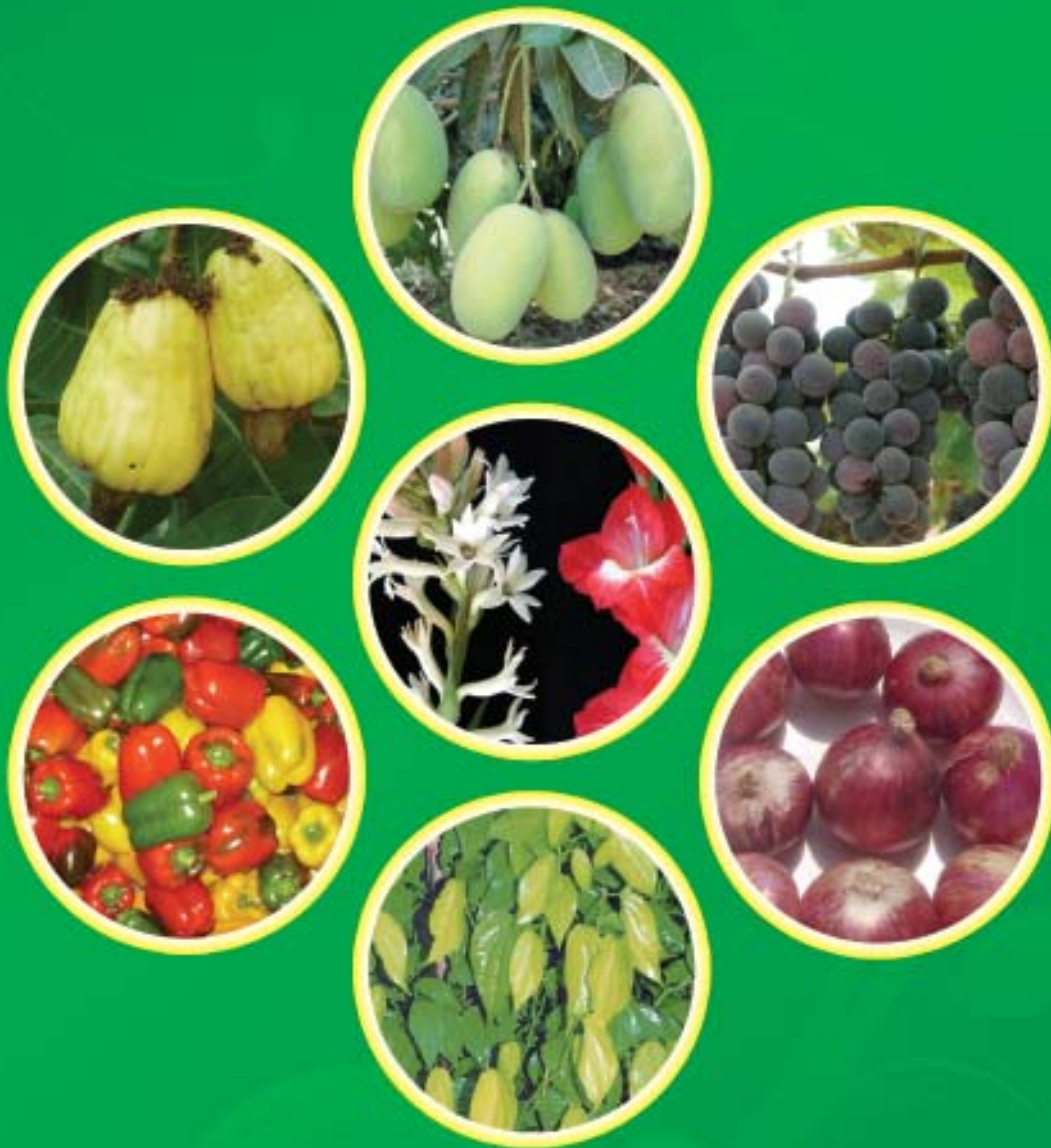




Annual Report

2011-12



Dr.Y.S.R. Horticultural University
Venkataramannagudem, West Godavari District – 534 101, A.P.



COLLGE OF HORTICULTURE, VENKATARAMANNAGUDEM



Boys Hostel, Venkataramannagudem



Girls Hostel, Venkataramannagudem



COLLGE OF HORTICULTURE, RAJENDRANAGAR



Boys Hostel, Rajendranagar



Girls Hostel, Rajendranagar

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2011-12



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Venkataramannagudem, West Godavari District - 534 101, A.P.

Dr.YSRHU, Annual Report, 2011-12

Published by

Dr.YSR Horticultural University

Administrative Office, P.O. Box No. 7,
Venkataramannagudem-534 101, W.G. Dist., A.P.
Phones : 08818-284312, Fax : 08818-284223
E-mail : vcaphu@gmail.com, vc@drysru.edu.in
URL : www.drysru.edu.in

Compiled and Edited by

Dr. B. Srinivasulu, Registrar & Director of Research (FAC), Dr.YSRHU

Dr. M.B.Nageswararao, Director of Extension, Dr.YSRHU

Dr. M.Lakshminarayana Reddy, Dean of Horticulture, Dr.YSRHU

Dr. D.Srihari, Dean of Student Affairs & Dean PG Studies, Dr.YSRHU

Lt.Col. P.R.P. Raju, Estate Officer, Dr.YSRHU

Dr.B.Prasanna Kumar, Deputy COE, Dr.YSRHU

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Printed at

Dr.C.V.S.K.SARMA, I.A.S.
VICE-CHANCELLOR
Dr.Y.S.R. Horticultural University &
Agricultural Production Commissioner &
Principal Secretary to Government, A.P.



Foreword

I am happy to present the Fourth Annual Report of Dr.Y.S.R. Horticultural University (Dr.YSRHU). It is a compiled document of the university activities during the year 2011-12.

Dr.YSR Horticultural University was established at Venkataramannagudem, West Godavari District, Andhra Pradesh on 26th June, 2007. Dr.YSR Horticultural University second of its kind in the country, with the mandate for Education, Research and Extension related to horticulture and allied subjects. The university at present has 4 Horticultural Colleges, 5 Polytechnics, 25 Research Stations and 3 KVKs located in 9 agro-climatic zones of the state.

Dr.YSR Horticultural University offers B.Sc. (Hons.) in Horticulture, M.Sc. (Horticulture) with specialization in four areas, namely i) Fruit Science, ii) Vegetable Science, iii) Floriculture & Landscaping, iv) Spices, Plantation, Medicinal & Aromatic crops and Ph.D (Horticulture). The university runs on the land grant pattern followed in the USA, integrating Horticultural Education, Research and Extension with an intension to provide self employment to rural youth and also to make use the services of rural youth, the university has established five Horticultural Polytechnics to offer two year Diploma in Horticulture.

The Dr.YSR Horticultural University Board of Management was not constituted during the year 2011-12. And three Academic Council meetings, one REAC meeting and three ZREAC meetings were held during the year.

A total of 314, 48 and 8 students in B.Sc. (Hons.) Horticulture, M.Sc. (Horticulture) and Ph.D (Horticulture) respectively along with 125 students in Diploma in Horticulture course are on roll during the year.

The Dr.YSR Horticultural University is conducting basic, applied, location / region specific and anticipatory research for the overall development of horticultural crops in the state at 25 research stations.

In coconut the dual purpose dwarf coconut cultivar Gangabondam, was released as Gauthami Ganga (Accession No.IND 003S) for commercial cultivation in the state for tender nut water. A selection from Fiji tall, Kera Bastar (Accession No.IND 004S) was released at National level for commercial cultivation in the states of Andhra Pradesh, Maharashtra, Tamil Nadu & Chattisgarh. Kalpa Prathibha (Accession No.IND 016S), a selection from Cochin China was released for its better performance with higher nut yield, copra and oil yield over local cultivar East Coast Tall. The variety was released at National level for commercial cultivation in the states of Andhra Pradesh and Tamil Nadu.

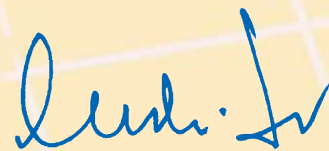
In cashew the annual nut yield was highest with H-320 which has given out 37.023 kg/tree which was followed by 29.955 kg/tree in H-303. Cumulative nut yield recorded was found highest with T.No. 10/19 [121.59 kg/tree] followed by 90.54 kg/tree in M 15/4 which were proposed to release.

The university scientists are involved in popularizing the proven technologies and improved varieties developed through various extension activities viz., All India Radio, Print and Visual media, Participation in Exhibitions, Kisam melas, Rythu chaitanya yatra, Rythu Sadassulu and Adarsha Rythu programmes.

I take this opportunity to thank the Indian Council of Agricultural Research and Government of Andhra Pradesh for their financial and technical support to the university.

I am thankful to Hon'ble members of Board of Management, Academic Council, Research and Extension Advisory Council for their timely guidance and cooperation extended in the university administration.

I am whole heartedly thankful to University Officers, Associate Deans, Principals, Heads of Research Stations, Programme Coordinators and supporting staff for their cooperation in preparation of the Annual Report.



(Dr.C.V.S.K.SARMA)

Vice-Chancellor

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Summary

The Dr.Y.S.R. Horticultural University (Formerly Andhra Pradesh Horticultural University) was established by the Government of Andhra Pradesh with its headquarters at Venkataramannagudem, near Tadepalligudem in West Godavari District, Andhra Pradesh on 26th June, 2007 by Act 30 of 2007 and renamed as Dr.Y.S.R. Horticultural University w.e.f. 18th April, 2011 by Act 13 of 2011. It is the second Horticultural University in the country. The university runs on Land Grant Pattern followed in the USA, with emphasis on Education, Research and Extension of Horticulture and allied subjects. Presently this university has 4 constituent Colleges of Horticulture, 25 Research Stations, 3 KVKs and 5 Horticultural Polytechnics situated in 9 agroclimatic zones of Andhra Pradesh.

The University is governed by a Board of Management comprising of 21 members headed by the Vice-Chancellor. The Vice-Chancellor is supported by University Officers viz., Registrar, Dean of Horticulture, Director of Research, Director of Extension, Dean of PG Studies, Dean of Student Affairs, Controller of Examinations, Comptroller and Estate Officer in University management. The academic affairs of the University are governed by the Academic Council, UG and PG boards lead by the Vice-Chancellor, the Research and Extension services are guided by Research and Extension Council (REC).

EDUCATION

This university offers B.Sc. (Hons.) Horticulture in four constituent colleges namely College of Horticulture, Anantharajupet (Kadapa District), Mojerla (Mahaboobnagar District), Rajendranagar (Ranga Reddy District) and Venkataramannagudem (West Godavari District), M.Sc. (Horticulture) with specialization in Fruit Science, Vegetable Science, Floriculture and Landscape Architecture and Spices, Plantation, Medicinal and Aromatic Crops and Ph.D (Horticulture) at College of Horticulture, Rajendranagar, Venkataramannagudem and Anantharajupet. The university has established five Horticultural Polytechnics in rural areas to offer two year Diploma in Horticulture. The Horticultural Polytechnics are at Dasnapur (Adilabad district), Madakasira (Ananthapur district), Ramachandrapuram (East Godavari district), Ramagirikhilla (Karimnagar district) and Kalikiri (Chittoor district).

During the year 2011-12, two Academic Council meetings were held. Students on roll are 314, 48, 8 and 125 in B.Sc. (Hons.) Horticulture, M.Sc. (Horticulture), Ph.D (Horticulture) and Diploma in Horticulture respectively. NSS activities at College of Horticulture, Anantharajupet, Mojerla, Rajendranagar and Venkataramannagudem were conducted.

RESEARCH

Crop improvement

At HRS, Ambajipeta, in coconut the dual purpose dwarf coconut cultivar Gangabondam, was released as Gauthami Ganga (Accession No.IND 003S) for commercial cultivation in the state for tender nut water.

A selection from Fiji tall, Kera Bastar (Accession No.IND 004S) was released at National level for commercial cultivation in the states of Andhra Pradesh, Maharashtra, Tamil Nadu & Chattisgarh.

Kalpa Prathibha (Accession No.IND 016S), a selection from Cochin China was released for its better performance with higher nut yield, copra and oil yield over local cultivar East Coast Tall. The variety was released at National level for commercial cultivation in the states of Andhra Pradesh and Tamil Nadu.





At HRS, Bapatla, in cashew the annual nut yield was highest with H-320 which has given out 37.023 kg/tree which was followed by 29.955 kg/tree in H-303. Cumulative nut yield recorded was found highest with T.No. 10/19 [121.59 kg/tree] followed by 90.54 kg/tree in M 15/4.

At HRS, Kovvur, FHIA 3, a dual purpose tetraploid hybrid and Yangambi km5, a triploid dessert selection of banana are resistant to race 1 of Panama wilt pathogen and enjoy good consumer preference.

At HRS, Peddapuram, out of fourteen cassava entries evaluated, the entry PDP-8 recorded highest tuber yield of 29.1 tons/ha with starch content of 24.4% followed by PDP-7 (27.3 tons/ha and 23.4% starch) as against the checks TCH-2 (25.4 tons/ha; 21.9% starch) and MNga-1 (21.9 tons/ha and 24.5% starch).

At HRS, Venkataramannagudem, Singapore has recorded significantly highest fruit number / tree (4326), while PKM-3 recorded maximum yield per tree (288.63 kg and 28.86 t.ha⁻¹). PKM-3 is performing for its cumulative yield of 100.06 t.ha⁻¹ in varietal trial of sapota.

At HRS, Adilabad, among four different varieties tested, gold streak variety produced highest number of flowers (38.36), diameter of flower (7.84 cm) and with less percentage of thrips and mite damage (6.52 & 3.31%) respectively bending at 3rd bud stage.

At FRS, Rajendranagar, among three cool crops varieties tested for observations trial in Adilabad condition. The highest yield (625.28 g/plant) was recorded in sprouting broccoli followed by brussels sprout (252.12 g/plant) and Chinese cabbage (178.28 g/plant).

In tuberose, two new tuberose varieties viz., Arka Nirantara and GK-T-C-4 along with Prajwal and Hyderabad single can be recommended for cultivation of single varieties, while among doubles, Hyderabad double and Suvasini with maximum spike length and number of florets per spike were found to be suitable.

At GRS, Rajendranagar Among the juice and wine varieties, Chenin Blanc has recorded highest yield (14.39 kg/vine) and maximum percentage of juice recovery (63%) was observed in Pusa Navarang variety of grape.

At VRS, Rajendranagar, twenty five genotypes of ridge gourd, thirty genotypes of bitter gourd and twenty five genotypes of bottle gourd were evaluated and characterized for further use in the crop improvement programmes.

At FRS, Sangareddy, in Dashehari clonal evaluation, Dashehari-35 of CISH, Lucknow was found promising, recording maximum cumulative fruit yield of 217.66 kg tree⁻¹ per tree in 6 bearing years.

At HRS, Kammarapally, out of seven (7) turmeric genotypes tested, TCP-129 has recorded highest fresh rhizome yield (22.97 t/ha) followed by RH-50 (22.51 t/ha) and RH-80 (21.58 t/ha) in comparison to Duggirala red check variety (20.33 t/ha).

Crop production

At HRS, Lam, among the different doses of nitrogen (300, 450, 600, 750 and 900 kg ha⁻¹) with neem cake, neem oil and mud slurry coating applied to the pre released variety (LCA 625) the RDN @300 kg N/ha applied as neem cake coated urea recorded consistently higher yields.

At HRS, Peddapuram, green manuring (Cowpea @50 kg/ha+ RD of NPK @ 100:50:100 kg/ha) recorded maximum cassava tuber yield (29.7 tons/ha) followed by RDF FYM + NPK @ 10t + 100:50:100 kg/ha with 28.8 tons/ha and Green manuring (cowpea) @50 kg/ha + RD (100 kg/ha) of K + 50% of NP + Azospirillum & PSB@ 5 kg/ha each (28.2 t/ha).

At HRS, Rajendranagar, in organic leafy vegetable production, application of FYM @ 20 t/ha in combination with biogertilizers viz., Azospirillum + PSB each 5 kg/ha recorded higher amaranthus yield of 115.0 q/ha with a B:C ratio of 1:0.68.





At FRS, Sangareddy, in the evaluation of various treatments on regulation of flowering and fruiting, 30% increase in yield was observed in trees sprayed with KH_2PO_4 (1%) + KNO_3 (1%) when compared with control.

Crop protection

Entomology

At HRS, Ambajipeta, Azadiractin 10000 ppm (Econem plus) either root feeding @ 12.5 ml + 12.5 ml water or spraying @5 ml/lit of water was effective against coconut eriophyid mite.

At HRS, Bapatla, among the insecticides evaluated as post extraction prophylaxis, chlorpyrifos 0.2% offered protection to the tune of 90.9% trees without re-infestation or persistent attack followed by monocrotophos 0.2% with 64.0% trees without re-infestation or persistent attack. The other treatments viz., carbaryl 1.0%, and treated check with neem oil offered 52.94 and 52.63 percent protection without re-infestation or persistent attack in cashew.

Plant Pathology

At HRS, Ambajipeta, application of bacterial bio agent *Pseudomonas fluorescens* powder @ 10 g/palm was found effective against bud rot disease of coconut caused by *Phytophthora palmivora*.

Application of paste formulation of *Trichoderma viride* was found effective against stem bleeding disease of coconut.

At HRS, Rajendranagar, among the nine entries evaluated for resistance against okra YVMV disease in AVT-I, OKYVMRES-I was completely free from the disease incidence when compared to the remaining entries which exhibited 100% incidence.

EXTENSION

This University has three KVK's and are located at Pandirimamidi, East Godavari District, Venkataramannagudem, West Godavari District and Ramagirikhilla, Karimnagar District. Scientists of three KVKs had actively involved in conducting on farm trials, front line demonstrations and training programmes on need based / crop specific problems and conditions identified through the diagnostic visits. Regular liaison with the department of Agriculture and Horticulture is also maintained to transfer the technologies that are proven. Regular ZREAC meetings were conducted in all the three zones with Departmental Officers and local farmers. As a support to mass media cell of Commissioner of Agriculture, All India Radio and Doordarshan monthly calendar of operations of Horticultural crops is prepared well in advance and circulated to all the concerned stations and extension agencies in the state.





I. Introduction

The Dr.Y.S.R. Horticultural University (Formerly Andhra Pradesh Horticultural University) was established by the Government of Andhra Pradesh by Act 30 of 2007 with its headquarters at Venkataramannagudem, near Tadepalligudem in West Godavari District and renamed as Dr.Y.S.R.Horticultural University w.e.f. 18th April, 2011 by Act 13 of 2011. It is the second Horticultural University in the country. The University runs on the Land Grant pattern followed in the USA, with emphasis on Education, Research and Extension of Horticulture and allied subjects.

The University at present has four horticultural colleges, five polytechnics, 25 Research Stations and three KVKs across 9 agro-climatic zones of the state. Ongoing research programmes at 25 Research Stations have been reoriented into eight thrust areas identified based on the present day need. Nineteen All India Coordinated Research projects are also operating at different research stations of the university. Funds for research are provided by the State Government and also the Indian Council of Agricultural Research (ICAR). The ICAR provides 75 per cent of funds for conducting research under various All India Coordinated Research Projects of ICAR.

The University is governed by a Board of Management comprising of 21 members headed by the Vice-Chancellor. The Vice-Chancellor is supported by University Officers viz., Registrar, Dean of Horticulture, Director of Research, Director of Extension, Dean of PG Studies, Dean of Student Affairs, Controller of Examinations, Comptroller and Estate Officer in University management. The academic affairs of the University are governed by the Academic Council, UG and PG Boards led by the Vice-Chancellor. The Research and Extension services are guided by the Research and Extension Council (REC).

This university offers B.Sc. (Hons.) Horticulture, M.Sc. (Horticulture) with specialization in i) Fruit Science ii) Vegetable Science iii) Floriculture and Landscape Architecture, and iv) Spices, Plantation, Medicinal and Aromatic crops and Ph.D (Horticulture). The course curriculum prescribed by the IV Deans' committee of Indian Council of Agricultural Research is being followed for the degree programme. Students besides course work, they shall also undergo Rural Horticultural Work Experience Programme (RHWEP) and 'Hands on Training / Experiential learning of 14 weeks each on specialized subjects, namely, (1) Protected cultivation of high value crops (2) Post-harvest technology and value addition (3) Nursery production and management (4) Floriculture and landscape gardening, dealing with commercialization of horticulture in addition to rural training for the award of Bachelor's degree. In RHWEP the final year students are deputed to stay in villages along with farmers for one and half month, where they will interact with farmers of the village, work with them, understand their problem, apply the latest knowledge, acquire necessary skills and gain self confidence. These rural based training programmes i.e., RHWEP, Hands on Training/ Experiential Learning will be useful to develop the manpower requirement with different technical expertise in view of the globalization of Horticultural trade and for imparting quality education and training in horticulture to the students to develop into well trained personnel, a part of rural development programme. With an intention to provide self employment to rural youth, and also to make use the services of rural youth in rural development, the University has established five Horticultural Polytechnics in rural areas to offer two year Diploma in Horticulture.

The University scientists are involved in popularizing the proven technologies and improved varieties developed through various extension activities, namely; All India Radio, print and visual media, participation in Exhibitions, Kisan Melas, Rythu Chaitanya Yatra, Rythu Sadassus and Adarsha Rythu Training Programmes.





II. University Administration

His Excellency, the Governor of Andhra Pradesh, **Sri E.S.Lakshmi Narasimhan** is the Chancellor of the University and Dr. C.V.S.K.Sarma, the Vice-Chancellor, Agricultural Production Commissioner and Principal Secretary to Government & Vice-Chancellor i/c. are the Academic Head and Principal Executive Officer of the University.

The organizational set up of the University is presented in flow chart.

The University is governed by the following authorities.

- Board of Management
- Academic Council

A. AUTHORITIES OF THE UNIVERSITY

1. Board of Management

The Board of Management of Dr.YSRHU is the apex body, empowered to make policy decisions, with the Vice-chancellor as its Chairman who is also the Chief Executive of the University.

The Board of Management has representatives from State Legislature/Parliament (4), the Horti-industry (2) and State Chamber of Panchayat Raj (1) as well as Horticultural Scientific Community (1). In addition, one representative from the Indian Council of Agricultural Research, three Members of Academic Council of the University, Secretaries to Government from Panchayat Raj and Finance Departments and Director of State Departments of Agriculture and Animal Husbandry are also the Members of the Board of Management of Dr.YSRHU.

Members of Board of Management, Dr. YSRHU

Ex-Officio Members

Dr. C.V.S.K. Sarma, I.A.S. Agril. Production Commissioner & Principal Secretary to Government, ATM & Vice-Chancellor (From 26.02.2011)

Sri. V. Nagi Reddy, I.A.S., Vice-Chancellor, ANGRAU

Dr. V. Prabhakar rao, Vice-Chancellor, SVVU

Dr. C.V.S.K. Sarma, I.A.S. Agril. Production Commissioner & Principal Secretary to Government, ATM

Mrs. Vasudha Mishra, I.A.S. Secretary to Government (IF)

Mrs. I. Rani Kumudini, I.A.S. Commissioner & Director of Horticulture





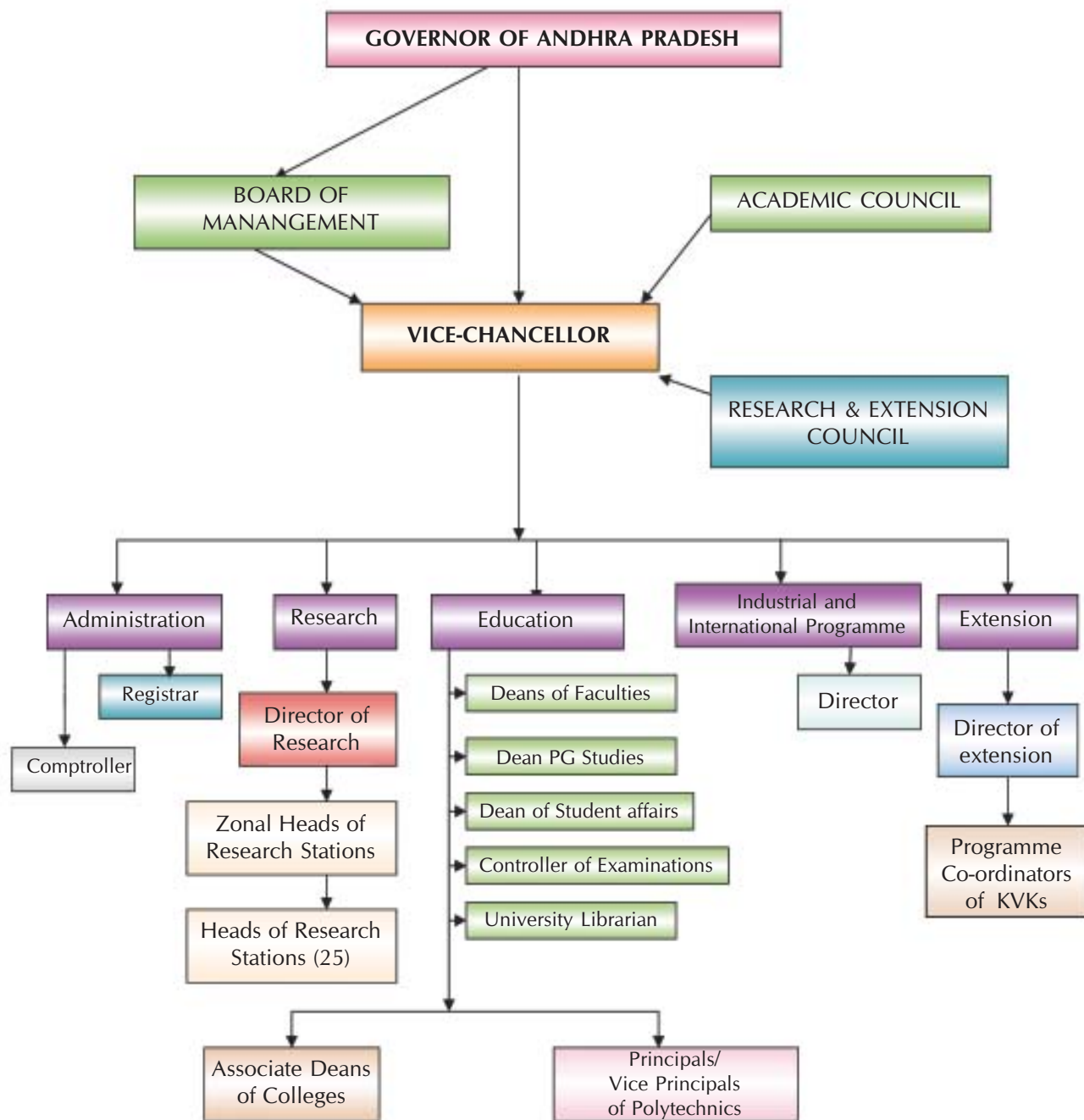
Other Members

- One distinguished scientist from the field of Horticulture --
- Four persons nominated from amongst the progressive farmers of Horticulture/ Agriculture of whom one shall be a women --
- Two persons nominated from among the Horticulture industrialists and other entrepreneurs including self employed graduates --
- One representative from the Indian Council of Agricultural Research --
- Four persons from among the members of the state legislature and the members of parliament elected from the State of Andhra Pradesh --
- One Director / Dean --
- Three Professors of the University other than Dean/ Director --
- One person nominated by the Chancellor from among the members of State Chamber of Panchayat Raj --





ORGANIZATIONAL STRUCTURE OF DR.YSR HORTICULTURAL UNIVERSITY





2. Officers of the University

The list of University Officers for the year is given below

UNIVERSITY OFFICERS

Vice-Chancellor	Dr. C.V.S.K.Sarma, I.A.S. Agril. Production Commissioner & Principal Secretary to Government, ATM (From 26.02.2011 onwards)
Registrar	Dr.P.Suryanarayana Reddy (15.9.2008 to 31.5.2011)
Registrar (FAC)	Dr.S.Amarender Reddy (1.6.2011 to 2.6.2011)
Registrar (FAC)	Dr. K.Purushotham (3.6.2011 to 31.10.2011)
Registrar	Dr. B.Srinivasulu (01.11.2011 onwards)
Comptroller (FAC)	Dr.P.Suryanarayana Reddy (3.10.2008 to 31.5.2011)
Comptroller (FAC)	Dr. B.Srinivasulu (1.6.2011 onwards)
Dean of Horticulture & Dean PG (FAC)	Dr. K.Hari Babu (01.11.2010 to 31.03.2012)
Dean of Horticulture & Dean PG (FAC)	Dr. B.Srinivasulu (01.04.2012 onwards)
Director of Research	Dr. K.Purushotham (09.05.2008 to 31.10.2011)
Director of Research (FAC)	Dr.B.Srinivasulu (1.11.2011 onwards)
Director of Extension (FAC)	Dr. S. Amarender Reddy (17.09.2010 onwards)
Dean of Student Affairs	Dr. K.Hari Babu (06.03.2009 to 31.3.2012)
Dean of Student Affairs (FAC)	Dr.G.Subbi Reddy (12.4.2012 onwards)
Controller of Examinations	Dr. B.Srinivasulu (12.03.2009 onwards)
Estate Officer	Sri P.R.P.Raju (05.03.2010 onwards)

3. Academic Council

The Academic Council is vested with the responsibility of implementing and monitoring all the academic programmes. The Council is headed by the Vice-Chancellor as Chairperson and consists of Deans of Faculties, Directors of Research and Extension, Controller of Examinations, Dean of Student Affairs, University Heads of Departments and Professors as Members. In addition, the Council consists of ten academicians, representing different faculties nominated by the Vice-Chancellor and two representatives of the Board of Management. As Chief Executive of the University the Vice-Chancellor is vested with the powers and responsibilities for the academic administration.

MEMBERS OF ACADEMIC COUNCIL

Chairman	Dr. C.V.S.K. Sarma, I.A.S. Agril. Production Commissioner & Principal Secretary to Government, ATM & Vice-Chancellor (From 26.2.2011 onwards)
Ex-Officio Member Secretary	Dr. P. Suryanarayanareddy, Registrar





Members	Sri V. Nagi Reddy , I.A.S., Vice-Chancellor, A.N.G.R.A.U
	Dr. V. Prabhakara Rao , Vice-Chancellor, Sri Venkateswara Veterinary University
	Dr. K. Purushotham , Director of Research, Dr.YSRHU
	Dr. S. Amarender Reddy , Director of Extension, Dr.YSRHU
	Dr. K. Haribabu , Dean of Students Affairs, Dr.YSRHU
	Dr. B. Srinivasulu Controller of Examinations, Dr.YSRHU
	Dr. K. Veeranjanyulu University Librarian, ANGRAU
	Dr. G. Subbi Reddy Associate Dean
	Dr. D. Sri Hari Associate Dean
	Dr. M.L.N. Reddy Associate Dean
	Dr. B. Gautam Principal Scientist
	Dr. K. Gopal Principal Scientist
	Dr. K. Ravindra Reddy Professor
	Dr. G. Satyanarayana Principal Scientist (Retd.), ANGRAU
	Dr. M. Rama Rao Associate Director of Research (Retd.), ANGRAU
	Dr. M. Kochu Babu Director, Directorate of Oil Palm Research
	Dr. K.M. Yuvaraj Associate Professor
	Dr. N.B.V. Chalapati Rao Associate Professor
	Dr. V. Sudhavani Assistant Professor
	Mrs K. Venkata Laxmi Assistant Professor
	Dr. M. Ramakrishna Principal
	Dr. K. Chandrasekhar Reddy Vice-Principal, SKPP Horticulture Polytechnic.
	Dr. B. Srinivasulu , Registrar & Member Secretary

B. MEETINGS OF THE AUTHORITIES OF THE UNIVERSITY

Academic Council

The Academic Council normally meets once in six months. The Eighth and Ninth Academic Council meetings were held on 9.6.2011 and 16.3.2012 at SVVU, Tirupathi and Dr.YSRHU, V.R.Gudem respectively.

C. FACULTY STRENGTH

The cadre-wise strength of teaching staff of Dr.YSRHU is as follows

Faculty Strength in Dr.YSRHU during 2011-12

Teaching Staff	
Post	No.
Professors	37
Associate Professors	18
Assistant Professors	106





III. EDUCATION

1. Teaching Institutes

Dr.YSR Horticultural University (Dr.YSRHU) offers under graduate programme, B.Sc. (Hons.) Horticulture and M.Sc. (Horticulture) with specialization in Fruit Science, Vegetable Science, Floriculture & Landscape Architecture and Spices, Plantation, Medicinal & Aromatic crops in addition to Ph.D in Horticulture in English medium. The Dr.YSRHU also offering two years Post-matric-diploma programme in Telugu medium.

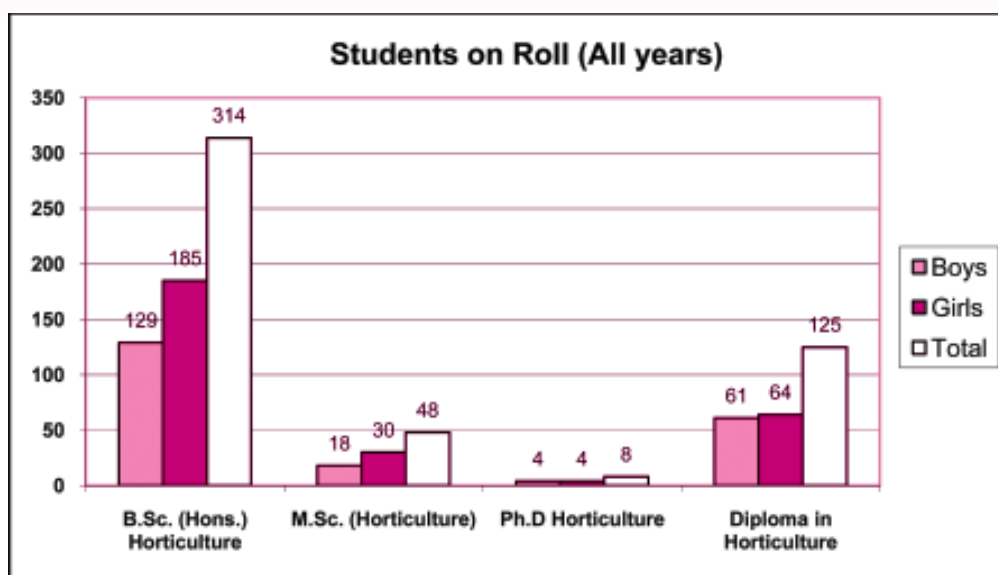
The list of colleges and polytechnics with their location, year of establishment and courses offered is given in Table.

S.No.	Teaching Institute with location	Courses offered
I.	Colleges of Horticulture	
	i) Horticultural College & Research Institute, Anantharajupet	B.Sc. (Hons.) Horticulture M.Sc. (Horticulture) with specialization in Fruit Science, Vegetable Science, Floriculture & Landscape Architecture and Spices, Plantation, Medicinal & Aromatic crops
	ii) College of Horticulture, Mojerla	B.Sc. (Hons.) Horticulture
	iii) College of Horticulture, Rajendranagar	B.Sc. (Hons.) Horticulture M.Sc. (Horticulture) with specialization in Fruit Science, Vegetable Science, Floriculture & Landscape Architecture and Spices, Plantation, Medicinal & Aromatic crops and Ph.D (Horticulture)
	iv) Horticultural College & Research Institute, Venkataramannagudem	B.Sc. (Hons.) Horticulture M.Sc. (Horticulture) with specialization in Fruit Science, Vegetable Science, Floriculture & Landscape Architecture and Spices, Plantation, Medicinal & Aromatic crops and Ph.D (Horticulture)
II.	Horticultural Polytechnics	
	i) Horticultural Polytechnic, Adilabad ii) Horticultural Polytechnic, Kalikiri iii) SSPG Horticultural Polytechnic, Madakasira iv) Horticultural Polytechnic, Ramagirikhila v) SKPP Horticultural Polytechnic, Ramachandrapuram	Diploma in Horticulture

2. Admission Strength and Out turn of Students

Course	Students admitted (2011-12)		
	Boys	Girls	Total
B.Sc. (Hons.) Horticulture	129	185	314
M.Sc. (Horticulture)	18	30	48
Ph.D. (Horticulture)	4	4	8
Diploma in Horticulture	61	64	125
Total	212	283	495





3. Scholarships and Stipends

Name of the Scholarship	No. of recipients	Amount received (Rs.)
BC Post Matric Scholarship	132	520190
SC Post Matric Scholarship	60	314525
ST Post Matric Scholarship	29	143350
EBC Post Matric Scholarship	31	87294
EPC Post Matric Scholarship	-	-
Disabled	-	-
District Minority Department Scholarship	4	4900

4. Students' Hostels

Sl. No.	Name of the College	No. of Hostels		
		Boys	Girls	Total
1.	Horticulture College & Research Institute, Venkataramannagudem	1	1	2
2.	College of Horticulture, Rajendranagar	1	1	2
3.	College of Horticulture, Mojerla	1	1	2
4.	Horticulture College & Research Institute, Anantharajupet	1	1	2
5.	SKPP Horticulture Polytechnic, Ramachandrapuram	1	1	2
6.	Horticulture Polytechnic, Ramagirikhila	1	1	2
7.	SSPG Horticulture Polytechnic, Madakasira	1	1	2



5. Students Activities

i) NSS Activities

NSS Activities at SKPP Horticultural Polytechnic, Ramachandrapuram

Camp	Venue	Date	No. of students attended
1) Aids awareness Campaign	R.C. Puram Town, W.G. District	1.12.2011	58
2) National Voters Day	SKPP H.Polytechnic, Ramachandrapuram	25-1-2012	58
3) NSS Special Camp	Kapavaram Village, E.G. District	25-2-2012 to 2-3-2012	58

NSS Activities at Horticultural Polytechnic, Kalikiri

Camp	Venue	Date	No. of students attended
Special Camp	Nagaripalli Kalikiri (M)	16.08.2011 to 22.08.2011	45
Special Camp	Cheruvumundarapalli, Kalikiri (M)	10.02.2012 to 16.02.2012	45

Beautification of college premises, raising of kitchen garden, water conservation practices on 10.8.2011 and 11.8.2011 were conducted.

Kitchen garden, construction of water tanks at Horticultural Polytechnic, Kalikiri on 21.10.2011 and 22.10.2011.

International non-violence day celebration was conducted on 11.11.2011 at Horticultural Polytechnic, Kalikiri.

Deworming of sheeps (300 no.) at Peddavankala palli, Harijana vada and Bodavandlapalli on 1.3.2012 and 2.3.2012.

NSS Activities at SSPG Horticultural Polytechnic, Madakasira, Anantapur Dist.

Special Camp was conducted in Gundumala village from 7th-13th February, 2012.

On the Eve of Dr.YSRHU Formation day 50 saplings (40 *Neerium* and 10 *Alamanda* sps) have been planted in the Campus on 26th June 2011.

Teachers Day was celebrated on 5th September 2011. Elocution Competition was held and prizes were distributed to the outperformed NSS Volunteers.

An awareness camp on Corruption elimination was organised by Eenadu, ETV and NSS Unit at SSPG Horticulture Polytechnic Campus.

Dr. M Ramkarishna, Principal, SSPG Horticulture Polytechnic, Dr. Satyanarayana, Associate Dean, College of Agricultural Engineering, Sri R.Preetham, Assistant Professor (Agronomy) & NSS PO, Shri Ganesh Assistant Professor (Agril. Engineering) along with students of SSPG Horticulture Polytechnic and College of Agricultural Engineering participated in the event.

NSS Day was celebrated in the Campus on 24th September 2011 on the day Dr. M Ramkarishna, Principal, SSPG Horticulture Polytechnic, Dr. Ch V V Satyanarayana, Associate Dean, College of





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Agricultural Engineering, Dr. H Srinivas Naik, Principal, Animal Husbandry Polytechnic, Shri. Malleshwar Reddy, Assistant Professor, Agricultural Polytechnic, and Sri R.Preetham Assistant Professor (Agronomy) & NSS PO, NSS Unit along with NSS Volunteers of SSPG Horticulture Polytechnic participated in the event.

On the eve of **International Non Violence Day**, a **Blood Donation Camp** was organised.

A *Parthenium* eradication programme in the campus was taken up on 18th November 2011 and A health awareness programme was conducted on 19th November 2011.

On the eve of 55th Death Anniversary of Dr. B R Ambedkar, floral tributes were paid by Shri. R Preetham, NSS PO and NSS Volunteers of this Polytechnic.

Human Rights Day was celebrated on 10th December 2011. On the eve of Birth Anniversary of Sri. Swami Vivekananda, a youth festival was celebrated.

On the eve of National Voters Day on 25th January 2012, Essay writing, Elocution competitions were held in the college and in the adopted village identified 34 villagers who are not having voter identity cards and have seen that they apply for the new voter identity cards.

On 8th March 2011 International Women's Day was celebrated at SSPG Horticulture Polytechnic, Madakasira. Elocution and Essay Writing Competitions were held for Girl Students and the winners were give prizes.

Special Camp Programme

A special camping Programme was conducted in Gundumala village, Madakasira mandal, Anantapur district from 7th-13th February 2012. 50 NSS Volunteers have took part in the Special Camping Programme. An Animal Health Camp, Human Health Camp, Shramadhan (Water harvesting Structure was Constructed), Soil Sample Collection and Analysis of soil samples was done, Farmers-Scientist-Department Officers Interaction meeting on Pomegranate etc., programmes were conducted during Special Camping Programme.

Vegetable Cultivation was taken up by the students in an half acre of land, students could successfully cultivated thirty vegetables. A **Vermicompost Unit** was raised by the students under the supervision of the teaching staff. A demonstration plot on **"Integrated Pest Management"** was taken up by the students in the campus.

NSS Activities at Horticultural Polytechnic, Ramagirikhilla

Special Camp was conducted in Ratnapur village from 15-03-2012 to 21-03-2012

College of Horticulture, Rajendranagar

NSS Activities

NSS camp was organized from 28.4.2011 to 4.5.2011 at Kauvaguda village, Rangareddy District.

Clean and Green Programme for 3 hours was organized on 21st January, 2012 with 100 NSS Volunteers of unit I and staff of College of Horticulture, Rajendranagar.

National Voters Day was celebrated at College of Horticulture, Rajendranagar on January 25th, 2012. On this occasion, Elocution, Essay Writing and Slogan Writing Competitions were conducted as mentioned below on 24th, January, 2012.





Event	Languages	Topic
Elocution	(Telugu, English)	Importance of Franchising Vote in Strengthening Indian Democracy- Role of Students
Essay writing	(Telugu, English)	Importance of ethical voting in strengthening Indian Democracy - Role of Youth
Slogan writing	(Telugu, English)	Importance of Voter Enrollment and Ethical Voting

On January 25th a meeting was conducted to create awareness about importance of voter registration, procedure of registration, ethical voting. A rally was organized in Bhavani Colony, Premavathipet (adjacent area of College of Horticulture, Rajendranagar) to create awareness among public about National Voters Day.

University Intercollegiate Sports meet was organized at the college from 22 to 24 December 2011 successfully.

Dr.C.V.S.K. Sarma, Hon'ble Vice-Chancellor, Dr YSRHU inaugurated the sports meet. In the meet 10 students (both boys and girls) were selected to participate in the All India Inter Agricultural University Sports and Games meet, which was held during 16-19 February, 2012 at Dr.Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra.

College of Horticulture, Mojerla

NSS Special Camp

Name of the college	Camp	Venue	Date	No. of students attended
College of Horticulture, Mojerla	NSS Special Camp	Mojerla Village, Peddamandadi Mandal, Mahabubnagar Dist.	13.03.2012 to 19.03.2012	41

Shramadan : Road repair & Cleaning

As part of shramadan, on 21.01.2012 student volunteers repaired the road near college and cleaned the college premises by clearing bushes and burning trash.

National Voters Day (NVD)

On the eve of National Voters Day Celebration on 25.01.2012.

Essay writing and elocution competitions were conducted on the topics mentioned and the winners

Essay writing	Juniors	Democracy – India a role model	1 st Prize: K. Murali (2 nd year)
	Seniors	Electoral Reforms	1 st Prize: J. Srikanth (3 rd year) 2 nd Prize: Nitya Menora (4 th year)
Elocution	Juniors	Democracy – India a role model	1 st Prize: R. Harischandra Prasad (2 nd year)
	Seniors	Electoral Reforms	1 st Prize: J. Srikanth (3 rd year) 2 nd Prize: B. Sravan Kumar (4 th year)





were given prizes.

National Voters Day pledge has been administered by the Associate Dean in the college involving student volunteers and staff members.

Pulse Polio Immunization Awareness Rally : A rally has been conducted on 18.02.2012 to bring awareness on Pulse Polio Immunization in Peddamandadi and Mojerla village involving ninety NSS student volunteers along with the co-operation of the Primary Health Centers, Medical Officers, Aasha and ANM workers.

Legal Awareness Camp on Anti-ragging act on 9.11.2011

Legal awareness camp with regard to the A.P. Prohibition of Ragging Act 1997 was conducted in our college premises on 9.11.2011.

ii) Sports, Games and Cultural Activities

SKPP Horticultural Polytechnic, Ramachandrapuram

Won Overall Championship in Sports, Games, Literary events conducted at Ramagirikhilla from 20-02-2012 to 22-02-2012

SSPG Horticultural Polytechnic, Madakasira

Sree Rajeev Gandhi Memorial Cricket League Championship is being sponsored by the Honourable MLC, Government of Andhra Pradesh, Shri. Gundumala Thippe Swamy. The students actively participated in the League during 20th August 2011 to 14th November 2011.

Students have participated in First Inter collegiate Sports, Games, Cultural and Literary meet held at Ramagirikhilla, Karimnagar district from 20th -22nd February 2012. THis Polytechnic stood **Second** with 51 points after SKPP Horticultural Polytechnic, Ramchandrapuram who have got 53 points. Kum. V Rajeswari a student of Second Year has participated in 9 events and got 8 prizes. Kum. R.Hareeswari a Second year student participated in Essay writing and Elocution and stood first. Our College stood first in Sports events by securing 19 points, stood first in literary events and First in Games.

Activity	Venue	Date	No. of students from Horticultural Polytechnic, Kalikiri	Prizes won
Sports, Games and cultural activities	Ramagirikhilla, Karimnagar district	20.02.2012 to 22.02.2012	20	7

Horticultural Polytechnic, Kalikiri

Horticultural Polytechnic, Ramagirikhilla

Ist Inter Collegiate Sports and Games, cultural & Literary Meet was held from 20-02-2012 to 22-02-2012 (3 days) at this campus. Dr. K. Hari Babu, Dean of Student Affairs attended as a chief guest for inaugural function Smt. Ayesha Masyath Khan, RDO, Manthani attended as a chief guest for valedictory





function. The students from Five Horticulture Polytechnic Colleges were participated in the meet.

Horticultural College & Research Institute, Anantharajupet

Dr.M.L.N.Reddy, Associate Dean and Dr. G. Pakki Reddy, Executive Director, ABF, Rajendra nagar, addressed the gathering on the occasion of public awareness programme on pros and cons of agricultural Biotechnology Organized by ABF, AP Netherlands project on 22-9-2011.

NSS Activity

N. S. S. Special camp organized from 22-7-2011 to 28-07-2011 in obulavaripalli (V) & (M). NSS volunteers were given awareness on Law and Order to be followed as citizen, by Sri Parthasarathyreddy, Subinspector of Police, Obulavaripalli on this occasion. During the one week programme various activities like Plantation of avenue plants, white washing of Govt. office buildings, awareness camps on Abolition of child labour, ill effects of plastics, youth training etc were organized under the supervision of NSS programme officers Sri V.N.P. Siva rama Krishna, Asst. Prof. (Hort) and Dr. M Kavitha Scientist (PI Path) of the college.

Dr. K.Haribabu, Dean of Horticulture i/c and Dean Students affairs Addressed the NSS volunteers on the occasion of inaugural session of N. S. S. Special camp organized from 05-7-2011 to 11-07-2011 in Mukkavaripalli (V), obulavaripalli (M). on this occasion. NSS volunteers were given awareness on Road safety and Traffic rules to be followed as citizen, by Smt Jhansi lakshmi, deputy regional manager, RTC, Kadapa, on this occasion. During the one week programme various activities like Plantation of avenue plants, white washing of Govt. office buildings, awareness camps on Abolition of child labour, ill effects of plastics, youth training etc were organized under the supervision of NSS programme officers Dr. M Kavitha Scientist (PI Path and Sri V.N.P. Siva rama Krishna, Asst. Prof. (Hort). Other staff members also participated.

Field Visits organized by the Sudents

B.Sc. (Hons.) Horticulture students of III year were taken to Agroforestry nursery located near Kukkaladoddi, on the way from Kodur to Tirupati on 19-08-2011. They were shown number of forest sps and medicinal plant species. Sri Kumar Nursery i/c explained them about different clones of Eucalyptus and Nursery raising technique in Eucalyptus.

B.Sc. (Hons.) Horticulture students of III year were taken to commercial rose and Jasmine gardens located near Kukkaladoddi, on the way from Kodur to Tirupati on 19-08-2011. They were explained about package of practices, bending pruning techniques in Rose and defoliation techniques in Jasmine.

Fertilizer application in crossandra garden was demonstrated to III year (2008 admitted batch) students. They were explained about importance of micronutrients in getting quality flowers.

B.Sc. (Hons.) Horticulture students of III year were taken to commercial Watermelon growers located near Chennarajupodu village near Anantharajupet on 26-08-2011.

B.Sc. (Hons.) Horticulture students of III year were taken to commercial Horticulture Nursery located in Raghavarajapuram village near Anantharajupet and APSA, Fruit juice factory located near Kodur, Under entrepreneurship development course on 25-08-2011. They were explained about procedure for starting of an enterpreneur, getting license production and marketing of the produce.

A programme on personality development was organized on 05-08 2011. Swamini Sheelananda and her disciples from Chinmayaranyam Ashram, Korlakunta, interacted with the students of COH,





Anantharajupet on how to become good citizens with good conduct.

AP educational tour : B.Sc. (Hons.) Horticulture students were taken on educational tour to various research stations and colleges working under Dr. Y.S.R. Horticulture University for 8 days from 11-09-2011 to 18-09-2011. Sri. M.G. Balahussain, Asst. Professor (Horticulture) and Kum K. Lalitha, Asst. Professor (Agronomy) accompanied the students on tour.

South India educational tour : B.sc (Hons) Hort students were taken on educational tour to various research stations and colleges located in southern states for 10 days from 21-09-2011 to 02-10-2011. Dr. K. Baburatan, Professor (Horticulture) and Sri. Sivaramakrishna Asst. Prof. (Horticulture) accompanied the students on tour.

B.Sc. (Hons.) Horticulture students of 3rd year were taken to commercial Mango processing unit located at [unclear] entrepreneurs [unclear] 11.



NSS Activities at SKPP Horticultural Polytechnic, Ramachandrapuram



NSS Activities at Horticultural Polytechnic, Kalikiri



Legal awareness camp with regard to the A.P. Prohibition of Ragging Act 1997 was conducted in our college premises on 9.11.2011.





Won Overall Championship in Sports, Games, Literary events conducted at Ramagirikhilla from 20-02-2012 to 22-02-2012



Dr. M.L.N.Reddy, Associate Dean and Dr. G. Pakki Reddy, Executive Director, addressed the gathering on the occasion of public awareness programme on 22-9-2011.



HCRI, Anantharajupet organized NSS Special camp from 22-7-2011 to 28-07-2011





Dr. K.Haribabu, Dean of Horticulture i/c and Dean Students affairs Addressed the NSS volunteers on the occasion of inaugural session of N. S. S. Special camp organized from 05-7-2011 to 11-07-2011 in Mukkavaripalli (V), Obulavaripalli (M)



B.Sc. (Hons.) Horticulture students of HCRI, A.R.Peta, were taken on educational tour to various research stations and colleges





Field Visits organized by the Students



HCRI, Anantharajupet, organized a programme on personality development on 05-08 2011



South India educational tour of B.sc (Hons) Hort students of HCRI, Anantharajupet



B.Sc. (Hons.) Horticulture students of 3rd year, HCRI, Anantharajupet were taken to commercial Mango processing unit





IV. RESEARCH

The university is conducting basic, applied, location region specific and anticipatory research for the overall development of horticultural crops in the state at 25 Research Stations located in 9 agro-climatic regions of the state. The research programmes are covered under three categories namely, Non plan projects/ University projects, ICAR plan projects under All India Coordinated Research Projects and State Horticulture Mission projects.

The research activities of the university are being carried out in the following research stations.

Research Stations

Sl.No.	Horticultural Research Stations	Research on Crops	AICRP on
1.	Horticultural Research Station, Chintapalle, Vishakapatnam District.	Spices, Flowers	Black pepper, Turmeric, Ginger
2.	Horticultural Research Station, Pandirimamidi, East Godavari District.	Fruits, Vegetables, Palmyrah	Palmyrah
3.	Horticultural Research Station, Ambajipeta, East Godavari District.	Coconut, Cocoa	Coconut
4.	Horticultural Research Station, Kovvur, West Godavari District.	Banana, Elephant Foot Yam, Colocasia	Banana, Elephant Foot Yam
5.	Horticultural Research Station, Venkataramannagudem, West Godavari District	Sapota, Jack	Sapota, Jack, Papaya, Betelvine, Medicinal Plants, Tapioca
6.	Horticultural Research Station, Vijayarai, West Godavari District.	Oil Palm, Vegetables	Oil palm
7.	Mango Research Station, Nuzvid, Krishna District	Mango	–
8.	Horticultural Research Station, Lam, Guntur District.	Chilli, Vegetables, Spices	Chilli, Vegetables, Grain spices
9.	Cashew Research Station, Bapatla, Guntur District.	Cashew	Cashew
10.	Horticultural Research Station, Darsi, Prakasam District.	Sweet orange, Vegetables	–
11.	Horticultural Research Station, Adilabad, Adilabad District.	Vegetables, Flowers	–
12.	Horticultural Research Station, Aswaraopet, Khammam District.	Mango, Guava, Vegetables	–
13.	Turmeric Research Station, Kammarapally, Nizamabad District.	Turmeric	Turmeric
14.	Horticultural Research Station, Mallepally, Nalgonda District.	Arid plantation crops	–





Sl.No.	Horticultural Research Stations	Research on Crops	AICRP on
15.	JVR Horticultural Research Station, Malyal, Warangal District.	Mango, Chilli	--
16.	Floriculture Research Station, Rajendranagar, Ranga Reddy District.	Flowers	Flowers
17.	Grape Research Station, Rajendranagar, Ranga Reddy District.	Grape	Grape
18.	Herbal Research Station, Rajendranagar, Ranga Reddy District	Herbal crops	--
19.	Vegetable Research Station, Rajendranagar, Rangareddy District.	Vegetables	Vegetables, Tuber crops, Grain spices
20.	Fruit Research Station, Sangareddy, Medak District.	Mango, Guava, Custard apple	Mango, Guava
21.	Horticultural Research Station, Anantapur, Anantapur District.	Arid Fruit crops	Pomegranate, Amla
22.	Horticultural College & Research Institute, Anantharajupet, Kadapa Dt.	Fruit crops, Vegetables	--
23.	Horticultural Research Station, Mahanandi, Kurnool District	Vegetables	--
24.	Citrus Research Station, Petlur, Nellore District.	Citrus crops	--
25.	Citrus Research Station, Tirupati, Chittoor District.	Citrus, Sweet orange	Sweet orange, Acid lime

3. Seasonal conditions and crop performance

Seasonal conditions prevailed in the state during the year 2011-12 on the whole was satisfactory. The state received an average total rainfall of 670 mm as against normal rainfall of 940 mm, the deficit being 29 per cent. During the south west monsoon the state received an average rainfall of 540 mm as against the normal rainfall of 624.1 mm, the deficit being 14 per cent. During north east monsoon period an average rainfall of 332.5 mm was received as against the normal rainfall of 113.3 mm, the deficit being 65 per cent. Hot weather period of 90 days prevailed during the period as against normal hot weather period of 77.8 days.

The areas, production and productivity of horticultural crops in Andhra Pradesh during 2011-12 are presented.

Statistics of Horticultural crops in Andhra Pradesh during 2011

Sl. No	Crop Category	Area (000'HA)	Production (000'MT)
1	Fruit Crops	646.1	9417.0
2	Vegetables Crops	651.2	11847.6
3	Plantation Crops	304.8	777.2
4	Spice Crops	289.2	1069.2
5	Flower Crops	21.8	133.7
	Total	1933.4	23324.5





A. CROP IMPROVEMENT

FRUITS

MANGO

Augmentation and evaluation of mango germplasm

At FRS, Sangareddy, a total of 12 varieties were evaluated the maximum number of fruits tree⁻¹ (433) and maximum yield (82.4 kg tree⁻¹) was recorded in the variety CISH M2. However, maximum cumulative yield (414.17 kg tree⁻¹) (5 bearing years) was observed in CISH M2. The maximum fruit weight (318 g) and pulp weight (255 g) was recorded in CISH M1. The Maximum fruit length (12.4cm) was recorded in Yerra Arati and highest TSS (22.0 ° Brix) was recorded in Yerra Arati while minimum acidity (0.27) was recorded in Sindhura. The highest shelf life (10.7 days) was observed in Arka Neelkiran and the maximum total sugar percent was recorded in Gulabi (23.60).

Survey of seedling germplasm in mango

At FRS, Sangareddy, A total of 18 seedling germplasm were collected from Visakhapatnam for their fruit, pulp and stone characteristics and were evaluated during the period 2009-10. The scion sticks of seedling No. 17, 11A, 13 have been collected and grafted in the nursery section. During the year 2011-12, a total of another 4 seedling germplasm were collected and analyzed.

Clonal selection of Banganpalli

At FRS, Sangareddy, a total of 3 clones were grafted during 2010-11 and the plants will be planted during the year 2012-13.

Testing of two superior clones of Dashehari

At FRS, Sangareddy, the three clones of Dashehari viz. Dashehari-51, Dashehari -35 and Dashehari Local were evaluated for growth, yield and quality characteristics in 11 year old trees. Among the three clones, Dashehari-35 was superior in growth parameters and was found to be vigorous. Maximum plant height (5.60 m) was observed in Dashehari -35. The maximum stem girth (0.82 m) and canopy spread (EW 6.50 m and NS 6.57 m) was recorded in Dashehari-35. The maximum number of fruits tree was recorded in Dashehari-51 (142.16) and maximum fruit yield in Dashehari Local (19.37 kg tree⁻¹). The cumulative yield (9 bearing years) revealed highest yield in Dashehari-35 (232.02 kg tree⁻¹). The analysis of physico- chemical characters of different clones showed that the maximum fruit weight (156.6 g) and pulp to stone ratio (3.5) was recorded in Dashehari local, however the highest total soluble solids (22 °B) and lowest acidity (0.11 %) was observed in Dashehari -51. The incidence of powdery mildew was recorded in all the three clones.

Testing of the promising mango hybrids

At FRS, Sangareddy, the performance of eleven mango hybrids was studied for growth, yield and quality parameters. Among the eleven hybrids, maximum height (3.86 m), stem girth (0.54 m) and canopy spread (5.01 m) was recorded in Sunder Langra. Maximum number of fruits tree⁻¹ (143) was





recorded in Sunder Langra followed by Neelphonso (137). Maximum yield was recorded in Neeleshan Gujarath (30.90 kg tree⁻¹) followed by Neelphonso (26.50 kg tree⁻¹). Maximum cumulative yield (67.24 kg tree⁻¹) was recorded in Sunder Langra. Maximum fruit length (12.00 cm) and fruit breadth (8.6 cm) was recorded in Neeleshwari and Manjeera respectively. Maximum fruit weight (426 g) was recorded in Manjeera and maximum pulp content (81%) was recorded in Neeleshan Gujarath. The TSS was maximum in Sunder Langra (21.6° Brix) and maximum shelf life of 9.3 days was recorded in Manjeera.

Selection from seedling progenies of improved hybrids

At FRS, Sangareddy, 500 seedlings were raised in the nursery. The seedlings will be planted during 2012-13.

Observation trail on the performance and quality in mango var. Alphonso in the coastal districts of Andhra Pradesh

Krishna District : The bagged fruits recorded turmeric yellow color with a highest percent of red blush and zero score of spongy tissue than un bagged fruits.

East Godavari District : The un-bagged fruits recorded turmeric yellow with less percent of red blush compared to the Krishna fruit samples of Krishna. One score of spongy tissue was observed. Fruit weight and TSS was highest (229.5 g & 20.3) than fruit samples of Krishna dist.

GUAVA

Augmentation and evaluation of guava germplasm

At FRS, Sangareddy, a total of twenty five accessions were evaluated for growth, yield and quality parameters. Among the 25 accessions evaluated for vegetative parameters, maximum plant height (6.12 m) and maximum stem girth (0.72 m) were recorded in Parker's dessert and red fleshed respectively, However, maximum tree spread EW (7.70 m) and NS (7.77 m) were recorded in Seedless-1. Maximum number of fruits tree⁻¹ (1724) was recorded in Lucknow 46-1 followed by Kohir (1602) while minimum number of fruits tree⁻¹ (12.5) was recorded in Chinese guava. Maximum fruit yield tree⁻¹ was recorded in Sabdana badri (228.49 kg tree⁻¹) followed by Lucknow 46-1 (182 kg tree⁻¹). The cumulative yield for 8 years showed that maximum fruit yield was recorded in Lucknow-49 (640.56 kg tree⁻¹) followed by Lucknow 46-2 (601.39 kg tree⁻¹). The physico-chemical analysis of guava germplasm revealed that the maximum average fruit weight (185 g) was recorded in Red fleshed followed by Lucknow-49 (157 g) and Sabdana badri (156 g). The TSS was maximum in Arka Amulya (10.5°B) and minimum acidity was recorded in Karela (0.30 %).

Varietal trial in guava

At FRS, Sangareddy, among the six varieties evaluated, seedless and Lucknow-49 were observed to be vigorous in growth habit in 3 year old trees. Maximum plant height (2.17 m) was recorded in seedless while maximum stem girth (0.27 m) and canopy spread in both the directions (E-W 2.85 m & N-S 2.90m) were recorded in Sardar. Maximum fruits tree⁻¹ (61) and yield (8.81 kg tree⁻¹) was recorded in Lucknow-49. The physico-chemical characters, maximum fruit weight was recorded in red fleshed (160 g) followed by Chittidar (150 g) and minimum fruit weight was recorded in Apple form (81.50 g). Maximum fruit length (6.7cm) and fruit breadth (4.5 cm) was recorded in Chittidar. The total soluble solids of more than 9.0 ° Brix was recorded in Allahabad Safeda, Sardar and Seedless varieties while minimum acidity was recorded in Chittidar (0.46%).





Standardization of training and pruning practices for hedge row planting in guava crop

At FRS, Sangareddy, planting of guava grafts var. Allahabad Safeda was done during December, 2009 with a spacing of 5 x 2.5 m. However, as per the recommendations of the RKVY evaluation team, the spacing has been changed to 2.5 x 2.5m by planting a new Guava graft in between two rows. When the plants have attained sufficient growth, all the plants have been headed back uniformly at a height of 60cm. After 4 months of growth, when the new shoots have attained sufficient growth, these shoots were reduced to 50% of their growth and allowed secondary growth. Pruning was repeated again after 3-4 months to obtain tertiary branching. On this, to study the effect of crop load in terms of Number of fruits per plant, yield/plant and average fruit weight. The data on yield was obtained during summer i.e., February-March, 2012 (Hasthabahar) as given below.

To study the effect of mulching on yield and quality of guava under meadow system of planting

S.No	Number of fruits allowed per plant	Average fruit weight (g)	Fruit yield/plant(kg)
1	10	171	1.71
2	20	177	3.54
3	30	120	3.60
4	40	133	5.32
5	50	123	6.15

At FRS, Sangareddy, this is a new experiment planted during July, 2011. Planting of guava white pulp var. Allahabad safeda and L-49 was taken up at a spacing of 2 x 1 m (Meadow system). Similarly, pink pulp varieties viz., Lalith and Kohir Red were also taken up at the same spacing. Mulching with Black Polythene sheet and rock wool has been taken up. However, during the pre-ZREAC meeting, it was proposed to drop the treatment rock wool since it has got irritating nature and may cause allergy to the workers. Heading back of the plants will be done during June, 2012 followed by periodical pruning till required frame work is obtained.

SWEET ORANGE

At CRS, Tirupati Integrated Nutrient Management trial in Sweet orange the maximum fruit yield of 120 kg per year was recorded (75% RDF + VAM (500g /plant) + PSB (100 g/plant) + *Azospirillum* (100g /plant) *T.harzianum* (100g/plant). While measuring the fruit quality attributes, (75% RDF + VAM (500g /plant) + PSB (100 g/plant) + *Azospirillum* (100g /plant) *T.harzianum* (100g/plant) has recorded highest juice percentage of (43%), maximum TSS/Acid ratio was recorded (100 % RDF + VAM (500g /plant) + PSB (100g/plant) + *Azospirillum* (50g /plant). Maximum TSS (9.9) was recorded by both (RDF) and (75% RDF + VAM (500g /plant) + PSB (100 g/plant) + *Azospirillum* (100g /plant) *T. harzianum* (100g/plant) treatments.

Fertigation studies in sweet orange: While measuring the biometric observations, maximum height(2.968m) and plant canopy volume (11.6m³) was recorded by (100% recommended dose of N & K₂O) where as maximum plant stem girth (21.7cm) was recorded by (Soil application of recommended dose of N & K₂O). Yield parameters indicate that maximum no. of fruits per tree (439) and maximum fruit yield of 86 kgs per tree per year was recorded by (75% recommended dose of N & K₂O) treatment.

Quality attribute indicates that treatment (100% recommended dose of N & K₂O) has recorded maximum juice percentage of 42% and TSS/acid ratio of 11.16 among all the other treatments. Where





as maximum average fruit weight, titrable acidity, TSS was recorded in (75% recommended dose of N & K₂O) 172g, 0.9, 9.5° Brix respectively.

SAPOTA

At HRS, Venkataramannagudem, in germplasm evaluation cultivar Kirthibarthi has recorded maximum plant height (6.93 m) and Kalipatti recorded maximum canopy volume (424.05 m³), while higher number of fruits tree⁻¹ (2916), fruit yield (184.17 kg tree⁻¹ and 18.42 t.ha⁻¹) and cumulative yield (2001-2011) was recorded in Virudhnagar (54.37 t.ha⁻¹).

In varietal trial of sapota Singapore has recorded significantly highest fruit number/tree (4326), while PKM-3 recorded maximum yield per tree (288.63 kg and 28.86 t. ha⁻¹). Highest cumulative yield was recorded in PKM-3 (100.06 t.ha⁻¹).

JACKFRUIT

At HRS, Venkataramannagudem, in germplasm evaluation trial maximum plant height was recorded in Ainipala (7.40 m) while, canopy volume was maximum in Tanjavur (488.42 m³) followed by Palur-1 (380.84 m³). Yield was maximum in Palur-1 (27.06 kg) followed by NJ-1 (15.85 kg).

PAPAYA

At HRS, Venkataramannagudem, in varietal trial of papaya data revealed that plant height was higher in TFCP-1 (1.24 m) and lower in TFCP-3 (0.94 m). Girth at first bearing height was higher in TFCP-4 (13.07 cm) and lower in TFCP-2 (11.83 cm). Number of leaves was maximum at first bearing in TFCP-4 (12.67)

PASSION FRUIT

Studies on performance of passion fruit (*Passiflora edulis*) under CTZ of Andhra Pradesh

At FRS, Sangareddy, there was no significant difference among the quality parameter in yellow and purple varieties in wedge grafting, veneer grafting, cutting and seedlings under Central Telangana Zone. In purple variety, purple colour is not developed.

VEGETABLES

COOKING MELON

At HRS, Vijayarai, about 31 cooking melon germplasm lines were raised under 'Collection, maintenance and evaluation of cooking melon germplasm'. Among the 31 entries evaluated VC-5 has recorded highest yield of 4.11 t/ha with 14 fruits/vine and the average fruit weights was of 132g followed by VC-4 (4.02 t/ha with 15.5 fruits /vine and average fruit weight was 117g). The average fruit was found highest with VC-9 (192g) followed by VC-185.

ONION

Evaluation of onion varieties

At FRS, Sangareddy, during Rabi, 2011-12, significant difference between the varieties was obtained in characters like diameter of fresh bulb, TSS, fresh yield of bulb/plot and per ha. The data reveals that





the variety Arka pragathi produced the highest fresh bulb yield/plot (52 kg) followed by Agri Found Dark Red (43.33kg).

POTATO

Evaluation of potato varieties under Sangareddy conditions

At FRS, Sangareddy, during the Rabi 2011-12, the significant maximum plant height in Kufri Chipsona -II (40.67 cm) followed by Kufri Badsha (40.40 cm) was recorded among different varieties of Potato.

TOMATO

Evaluation of tomato F1 hybrids suitable for Adilabad district during kharif

At HRS, Adilabad, significantly highest yield was recorded in Abhinava (330.14 q/ha) followed by US-404 (310.16 q/ha). With regards to fruit borer and fusarium wilt recorded less as compared to other hybrids.

Evaluation of tomato F1 hybrids suitable for Adilabad district during rabi

At HRS, Adilabad, among twelve hybrids/varieties tested during rabi, Abhinava recorded significantly highest yield (388.17 q/ha), and lowest pest incidence of Fusarium wilt (4.41%) and fruit borer (1.28%) was recorded compared to other hybrids.

Development of pure line variety in tomato

At VRS, Rajendranagar, twenty four crosses were obtained from 8 lines (EC-165749, EC-157568, EC-164838, EC-163611, LE-53, L3-56, LE-62 and LE-64) and 3 testers (Arka Vikas, Arka Meghali and Arka Alok) during Rabi, 2009-10, which were evaluated during rabi, 2011.

Among 24 hybrids tested, maximum fruit yield per plant was recorded in LE-64 x Arka Vikas (3.90 kg) followed by LE - 53 x Arka Alok (3.83 kg) and LE - 53 x Arka Meghali and LE - 64 x Arka Meghali (3.53 kg) whereas the commercial checks US - 618 recorded 2.50 kg followed by Lakshmi (2.27 kg), average fruit weight was maximum in LE -64 x Arka Alok (105.53 g) followed by EC - 165749 x Arka Alok (100.67 g) and LE - 53 x Arka Alok (100.10 g). The highest TSS was recorded in EC - 157568 x Arka Vikas (4.87°Brix) followed by LE - 53 x Arka Alok (4.83°Brix) whereas minimum TSS was recorded in EC -165749 X Arka Vikas (3.17°Brix) followed by EC - 165749 x Arka Meghali (3.27°Brix). Among the lines maximum yield per plant was recorded in LE - 53 (2.53 kg) followed by LE - 64 (1.93 kg) average fruit weight was maximum in LE - 53 (82.93 g) followed by EC - 165749 (82.63 g).

At VRS, Rajendranagar, from the results of the germplasm evaluation, 2008-09, it is evident that the 14 lines of *L. esculentum* viz., EC-164863, 165700, 251750, 320574, 177393, 164656, 163605, 145622, 163599, 162508, LE-55, 59, 60 and 65 were promising, which were crossed with one line of *L.pimpinellifolium* (LP-6) during rabi 2009-10.

Maximum number of fruits per plant was recorded in EC-251750 x LP6 (100.2) followed by EC-164863 x LP6 (58.1) and LE-60 x LP6 (52.3) where as average fruit weight was highest in LE-59 x LP6 (65.2 g) followed by LE-65 x LP6 (62.1 g) and EC-165701 x LP6 (60.2 g). Maximum fruit yield per plant was recorded in LE-59 x LP6 (3.0 kg) followed by LE-60 x LP6 (2.9 kg) and LE-65 x LP6 (2.3 kg) whereas TSS was lowest in LE-162508 x LP6 (3.1°Brix) followed by LE-145622 x LP6 (3.8°Brix).





CABBAGE

Observation trial on the captive cultivation of Brussels sprout, Sprouting broccoli and Chinese cabbage in Adilabad conditions

At HRS, Adilabad, among three cool crops varieties tested for observational trial in Adilabad condition. The highest yield (625.28 g/plant) was recorded in sprouting broccoli followed by brussels sprout (252.12) g/plant) and Chinese cabbage (178.28 g/plant) with regards to pests like thrips and aphid damage was highest in Chinese cabbage.

BEAN

Development of pure line variety of Dolichos bean (Bush type)

At VRS, Rajendranagar, four genotypes with bushy growth habit were selected from the F₂ generation of the crosses obtained by crossing superior Pole types DLL-18, 70, 71, and RND-lwith local type. The four selections of F₃ generation were sown during late kharif 2010 and further selections were made and selfed to get F₄ seed. The selected progenies were studied for their performance. Maximum pod yield per plant was recorded in Sel-3 (427.3 g) followed by Sel-4 (407.2 g) and Sel-1 (334.6 g) whereas the lowest yield was recorded in Sel-2 (214.1 g). Maximum pod length was recorded in Sel-3 (11.92 cm) followed by Sel-1 (9.81 cm) and Sel-4 (9.36) where as pod width was maximum in Sel-4 (2.56 cm) followed by Sel-1 (1.83 cm) and Sel-3 (1.69 cm). Maximum protein content was recorded in Sel-4 (18.34%) followed by Sel-1 (15.8%) Sel-4 and Sel-1 were found superior to Sel-2 and Sel-3 with regard to morphological and yield characters.

BRINJAL

Development of pure line variety in brinjal

At VRS, Rajendranagar, 30 crosses were obtained from 6 parents (IC-99737, 99667, 111071, 111086, SM-158, 160) through diallel mating including reciprocals, which are to be evaluated during late rabi, 2012.

Improvement of brinjal variety Bhagyamati through hybridization and selection.

At VRS, Rajendranagar, the seed of 'Improved Bhagyamati', which was found superior to Bhagyamati with respect to morphological and yield characters, has been multiplied and ready for minikit testing.

BOTTLE GOURD

Twenty five genotypes of bottle gourd were evaluated and characterized during kharif 2011 for further use in the crop improvement programmes.

BITTER GOURD

Among the Fifty five genotypes of bitter gourd evaluated and characterized during kharif, 2011 seven accessions viz., MC-1,4,5,9,13,33 and 45 were found promising with good yield and quality, trails.





OKRA

At VRS, Rajendranagar during Kharif 2011, ten entries were evaluated and among them, 08/OKHYB/4 recorded significantly highest yield (74.4 q/ha) and was followed by 08/OKHYB/4 (57.9 q/ha). Average fruit weight was maximum with 08/OKHYB/2 (17.4 gm).

At VRS, Rajendranagar, among the entries evaluated 10/OKHYB/8 recorded significantly higher yield (80.3q/ha) am was on a par with 10/OKHYB/7 (79.3 q/ha). Average fruit weight was highest in 10/OKHYB/8 (20.6 gm and 10/OKHYB/7 (18.5gm).

At VRS, Rajendranagar, among the entries 09/OKHYB/9 the highest yield (78.4 q/ha), was followed by 09/OKHYB/10 (74.2 q/ha) average fruit weight with 09/OKHYB/9 (19.9 gm). Fruit length was significantly highest in 09/OKHYB/3 (16.2 cm)

ASH GOURD

At VRS, Rajendranagar, among the entries 10/asghyb-5 recorded significantly highest fruit yield (1127.33q/h) followed by 10/asghyb-2 (870.66q/ha) but the maximum fruit weight was recorded in the entry 10/asghyb-(6.32kg).

At VRS, Rajendranagar, among the entries 11/asgvar-2 recorded significantly highest fruit yield (715.5 q/ha) followed by Pusa Ujawal (689.16 q/ha),but the maximum fruit weight was recorded in the entry 11/asgvar-2 (7.24kg).

ONION

At VRS, Rajendranagar, seven varieties of onion were evaluated during kharif season for the three consecutive years and found that the variety Agrifound Dark Red recorded highest bulb yield (375.7 q/ha) and bulb weight (104.06 g) followed by N-53 (316.4 q/ha & 95.18 g).

FLOWERS

To develop Horticultural techniques for cultivation of flower and leaf fillers in three regions of A.P.

i) Flower Fillers

Golden rod (*Solidago*) : The spike length varied from 97cms to 103cms. The flowering duration is 180 days (October, December and March to May). The spike yield is about 107 spikes per square meter. This was identified and recommended as suitable flower filler for these regions.

ii) Leaf fillers

Asparagus : In *Asparagus densiflorus springeri* the frond length and production interval was low with higher yield in July to January months and the leaf longevity was more in winter months. Maximum yield of 414 fronds per square meter was recorded during November. It is identified as suitable green filler and is recommended for cultivation in these regions.

GLADIOLUS [*Gladiolus byzantinus*]

Collection, maintenance and evaluation of Gladiolus germplasm

At FRS, Rajendranagar, eleven new varieties were added to the existing collection of 46 varieties of gladiolus. The earliest flowering (< 60days) was observed in Aarthi, Blue Lilac and Snow Princess while





late flowering (>90days) the Candyman, Peter pears, Hybrid 94-1, Hybrid 94-4, AC.No.9, Archana, Dheeraj, Gold Beauty, Mohini, Plant Art, Sagar, Snow White. The spike length ranged from as low as 49.06cm in Darshan to long as 24.86cm in Sada bahar, maximum number of florets per spike was Shabnam (17.6), Hybrid -94-101(15.0) while maximum floret size (>9.0cms.) was recorded in Arun, Blue lilac, Chandini, Hyb.94-101, Hyb.94-4, Arka Amar, Kajol, Punjab dawn, Sagar, Shagun, Tilak and white prosperity.

For cut flower production Apple blossom, American beauty, Darshan, Kum kum, White prosperity, Yellow Pril, Arka Amar is found promising.

Testing of new genotypes of gladiolus

At FRS, Rajendranagar, two varieties of gladiolus viz., IIHR G-11 and IIHR G- 12 of IIHR Bangalore and were evaluated along with the local check "White prosperity". Among the three varieties IIHR G-12 was found to be early variety recording minimum days for spike emergence (62.6 days), days to flowering (76.6 days). However the maximum spike length (95.2 cm), rachis length(38.6 cm), florets per spike (14.1) diameter of second floret (9.97cm) were recorded in White Prosperity.

Staggered planting technologies for extending the availability of gladiolus flowers.

At FRS, Rajendranagar, the studies on the performance of gladiolus variety viz., Arka Amar under staggered planting (June to December) indicated that the spike emergence and flowering was early in 15th August to 15th September planting. Maximum spike length and florets per spike were observed with 15th June planting. Maximum floret size and vase life of flowers was observed in October planting. The spike length decreased and flower size is of inferior quality in November and December plantings. Rate of corms & cormel production was high in August, September & October plantings.

Evaluation of the performance of Gladiolus [*Gladiolus byzantinus*] varieties for the agency area of the district.

At HRS, Pandirimamidi, varieties significant deferens were observed for plant height, spike length, number of florets, number of corms / plant and number of cormels/corm. Plant height was significantly highest (76.8 cm) in Dhanvantari. Spike length was highest in Shabnam (90.5 cm). Number of florets per spike was highest in Jyotsuna (16.4 Nos). Highest number of corms and cormels/plant were found in variety Apple Blaid (24.3& 378.3).

CHRYSANTHEMUM

Collection, preliminary assessment and maintenance of chrysanthemum germplasm

At FRS, Rajendranagr, 115 varieties were evaluated which also includes 16 new additions during the year under report to study their performance; The days for first flower bud appearance showed wide range of variation from as early as 48.99 days to as late as 133.59 days in Pink Cascade and Apurva Singar respectively. Local Button a mini variety recorded more number of flowers/ spray (298.54), while Apurva Singar exhibited maximum spray length of 31.85cm. The diameter of flower among the lines differed with the type of flower and it ranged from 2.11cm in local button to 8.89 cm in Star Pink. With regards to number of suckers per plant, maximum number of suckers were produced in the variety Yellow Bonsai (54.46), while, minimum number of suckers per plant were observed in standard variety Taichen Queen.





Testing of newly evolved genotypes of chrysanthemum

At FRS, Rajendranagar, twelve spray type cultivars of chrysanthemum were evaluated along with Silper as local check. The maximum plant height (56.67cms.) was recorded in PAU-B-107. Garden Beauty, a new cultivar for garden display showed maximum plant spread(88.77cm). The Autumn Joy cv was found to be early flowering (47 days) while PAU-A-43 took maximum days to flower (96days).The maximum number of flowers per spray (21.67) and maximum spray length (26.59cms.) was recorded in PAU-B-107 . The flower size was maximum in Garden beauty (8.13cms.) followed by winter queen (7.00cms.) and Autumn Joy (6.19cms). The highest number of flowers per plant was recorded in PAU-B-107 (227.4) and Winter Queen (206.4). The PAU-B-107recorded the highest average flower weight (2.27g). Maximum number of suckers per plant were observed in PAU-D-1(55.4) followed by PAU-B-107(53.5) and Autumn Joy (36.4).

TUBEROSE

Testing of new cultivars of tuberose

At FRS, Rajendranagar, two new tuberose varieties viz., Arka Nirantara and GK-T-C-4 were evaluated along with Phule Rajani, Shringar, Prajwal and Hyderabad single (local check). Early spike emergence and flowering was noticed in Prajwal (68.01 daysand 68.43 days). while late flowering was observed in Arka Nirantara(81.76 days). The varieties Prajwal and GK-T-C-4 produced maximum spike length and rachis length respectively. The variety Arka Nirantara produced maximum number of florets per spike (46.48) followed by Hyderabad Single(41.07) and maximum floret size i.e floret length (6.3cms) and floret diameter (4.79cms.) was recorded in Phule Rajani and Prajwal respectively. Further no major pests and diseases were observed in these varieties during the reporting period.

Observational trail on performance of tuberose in agency tracts of East Godavari District

At HRS, Pandirimamidi, plant height was highest in Rajat rekha variety 33.08cm and the least was recorded with Hyderabad single variety 13.25cm. Other varieties are on par with each other. The highest flower yield was observed in Calcutta double variety 255qt/ha followed by Suvasini and Rajat rekha varieties.

CUT FOLIAGE AND FILLERS (asparagus, ferns and philodendron)

Collection, evaluation and improvement of cut foliage and fillers(asparagus, ferns and philodendron)

At FRS, Rajendranagar, fourteen foliage plants which includes two new asparagus species, two *Dieffenbachia* varieties, five philodendron varieties and five fern varieties were collected and evaluated during the reporting period. Among the 4 varieties of ferns, *Nephrolepis exalta 'smithi'* and *Blechnum penna – marina* have attractive foliage with long fronds of varied shapes.

ROSE

Studies on different bending and pruning techniques for captive cultivation of exotic Roses

At FRS, Rajendranagar, studies on performance of two poly house rose varieties viz., First Red and Grand Gala indicated that maximum number of harvestable shoots were produced in T2 (Pruning to 45





cm length leaving 4 branches) followed by T4(Shoot bending at fifth bud).Among the two varieties 'First red' produced maximum number of flowering shoots in pruning than in conventional production.

Studies on different bending and pruning techniques for captive cultivation of exotic Roses

At HRS, Adilabad, among different varieties tested, Gold streak variety produced highest no. of flowers (38.36) diameter of flower (7.84 cm) and with less thrips and mite damage (6.52 & 3.31%) bending at 3rd bud stage.

HELICONIUM

Observational trail on performance of Heliconium species in the agency areas of East Godavari Dist.

At HRS, Pandirimamidi, *Heliconia psittacorum* X *Spathocircinata* (Heliconia Golden Torch) variety recorded the highest plant height and produced more number of suckers among the species and flowered at 150DAP. Inflorescence length was highest in Rubra variety and *H.latispatha* orange bygyro variety recorded the highest plant height of 68.5cm when flowered at 180 DAP where as Mass de rooj variety produced more number of leaves 10.75 among all the 6 species. Sucker number was highest in *H.latispatha* C.(15) at 180DAP. Inflorescence length was highest in *H.densiflora* variety 92.3 cm followed by Mass de rooj 87.5cm. Maximum plant height was recorded with *H.lamark* Richmond red variety 313.75m where as sucker number was highest in *H.latispatha* big orange. (31.25) at 240DAP. Highest inflorescence length was recorded with *H.latispatha* big orange (49.75cm).

BIRD OF PARADISE

Observational trail on performance of Bird of Paradise

After two years of planting Bird of paradise recorded the plant height of 90.5cm and 19.9 leaves with an average number of 3 suckers per plant. The plant height was highest in Rajat Rekha variety 33.08cm and the least was recorded with Hyderabad single variety 13.25cm.

GERBERA

To Standardize the horticultural techniques for captive cultivation of Gerbera to different agro-climates of Andhra Pradesh

At HRS, Adilabad, among four different varieties of gerberas tested Marinella recorded maximum number of flowers/plant (46.28) and plant height (29.22 cm) and with highest vase life period. The pests, cultivar recorded the lowest damage by thrips (3.12) and stem rot (2.14%).

CARNATION

Assessment of newly developed carnation cultivars

At HRS, Adilabad, among different varieties, Farida has recorded maximum no. of 40.52 flowers/plant and 5.21 cm of flower diameter and no calyx splitting.





TUBER CROPS

CASSAVA

Collection, maintenance, characterization and evaluation of cassava germplasm

At HRS, Peddapuram, a total of 52 accessions were evaluated for their performance. Among the entries evaluated, accession PDP-8 followed by PDP-7 and CMR-13 recorded maximum tuber yield of 32.1, 31.2 and 30.9 tons/ha respectively. The incidence of CMD ranged between 0 to 100% in different cassava accessions.

Cassava Seedling evaluation programme

At HRS, Peddapuram, out of 33 selections (clonal selection) evaluated, 12 selections found promising and the no. of tubers/plant ranged between 2.7 (CMR-150/2) to 5.5 (C-93/3) and tuber yield between 520 grams (CMR-150/1) to 1900 grams (C-93/3) out of these six selections found promising with tuber yield ranged from 0.6 kg (CMR-150/1) to 2.8 kg (C-93/3) and starch 13.3% (CMR-150/1) to 22.2% (CMR-150/4) in Cassava.

IET on Cassava mosaic resistant lines (IET Ca MR 09)

At HRS, Peddapuram, among the entries tested, PDP-8 and PDP-7 recorded significantly highest tuber yield (29.1 t/ha) over check MNga-1 (21.9 t/ha) and H-165 (25.4 t/ha). The incidence of CMD ranged between 0 to 98.6% in different cassava accessions.

Uniform regional trial on Cassava (URT Ca 09)

At HRS, Peddapuram, out of eight entries the entries viz., 5-3 and Ci-800 recorded on par tuber yield (32.6 and 32.2 tons/ha) with starch content of 25.4% and 24.8% respectively as against check H-165 (29.3 tons/ha with starch 20.5%).

SWEET POTATO

At VRS, Rajendranagar, germplasm of Sweet Potato (130 No's) and Colocasia (90 No.s) are being maintained at main center. Colocasia selection RNCA-1 was recommended for release by AICRP on Tuber crops, Thiruvananthapuram.

In the INM trial the maximum Tuber yield recorded (12.37 t/ha) by application of FYM @ 10 t/ha + neem cake @ 1 t/ha followed by FYM applied @ 5 t/ha (11.60 t/ha) in sweet potato.

COLOCASIA (Taro) (MLT Co 09)

At VRS, Rajendranagar, the maximum cormel yield was recorded by RNCA-1 (35.17 t/ha) followed by KCS- (33.32 t/ha).

Multi Location Trail on *Xanthosoma* (MLT Xa 09)

At VRS, Rajendranagar, among the entries KKV-Xa-4 recorded the maximum yield of 15.07 t/ha followed by KKV-Xa-1 13.59 t/ha and as KKV-Xa-3 recorded the lowest (12.14 t/ha).





SPICES

GINGER

Performance of ginger varieties under Central Telangana Zone

At FRS, Sangareddy, Maran, Narsipatnam local, Suprabha, Nadia and Zaheerabad local. Out of the five varieties tested, the variety Narsipatnam local recorded the highest plant height (67.8 cm at 180 days after planting) which was significantly superior. The number of tillers was highest (34.90 at 180 days after planting) in Zaheerabad local and was followed by Maran (32.0). The number of leaflets was highest (354.75 at 180 days after planting) in Maran followed by Nadia (344.25). The number of primary fingers was significantly highest (5.05) in Zaheerabad local followed by Suprabha (4.70). The variety Maran recorded the highest yield per plant (219.5 g) and per hectare (27.27 t) which was significantly superior followed by Nadia (103.75 g/plant and (13.83 t/hectare. The quality analysis revealed that mean fibre content was highest (1.7 g %) in Maran followed by Nadia (1.41 g %). Mean protein content was highest (2.02 g %) in Narsipatnam local followed by Suprabha (1.57 g %) and Maran (1.51 g %). All the varieties recorded 0.2 g % of mean fat content except Zaheerabad local (0.10g %). The mean carbohydrate content was highest (12.09g %) followed by Nadia (11.95g %).

Studies on the performance of improved varieties of ginger in the agency areas of East Godavari Dist.

At HRS, Pandirimamidi, among the varieties the maximum yield /plot in Maran (11.68 kg) CTP local (8.76 kg) and lowest in MTP-local (3.95 kg) was recorded.

Studies on the performance of improved varieties of turmeric in the agency areas of E G Dist.

At HRS, Pandirimamidi, plant height of 1.33m in Roshmi followed by KTS-8 and lowest in Roma (1.03m) was recorded. The highest number of leaves (17.1) and highest yield per plot (56.63kg) in CLS-37 was recorded followed by Roshimi, KTS-8 and KTS-3.

CINNAMON

Identification of Cinnamon varieties suitable for rainfed conditions of agency tract of E G Dist.

At HRS, Pandirimamidi, the highest bark yield of 2.9kg was recorded with SL-189 compared to other clones.

CORIANDER

Studies on the performance of Coriander varieties in Central Telangana Zone

At FRS, Sangareddy, the seed yield of 1.50 kg /plot and 937.50 kg/ha in Sadhana followed by Sudha (1.34 kg/plot and 835.94 kg/ha.) was recorded.

Inter institutional project on “Standardization of agro-techniques for seed spices (Coriander) under different agro-climatic conditions”

At VRS, Rajendranagar, highest grain yield was recorded in black soils in D₁ (5.6 q/ha) followed by D₂ (4.5 q/ha) whereas maximum yield in red soils in D₂ (2.9 q/ha) followed by D₁ (2.6 q/ha).

FENNEL

Inter institutional project on “Standardization of agro-techniques for seed spices (Fennel) under different agro-climatic conditions”





At VRS, Rajendranagar, maximum grain yield was recorded in D₁ (15.8 q/ha) followed by D₂ (13.5 q/ha) in black soils whereas in red soils in D₁ (11.0 q/ha) followed by D₃ (8.3 q/ha).

FENUGREEK

Inter institutional project on “Standardization of agro-techniques for seed spices (Fenugreek) under different agro-climatic conditions”

At VRS, Rajendranagar, in red soils maximum yield was recorded in the treatment D₂ (12.3 q/ha) followed by D₁ (10.5 q/ha) whereas in black soils highest in D₃ (12.1 q/ha) followed by D₂ (11.2 q/ha).

MEDICINAL & AROMATIC PLANTS

MAKOI (*Solanum nigrum*)

At BRS, Venkataramannagudem botanical descriptors were developed. Thirty five genotypes were collected and evaluated. Distinct and stable plant characters viz. flower characters (size, style position, pollen size & viability), stem pigmentation at nodes and fruit characters (shape and flesh colour) were identified under Andhra Pradesh conditions and will be confirmed with different states of country.

SWEET FLAG (*Acorus calamus*)

At BRS, Venkataramannagudem, botanical descriptors were developed. Sixteen clones were collected and evaluated. Variation in morphological characters of leaf viz. stomata size and distance between leaf veins were observed. These characters were found to be stable under local agro-climatic conditions and will be confirmed. These characters can be used as DUS characters for future characterization.

PLANTATION CROPS

OIL PALM

At HRS, Vijayarai, the four year old ten cross combinations of oil palm data obtained on the ‘Evaluation of new cross combinations in Oil palm-Set – I’ has revealed that out of the ten cross combinations of oil palm the vegetative growth characters has revealed that significant highest plant height was recorded with NRC OP-4 (4.6m) and lowest plant height was recorded with NRCOP – 10 (3.73m).

The new cross combinations of oil palm Teneras evolved at the Directorate of Oil palm Research, Pedavegi have been transplanted in the main field during the year 2010-11 for the ‘Evaluation of new cross combinations in Oil palm-Set-II’ and it is under evaluation.

RUBBER

Studies on the performance of rubber clones under high altitude conditions

At HRS, Pandirimamidi, among growth parameters PB 235 recorded maximum plant height (14.2 m), spread (7.8 m E-W & 7.9 m N-S) and girth (82.5cm) was recorded. During 35 tapped days highest latex yield (5.99 lit/tree) and dry rubber (2.5 kg/tree) in RRIM 600 with highest per cent (41.7 %) of rubber recovery followed by in the entry PB 28/59 was recorded.





PALMYRAH

Survey, Collection and Evaluation of Palmyra germplasm

At HRS, Pandirimamidi, of the 13 accessions planted during 1991, mean plant height was maximum in accession 4/91 (8.14 m) followed by Acc 6/91 (7.87m). Maximum Stem girth of 1.93 m. was recorded in Accession-4/91 followed by accession 13/91 (1.82m).

At HRS, Pandirimamidi, among the 1993 planting accessions, maximum palm growth and stem girths were recorded with accession 17/93. The 14 accessions of 1994 collection, maximum plant height was recorded in accession 37/94 and the highest number of leaves and. Stem girth was recorded in accession 25/94.

Among the 13 accessions of 1995 planting accession 42/95 has recorded higher value for height, and leaf number, stem girth and petiole length is found highest in 40/95 accession.

Among the accession of 1998, the maximum palm height in the accession 56/98. Stem girth in 58/98, leaf number in 57/98 was recorded. Among the 8 accessions of 1999, planting palm height was highest in accession 64/99. Number of leaves in accession 66/99 followed by 64/99 and 62/99 was recorded.

Among the 18 accessions of 2000 planting highest plant height with accession 68/00 and number of leaves was higher in accession 75/00 was recorded.

Of the 45 accessions of 2001 collection, plant heights and number of leaves produced were higher in accession 121/01. Among the 18 accessions collected from Nalgonda district, plant height and number of leaves produced was recorded highest in 136/02 and higher leaf parameter values was observed in 135/02 over the other accessions. Of the 16 accessions collected from Tamil Nadu palm heights highest in 149/02 and number of leaves produced were higher in accession 157/02.

Of 13 accessions collected locally in 2003, accession 164/03 has shown higher palm height, number of leaves and all the other leaf parameters recorded highest in accession 173/03.

Among the 2004 planted germplasm, accessions 179/04 has recorded the highest palm height and the accession number 182/04 produced the highest number of leaves.

The germplasm collected and planted during 2006 has recorded highest palm height with accession number 198/06 and the highest number of leaves is produced by accession 196/06. The germplasm collected and planted during 2007 has recorded highest palm height with accession number 210/07 and the highest number of leaves is produced by accession 209/07.

Among different palms in various accessions initiation of flowering occurred from December to February and number of bunches per palm ranged from 1 to 9. Mean number of fruits per bunch ranged from 2 to 12.5 and length of bunch varied from 0.5 to 1.6 m.

COCONUT

Collection, conservation and evaluation of local germplasm, of coconut

At HRS, Ambajipeta, the seed nuts of local germplasm accessions were collected during August, 2005 and the nuts were raised in the nursery. The seedlings of accessions viz., CRP 745 [Pillalakodi green], CRP 746 [Pillalakodi brown], CRP 747 [Jonnalarasi green], CRP 748 [Jonnalarasi brown], CRP 749 [Gangabondam], CRP 750 [AMB ECT-1], CRP 751 [AMB ECT-2] were planted in the main block.





The data revealed that maximum plant height (3.06 m) and number of leaves per plant (7.74) was recorded by CRP 750 (AMB ECT -1) at 5th year after planting (Table-1).

Table 1 : Growth characters of local germplasm accessions at Ambajipeta

S. No.	Name of the accession	Plant height (m)	Number of leaves
1.	CRP 745 [Pillalakodi green]	2.86	6.92
2.	CRP 746 [Pillalakodi brown]	2.95	7.46
3.	CRP 747 [Jonmalarasi green]	3.05	7.72
4.	CRP 748 [Jonmalarasi brown]	2.91	7.36
5.	CRP 749 [Gangabondam]	2.80	6.82
6.	CRP 750 [AMB ECT-1]	3.06	7.74
7.	CRP 751 [AMB ECT-2]	2.85	7.21

Evaluation of new coconut hybrids

At HRS, Ambajipeta, the seedlings of cross combinations viz., CRP 509 x Kalpa pratibha, Gauthami ganga x Kalpa pratibha, CRP 509 x Double Century, Gauthami ganga x Double Century, Double Century x Gauthami ganga and CRP 509 x Gauthami ganga were in nursery and to be planted in the June, 2012.

Trial of promising seed material

At HRS, Ambajipeta, the pre-bearing performance of the coconut hybrids and certain varieties showed that the highest total number of leaves on crown was recorded in VHC-II (31.20) followed by VHC-I (30.86) . Godavari Ganga(12.52) registered higher number of spadices/palm/year.

Table 2 : Vegetative growth characters in coconut hybrids/varieties

Cross combinations		Total no. of leaves on crown	Mean no. of spadices/ palm/year	Mean female flowers/ palm/year	Mean nut yield/palm/ year [2011-12]
1	Chandrasankara (COD x WCT)	29.20	11.30	212.33	106.15
2	Lakshaganga (LCT x GBGD)	29.53	11.44	240.67	112.45
3	Keraganga (WCT x GBGD)	29.10	11.96	230.33	109.31
4	Chandralaksha	30.00	9.90	212.67	102.90
5	VHC-I (ECT x MGD)	30.86	9.89	193.33	90.66
6	VHC-II (ECT x MYD)	31.20	12.03	224.67	111.22
7	Chandrakalpa	29.00	10.37	195.67	90.72
8	Double Century	27.88	10.02	184.67	91.54
9	Godavari ganga (ECT x GBGD)	30.46	12.52	243.00	119.56
S Em ±		1.00	0.50	14.00	10.83
CD at 5%		N.S.	1.51	N.S	N.S.



Table 3 : Nut quality characters in coconut hybrids

Cross Combinations		Wt. of whole nut (g/nut)	Husked nut wt. (g/nut)	Husk wt. (g/nut)	Water content (ml/nut)	Meat Wt. (g/nut)
1	Chandrasankara (COD x WCT)	1166.66	504.17	662.50	119.16	238.33
2	Lakshaganga (LCT x GBGD)	1058.33	486.67	571.67	113.33	238.33
3	Keraganga (WCT x GBGD)	861.66	426.67	425.00	103.33	231.67
4	Chandralaksha	1216.66	575.00	641.67	141.66	271.67
5	VHC-I (ECT x MGD)	758.33	408.33	350.00	86.67	205.00
6	VHC-2 (ECT x MYD)	1013.33	541.67	471.67	155.00	230.00
7	Chandrakalpa	958.33	438.33	520.00	86.67	243.33
8	Double Century	1150.00	606.67	543.33	170.00	276.667
9	Godavari ganga (ECT x GBGD)	1066.00	556.67	510.00	150.00	241.66
	S Em ±	66.91	38.34	50.59	17.26	18.69
	CD at 5%	202.33	115.95	152.98	52.19	N.S.

Significant differences were recorded among the varieties/hybrids for nut quality characters except meat weight. The highest nut weight was recorded in Chandralaksha (1216.66g) followed by Chandrasankara (1166.66 g/nut) when compared to check Godavariganga (1066.00g). The highest dehusked nut weight was recorded in DoubleCentury(606.67g) followed by Chandralaksha (575.0g) compared to check Godavariganga (556.66g). The husk weight was ranged from 350.0 - 662.50 g/nut and recorded maximum in Chandrasankara(662.50 g/ nut) and water content in matured nut ranged from 86.67 - 170ml/nut in various hybrids. Entries viz., Double Century (276.66g/nut) and Chandralaksha (270.67 g/nut) registered highest meat wt. compared to 241.66 g/nut in check Godavariganga (Table-3).

Performance of Tall x Tall hybrids in coconut in different agro-climatic regions

At HRS, Ambajipeta, the crossing programme was initiated at CPCPRI, Kasaragod and the seed nuts of the cross combinations viz., WCT x PTP, LCT x ADOT, BGR x ADOT, ADOT x ECT, ECT x LCT, ECT x ECT were received from CPCRI, Kasaragod and nursery was raised. The hybrids are planted in June,2011 and they are in vegetative stage.

Performance of New (experimental) cross combination of Tall x Tall hybrids in coconut in major agro-climatic regions

At HRS, Ambajipeta, the crossing programme was initiated during 2008 with released varieties viz., Philippines Ordinary, Laccadeevi Ordinary, Fiji tall, Java and Cochin China. The cross combinations viz., Kalpa Mitra x CRP 509, Double Century x CRP 509, Kerabastar x CRP 509, Chandrakalpa x CRP 509, CRP 509 x Kalpa mitra, Kalpa pratibha x CRP 509, CRP 509 x Kerabastar were done , nursery was raised and the hybrids are planted in June, 2011 and they are in vegetative stage.

Performance of Dwarf x Dwarf hybrids in coconut in different agro-climatic regions

At HRS, Ambajipeta, the crossing programme was initiated at CPCPRI, Kasaragod and the seed nuts of the cross combinations viz., IND 007 X IND 058, IND 007 X Kalpa Raksha, Kalpa Raksha X Kalpa sree, Gauthami ganga X IND 048, Kalpa sree X Kalpa Raksha were supplied by CPCRI, Kasaragod and nursery was raised for evaluation.





Dwarf x Dwarf hybrids received from CPCRI, Kasaragod

S. No.	Name of accession	Accession number
1.	COD x MYD	IND 007 x IND 058
2.	COD x MGD	IND 007 x Kalpa raksha
3.	MYD x CGD	IND 058 x IND 029
4.	GBGD x MOD	CRP 751 x IND 048
5.	CGD x MGD	IND 029 x Kalparaksha

The seedlings were ready for planting and the hybrids will be planted in June, 2012.

Performance of newly released coconut varieties and hybrids in different agro-climatic zones

At HRS, Ambajipeta, the selfing of Gauthami ganga was initiated during 2009 and about 450 nuts were despatched to all AICRP centres (Table 5).

Table 5 : Details of seed nuts of newly released coconut varieties exchanged

S. No.	Name of accession	Accession number	Seednut Source Centre
1.	Kalyani coconut – 1	Jamaican Tall	Aliyarnagar
2.	Gauthami ganga	CRP 751	Ambajipeta
3.	Konkan Bhatiyee Coconut Hybrid – 1	CRP 751 x CRP 509	Ratnagiri
4.	Kalpadhenu	Andaman Joint	—
5.	Kerakeralam	WCT	Veppankulam
6.	Kerabastar	Fiji tall	Ratnagiri
7.	Kalpaprathibha	Cochin china	Kasargod
8.	Kalpa mitra	Java tall	Kasargod
9.	Kalpa raksha	MGD	Kasargod
10.	Kahikuchi hybrid – 1	IND 058 x Kerakeralam	Ratnagiri

Screening of cocoa clones for their performance as a mixed crop in coconut gardens.

At HRS, Ambajipeta, six cocoa clones viz., VTLCC – 1, VTLCH – 1, VTLCH – 2, VTLCH – 3, VTLCH – 4, VTLC – 1 (Control) were planted in November, 2008. The maximum plant height (213.87 cm) was recorded in VTLCH – 3 followed by VTLCH – 4 (206.75 cm). But mean girth was significantly highest in VTLCH – 1. (Table 6).

Table 6 : Vegetative Characters of cocoa clones

S. No	Treatments	Mean Plant height (cm)	Mean Girth (cm)	Height at first branching (cm)	No. of Branches
T1	VTLCC – 1	202.10	15.92	112.22	4.45
T2	VTLCH – 1	166.22	20.16	64.48	4.62
T3	VTLCH – 2	188.37	16.73	99.61	4.58
T4	VTLCH – 3	213.87	15.27	92.70	4.48
T5	VTLCH – 4	206.75	17.85	61.00	4.25
T6	VTLC 1 (Control)	196.81	17.67	89.55	4.61
	S Em ±	17.26	0.93	18.00	0.53
	CD at 5%	N.S	2.86	N.S	N.S



FOREST PRODUCE

Collection and maintenance of germplasm plants yielding economic forest produce in agency tract of East Godavari Dist.

At HRS, Pandirimamidi, in Myro bolan ACC-2 has recorded the maximum plant height of 9.4m and gave higher yield (7.76kg) when compared to ACC-2. In marking nut ACC-1 recorded the maximum plant height and spread compared to ACC-2 in gumkaraya ACC-1 recorded the highest plant height compared to others and the spread was highest in ACC-4.

TAMARIND

At HRS, Pandirimamidi, in tamarind ACC-1 and 2 recorded the highest plant height where as spread was highest in ACC-13. In Anatto, ACC-3 gave the highest yield 5kg per plant followed by ACC-1.

SOAP NUT

At HRS, Pandirimamidi, in soap nut the highest plant height was recorded with ACC-5 followed by ACC-2

CUSTARD APPLE

At HRS, Pandirimamidi, in custard apple ACC-1 produced the fruits with maximum weight of 305g, ascorbic acid content of 26mg and TSS of 26° Brix followed by ACC-4 and 5 but the highest TSS was recorded ACC-2 (30° Brix).





Augmentation and evaluation of guava germplasm at FRS, Sangareddy



Collection, maintenance and evaluation of Gladiolus germplasm at FRS, Sangareddy



Performance of ginger varieties under Central Telangana Zone at FRS, Sangareddy



B. CROP PRODUCTION

FRUITS

MANGO

At MRS, Nuzvid, among the various pruning techniques followed centre opening, pruning upto 2nd node followed by clipping of fruit stalks recorded significantly highest number of fruits /tree (30.5), highest yield /tree (13.65 kg/tree) and lowest incidence of thrips (5.3 thrips / panicle) & hoppers (5.25 hoppers / panicle).

At MRS, Nuzvid, among the various varieties under high density planting Totapuri recorded significantly highest yield of 160.03 kg/tree and among the hybrids Neeleshan recorded highest yield of 132.88 kg/tree.

At MRS, Nuzvid, spraying of two percent potassium sulphate (K_2SO_4) 30 days before harvest on kesar variety of mango resulted in minimum physiological loss of fruit weight of 5.32% and 11.04% at 5 and 10 days after harvest respectively. Lowest incidence of Anthracnose disease infection was also recorded in the same treatment i.e. 3.1%, 3.16% and 3.16% at 10, 15 and 20 days after harvest respectively. Significantly highest TSS content of 21°B was also recorded in the same treatment whereas lowest TSS of 18.2°B was recorded in control. Three sprayings of potassium sulphate (K_2SO_4) at two percent concentration at 15 days interval starting from peanut stage on Baneshan mango variety recorded highest quantitative characters like fruit number / tree (67.75), fruit weight (295.2) and yield /tree (20.475 kg/ tree) and qualitative characters like TSS (21.7°B) when compared to other concentrations of potassium sulphate including control. From the data collected in Nuzvid mandal of Krishna District it is found that among the different intercrops grown in mango ecosystems (Cereals, legumes, vegetables, commercial crops) mango intercropped with brinjal recorded significantly highest cost benefit ratio of 2.59 with mango equivalent yield of 16576.7 kg/ha.

Roots stock trial in mango

At FRS, Sangareddy, during 2011-12, there were significant differences among the various rootstocks with respect to girth of rootstock, canopy spread and average fruit weight. However, the treatments did not differ significantly with respect to yield and quality parameters. Maximum root stock girth (0.86 m) and spread E-W (7.70 m) and N-S (7.54 m) was observed on Banganpalli grafted on Nekkare rootstock. Maximum fruit weight (431 g) was observed in Banganpalli grafted on Vellaikolamban. Maximum cumulative yield (2004-12) (453 kg tree⁻¹) was recorded in Banganpalli grafted on Nekkare rootstock.

Pruning trial for high density planting (double hedge row) in mango

At FRS, Sangareddy, during the year 2011-12, the trees in the experiment interlocked and hence the pruning was imposed. During the reporting period, there is no significant difference with respect to height, girth, spread, number of fruits tree⁻¹, yield and quality parameters.

Effect of different chemicals on regulation of flowering and fruiting in mango

At FRS, Sangareddy, there were no significant differences among the treatments with respect to panicle length, panicle breadth, fruit set, number of fruits tree⁻¹, yield, and TSS. However, the treatments differed significantly with respect to flowering percentage, per cent perfect flowers, and fruit weight.





Highest flowering per cent (47.0) was observed in trees sprayed with K_2HPO_4 1%. Further, highest per cent perfect flowers (7.11) and fruit weight (463 g) was observed in trees sprayed with KH_2PO_4 (1%) + KNO_3 (1%). The maximum cumulative yield (2007-12) (465 kg tree^{-1}) was recorded in tree sprayed with KH_2PO_4 (1%) + KNO_3 1 %.

Pre harvest treatment for extending the post harvest shelf life of mango

At FRS, Sangareddy, there were no significant differences between treatments with respect to number of fruits, yield tree^{-1} and TSS. The treatments differed significantly with respect of fruit set, fruit weight and storage life. Maximum fruit set (7.17), fruit weight (396 g) and storage life (13.3 days) was observed with trees sprayed with $CaCl_2 \cdot 6 H_2O$ (6 %) along with mulching. However, highest cumulative yield (2007-11) (353 kg.tree^{-1}) was observed in trees sprayed with $CaCl_2 \cdot 6 H_2O$ (6 %) along with mulching

Effect of Calcium, Boron and Sorbitol on Pollination and Fruit set in Mango

At FRS, Sangareddy, there were significant difference among the treatments with respect to the fruit set, number of fruits tree^{-1} , average fruit weight and yield. Maximum fruit set (13) was recorded in trees sprayed with both boric acid and sorbitol. Maximum number of fruits tree^{-1} (168), was observed in fruits treated with boric acid. Maximum fruit weight (386 g) was recorded in the fruit sprayed with both boric acid and sorbitol. Further, maximum cumulative yield (236 kg tree^{-1}) was also recorded in fruits treated with Sorbitol.

Studies on flowering and fruiting behaviour of mango cultivars in relation to weather parameters (Temperature, Humidity, Wind velocity and Sun shine hours).

At FRS, Sangareddy, the flowering was initiated during last week of November, 2011 in Suvarnarekha and last week of December, 2011 in Totapari and Mallika. The flowering was initiated during the 1st week of December, 2011 in Banganpalli. However, the fruit set was completed by 3rd week of January, 2012 in Suvaranrekha and Banganpalli and by 4th week in Totapari and Mallika. There were significant differences with respect to number of fruits tree^{-1} , fruit weight and fruit yield. Maximum number of fruits tree^{-1} (451) was recorded in Suvarnarekha. The maximum fruit weight (398 g) and yield (156 kg tree^{-1}) was recorded in Mallika variety.

To study the effect of organic manures and inorganic fertilizers on growth, yield and quality of mango

At FRS, Sangareddy, significant differences between treatments were not observed in plant height, tree girth and canopy spread. Application of 25% organic through FYM (50kg)+ 25% through vermicompost (25kg) + 25% through green leaf (32 kg glyricidia leaves) + 25% inorganic fertilizers (0.543 kg urea + 1.562kg SSP+ 0.416 kg MOP recorded maximum number of fruits per tree (77.82), maximum fruit yield/tree (32.58 kg) and average fruit weight per tree (418.69gm).

Cumulative (pooled data 2009 to 2011) yield in terms of fruits tree^{-1} was maximum (82.37), weight of fruits tree^{-1} was highest ($33.27 \text{ kg plant}^{-1}$) in the application of 25% organic through FYM+ 25% through vermicompost + 25% through green leaf + 25% inorganic followed by 100% organic through FYM (78.53 fruits tree^{-1} and $32.30 \text{ kg weight fruits tree}^{-1}$ and the increased cumulative yield over control was 38.65% and 36.50% respectively.

Observation trial on off season mango grafting under different shade Conditions.

At FRS, Sangareddy, success percentage of grafting was more in poly house when compared to shade net and open conditions in off season grafting in mango was recorded.





SWEET ORANGE

At CRS, Tirupati INM trial in Citrus (Sweet orange) the results of the growth parameters showed that the plant height (3.54m) plant girth (48.75cm) and plant canopy volume (36.10cu.m) is significantly more in treatment T₃ over control. The highest fruit yield both in number and yield (575 and 102.25kg/tree) was recorded when the plants were supplied with Treatment T₃ (100% RDF + VAM(500g/Plant) PSB (100g/Plant) Azospirillum 100g/plant *T.harzianum*(100g/Plant) per plant followed by T₂ treatment. Similarly fruit quality parameters were also recorded more in treatment T₃ TSS (10.8) Juice (43.75%) and medium titrable acidity (1.00) followed by treatment by T₂.

Effect of Bio fertilizers on growth and yield parameters of sweet orange

S. No	Treatments	Plant height (m)	Plant girth (cm)	Plant volume (cu.m)	No. of fruits/tree	Av. Fruit weight (g)	Fruit yield (kg/tree)	Juice (%)	Titrable acidity	TSS (0 Brix)	TSS/acid ratio
1.	T ₁	2.90	43.00	30.10	452	190	85.75	40.50	1.059	10.0	8.33
2.	T ₂	2.94	44.00	31.25	505	185	93.25	41.25	1.06	10.3	
3.	T ₃	3.54	48.75	36.10	575	178	102.25	43.75	1.10	10.8	9.81
4.	T ₄	3.0	45.50	32.50	532	180	95.75	42.50	1.03	10.5	10.81
5.	T ₅	2.85	42.25	30.00	474	185	88.25	41.00	1.05	10.2	10.19
	CD @ 5%	0.062	1.05	1.07	1.64	1.37	2.36	1.21	0.04	0.41	0.26

Fertigation studies in citrus (sweet orange) : Result revealed that treatment (T₁) application of 100 percent recommended dose of N (800g) and K₂O (600g) through drip has recorded significantly highest plant height (3.65 m), stem girth (46.15 cm) and canopy volume (33.56 cm) over soil application of recommended dose of N & K₂O. Yield parameters indicate that the treatment T₁ has recorded significantly the maximum No. of fruit/tree (565) fruit yield (101.50 Kg/tree), quality parameters like TSS (10.2) and juice recovery (42.50%) over the treatment T₄.

Data on the growth and yield parameters under different fertigation treatments on sweet orange plants.

Treatments	Plant height (m)	Plant girth (cm)	Plant volume (cu.m)	No. of fruits/tree	Av. Fruit weight (g)	Fruit yield (kg/tree)	Juice (%)	Titrable acidity	TSS (0 Brix)	TSS/acid ratio
T ₁	3.65	46.15	33.56	565	180	101.50	42.50	0.85	10.2	12.00
T ₂	3.51	45.00	30.18	530	182	98.00	42.00	0.87	9.9	11.03
T ₃	3.45	41.20	29.74	508	182	92.25	41.75	0.89	9.8	11.01
T ₄	2.92	40.30	25.17	475	190	89.00	41.00	0.90	9.7	10.44
CD @ 5%	0.081	2.56	0.81	0.48	1.46	3.40	2.59	0.007	0.048	0.76





SAPOTA

At HRS, Venkataramannagudem, In spacing trial of sapota highest fruit yield /tree was recorded in 10 x10 m spacing (99.22 kg tree⁻¹), while 5.0 x 5.0 m spacing recorded lowest fruit yield ha⁻¹ (18.09 t.ha⁻¹) which was on par with 7.5 x 5.0 m spacing (17.14 t.ha⁻¹). Cumulative yield from 2000-2011 was maximum in 5 x 5 m spacing (105.81 t. ha⁻¹) followed by 7.5 x 5.0 m (99.24 t. ha⁻¹) and lowest was recorded in 10 x 10 m spacing (54.98 t.ha⁻¹). Maximum Canopy volume was recorded in 10 x10m spacing (317.79 m³) and minimum in 5 x 5 m spacing (183.47 m³) planted trees.

At HRS, Venkataramannagudem, in INM trial the maximum yield /tree (185. 56 kg and 18.56 t.ha⁻¹) and Cumulative yield (1999-2011) (70.98 t.ha⁻¹) was recorded in the treatment 10 kg vermicompost + 350+50+450 g NPK/tree⁻¹.

BANANA

INM in Banana

At HRS, Mahanandi, the banana the highest yield of 45.21 t/ha in the treatment dose of (FYM + Oil cake + 75 % RDF + Azatobactor + PSB followed by (FYM + Vermi compost + 75 % RDF+ Azatobactor + PSB of 42.79 t/ha was recorded.

Comparative yield trail in Banana cv Sugandham and Grand Naine

At HRS, Mahanandi, Grand Naine is having highest no of fruits (137.64), highest length of the fruit (16.98 cm), highest fruit wt (148.62 g/finger) when compared to Sugandham with an yield of 46.58 t/ha.

JACK FRUIT

At HRS, Venkataramannagudem, approach method of grafting has recorded maximum success of 90.00% and softwood and epicotyl grafting methods were found to be unsuccessful.

FLOWERS

MARIGOLD

Identification of marigold varieties for commercial cultivation in Rayalaseema region.

At HRS, Mahanandi, among 7 varieties of marigold tested, the variety Kuppam Selection recorded highest flower yield (10.75 t/ha) and Pusa basanti gainda registered flower yield of 10.38 t/ha when compared to the variety Local Yellow (8.43 t/ha).

HELICONIUM

At HRS, Vijayarai, the experiment was conducted since the year 2008 has shown poor growth and development due to the usage of cocopeat as organic substratum and there by observed stunted growth and development. Hence, it is concluded that the heliconium crop cannot tolerate cocopeat having the poly phenols which have negative impact on the growth and development of the crop.





GLADIOLUS

Effect of chemicals on weed control in gladiolus

At FRS, Rajendranagar, experiment was carried out with commercial variety of gladiolus 'White Prosperity'. Among the herbicides Pendimethalin @ 0.75 kg a.i/ha was found to be the safest chemical which showed maximum spike length (77.50cm) more number of florets/spike (14.00) and maximum floret diameter (9.51 cm). With the treatment of Pendimethalin @ 1.0kg a.i/ha, the plants showed maximum rachis length (27.80cm). The weed free check plots took less number of days to spike emergence (63.67 days) and also for 50% flowering (77.07 days).

Staggered planting technologies for extending the availability of gladiolus flower

At HRS, Mahanandi, between two varieties Shubhangini variety is having highest stalk length (92.18 cm), highest no of flowers/spike (12.98), maximum flower diameter (9.7 cm) compare to Swarnima.

CHRYSANTHEMUM

Effect of chemicals on weed control in spray chrysanthemum

At HRS, Rajendranagar, the observations on weed count per m² at 50 days interval from 50 to 150 days after application of herbicide revealed that application of Pendimethalin @ 0.75kg a.i/ha and 1.0Kg a.i/ha are effective in controlling the weeds recording minimum weed count (g/m²). The observation on fresh weight of weeds (g/m²) and dry weight of weeds (g/m²) also clearly indicated the superior efficiency of Pendimethalin applied @ 0.75kg a.i/ha against all weeds (sedges, grasses and broad leaf weeds) in the Chrysanthemum cv. Basanthi.

At 90 days of at flowering time significant highest plant height, number of branches per plant and plant spread (in both the direction) with Pedimethalin application @ 0.75kg a.i/ha and 1.0kg a.i/ha. Maximum spray length (18.18cms.), flowers per plant (185.47) and average flower weight (1.06g) was recorded by the application of Pedimethalin as weedcide.

TUBEROSE

Integrated nutrient management in Tuberose

At FRS, Rajendranagar, the trial was conducted in tuberose cv. "Hyderabad Double" and the data revealed that earliest flowering was recorded in 75%RDF +FYM (2kg/m²/yr) while maximum duration of flowering (189days) was recorded in 75%RDF +FYM (1kg/m²/yr)+ Vermicompost(300g/m²)+ Azospirillum +PSB. However, maximum rachis length, number of florets/spike, spikes per bulb and spikes per m² were recorded in 75%RDF +FYM (1kg/m²/yr) + Vermicompost(300g/m²) + Azospirillum +PSB. With regards to floret size viz., maximum floret length and floret diameter was observed in the treatment 75% RDF+ FYM+ VC and 100%RDF +FYM(2kg/m²/yr) respectively.

GERBERA

Studies on the production of gerbera under polyhouse conditions.

At HRS, Pandirimamidi, among the 6 varieties. Leaf no. was significantly highest in variety Debora where as in other varieties it is on par with each other. Whereas No.of suckers were highest in Banasha followed by Debora and Avemaria varieties.





Days taken from bud burst to bud opening were lower in Banasha (8.66) followed by Tambre, Esmara and Debora but Mamut taken maximum number of days for opening (12.25). The number of flowers per plant was highest in Debora (36) followed by Banesa and Mamut and lowest was with Tambre (24). The highest flower diameter was recorded in Banesa (9.125cm) Avemaria (7.5cm). The stalk length was highest in Tambre (55cm) followed by Banesa variety.

HERBAL CROPS

ASOKA (*Clitoria ternatea*)

At Herbal Research Station, Rajendranagar, among the different inter crops studied in Asoka *Clitoria ternatea* (Sankupushi) produced higher dry herbage yield 2140.35 kg/ha.

GLORY LILLY

At Herbal Research Station, on commercially important medicinal climbers trial, Glory lilly produced 56.8 kg of seed yield per acre. While two years old plants of *Decalepis hamiltoni* and *Holostemma adakodien* produced dry root yield of 375.0 g and 72.3 g respectively per plant.

Gymnema sylvestre cuttings treated with IBA 600 ppm resulted in maximum rooting percentage of 57.27.

PHYLLANTHUS AMARUS

At Herbal Research Station, for standardization of package of practices for *Phyllanthus amarus*, planting at 15 x 10 cm spacing resulted in significantly higher dry herbage yield (12.74 q/ha) and among the different organic manures applied, the application of vermicompost @ 6 t/ha produced higher herbage yield (10.66 q/ha) and significantly superior over recommended dose of fertilizers (RDF).

COLEUS

At Herbal Research Station, among the different growth regulators applied to Coleus, spraying of Cycocel @ 250 ppm produced 1357.57 kg/ha of dry root yield and significantly superior over control. Application of growth regulators at 45 days after planting resulted in higher dry root yield and significantly superior over dipping of roots in growth regulators at the time of planting. However, non significant differences was observed among the application of growth regulators at 30, 45 and 60 days after planting.

ALOE BARBADENSIS

The non significant difference for cumulative leaf yield was observed in between the red and yellow flowering type of *Aloe barbadensis*. Among the different spacing planting at 30 x 30 cm resulted in significantly higher cumulative leaf yield (104.37 t/ha) in Aloe was recorded.





TUBER CROPS

CASSAVA

Low input technology for Cassava production

At HRS, Peddapuram, the treatment greenmanuring (Cowpea @ 50 Kg/ha+ RD of NPK @ 100:50:100 kg/ha) recorded maximum cassava tuber yield(29.7 tons/ha) followed by (RDF FYM + NPK @ 10 t + 100:50: 100 Kg/ha with 28.8 tons/ha and green manuring (cowpea) @ 50kg/ha +RD (100kg/ha) of K + 50% of NP+ Azospirillum & PSB@ 5 kg/ha recorded the tuber yield of 28.2 t/ha.

Integrated weed management in Cassava

At HRS, Peddapuram, out of 12 treatment combinations tried, the application of Oxyflorofin 0.06kgai/ha(pre eme)+ 2HW at 2&3 MAP recorded maximum tuber yield of 28.9 tons/ha followed by (1 Hand weeding at 1 MAP followed by Glyphosate spray @ 2 kg ai as post emergence spray at 2MAP recoded tuber yield of 27.9 tons/ha.

Standardization of fertigation through micro- irrigation for cassava

At HRS, Peddapuram, Fertigation with 100% RDF and irrigation at 100% CPE resulted significantly highest tuber yield of 32.8 tons/ha followed by fertigation with 75% RDF and irrigation at 100%CPE.

Use of cassava leaves for eri silk worm rearing for production of eri cocoons.

At HRS, Peddapuram, significant differences were observed for tuber number and starch content among cassava varieties. The significant highest tuber no.(8.03) and starch content (25.02%) was recorded with S-856(V1). Defoliation levels found to be influenced significantly on the tuber yield. The highest tuber yield(30.62 t/ha) was recorded with 0% (D1) defoliation and yield reduction was significant with increased defoliation(25 to 75%). The highest tuber yield (34.0 t/ha) was recorded with V1(S-856) & 0% defoliation in cassava.

VEGETABLES

ONION

Integrated Nutrient Management in onion

At HRS, Mahanandi, the treatment (75% RDF + Neem cake @ 2.5 t/ha + Azospirillum + P.S.B has recorded highest bulb yield (223.60 t/ha) followed by the treatment 75 % RDF + Castor cake @ 2.5 t/ha + Azospirillum + P.S.B (22.57 t/ha).

OKRA

At VRS, Rajendranagar, in pooled data of 3 years among the treatments recommended NPK dose and vermicompost @ 5 t/ha with 5 vermiwash sprays @ weekly intervals after 30 days of sowing recorded significantly higher yield then recommended dose of NPK. However, the recommended dose of NPK + Vermiwash 5 sprays recorded highest B:C ratio of 1:1.02.





AMARANTHUS

At VRS, Rajendranagar, the leaf yield of amaranthus varied significantly due to application of different organic manures and inorganic fertilizers. The two varieties RNA-I and Arka Suguna recorded comparable yields, but among the treatments FYM @ 20 t/ha in combination with PSB + Azospirillum each @ 5 kg/ha recorded significantly higher yield among all the treatments. The treatment recorded highest B:C ratio of 1 : 0.68 for the treatment.

SPINACH BEET (PALAK)

At VRS, Rajendranagar, the same field where amaranthus was raised during kharif 2011-12. The leaf yield was significantly influenced with organic manures. Among the two varieties "All green" recorded significantly higher yield. The application of FYM @ 20 t/ha + PSB + Azospirillum each recorded significantl highest yield.

BROCCOLI

Response of Broccoli to Micro nutrient applications.

At VRS, Rajendranagar, among all the treatments copper sulphate 100 ppm and copper sulphate + ferrous sulphate 100 ppm each spray given significantly superior yield to all other treatments. Copper + ferrous sulphate each at 100 ppm combination treatment given highest B:C ratio of 1:3.07.

At VRS, Rajendranagr, among the intercropping cabbage + ajwan recorded highest yield but sole crop of cabbage recorded highest yield when compared to intercropping combinations. In carrot, carrot + ajwan combination recorded highest yield than sole crop.

CAPSICUM

Studies on the production of capsicum under polyhouse conditions.

At HRS, Pandirimamidi, among the treatments 'Indra' hybrid in September planting recorded the highest plant yield per plant (2.60 kg) followed by other hybrids where as lowest was observed in November month of planting.

MEDICINAL & AROMATIC PLANTS

BLACK NIGHT SHADE (*Solanm nigrum*)

At BRS, Venkataramannagudem, application of Vermicompost 6t/ha and Azophosmet 4kg/ha (Soil application) + Methylobacterium @ 500ml/ha significantly increased the growth viz. Plant height (59.55 cm), branches (22.84) and herbage yield (22.40 t/ha) in *Solanum nigrum*.

The interaction effect of spacing 30 x 30 cm and time of harvesting at 45 days interval significantly increased the growth viz. Plant height (48.32 cm), branches (22.60) and herbage yield (43.33 t/ha) in *Solanum nigrum*.

In Acorus calamus, spacing with 60 x 30 cm and application of FYM 15t/ha significantly increased the growth and yield.





PLANTATION CROPS

COCONUT

At HRS, Vijayarai, in the experiment 'Studies on the effect of different levels of NPK on the yield of coconut variety East Coast Tall in the Red Sandy soils' indicate that the yield data was found non-significant. However, highest nut yield per palm (110.5) was recorded with $N_3P_2K_2$ (575g N, 320g P_2O_5 , 1500g K_2O per palm per year). The cumulative average nut yield per palm was found highest with $N_3P_1K_1$ (994.60 nuts) followed by $N_3P_2K_2$ (859.47 nuts). Based on the ten years average yield data it is concluded that the treatment $N_3P_2K_2$ (575g N, 320g P_2O_5 , 1500g K_2O per palm per year) has shown constantly higher yields. Under these red sandy loam soils of coastal districts of Andhra Pradesh it requires about 25% higher dose of nitrogen fertilizer than the recommended dose of nitrogenous fertilizer, without change in Phosphorous and Potassium fertilizer doses.

Studies on fertilizer application through micro-irrigation technique on coconut.

At HRS, Ambajipeta, the trial was initiated during November, 2007 as per the Workshop recommendation in a 25 years old garden of (CRP 509) East Coast Tall variety. It is evident from the data that the maximum nut yield (101.24 nuts/palm) was recorded by 100% RDF through fertigation, when compared to control(67.24nuts/palm) The data on yield attributes revealed that the highest number of leaves on crown (37.30) was found in 75%RDF through fertigation.The number of spadices per palm (13.67) mean number of female flowers per spadix (29.5) were recorded by 100% RDF through fertigation.

Table 1a : Yield attributes of coconut as influenced by fertilizer application through micro-irrigation

Treatment		Total no. of leaves on crown	Mean no. of spadices / palm	Mean no. of female flowers / spadix	Nut yield	
					Pre-treatment 2005-07	Nut yield 2011-12
1.	Control	30.27	9.50	18.00	58.22	67.24
2.	25 % RDF of N,P,K	30.52	12.00	21.00	57.11	79.43
3.	50 % RDF of N,P,K	33.68	12.80	27.00	62.25	85.62
4.	75 % RDF of N,P,K	36.82	13.50	28.50	60.75	90.23
5.	100 % RDF of N,P,K	37.31	3.67	29.50	61.10	101.24
6.	100 % RDF of N,P,K as soil application	32.91	0.80	22.00	59.85	83.03
	S Em ±	0.27	0.72	1.12	1.25	4.46
	CD at 5%	0.83	2.30	3.59	3.75	13.56

Regarding nut quality characters, the highest nut weight(1093.75g) and dehusked nut weight(472.50g) were recorded in the application of 100 per cent RDF through fertigation followed by 75% RDF through fertigation. Water content was also found to be highest (74.50 ml per nut) in 100 per cent RDF through fertigation. Copra content and shell weight were found to be non significant among the different treatments (Table 1a & 1b).



**Table 1b : Quality attributes of coconut as influenced by fertilizer application through micro-irrigation**

	Treatment	Wt. of whole nut (g/nut)	Husked nut wt. (g/nut)	Water content (ml/nut)	Meat Wt. (g/nut)	Copra weight (g/nut)	Shell weight (g/nut)
1.	Control	940.62	357.5	51.75	230.87	89.5	118.75
2.	25 % RDF of N,P,K	1043.75	375.0	55.62	265.12	107.25	106.25
3.	50 % RDF of N,P,K	843.62	372.5	67.75	284.75	122.0	109.37
4.	75 % RDF of N,P,K	1000.75	453.12	66.87	280.37	125.0	115.62
5.	100 % RDF of N,P,K	1093.75	472.50	74.5	298.25	132.5	118.75
6.	100 % RDF of N,P,K as soil application	1059.37	447.50	70.25	280.00	124.0	109.37
	S Em \pm	51.02	11.89	4.02	10.22	12.73	5.77
	CD at 5%	155.20	36.17	12.44	31.09	N.S	N.S.

Development of coconut based integrated farming system model for different agro-climatic regions.

Table 2a : Growth parameters of component crops

Crops	2011 - 2012
Coconut	
No. of leaves on crown	34.80
No. of leaves produced per year	14.15
Other component crops (canopy spread in cm)	
Cocoa	91.5
Banana	175.58
Pineapple	90.24
Elephant Foot Yam	84.54

Table 2b : Yield parameters of component crops

Crops	May, 2011
Coconut	
No. of bunches per year	13.34
No. of buttons per bunch	22.25
Nut yield per palm per year	112.45
Copra content	158.45
Oil percentage	68.54
Other components	
Cocoa	Pre-bearing
Banana (kg per plant)	22.60
Pineapple (g per plant)	975.25
Elephant Foot Yam (kg)	3.00

Table 2c : Soil moisture Content (%) in different months at depth of soil

Depth	March	April	May	June
0-30	15.04	13.20	11.60	12.78
30- 60 cm	21.06	18.48	16.24	17.89
60-90 cm	23.77	20.85	18.33	20.19



Table 2d : Soil nutrient analysis

Parameter	Initial values (November, 2008)	After one cycle (June, 2010)	After two cycles (June, 2011)
Organic Carbon	0.058	0.062	0.072
Nitrogen (%)	0.076	0.082	0.087
Phosphorus (ppm)	55.255	9.676	2.13
Potassium (ppm)	144.231	55.771	59.47
Soil temperature			
15 cm	24.25	23.58	21.45
30 cm	22.15	22.48	20.14

Table 2e : Plant nutrient status (%)
(Samples were drawn from previous crop)

Crop & Parameter	AtVegetative stage	At maturity	Crop & Parameter	AtVegetative stage	At maturity
Coconut (every May)			Elephant Foot Yam		
Nitrogen	2.15	1.91	Nitrogen	1.54	1.37
Phosphorus	0.17	0.15	Phosphorus	0.21	0.19
Potassium	1.88	1.67	Potassium	1.12	0.99
Cocoa (every may)			Pineapple		
Nitrogen	1.64	1.46	Nitrogen	1.32	1.17
Phosphorus	0.09	0.08	Phosphorus	1.18	1.05
Potassium	0.64	0.57	Potassium	1.22	1.08
Banana			Heliconia		
Nitrogen	1.87	1.66	Nitrogen	1.78	1.58
Phosphorus	0.19	0.17	Phosphorus	0.18	0.16
Potassium	1.99	1.77	Potassium	1.87	1.66

Table 2f : Microbiological studies

Soil microbial population	June, 2011
Bacteria (Nutrient Agar medium) (x 10 ⁵ cfu/g)	6.45
Actinomycetes (Starch-Casein Agar medium) (x 10 ⁵ cfu/g)	8.14
PSB (x 10 ⁴ cfu/g)	2.14
Trichoderma (Trichoderma specific media) (x 10 ³ cfu/g)	9.35
Earth worm population	
10 cm depth	0
20 cm depth	1.0
30 cm depth	3.15

Observational trial on the performance of *Morinda citrifolia* as mixed crop in coconut gardens

At HRS, Ambajipeta, the observation trail on the performance of *Morinda citrifolia* (Noni) was executed in the inter spaces of coconut. The growth parameters viz, plant height, number branches were recorded and the highest plant height (4.54 m) and mean number of branches per plant (52.0) were recorded in seedlings when compared to tissue culture plants (3.58 m) height and 36.25 branches





per plant respectively. The data on yield attributes of coconut revealed that the highest number of leaves on crown, mean number of spadices /palm and mean number of female flowers/ spadix were recorded in Noni seedlings plot (32.48, 11.20 & 19.42) when compared to Noni tissue culture plants (30.25, 10.45 & 17.25).(Table 3a & 3b)

Table 3a : Growth parameters of *Morinda citrifolia* under coconut

Planting material	Plant height (m)	Stem girth (cm)	No. of branches per plant	Fruits per plant	Total fruit weight per plant (kg)	Coconut yield per palm per year	
						Before planting	After planting
Tissue cultured plants	3.58	47.03	6.25	69.16	3.36	104	110
Seedlings	4.54	32.88	52	112.61	6.68	98	104

Table 3b : Yield Attributes of Coconut

Yield Attributes of Palm	Noni seedlings Plot	Noni Tissue culture Plot
No. of leaves on crown	32.48	30.25
Mean no. of spadices	11.20	10.45
Mean no. of female flowers	19.2	17.25

INM Trial in Coconut

At HRS, Ambajipeta, the non-significant difference were observed among different treatments however, the highest nut yield of 100.3 palm/year and copra content of 179.16 g/nut was recorded by the application of Green manure crops + Sunhump @25kg/palm/year (Table 4a & 4b).

Table 4a : Vegetative and yield characters as influenced by INM treatments.

S. No.	Treatment	No. of leaves on Crown	No. of spadices per palm/year	No. of female flowers per palm/year	Nut yield/ palm/year
1.	Coir pith compost @ 50 kg/palm/year (T1)	27.33	10.16	116.00	85.98
2.	Neem cake @ 10 kg + Bone meal @ 2 kg + Ash @ 20 kg / palm / year (T2)	29.66	9.91	124.00	62.91
3.	FYM @ 50 kg/palm/year (T3)	29.25	10.46	200.00	75.33
4.	Vermi compost @ 25 kg/palm/year (T4)	29.66	9.41	207.00	62.58
5.	Poultry manure @ 25 kg /palm/year (T5)	30.66	10.91	166.00	87.98
6.	Green leaf manure Glyricidia @ 30 kg /palm/year (T6)	28.66	9.66	160.00	72.08
7.	Green manure crops – sun hemp @ 25 kg /palm/year (T7)	26.41	11.23	140.00	100.30
8.	Recommended dose of fertilizers (T8)	27.41	11.83	176.00	96.65
	S Em ±	1.02	1.06	3.88	9.31
	CD at 5%	N.S	N.S	11.91	N.S

Table 13 : Nut quality characters as influenced by INM treatments.

Treatment	Whole nut weight (g)	Dehusked nut weight (g)	Husk weight (g)	Water content (ml / nut)	Shell weight (g/nut)	Copra content (g / nut)
T1	1062.50	354.16	708.33	68.33	83.33	166.50
T2	875.00	366.66	512.50	59.06	108.33	170.76
T3	957.16	383.33	570.83	85.00	104.16	191.66
T4	720.66	262.50	338.16	28.33	87.50	145.83
T5	895.66	325.00	570.66	55.83	112.50	175.00
T6	766.66	308.33	458.33	50.83	95.83	158.33
T7	862.50	329.66	533.43	64.16	116.66	179.16
T8	924.16	258.23	665.83	37.50	70.83	124.16
S Em ±	88.71	28.54	95.08	12.14	12.855	19.46
CD at 5%	N.S	N.S	N.S	N.S	N.S	N.S

PALMYRAH

Studies on the influence of different levels of defoliation on the neera yield in Palmyra.

At HRS, Pandirimamidi, among the treatments mean number of days taken for initiation of flowering ranged from 24.2 to 62.7 days. In male palms the highest [136.8] neera yields have been recorded with 50% defoliation when compared to environmental factors like temperature, humidity and rain fall appears to have played limited role in neera yields. For higher neera yields, temperatures of more than 33°C [max] and more than 18°C [Min] Relative humidities below 96% [AM] and below 33% [PM] are found to be essential.

Growth and developmental studies in Palmyra [*Borassus flabellifer*]

At HRS, Pandirimamidi, in the early juvenile stage (5 years old plants) rate of petiole growth is very slow ranged from 1.94 mm to 2.75 mm among the different leaves in the same plant. Growth rate is slower in the oldest leaf and comparatively faster in youngest leaf. Lamina growth also has exhibited the same pattern and it lowest (1.86 cm) in older leaves and high (2.95 cm) in younger leaves. Time taken for successive leaf emergence varied from 60 to 70 days among the different plants.

In the juvenile plants of 8 years age growth parameters have been recorded at fortnightly intervals and the rate of petiole growth ranged from 2.90 cm (oldest leaf) to 7.37 cm in the younger leaves. Rate of lamina growth also ranged from 0.98 cm to 2.68 cm among the leaves of different ages. Time taken for successive leaf emergence ranged from 28.50 days to 30.50 days.

In the adult palms of 10 years age, petiole growth rate in male palms varied from 4.88 to 10.43 cm where as in female it varied from 4.83 cm to 10.18 cm. Time taken for opening of successive leaf varied from 25.5 days to 28 days in female and 26 to 28 days male palms. Length of the un opened crown leaf at which emergence of petiole takes place ranged from 0.81 to 1.01 among different plants. Inflorescence growth rates varied from 6.45 cm to 10.55 cm among the plants.

Male palms started giving out the inflorescences early in the months of December compared to female palms in the month of December and January. Mean length of inflorescences was 1.36 in male palms and 1.09 in female palms. Growth rate of inflorescence varies 5.09 to 12.8 in male and 9.72 cm to 12.51cm in female palms.





Identification of marigold varieties for commercial cultivation in Rayalaseema region at HRS, Mahanandi.



Standardization of package of practices for *Phyllanthus amarus*, at Herbal Research Station, Rajendranagar.



Shubhangini



Swarnima

Staggered planting technologies for extending the availability of gladiolus flower at HRS, Mahanandi



The different growth regulators applied to Coleus, at Herbal Research Station



The non significant difference for cumulative leaf yield was observed in between the red and yellow flowering type of *Aloe barbadensis* at Herbal Research Station.





Use of cassava leaves for eri silk worm rearing for production of eri cocoons at HRS, Peddapuram.



Fixed plot of brinjal at HRS, Mahanandi



Integrated Nutrient Management in onion at HRS, Mahanandi.



Experiment of Mass trapping in brinjal at HRS, Mahanandi



Fertigation in Tomato at HRS, Mahanandi



Pheromone trap erected in brinjal field at HRS, Mahanandi





C. POST HARVEST TECHNOLOGY

FRUITS

KARONDA

Studies on standardization of technology and evaluation of wine from Karonda (*Carissa karanda*)

Karonda pulp with water in 1:1 ratio was standardized for production of wine from karonda fruits. The quality parameters and organoleptic score were better in 1:1 (pulp and water) ratio.

Studies on Standardization of technology and evaluation of juice from Karonda (*Carissa karanda*)

Karonda pulp with water in 1:4 ratio and 15% sugar was standardized for production of juice from karonda fruits. The quality parameters and organoleptic score were better in 1:4 (pulp and water) ratio and 15% sugar.

GUAVA

Studies on Modified Atmosphere Packing of Guava.

Polypropylene bags with 2.5% O₂ & CO₂ resulted in better shelf life in both the varieties of guava Allahabad safeda & L-49.

Studies on evaluation of wine from different Varieties of Pomegranate (*Punica granatum*)

The TSS ranged from 13.4 to 15 %, Aril recovery ranged from 65 to 68 % and juice recovery ranged from 55 to 60 % among the pomegranate varieties.

Studies on evaluation of Juice from different Varieties/Hybrids of red Guava (*Psidium guajava*)

Pulp recovery was more in Red fleshed Guava varieties. The qualitative parameters of all pink guava varieties were at a par with Lalith released by CISH, Lucknow. The incidence of bacteria and yeast and molds was not seen up to 90 days at ambient conditions.

BANANA

Studies on Modified Atmosphere Packing of Banana at cold storage conditions and ambient conditions.

Polypropylene bags with 20 pores and 30 pores improved the shelf life of Banana varieties Amrapali, Grandnaine and chakkerakeli at both the conditions.

FLOWERS

GLADIOLUS

Post harvest package technology of distant marketing of gladiolus spikes

At FRS, Rajendrnagar, the data revealed that spikes harvested at tight bud stage took more days for basal floret to open (2.8 days) and recorded more vase life (7.2 days). The spikes harvested at stage-2 (when 4-5 florets show colour) showed more percentage of floret opening (67.6%) more floret size (8.4 cm). Among different packing materials, cellophane recorded more vase life (7.3 days) against control (6.4 days).





Standardization of modified atmosphere (MA package) storage of gladiolus cut spikes.

At FRS, Rajendranagar, the data indicated that among different packing materials cellophane recorded maximum vase life (6.5 days), no. of florets opened (7.4), opening of florets (50.5%), and the percent wt. loss after simulated transit was least in LDPE 200 gauge of packing material.

CHRYSANTHEMUM

Standardization of package technology of chrysanthemum for local and nearby markets.

At HRS, Rajendranagar, the results revealed that packing in cellophane recorded maximum vase life in terms of 50% flowering (10.6 days) and 50% leaf wilting (8.4 days). When compared to control (9.1 and 7.2 days respectively). The weight loss after simulated transit was minimum in control (11.2%) when compared to all other treatments.

Standardization of post harvest technology of chrysanthemum for distant marketing.

At FRS, Rajendranagar, the data revealed that maximum vase life in terms of 50% flowering (13.0 days) was registered with cellophane packing while that of 50% leaf wilt (10.4 days) was with LDPE 100 gauge. The flower stems in control recorded the minimum value of vase life in terms of wilting of 50% flower (11.0 days) and 50% leaves (9.0 days). Weight loss after simulated transit was minimum in LDPE 100 (9.5%) and maximum (13.0%) in control.

Studies on the effect of thidiazuron on post harvest leaf yellowing in chrysanthemum flower stem

At FRS, Rajendranagar, studies revealed that foliar spray of thidiazuron delayed leaf yellowing and prolonged vase life compared to control (6.1 days), increased in storage duration and decreased vase life of flowers.

TUBEROSE

Standardization of post harvest technology for short distant market of tuberose (var. Hyd. Single)

At FRS, Rajendranagar, data revealed that different packing materials did not differ as regard to vase life and floret size and water absorption per stem. The minimum wt. loss was recorded in LDPE 100 gauge (3.6%) and maximum in control (5.6%).

Studies of MA storage of tuberose cut stems

At FRS, Rajendranagar, increase in duration of storage, decreasing vase life, diameter of basal floret, total water absorbed. The decrease was drastic after 3 days and after 9 days of storage.

Effect of packaging and storage on keeping quality of garland flowers of tuberose

At FRS, Rajendranagar, the results revealed that increase in storage duration decreased shelf life. The tuberose florets stored in CFB boxes with 100 gauge polyethylene lining performed better and precooling helped in extending shelf life.

CARNATIONS

Standardization of pulsing treatments to increase the vase life of Carnation cut flowers (var. Corsa)

At FRS, Rajendranagar, the data indicate that maximum vase life (8.2 days) was recorded in T_{14} and T_{13} and T_{11} . Maximum flower diameter (5.6 cm) was recorded in T_6 closely followed by T_{14} . Flowers in control condition recorded minimum vase life (6.3 days) and minimum flower diameter (4.9 cm) and took more days for flower opening (2.9 days).





MARIGOLD

Studies on post harvest packing of loose marigold flowers

At FRS, Rajendranagar, studies revealed that the maximum shelf life of 6.1 days in plastic crates and the minimum shelf life of 5.3 days obtained in gunny bags among different packing materials

TUBER CROPS

Standardization of tuber flour based food products (Like Pizza, Bakery items, confectionery, health mix etc.)

At HRS, Pandirimamidi, for identifying the maturity stage of tubers for higher nutritive values, tubers collected from 13 accessions at age of 3, 4 and 6 months and analyzed. The data showed that 4th and 5th month tubers having higher nutritive value than other samples.

Experiments were conducted for preparation of flour and suji from palmyrah tubers and results indicated that autoclave cooked followed by dried in tray drier gives good quality of flour as compared to other methods.

Biscuits and bread was prepared with tuber flours of 5, 10 and 15% showed that bitterness is increasing with increase of tuber flour percentage and the flour from autoclave cooked tuber has good taste as compared to other flours.

PLANTATION CROPS

PALMYRAH

Standardization and Commercialization of Inflorescence Sap Extraction and Inflorescence Sap Based Products (Jaggery, Palm Sugar and Candy)

At HRS, Pandirimamidi, experiments were conducted for increasing the flow of neera by different type of cut that V type cut yields more as compared to others and there is significant difference among the treatments of 5% level with increase in surface area of the cut portion of spathe. The yield of neera by applying anti oxidants (Ethopan, EDTA, BHT, CaOH, Citric Acid) to the sliced portion of the spathe.

For improving the shelf life of the inflorescence sap (neera) by using various preservatives viz., sodium benzoate, KMS and citric acid @ 0.1% with prior heating for 15 minutes at 90°C and samples were analysed for quality. The Neera can be preserved up to one week under refrigerated condition and one day under normal atmosphere conditions. For the clarification of Neera, the permeate neera quality was good after 10 min ultra filtration of pressure 1 kg/cm² of pretreated neera.

Standardization of Preservation Technique for Palmyrah Tender Fruit Endosperm.

At HRS, Pandirimamidi, for identifying the maturity stage for nungu the tender fruit of 50, 60, 70 and 80 days were collected and evaluated by sensory and observed that 70 days followed by 60 days nungu gives better option for preservation.

The average weight of tender fruit after flower initiation (70 days) varies from 0.625 kg to 1.25 kg, diameter of the tender fruit varies from 33cm to 45 cm, height of the tender fruit varies from 13 cm to 15 cm and average weight of nungu is 75 g to 80 g. About 25 % in tender fruits mostly 3 seeded with equal distribution and rarely two seeded and single seeded.





D. ENTOMOLOGY

FRUITS

MANGO

At MRS, Nuzvid, survey was conducted in mango gardens of various mandals of Krishna district for the incidence of different pests during the year. Mango fruit borer incidence was recorded at low to medium level during January – February which suddenly declined during March and again raised during April. Lot of flower feeding caterpillars were also observed causing damage to inflorescence. Sucking complex population peaked to a high of 160 no/12 panicles in the first fortnight of January – February.

Among the various insecticides tested Thiamethoxam 25% WG @0.005% (5g/20 Lit) and Imadacloprid 17.80% SL @ 0.3 ml/Lit of water was effective against both thrips and hoppers throughout the spray period.

At MRS, Nuzvid, studies on compatibility of different pesticides, fungicides and hormones revealed that the following combinations are physically compatible without any phytotoxicity.

Diofenthiurom + planofix + KNO_3
Cypermethin + planofix + KNO_3
Lambda-cyhalothrin + planofix + KNO_3
Thiophenate methyl + planofix + KNO_3
Carbendazime + Mancozeb + planofix + KNO_3
Diofenthiuron + Thiophenate methyl + planofix + KNO_3
Diofenthiuron + Carbendazim + Mancozeb + planofix + KNO_3
Cypermethrin + Thiophenate methyl + planofix + KNO_3
Cypermethrin + Carbendazim + Mancozeb + planofix + KNO_3
Lambda-cyhalothrin + Thiophenatemethyl + planofix + KNO_3
Lambda-cyhalothrin + Carbendazim + Mancozeb + planofix + KNO_3

Screening of germplasm against pests of mango (stone weevil, hoppers, thrips, scales, mealy bugs)

At FRS, Sangareddy, survey was conducted in Rangareddy, Mahaboobnagar, Medak, Chittoor and Krishna districts during the reporting period. The popular commercial varieties Neelum and Banganpalli were found to be free from stone weevil in Rangareddy, Mahaboobnagar, and Medak districts. In Chittoor, the highest infestation of stone weevil ranged from 6 to 20% in orchards where as lowest infestation was recorded in well managed orchards. In market yards, the stonenut weevil infestation ranged from 10 to 30%. And about 70 varieties were screened for stone weevil infestation and the infestation was negligible at Sangareddy.

Population dynamics of major pests of mango (Hopper and fruit fly)

At FRS, Sangareddy, in surveillance of mango pests, peak activity of hopper population was noticed in 6th standard week i.e second week of February in Banganpalli variety of mango (12.8 hoppers panicles⁻¹). Though the population of hoppers on panicle (*Ideoscopus clypealis*) was less and declined after third week of March. Peak incidence of hoppers on panicle was noticed in the sixth standard week and was positively correlated with maximum temperature and Relative humidity.





Integrated Pest management of mango hopper

At FRS, Sangareddy, under Integrated Pest Management of Mango Module III {First spray of thiamethoxam (0.008 %) @0.3g/lit at panicle emergence stage followed by second spray (21 days after first spray) of profenophos (0.05%)} @1.5ml/lit were found to be superior in controlling the hoppers in Mango var. Banganpalli.

Survey and Surveillance of Pollinators

At FRS, Sangareddy, the major pollinating insects recorded were Paddy blue butterfly (*Danius flexipus*), Honey bees (*Apis indica*), House fly, *Coccinella septumpunctata* and other Hymenopterans. The maximum numbers of pollinators were recorded in the middle of the tree (2-4 meter of height) during second week of January, where maximum flowering was noticed. Spraying of new chemicals such as Imidacloprid, Actara, Clothionidin were found lethal for pollinators.

The maximum no of pollinators (7.4) were recorded during 4th week of January and the more numbers of pollinators were observed in the medium height and activity was in maximum in the East direction followed by North and South.

Cost effective management strategies for fruit flies in Mango/Guava

At FRS, Sangareddy, the experiment on Baneshan variety of mango and guava variety of Lucknow -49 and at farmers field. Among the treatments, hanging of glass of wide mouth bottle trap containing 0.1% methyl eugenol and 0.1% DDVP @ 10 traps /ha was effective in controlling fruitflies followed by Dapoli traps. The species observed in the traps were *B.dorsata* and *B.zonata*. The damage of fruitfly was more in redfleshed varieties compared to the white varieties of guava.

SWEET ORANGE

At CRS, Tirupati, the chemical treatments, Neem formulation 10000 ppm @ 5ml/L followed by Thiamethoxam(0.025%) was found to be significantly superior over normal spray up to 14 days after spray followed by profenophos (0.1%) in reducing the leaf miner incidence.

Management of citrus thrips, aphids and blackfly/whitefly in citrus.

The Neem formulation of 10000 ppm @ 5ml/L followed by Thiamethoxam (0.025%), Neem formulation 10000 ppm @ 5ml/L followed by Dimethoate (0.06%) are two best treatments giving 100% control up to 14 DAS against aphids in sweet orange.

The Neem formulation of 10000 ppm @ 5ml/L followed by Spinosad (0.002%) was found superior giving >80% control of thrips onleaves upto 14 DAS and which was followed by fiopronil (0.01%) and thiamethoxam (0.025%) against aphids.

Least thrips damaged fruits were noticed in the neem formulation 10000 ppm @ 5ml/L followed by fiopronil (0.01%) and spinosad (0.002%). Fiopronil (0.01%) and thiamethoxam (0.025%) are economical and best chemicals for thrips management. BC ratio was calculated and it indicated that fiopronil (0.01%) and thiamethoxam (0.025%) are the two best chemicals for effective control of thrips in citrus.

Novaluron10EC (0.005%) is significantly superior over control followed by Azadirachtin(1%) (0.04%) providing >70% pest control even upto 14DAS and both these chemicals are comparable to Dimethoate 30EC (0.06%) the standard check citrus mites.





Among the different treatments Ethion 50 EC (0.05%) followed Propargite 57 EC (0.057%) are best chemicals for controlling aspects and giving highest B/C ratio of 3.9 and 2.24 respectively.

Survey and surveillance of pests and their natural enemies

a) Roving Survey : During the year 2011 roving survey was undertaken in 40 citrus orchards (Sweet orange and Acid lime) of Kadapa, Ananthapur, Nalgonda and Chittoor Districts of Andhra Pradesh and recorded intensity of citrus pests on sweet orange.

The survey results revealed that leaf miner, and rust mite damage is severe in most of the orchards. Among the other pests' snow scales in acid lime is observed especially during Nov-Feb months. Leaf cutting weevil (15-20%), thrips (10-15%) and green mites (20-25%) infestation on both leaves and fruits in Ananthapur, Nalgonda and Kadapa districts. Others like Psylla and blackfly infestation is low to medium (5-10%) and confined to some areas. About 80% butterfly damage was observed in acid lime gardens (poorly maintained) during June-July months in Kalahasti (B.N.Kandriga) mandal of Chittoor district. Fruit sucking moth infestation was noticed to a small extent when matured fruits harvesting was delayed owing to the market fluctuations in Anantapur and Nalgonda districts.

The larval parasite *Distatryx papillionis* was noticed on citrus butterfly larvae to an extent of 20-30%. Coccinellid predators, spiders, Chrysopids (*Chrysoperla carnia*) were observed feeding on aphids and psyllids in young sweet orange orchards of Nalgonda (Table 1&2).

Table 1 : Citrus orchards surveyed in different citrus growing districts Andhra Pradesh during 2011

	District	Mandals	No. of orchards	Crop & Root stock used
1.	Nalgonda (Jan 28-29,2011)	Nalgonda, Chityala, Gurrampodu, Kanagal	10	Sweet orange & acid lime Rangpurlime/ Jambheri
2.	Ananthapur (Feb 4-5,2011)	Bukkapatnam, Kothacheruvu, Garladinnay	9	Sweet orange Rangpurlime/Jambheri
3.	Chittoor (June,25,2011)	Kalhasti	6	Acid lime
4.	Nalgonda (Sept,16-17,2011)	Damaracherla, kanagal and Munugodu	7	Sweet orange /Rangpurlime & Jambheri
5.	Kadapa (Dec,8-9,2011)	Pulivendula,Vemala	8	Sweet orange /Rangpurlime & Jambheri
		Total	40	

Table 2 : Observations recorded on the various Citrus pests and their intensity during the Roving Survey during 2011

	Name of the Pest	No. of citrusOrchards	Intensity of citrus pests				
			Nil	Low	Moderate	Severe	Very severe
1	Citrus leaf miner	40	—	10	20	8	2
2	Citrus butterfly	40	20	10	2	2	6
3	Rust mite	40	15	10	12	3	—
4	Snow scales	40	30	2	8	—	—
5	Aphids	40	15	15	10	—	—
6	Fruit sucking moth	40	20	10	5	—	—
7	Ash weevil	40	10	20	10	—	—





2) Biology and population dynamics of citrus Leaf miner monitoring of adult population

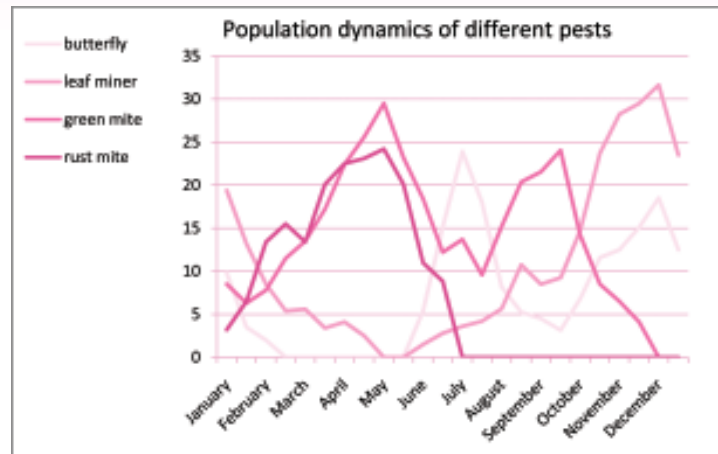
A periodical survey for major pests on sweet orange and acid lime was conducted at fortnightly intervals on fixed plot survey in the farm and the results revealed that the incidence of Citrus leaf miner was very severe from October –January and low during summer months. During the month of May no damage was recorded. Butterfly damage started from June onwards. Moderate infestation was recorded during the months of July, September and October, while severity noticed in the month of November. During the summer (March-May) its infestation was not observed. Moderate Green and rust mite infestations were recorded from February –June months, while green mite damage on leaves could be noticed from August-October months but decreased in November, December months.

Natural enemies like different species of spiders, coccinellids, chrysopids and robberflies were noticed feeding on sucking pests like psylla and aphids during August to December months. During the month of November 100% parasitization (*Leptomastix* sp. and *Cryptolaemus montrouzieri*) of mealybugs was recorded on glass house grown sweet orange plants (Table-3).

Table 3 : The incidence of major pests on sweet orange during 2011

S. No	Month	Fortnight	Major Pest			
			Leaf miner	Butterfly	Rust mite	Green mite
1	January	I	19.4(S)	9.8(M)	3.2(L)	8.5(L)
		II	13.2(M)	3.5(L)	6.5(L)	6.3(L)
2	February	I	8.5(M)	2(L)	13.4(M)	7.8(L)
		II	5.4(L)	0	15.5(M)	11.5(M)
3	March	I	5.6(L)	0	13.4(M)	13.5(M)
		II	3.4(L)	0	20.1(M)	17.2(M)
4	April	I	4.1(L)	0	22.5(S)	22.4(S)
		II	2.5(L)	0	23.1(S)	25.6(S)
5	May	I	0	0	24.2(S)	29.5(S)
		II	0	0	20.1(M)	23.2(S)
6	June	I	1.5(L)	5.4(L)	10.97(L)	18.4(M)
		II	2.8(L)	15.1(S)	8.84(L)	12.2(M)
7	July	I	3.6(L)	23.9(S)	0	13.7(M)
		II	4.21(L)	18(S)	0	9.58
8	August	I	5.65(L)	8.17(M)	0	15.21(M)
		II	10.75(M)	5.24(L)	0	20.37(M)
9	September	I	8.5(L)	4.5(L)	0	21.55(S)
		II	9.25(L)	3.15(L)	0	24.05(S)
10	October	I	14.7(M)	6.8(M)	0	14.2(M)
		II	23.7(S)	11.58(M)	0	8.5(L)
11	November	I	28.25(S)	12.5(M)	0	6.5(L)
		II	29.5(S)	15.1(S)	0	4.1(L)
12	December	I	31.64(S)	18.5(S)	0	0
		II	23.5(S)	12.5(M)	0	0

Rating	Nil	Low	Moderate	Severe	Very severe
Leaf miner	< 1%	1-5%	6-15%	16-30%	> 30%
Rust mite	< 1%	1-10%	11-20%	21-30%	> 30%
Butterfly	< 1%	1-5%	6-10%	11-15%	> 15%



3) Evaluation of synthetic chemicals and natural products against leaf miner in Citrus :

The experiment revealed that 1st spray was given at peak pest activity and 2nd spray at 14 days after 1st spray. The least incidence of citrus leaf miner was recorded in the treatment Neem formulation 10000 ppm @ 5ml/L followed by Thiamethoxam (0.025%) spray was found significantly superior over control up to 14 days in reducing the leaf miner incidence. This second best treatment proved effective was neem formulation 10000 ppm @ 5ml/L followed by Profenophos (0.1%) spray in sweet orange (Table 4).

Table 4 : Evaluation of different spray schedules against citrus leaf miner

Treat ments	Name of the Treatment	Mean percent incidence of leaf miner (average of 2 sprays)		
		3 DAS *	7 DAS	14 DAS
1	Neem formulation 10000 ppm @ 5ml/L followed by Acephate (0.1125%)	20.60(16.19)	10.20(11.15)	11.20 (11.72)
2	Neem formulation 10000 ppm @ 5ml/L followed by Thiamethoxam(0.025%)	9.07(10.46)	10.08(11.08)	6.75(9.0)
3	Neem formulation 10000 ppm @ 5ml/L followed by Profenophos(0.1%)	18.40(15.21)	10.10(11.01)	7.48(9.51)
4	Neem formulation 10000 ppm @ 5ml/L followed by Thiodicarb (0.075%)	19.28(15.62)	14.77(13.55)	11.30(11.58)
5	Neem formulation 10000 ppm @ 5ml/L followed by Spinosad (0.002%)	15.93(14.10)	24.97(17.98)	31.0(20.29)
6	Neem formulation 10000 ppm @ 5ml/L followed by Difenthiouron (0.05%)	16.44(14.33)	30.63(20.16)	34.33(21.52)
7	Water spray	20.83(16.28)	33.46(21.20)	42.37(24.36)
	CV	5.34%	4.59%	2.67%
	CD @ 5%	2.8517	2.7292	1.7224

* Days after spray; Figures in parenthesis are arc sign “ percentage transformed values

Integrated management of blackfly, Psylla, aphid, rust mite and leaf folder in citrus

Aphids :- The experiment was conducted on sweet orange on two sprays were given at 7 days interval and the observations were recorded at 3,7,14 days after second spray. The treatment Neem formulation 10000 ppm @ 5ml/L followed by Thiamethoxam(0.025%) and Neem formulation 10000 ppm @ 5ml/L followed by Dimethoate (0.06%) are the two best treatments giving 100% control up to 14 DAS (Table5).





The treatment Neem formulation 10000 ppm @ 5ml/L followed by Spinosad (0.002%) was found superior giving >80% control upto 14DAS. This was followed by fiopronil (0.01%) and thiamethoxam (0.025%) spray against thrips on leaves of citrus.

The least thrips damaged fruits were recorded in the neem formulation 10000 ppm @ 5ml/L followed by fiopronil(0.01%) spray. The second best treatment of neem formulation 4000 ppm followed by spino sad (0.002%) spray is the best chemical for thrips management (Table 6 & 7).

Table 5 : Evaluation of Synthetic chemicals and Natural products against citrus Aphids (*Toxoptera* spp.)

Treat ments	Name of the Treatment	Percent reduction over control		
		3 DAS*	7 DAS	14 DAS
1	Neem formulation 10000 ppm @ 5ml/L followed by Spinosad (0.002%)	88.67(45.05)	96 (48.69)	100(54.00)
2	Neem formulation 10000 ppm @ 5ml/L followed by Quinalphos(0.05%)	100(54.00)	100(54.00)	84.5(40.33)
3	Neem formulation 10000 ppm @ 5ml/L followed by Fipronil(0.01%)	91.67(48.00)	91.67(48.00)	90.67(47.61)
4	Neem formulation 10000 ppm @ 5ml/L followed by Profenophos(0.1%)	76.67(39.57)	98.67(50.86)	93.67(48.83)
5	Neem formulation 10000 ppm @ 5ml/L followed by Thiamethoxam(0.025%)	100(54.00)	100(54.00)	100(54.00)
6	Neem formulation 10000 ppm @ 5ml/L followed by Dimethoate(0.06%)	100(54.00)	100(54.00)	100(54.00)
7	Water spray	7.33(7.74)	8.33(8.24)	11.67(9.87)
	CV	9.01%	8.98%	7.60%
	CD @ 5%	22.4109	15.6785	19.4595

Table 6 : Evaluation of different synthetic chemicals against citrus thrips leaf infestation

Treat ments	Name of the Treatment	Percent reduction over control		
		3 DAS*	7 DAS	14 DAS
1	Neem formulation 10000 ppm @ 5ml/L followed by Spinosad (0.002%)	60.20(30.56)	80.33 (38.35)	80.03(38.29)
2	Neem formulation 10000 ppm @ 5ml/L followed by Quinalphos(0.05%)	63.53(31.74)	67.90(33.30)	41.47(23.87)
3	Neem formulation 10000 ppm @ 5ml/L followed by Fipronil(0.01%)	57(29.48)	68.67(33.62)	63.87(31.91)
4	Neem formulation 10000 ppm @ 5ml/L followed by Profenophos(0.1%)	43.07(24.56)	51.97(27.68)	41.63(24.08)
5	Neem formulation 10000 ppm @ 5ml/L followed by Thiamethoxam(0.025%)	68.17(33.54)	66.07(33.68)	60.83(30.79)
6	Neem formulation 10000 ppm @ 5ml/L followed by Dimethoate(0.06%)	57.87(29.71)	66.60(33.34)	60.50(30.66)
7	Water spray	0	0	0
	CV	6.76%	6.59%	7.25%
	CD @ 5%	10.4252	11.6571	11.1352

* Days after spray; Figures in parenthesis are arc sign percentage transformed values





Table 7 : Evaluation of Synthetic chemicals and Natural products against citrus thrips on fruits

S.No.	Name of the Treatment	Mean percent thrips infested fruits	
		2 Months after spray	4 Months after spray
1	Neem formulation 10000 ppm @ 5ml/L followed by Spinosad (0.002%)	20.43(17.23)	12.45(13.22)
2	Neem formulation 10000 ppm @ 5ml/L followed by Quinalphos(0.05%)	23.37(15.96)	14.12(12.410)
3	Neem formulation 10000 ppm @ 5ml/L followed by Fipronil(0.01%)	20.03(15.93)	7.63(9.51)
4	Neem formulation 10000 ppm @ 5ml/L followed by Profenophos(0.1%)	24.67(17.84)	20.53(16.08)
5	Neem formulation 10000 ppm @ 5ml/L followed by Thiamethoxam(0.025%)	21.43(16.45)	15.85(14.03)
6	Neem formulation 10000 ppm @ 5ml/L followed by Dimethoate(0.06%)	22.65(17.03)	14.09(14.10)
7	Water spray	31.87(20.56)	23.17(17.13)
	CV	12.02%	19.6%
	CD @ 5%	6.1869	6.5996

Figures in parenthesis are arc sign percentage transformed values

Table 8 : Cost benefit ratio calculation of different insecticides tested against thrips in Sweet orange

Sl. No.	Treatment	Cost of insecticide /kg/lt	Total cost of plant protection / treatment Rs.	Yield kg/ treatment	Net gain over control kg/tree	Realization over control Rs/ treatment	Cost benefit ratio
1.	Neem formulation 10000 ppm @ 5ml/L followed by Spinosad (0.002%)	1080/75ml	152.5	37.8	17.64	264.6	1.73
2.	Neem formulation 10000 ppm @ 5ml/L followed by Quinalphos(0.05%)	425	46	21.8	0.64	9.6	0.2
3.	Neem formulation 10000 ppm @ 5ml/L followed by Fipronil(0.01%)	1015	58.5	34.6	14.5	217.5	3.7
4.	Neem formulation 10000 ppm @ 5ml/L followed by Profenophos(0.1%)	500	47.5	23.7	3.54	53.1	1.17
5.	Neem formulation 10000 ppm @ 5ml/L followed by Thiamethoxam(0.025%)	840	55.5	32.71	12.55	188.25	3.4
6.	Neem formulation 10000 ppm @ 5ml/L followed by Dimethoate(0.06%)	340	45	26.64	6.48	97.2	2.16
7.	Water spray			20.16			

Market price of Sweet orange fruits - 15 Rs/kg
Labour charges @ 120 Rs. /day





5) Survey, identification of citrus nematode and their control measures and screening of root stock:

a) Survey and identification of citrus nematode

A survey of plant parasitic nematodes associated with citrus was undertaken in Kadapa, Nalgonda and Anantapur districts of Andhra Pradesh during 2011-2012. A total number of 20 Soil samples were collected and processed by Cobb sieving and decanting technique (Cobb 1980) and the nematodes were isolated at AICRP on Tropical Fruits (Citrus). The root knot nematode, *Meloidogyne* sp. was not recorded in collected samples in any of the surveyed districts.

Studies on compatibility of pesticides (Insecticides, Fungicides & Miticides) and micronutrients in Citrus

One spray with combination of different insecticides and fungicides was taken up during the monsoon period (September, 2011). Second spray with pesticides and micronutrient combination was taken up (January, 2012). Physical, chemical reactions while mixing the pesticides and biochemical changes later were recorded in each treatment and activity of different pests existed during period were also recorded and were presented in the following tables.

Treatments	Physical changes		Chemical changes (5DAS)	
	Color change	Formation of precipitation	Chlorosis	Necrosis
T1 = Profenophos 50 EC + Propargite 57 EC	White	Nil	Nil	Nil
T2 = Profenophos 50 EC + Dicofol 20 EC.	white	Nil	Nil	Nil
T3 = Acephate 75 WP + Propargite 57	No color	Nil	White powdery remnants observed on leaves	Nil
T4 = Acephate 75 WP + Dicofol 20 EC	No color	Nil	White powdery remnants observed on leaves	Nil
T5 = Chlorpyriphos 20 EC + Propargite 57 EC	No color	Nil	Nil	Nil
T6 = Chlorpyriphos 20EC + Dicofol 20 EC	No color	Nil	Nil	Nil
T7 = Blitax 0.3% + Propargite 57 EC.	Blue	Nil	Nil	Nil
T8 = Blitax 0.3% + Dicofol 20 EC.	Blue	Nil	Nil	Nil
T9 = Hexaconazole 0.2% + propargite 57 EC	White	Nil	Nil	Nil
T10 = Hexaconazole 0.2% + Dicofol 20 EC	White	Nil	Nil	Nil
T11 = Carbendazim 0.1% + Propargite 57 EC	No color	Nil	Nil	Nil
T12 = Carbendazim 0.1% + Dicofol20EC	No color	Nil	Nil	Nil

In T3, T4 treatments white powdery remnants were observed at 5DAS, but later no deleterious effects were noticed. The incompatibility was not observed among the pesticides and micronutrients mixed and tested in respect of physical, chemical and biochemical reactions. The chemical combinations listed below are found compatible with each other.



- 1). Profenophos 50 EC + Propargite 57 EC
 - 2). Profenophos 50 EC + Dicofol 20 EC.
 - 3). Acephate 75 WP + Propargite 57 EC.
 - 4). Acephate 75 WP + Dicofol 20 EC.
 - 5). Chlorpyriphos 20 EC+ Propargite 57 EC.
 - 6). Chlorpyriphos 20EC + Dicofol 20 EC.
 - 7). Blitax 0.3% + Propargite 57 EC.
 - 8). Blitax 0.3% + Dicofol 20 EC.
 - 9). Hexaconazole 0.2% + Propargite 57 EC.
 - 10). Hexaconazole 0.2% + Dicofol 20 EC.
 - 11). Carbendazim 0.1% + Propargite 57 EC.
 - 12). Carbendazim 0.1% + Dicofol 20EC.
- 1). Profenophos 50 EC + Micronutrients.
 - 2). Acephate 75 WP + Micronutrients.
 - 3). Chlorpyriphos 20 EC + Micronutrients.
 - 4). Blitax 0.3% + Micronutrients.
 - 5). Hexaconazole 0.2% + Micronutrients.
 - 6). Carbendazim 0.1% + Micronutrients.
 - 7). Propargite 57 EC + Micronutrients.
 - 8). Dicofol 20 EC + Micronutrients.

VEGETABLES

Survey and surveillance of pests on major vegetable crops existing in Kurnool district

At HRS, Mahanandi, roving survey was conducted in the vegetable gardens in the areas of Kurnool district. In Brinjal, 10-21% fruit and shoot borer damage, 1-6% jassids were identified. In Bhendi 6-11% fruit and shoot borer, 2-13% jassids, 4-10% mites, In Tomato, 6-13% fruit borer, 1-5% white flies were identified. 4-13% thrips in Onion and 2-5% thrips in chillies were observed in Kurnool district.

The fixed plot survey was conducted in Kharif season at HRS Mahanandi and surveillance of of pests on different vegetable crops are as follows.

Tomato fruit borer damage percentage was varied from 2.2 to 10.11 in different fortnights. Highest incidence of 10.11% was recorded at 3rd week of November 2011.

Okra The peak population of 16.8 jassids per plant at at 1st week of October 2011 was observed and the maximum temperature ($r=0.7964$) was found significant positive correlation effect with the jassids population.

Whitefly The peak population at 1st week of September 2011 less observed. Minimum temperature ($r=0.5791$) was found significant positive correlation effect with whitefly population.

Aphids The peak population was observed 148.4 per plant at at 4th week of November 2011. Fruit borer ranged from 15 to 62.61% with peak damage 62.61 percent at 4th week of November 2011 was recorded.

Brinjal- jassids The peak population was observed at 4th week of September 2011. The maximum temperature ($r=0.6432$) was found significant positive correlation effect on population.

Epilachna The peak population was observed at 2nd week of October 2011.

Whitefly population was ranged from 0.5 to 3.1 per plant with a peak population was at at 4th week of October 2011. The minimum temperature ($r=0.6320$) is found significant positive correlation effect with the population.





Aphids populations was ranged from 2 to 9.1 per plant with a peak of 9.1 at at 1st week of November 2011. The morning RH ($r = -0.5831$) were found significant negative effect with the population.

Shoot borer damaged was ranged from 2.5 to 25.27 percent with a peak at at 4th week of September 2011.

Fruit borer damaged was varied from 5 to 60.83 percentage with a peak at at 4th week of October 2011.

Chillies The thrips population was varied from 1 to 20.6 per plant with a peak population at 1st week of October 2011. The maximum temperature ($r = 0.6224$) was found significant positive effect on the activity of thrips.

Onion thrips population was varied from 0.1 to 5.3 per plant with a peak population at 4th week of September 2011. The maximum temperature ($r = 0.5925$) was found significant positive effect on the activity of thrips.

ONION

Effect of staggered planting on thrips incidence and bulb yield in onion

At HRS, Mahanandi, the effect of Staggered planting in onion experiment was conducted and revealed that, among the 10 dates of planting, T7(20-10-2011) had recorded minimum Thrips 3.03 per plant, plant height 46.08cm, Bulb weight 37.94g and highest yield of 39.00 t/ha was recorded with N-53 variety.

Correlation with the weather parameters revealed that the maximum temperature ($r = 0.5260$) found significant positive effect and RH in the morning ($r = -0.5974$) and evening ($r = -0.5260$) found significant negative effect with thrips population.

Among the 10 dates of planting T7(20-10-2011) had recorded low mean thrips 2.27, plant height 44.68cm, Bulb weight 33.15g and highest yield of 31.50t/ha was recorded with Agrifound Dark Red variety.

Correlation with the weather parameters revealed that the maximum temperature ($r = 0.6157$) found significant positive effect and relative humidity ($r = -0.5868$) in the morning found significant negative effect with thrips population.

Among the 10 dates of planting T7(20-10-2011) date of planting had recorded minimum low mean thrips 2.55/plant, plant height 37.15cm and Bulb weight of 19.37g and recorded bulb yield of 11.60t/ha was recorded with Agrifound Rose variety.

Correlation with the weather parameters revealed that the minimum temperature ($r = 0.5180$) found significant positive effect with thrips population.

OKRA

Bio efficacy of Bt formulations for the control of fruit borer in okra.

At HRS, Mahanandi, field experiment was conducted to know the bio-efficacy of three *Bt* formulations against fruit borer in Okra. The higher doses of *Bt* formulations at 5th day after treatment showed more effective and among the formulations, Delfin @ 1.5g/lit found superior with overall lowest fruit borer damage 16.23% and highest yield of 8.12 t/ha.





BRINJAL

Management of brinjal shoot and fruit borer through mass trapping technique

At HRS, Mahanandi, the highest yield was recorded in farmers practice plot 24.12 t/ha (C: B ratio of 1: 5.85). The shoot damage of 0.113% and fruit damage 22.71% were recorded, in the Plot installed with pheromone traps @ 4-6/200m² recorded the yield of 22.56 t/ha (C: B ratio 1:4.68). The shoot damage 0.136% and fruit damage 25.18% were recorded. The mean pheromone trap catch/trap/week was 3.15 male moths and plot installed with pheromone traps @ 4-6/100m² recorded the yield 20.61t/ha with C: B ratio1:3.32. The shoot damage 0.328% and fruit damage 49.42% with the mean pheromone trap catch/trap/week was 2.51 male moths were recorded.

Development of Integrated pest management module for Brinjal shoot and fruit borer

At HRS, Mahanandi, different IPM modules were tested against the Brinjal shoot and fruit borer. Among the tested modules of mechanical removal of damaged shoots + two rows of maize as border crop + potash application @ 100 Kg / ha + selective insecticide Emamectin benzoate 25G @ 0.4 g/L need based spray is the best IPM module is found to be effective in controlling the fruit and shoot borer with the lowest 1.02% and 9.87% of mean shoot and fruit damage. Followed by Spraying with profenophos @2.ml/L with the mean shoot and fruit damage was 1.79% and 12.12%.

Bio-efficacy of new chemicals against brinjal shoot and fruit borer

At VRS, Rajendranagar, by application of Spinosad 45 SC @ 0.5 ml/lit recorded lowest fruit damage of 13.62% followed by Emamectin benzoate with 17.23% fruit damage. The new molecules study revealed that the lowest per cent of shoot damage was recorded with the Flubendiamide 39.35 SC @ 0.3 ml/lit (8.87%) which was at par with the Rynaxpyr 18.5 SC@0.3ml/lit (12.27%), Deltamethrin 5 EC + Triazophos 35 EC @ 2 ml/lit (12.67%), Emmamectin benzoate 25 WG @ 0.4 g/lit (12.69 %) and spinosad 45 SC @ 0.5 ml/lit (12.82%), where as lowest fruit damage was recorded with Rynaxpyr 18.5SC @ 0.3 ml/lit (17.12%) which was at par with spinosad 45.8 SC @ 0.5 ml/lit (19.23%), Deltamethrin 5EC+ Triazophos 35 EC @ 2 ml/lit (20.21%) and flubendiamide 39.35 SC (21.33%) against shoot and fruit borer of brinjal.

CABBAGE

Insect pest management in organically grown cabbage or cauliflower

During 2011-12 significantly lowest aphid population (2.6 / 3 leaves/plant) was recorded with the non IPM module I (spraying of neem soap 10 g per liter and Bt @ 2 ml per liter) and IPM module II (Border planting of Chinese cabbage as trap crop alternate spray of neem soap and Bt. Significantly highest % parasitisation was recorded in the control (67.53%) plot followed by IPM module I (30.49%) where as in case of the IPM module II aphid population was concentrated on Chinese cabbage, but parasitoid (*Diaeretiella rapae*) activity was very low in Chinese cabbage. Per cent head damage was significantly low in IPM module II where Chinese cabbage was used as trap crops. Leaf webber, head borer population was significantly lowest in the IPM module II.

BITTER GOURD

Management of melon fly using cuelure and bait spray technology in bitter gourd.

At VRS, Rajendranagar, the lowest per cent fruit damage was recorded in the treatment with deltamethrin 2.5 EC (23.13%) which was at par with cue lure baited traps and the treatment with the bait spray and cue lure baited traps.





OKRA

Evaluation of new insecticide molecules against sucking pests of okra

At VRS, Rajendranagar, lowest jassid and Aphid population in the treatment with the Thiomethaxam @ 0.35 g/l was recorded in okra.

SPICES

CHILLIES

Pest management in chilli with mineral and botanical oils

At VRS, Rajendranagar, Lowest thrips population was recorded in the treatment sprayed with Acephate which was followed by Neem oil 1% and mineral oil 0.2% but yield was lowest in all the treatments.

Evaluation of newer molecules against blossom midge in chilli

At VRS, Rajendranagar, the lowest cumulative flower damage was recorded in the treatment with Azadirachtin 10,000 ppm@5ml/l (34.26%) which was at par with all other treatments including control except carbosulfan 25 EC @ 0.5 ml/l and deltamethrin 2.5 EC @ 0.5 ml/l. Where as the lowest per cent cumulative fruit damage was recorded with Rynaxpyr 18.5 SC @ 0.3 ml/l (32.78 %) which was at par with azdirachtin 10,000 ppm@ 5ml/l (34.92%), triazophos 40 EC (37.88 %) and carbosulfan 25 EC @ 0.5 ml/l (39.01%) in chilli.

PLANTATION CROPS

COCONUT

Survey and monitoring of pest problems in coconut Fixed plot survey

At HRS, Ambajipeta, two villages were selected for fixed Plot survey in East Godavari district i.e., Sakinetipalli and Yedurlanka. Mild to medium intensity of rhinoceros beetle damage was noticed in both the villages. Hundred per cent Intensity of mite was observed in both the fixed plot villages.

Monitoring of coconut pests in East Godavari of Andhra Pradesh during 2011 (upto December, 2011)

Name of the village	Mite *				Red palm weevil	BHC	Rhinoceros beetle			Slug cater pillar	Other pests
	Incidence	Intensity		Mite population / 4 mm 2			Incidence (%)	Intensity			
		Young	Harvested					Leaf damage(%)	Spindle damage (%)		
Sakhinetipalli	100%	1.74 (Mild)	3.16 (Medium)	9.44	Nil	Nil	35.2	11.9	Nil	Low incidence	Bag-worm
Yedurlanka	100%	2.33 (Mild)	2.92 (Medium)	18.03	Nil	Nil	22.5	9.41	Nil	Low incidence	Bag-worm





From January 2012 two new villages were selected for fixed Plot survey in East Godavari district viz., Palivela of Kothapeta mandal and Korlapativaripalem of Ambajipeta mandal. Low intensity of rhinoceros beetle damage was noticed in both the new gardens selected. In Palivela village high incidence of coconut slug caterpillar was recorded in the months of January, February and March 2012.

Table 2 : Monitoring of coconut pests in East Godavari of A.P. during 2012 (from January 2012)

Name of the village	Incidence of different pests and intensity									
	Incidence (%)	Mite		Red palm weevil	Black headed caterpillar	Rhinoceros beetle			Slug caterpillar	Other pests
		Intensity Mite				Incidence (%)	Intensity			
		Young	Harvested				Leaf damage (%)	Spindle damage (%)		
Palivela*	100	2.74	3.58	—	—	0.5	0.07	—	High	-
Korlapativari palem	100	2.46	3.41	—	—	2.5	0.11	—	-	-

Roving Survey : Roving survey was conducted in 58 villages of East Godavari, 7 in West Godavari and 4 in Visakhapatnam district, 3 in Vizianagram district and 6 in Srikakulam district of Andhra Pradesh.

Red palm weevil, Rhinoceros beetle and Eriophyid mite are the three important pests observed on the coconut crop in North Coastal districts of Andhra Pradesh. In addition, damage caused by monkeys was also observed in S. Rayavaram mandal of Visakhapatnam district along with high termite incidence in Srikakulam district . In Srikakulam district , Rhinoceros beetle incidence was observed from medium to severe scale where as Red palm weevil damage in medium level. In Vijayanagaram and Visakhapatnam, Rhinoceros beetle incidence was observed at a lower scale where as Red palm weevil damage from nil to low scale. Eriophyid mite incidence is in mild to medium scale in all the three districts surveyed. High incidence of leaf eating slug caterpillar was observed in isolated pockets in the gardens of East and West Godavari district. Low incidence of Rhinoceros beetle and mild to medium intensity of Red palm weevil and high to medium intensity of black headed caterpillar on coconut trees on fish pond bunds was observed in East Godavari and West Godavari districts.

Management of eriophyid mite in coconut gardens

The data was recorded on the intensity of Eriophyid mite from 3rd bunch of coconut in the treatment imposed plots at quarterly intervals. Mild intensity of mite i.e., 2.35 grade index was observed in the T₁ - treatment [IPM implemented garden] and in the T₂ - treatment [IPM treatment without root feeding] recorded 2.49 grade index [Mild] whereas 2.95 grade index [Medium] was recorded in control plot (T3).

Management of eriophyid mite in coconut gardens for the year 2011 (Grade index of mite infestation in 3rd bunch)

Month/Year	Treatment	Mite 3 rd bunch	
		Grade index	Intensity
April-July'11	T1	2.30	Mild
	T2	2.48	Mild
	T3 (control)	2.70	Medium
Aug-Nov-11	T1	2.45	Mild
	T2	2.50	Mild
	T3 (control)	3.00	Medium
Dec-11-Mar 12	T1	2.30	Mild
	T2	2.50	Mild
	T3 (control)	3.15	Medium
Mean	T1	2.35	Mild
	T2	2.49	Mild
	T3 (control)	2.95	Medium





Pre data on Mite damage grade index [2012]

As per the workshop recommendations new gardens are selected and Pre data on the intensity of Eriophyid mite from 3rd bunch was recorded in the month of march 2012 revealed mild intensity of mite i.e., 2.35 grade index was observed in the T₁ – treatment [IPM implemented garden], 1.74 grade index [Mild] in the T₂ – treatment [IPM treatment without root feeding] recorded and 2.10 grade index [Mild] was recorded in control plot (T 3).

Compatibility of natural enemies with the most commonly used botanical/chemical pesticides

The culture of test organisms i.e., larval parasitoids of black headed caterpillar *Goniozus nephantidis* and *Bracon hebetor* were mass multiplied in the laboratory for conducting bioassay studies. The parasitoids were exposed to various pesticides viz., Phorate, Monocrotophos, Chlorpyriphos and Carbaryl at concentrations ranging from 0.05 ppm to 10 ppm and the adult mortality was recorded up to seven days after treatment.

Goniozus nephantidis : At one day after treatment, the highest mortality (100 per cent) was recorded in Phorate, Chlorpyriphos and Carbaryl at 2 ppm, 5 ppm and 10 ppm whereas , Monocrotophos yielded only 35 per cent mortality at the highest concentration (10 ppm). The mortality per cent ranged from 0 - 15 per cent in the lower concentrations [1.0 ppm, 0.5 ppm, 0.1 ppm, 0.05 ppm]. The observation on the seven days after treatment revealed that, even at lower concentration [1,00 ppm to 0.05 ppm] the mortality per cent ranged from 10 – 45 per cent and nil mortality was observed in the control. Hence, the above mentioned pesticides are lethal to the parasite at higher concentration [2 ppm, 5 ppm, 10 ppm] and relatively safer at lower concentration [1 ppm, 0.5 ppm, 0.1 ppm and 0.05 ppm].

Bracon hebetor : The data recorded signifies that when adults of Bracon hebetor exposed to the glass vials treated with various pesticides, Phorate, Monocrotophos, Chlorpyriphos and Carbaryl, all of them resulted in 100 per cent mortality at higher concentration i.e., 10 ppm – 2 ppm. However, Carbaryl even at 1 ppm yielded 85 per cent mortality. At seven days after treatment, even at lower concentration, [1 ppm – 0.05 ppm] the mortality percentage ranged from 85 – 10 per cent indicating the sensitivity of the insect. Amongst all the pesticides, Phorate resulted in 30 – 10 per cent mortality at lower concentrations indicating the relatively safer pesticides.

Evaluation of improved strains of parasitoids (Braconid) and predators in the field against *O. arenosella*

The experiment was initiated in Undrajavaram, Tanuku mandal, West Godavari district. The pest incidence reduced to 100 per cent at three months after release in the T₁ – treatment [Olfactory stimulated strains of *Parasitoids*], whereas in T₂ – treatment [the non- Olfactory stimulated strains of *Parasitoids*] the pest incidence reduced to 83.5 percent of after three months of release of parasite.

Field efficacy of *Goniozus nephantidis* against the coconut black headed caterpillar

Treatment	No of larvae/ Leaf let [Pre-Release count]	No of larvae/ Leaf let/Tree Post release data	Per cent Parasitization	Post Release observation
T1 [Conditioned]	18.00	4.16	76.9	1 st month After release
T1 [Conditioned]	18.00	3.02	83.2	2 nd month After release
T1 [Conditioned]	18.00	0.00	100.00	3 rd month After release
T2 [Unconditioned]	18.10	6.71	62.90	1 st month After release
T2 [Unconditioned]	18.10	5.10	71.8	2 nd month After release





Treatment	No of larvae/ Leaf let [Pre-Release count]	No of larvae/ Leaf let/Tree Post release data	Per cent Parasitization	Post Release observation
T2 [Unconditioned]	18.10	2.99	83.5	3 rd month After release
T3 [Control]	19.12	18.92	1.05	1 st month After release
T3 [Control]	19.12	18.73	2.0	2 nd month After release
T3 [Control]	19.12	27.36	+43.09 increase in pest	3 rd month After release

Studies on field efficacy of commercially available pheromones against coconut pests-viz., rhinoceros beetle and red palm weevil

Studies on red palm weevil pheromone lures were conducted during the year with three available lures i.e., Central Plantation Crops Research Institute (CPCRI-T₁), Chemtica (T₂), Pest Control India (PCI-T₃) and Brook lands (T₄). Maximum number of weevils were trapped in the month of July in Chemtica (T₂) treatment and throughout the observation period the highest number of weevils were trapped in Brooklands lure with a catch of 22.50 weevil/trap/month followed by Chemtica 19.42.

Number of Red palm weevils trapped in different pheromone traps April 2011 to March 2012

Treatments	Total No. of weevils trapped			Average no. of weevils/trap/month	Sex ratio M: F
	Male	Female	Total		
T ₁ – CPCRI lure (8 traps)	698	572	1270	13.23	1.00 : 0.82
T ₂ – Chem Tica (4 traps)	474	458	932	19.42	1.00 : 0.97
T ₃ – PCI lure (4 traps)	465	407	872	18.17	1.00 : 0.88
T ₄ – Brook lands (4 traps)	566	514	1080	22.50	1.00 : 0.91
T ₅ – Control	—	—	—	—	—

Number of red palm weevils trapped in different months [from April, 2011 to March, 2012]

Time of Observation	T ₁ – CPCRI		T ₂ – Chemtica		T ₃ – PCI		T ₄ – Brooklands		T ₅ - Control
	Total No. of Weevils	Average (No. of weevils / trap)	Total No. of Weevils	Average (No. of weevils / trap)	Total No. of Weevils	Average (No. of weevils / trap)	Total No. of Weevils	Average (No. of weevils / trap)	
Apr'11	32	4.00	35	8.75	50	12.50	55	13.75	—
May' 11	80	10.00	74	18.50	47	11.75	40	10.00	—
June' 11	141	17.63	78	19.50	91	22.75	156	39.00	—
July' 11	269	33.63	266	66.50	207	51.75	262	65.50	—
Aug' 11	67	8.38	45	11.25	44	11.00	34	8.50	—
Sep' 11	273	34.13	101	25.25	116	29.00	200	50.00	—
Oct' 11	173	21.63	35	8.75	80	20.00	75	18.75	—
Nov' 11	116	14.50	59	14.75	81	20.25	86	21.50	—
Dec' 11	61	7.63	44	11.00	43	10.75	43	10.75	—
Jan' 12	48	6.00	40	10.00	31	7.75	26	6.50	—
*Feb'12 12	53	6.63	81	20.25	47	11.75	39	9.75	—
Mar' 12	76	9.50	74	18.50	35	8.75	64	16.00	—
Total/ Avg	115.75	14.47	77.67	19.42	72.67	18.17	90.00	22.50	—





Rhinoceros beetle

Studies conducted with Rhinoceros Beetle lures (Rhino lures) with two available commercial firms i.e., Chemtica (T_1) and Pest Control India Ltd. (T_2) arranged in two different gardens revealed that highest number of beetles were trapped in Chemtica lure (2.08 beetles/trap/month) while PCI lure trapped 0.79 beetles/trap/month during the experimental period.

Number of Rhinoceros Beetles trapped in different traps from April 2011 to March 2012

Treatments	No. of beetles trapped			Average no. of beetles / trap /month	Sex ratio M: F
	Male	Female	Total		
T_1 – Chemtica lure (4 traps)	60	40	100	2.08	1.00 : 0.67
T_2 – PCI lure (4 traps)	22	16	38	0.79	1.00 : 0.73
T_3 – Control	—	—	—	—	—

Number of rhinoceros beetles trapped in different months from April 2011 to March 2012

Observation	T_1 - Chemtica Lure (4 traps)		T_2 - PCI Lure(4 traps)		T_5 - Control
	Total No. of beetles	Average(No.of beetles/ trap)	Total No. of beetles	Average(No.of beetles/ trap)	
Apr' 11	7	1.75	0	0	—
May' 11	0	0	0	0	—
June' 11	0	0	0	0	—
July' 11	5	1.25	12	3	—
Aug' 11	0	0	23	5.75	—
Sep' 11	21	5.25	3	0.75	—
Oct' 11	33	8.25	0	0	—
Nov' 11	24	6	0	0	—
Dec' 11	3	0.75	0	0	—
Jan' 12	5	1.25	0	0	—
*Feb' 12	2	0.5	0	0	—
Mar' 12	0	0	0	0	—
Total / Avg.	8.33	2.08	3.17	0.79	—

Validation of integrated pest management technology for *Oryctes rhinoceros* in different regions

Voodimudi village [P.Gannavaram Mandal] was selected for the experiment implementation. The Metarhizium culture is being maintained at Entomology lab, HRS, Ambajipeta and Baculovirus culture was obtained from CPCRI, Kayangulam. Pheromone lures were also obtained from M/s. Chem Tica Pvt. Ltd., Trichur were installed in the gardens. The observations revealed that leaf damage came down from 58.4 to 5.0, spindle damage from 25 to 3 per cent and incidence from 60 to 5 per cent validating the importance of IPM in the management Of Rhinoceros beetle.





Pre and Post treatment infestation levels of Rhinoceros Beetles in the experimental garden

Garden No.	Name of the village	Treatment Lure	Pre treatment (%) Intensity (June 10)			Post treatment (%) Intensity (Dec 10)			Post Treatment Intensity (June 11)			Post Treatment Intensity (March 12)		
			Leaf dmage	Spindle Damage	Incidence	Leaf dmage	Spindle Damage	Incidence	Leaf dmage	Spindle Damage	Incidence	Leaf dmage	Spindle Damage	Incidence
1.	Voodimudi	Chemtica Rhino lure	58.4	25.0	60	37.5	23.22	50	19.14	42	30	5.00	3.0	5

Effect of management practices on the incidence and intensity of coconut pests in other experimental plots

Monitoring of coconut pests in the garden where fertilizer application is given through micro irrigation technique. Mild to medium incidence of mite intensity and low incidence of rhinoceros beetle was recoded in the coconut garden where fertilizers were applied through micro-irrigation.

Development of coconut based integrated cropping system model for different agro climatic regions.

In the garden where integrated cropping system was implemented 100% intensity of mite was recorded however it is in mild scale, where as low incidence of rhinoceros beetle was observed.

Mass multiplication of parasitoids of *Opisina arenosella*.

About 6.07 lakhs parasitoids were reared in the laboratory during the year. The infestation of coconut black headed caterpillar was recorded in the following villages of Andhra Pradesh viz.

In response to the indents received from the farmers of above places 4.18 lakhs Parasitoids were supplied to the farmers to cover an area of 2135 acres.

District	Village
East Godavari	Savarapalem, Matlapalem, Thalarevu, N.Kothapalli, Thapeswaram, S.Yanam, Mallavarm, Atreyapuram, Komaragiripatnam, Gundipudi, Thurpulanka, Chinthalamori, Samarlakota, Allavaram, Uppalaguptam, Amalapuram, Tuni, Dwarapudi, Mandapeta, Samanthakurru, Turupupalem
West Godavari	Likhitapudi, Digamarru, Pattavala, Poduru, Kavitam lakulu, Ramayanapuram, Zinnuru, Nalapogula, Agarthapalem, Veerupadu, Konithiwada, Komatithippa, Mathsyapuri, Pulapalli, Purushothampalli , Darbarevu, korukollu
Visakhapatnam	S.Rayavaram
Nellore	Indukurupeta



Influence of crop habitat diversity on the occurrence of coconut pests

The data reveals that mild to medium intensity of coconut pests like Eriophyid Mite and Rhinoceros Beetle was noticed in all the gardens. Data recorded in the month of August 2011 suggest that the mite scale was lowest in the T6 [mono-cropped garden] when compared to remaining intercropped garden. Similarly the mite populations per 4mm² was lowest in the mono-cropped garden followed by T4 [Coconut + high density multiple species cropping system]. The lower infestation of the mite in the monocrop coconut garden, in contrast to intercropping systems may be contributed to the higher rainfall patterns in the region in the preceding months. However data recorded in the month of November 2011, shows that the mite infestation [grade index] was statistically at par in all the coconut garden [Intercropped and monocrop garden] and the mite populations per 4mm² was lowest in the mono-cropped garden followed by T4 [Coconut + high density multiple species cropping system]. In contrast, data recorded in February 2012 reveals that T1 [Coconut + Banana] and T6 [mono-cropped garden] were statistically at par with respect to the mite infestation [grade index] while there is no difference in mite infestation in the remaining intercrop gardens Viz., T3 [Coconut + Cocoa], T4 Coconut + high density multiple species cropping system and T4 [Coconut + Yam] which were statistically at par.

The coconut leaf damage caused by rhinoceros beetle can be attributed to the farm management practices. The leaf damage was lowest in the T6 [mono-cropped garden] which were statistically different than other gardens as the mono-cropped garden is always kept clean, ploughed and devoid of any beetle harboring areas. However, in the other intercropped gardens the per cent leaf damage was statistically at par.

Intensity of different coconut pests recorded in 2011-12

Treatments	Eriophyid Mite			Rhinoceros Beetle					
	Scale			Leaf damage (%)			Spindle damage (%)		
	Aug 11	Nov 11	Feb 12	Aug 11	Nov 11	Feb 12	Aug 11	Nov 11	Feb 12
T ₁ - Coconut + Banana	2.18	2.39	2.40	13.53	13.70	18.8	20	10	10
T ₃ - Coconut + Cocoa	2.20	2.40	2.35	19.69	14.69	12.5	30	20	20
T ₄ - Coconut + HDMSC	2.13	2.12	2.04	19.34	18.67	13.46	20	40	30
T ₅ - Coconut + Yam	3.17	2.67	3.23	14.69	12.70	18.10	10	30	10
T ₆ - Mono croppedgarden	3.72	2.98	2.93	14.72	14.01	9.76	20	10	—

Studies on seasonal incidence pests of cocoa in 2011-12

The cocoa pest succession and intensity was determined in both fixed plot and rowing surveys operated for one year from June 2011 to April 2012 at ten locations in Godavari districts of Andhra Pradesh .Various locations covered under rowing survey are Ambajipeta, Atreyapuram, Bandarulanka, Tuni, Ravulapadu, Munganda, Ravulapalem ,Paveleva ,Isakapudi, Sakhinetipalli, whereas the HRS, Ambajipeta was considered for fixed plot survey . The Brown leaf chaffer beetle, *Adoretus versutus* and black leaf chaffer beetle, *Apogonia blanchardi* were observed during May – June. However, the bagworm





Pteroma plagiophelps was noticed all round the year and the tussock moth caterpillars and hairy caterpillars, semi-loopers were prevalent between December - April. The sucking pests viz., mealy bugs, cow bugs, aphids also found to suck the sap contents of tender twigs, cherils/ fruits.

Pests of cocoa crop and their natural enemies observed during the study period

S. No.	Pest	Nature of damage	Plant part attacked	Natural enemies
1	Brown leaf chaffer beetle [<i>Adoretus versutu</i>]	Defoliator	Leaves	—
2	Black leaf chaffer beetle [<i>Apogonia blanchardi</i>]	Defoliator	Leaves	—
3	Bag worm [<i>Pteroma plagiophelps</i>]	Defoliator	Leaves	<i>Brachymeria sp</i> <i>Xanthopimpla sp</i>
4	Leaf eating caterpillars [<i>Dasychira sp, Euproctis sp, lymantria sp, Acria sp</i>]	Defoliator	Leaves, tender twigs, flowers, flower buds, small cherils	<i>Coccinellids, Chrysopa sp.</i> and spiders
5	Semi loopers	Defoliator	Leaves, tender twigs, flowers, flower buds, small cherils	<i>Coccinellids, Chrysopa sp.</i> and spiders
6	Slug caterpillar	Defoliator	Leaves	<i>Apanteles sp</i>
7	Mealy Bug	Sap suckers	Leaves, tender twigs, flowers, flower buds, small cherils	<i>Coccinellids, Chrysopa sp.</i> and spiders
8	Aphids	Sap suckers	Leaves, tender twigs, flowers, flower buds, small cherils	<i>Coccinellids, Chrysopa sp.</i> and spiders
9	Thrips	Sap suckers	Leaves, tender twigs, flowers, flower buds, small cherils	<i>Coccinellids, Chrysopa sp.</i> and spiders
10	Cow bugs	Sap suckers	Flowers, flower buds, small cherils	—
11	Leaf hoppers	Sap suckers	Flowers, flower buds, small cherils	—
12	Shield bugs	Sap suckers	Small cherils,pods	—
13	Coreid bugs	Sap suckers	Small cherils,pods	—
14	Rats & squirells	Internal contents of pods	Pods	—

Management of Cocoa pests

Defoliator pests : Among the various insecticides tested against the bagworm [*Pteroma plagiophelps*], 100 per cent reduction in the pest population at 1 D AS was caused by Carbaryl 50% WDP, Acephate 75% SP and Quinalphos 25% EC. However the 100 per cent reduction in the pest population the Neem oil Azadirachtin EC 1500 ppm took 3 days and Endosulfan 35% EC required two days after spraying.





Sucking pests : Among the various insecticides tested against the mealy bug [*Dasychira mendosa*] Acephate (75% SP) and Cholorpyriphos 20 % EC was very effective causing 100 per cent reduction in the pest population at 3 DAS and for profenophos (50 % EC) took four days.

Efficacy of different insecticides against various Lepidopteran pests of Cocoa

Treatment		Pre spraying data			Post spraying data			Pop red at 1 DAS			Pop red at 1 DAS		
		24 hrs before			at 1 DAS			[No]			[%]		
		BW	HCP	WW	BW	HCP	WW	BW	HCP	WW	BW	HCP	WW
T1	Neem oil	45.0	28.0	125.0	23.0	10.0	45.0	22.0	18.0	80.0	48.9	64.3	64.0
T2	Carbaryl	46.0	26.0	115.0	0.0	0.0	0.0	46.0	26.0	115.0	100.0	100.0	100.0
T3	Endosulfan	41.0	29.0	94.0	2.0	2.0	15.0	39.0	27.0	79.0	95.1	93.1	84.0
T4	Quinalphos	44.0	19.0	81.0	0.0	0.0	0.0	44.0	19.0	81.0	100.0	100.0	100.0
T5	Profenophos	47.0	25.0	77.0	7.0	2.0	22.0	40.0	23.0	55.0	85.1	92.0	71.4
T6	Acephate	43.0	35.0	80.0	0.0	0.0	0.0	43.0	35.0	80.0	100.0	100.0	100.0
T7	Control	48.0	36.0	122.0	40.0	28.0	121.0	-8.0	-8.0	-1.0	-16.7	-22.2	-0.8

DAS : Days after spraying; BW :Bag worm [*Pteroma plagiophelps*] ; HCP : Hairy caterpillars [*Euproctis fraterna*] ; WW: Web worm [*Acria sp*] ; Pop red : Population reduction

Efficacy of different insecticides against mealy bug in cocoa

Treatment		Average no of Mealy bugs per plant						
		1DAS	2 DAS	3 DAS	4 DAS	5 DAS	6 DAS	7 DAS
T1	Profenophos 50 % EC	39	21	9	0	0	0	0
T2	Acephate 75 % SP	33	19	0	0	0	0	0
T3	Choripyriphos 20 % EC	12	2	0	0	0	0	0
T4	Dimetoate 30% EC	31	22	11	9	7	5	0
T5	Acetamiprid 20% SP	27	17	11	5	0	0	0
T6	Imidachloprid 17.8 SL	20	13	8	2	0	0	0
T7	Control	50	50	50	50	50	50	50

* DAS : Days after spraying

Studies on the bio-efficacy of rodenticides in cocoa crop

The second generation anticoagulants rodenticide, bromodialone 0.005 % is tested against the *Rattus rattus* which is the common pest of coconut as well as the cocoa crop. The data given in table reveals that 76.97, 83.82, 96.88 and 100 per cent reduction in the damage of cocoa pods is achieved in the one, two, three and four weeks after the administration of the bait. Whereas, in the control plot the rat infestation rose from 149 to 189 damaged pods in fourth week.



Effect of Bromodialone 0.005% on the Rat infestation in Cocoa

Week	T 1	T 2	C 1	C 2	RCS = 100 [1- T 2 x C 1/ T 1 x C 2]
Week 1	157	41	149	169	76.97
Week 2	157	30	149	176	83.82
Week 3	157	6	149	183	96.88
Week 4	157	0	149	189	100.00

Rodent control success [RCS] = 100 [1 – {(T2xC1)/T1xC2)}] where

T₁ – Pre-treatment damaged pods by rodents in treatment plots

T₂ – Post-treatment damaged pods by rodents in treatment plots

C₁ – Pre-treatment damaged pods by rodents in control plots

C₂ – Post-treatment damaged pods by rodents in control plots

Studies on uptake, translocation and persistence of azadirachtin in coconut and its effect on coconut mite and defoliators through root feeding.

Azadirachtin 10000 ppm @ 10 ml + 10 ml of water was administered to the coconut trees and bioassays were conducted against the 3rd instar larvae of coconut black headed caterpillar and mortality rates were compared against the standard check (Monocrotophos @ 10 ml + 10 ml of water). The results suggest that Monocrotophos required 3 days whereas, Azadirachtin required 5 days for absorption. Consequently, Monocrotophos resulted in 100 % mortality in seven days whereas, the Azadirachtin resulted in only 20 % mortality and there is no reduction was observed for mite population in both the treatments.

Studies on field evaluations of new systemic insecticides against coconut mite through root feeding

Among the various newer insecticides, monocrotophos was the quickest in 2 days followed by indoxacarb [3 days]. The bioassay studies were conducted with the leaves of the trees treated and the results suggests that monocrotophos resulted in 100% followed by 20 % in fipronil and Azadiractin and 10 % in Emamectin Benzoate mortality of 3rd instar larvae of *O.arenosella* at 15 days after root feeding.

Pesticide	Pesticide + Water [ml]	Absp [Days]	BHCP*	Mite @	SCP #
T1 Emamectin Benzoate1% EC	5 + 45	6	10	0	100
T2 Indoxacarb 14.5 SC	5 + 45	3	0	0	100
T3 Thiamethoxam 25% WG	5 + 45	6	0	0	100
T4 Imidachloprid 17.8 SL	10 + 40	6	0	0	100
T5 Fipronil 5 % SC	5 + 45	7	20	0	100
T6 Thiacloprid 21.7% SC	5 + 45	6	0	0	100
T7 Monocrotophos 36 SC	15 + 15	2	100	0	100
T8 Azadirachtin 10000 ppm	15 + 15	5	20	0	100
T9 Water	30	2	0	0	0

* Percent mortality of 3rd instar larvae of coconut black headed caterpillar (BHCP) @ 15 days after RF

@ Percent mortality of mite @ 15 days after RF

Per cent anti feedancy of Slug caterpillar (SCP) in field conditions @ 15 days after RF



Survey, identification and evaluation of Pathogenicity of entomo-pathogenic fungi *Fusarium solani* to lepidopteran pests of Cocoa in laboratory conditions

The third instar larvae of slug caterpillar was collected from the field and were kept on fresh cocoa leaves and the experiments were carried out in a climate-controlled room at $25 \pm 2^\circ\text{C}$, $70 \pm 5\%$ relative humidity and under 16-h photoperiod. $80 \times 70 \times 70$ mm autoclave-sterilized plastic boxes each lined with three layers of sterile wetted blotting paper. The isolates of entomopathogenic fungi *Fusarium solani* were screened against third instar larvae of Slug caterpillar. The conidial suspensions were adjusted to the required concentration after conidial counts by using an improved Neubauer haemocytometer at $400\times$ magnification. The viability of conidia of each isolate were determined by inoculating them onto water agar (1%) and assessing the germination after 24 h of incubation at $24 \pm 2^\circ\text{C}$ and under 16-h photoperiod. In order to demonstrate the virulence of isolates of entomopathogenic fungi *Fusarium solani* to lepidopteran larvae, they were treated with various conidial concentrations of the fungus i.e. 1×10^{-1} to 1×10^{-10} . The results indicated that all the concentrations resulted in 100 % mortality of the insect even at lower concentration.

MEDICINAL & AROMATIC PLANTS

At BRS, Venkataramannagudem, various insect species on some medicinal crops were recorded and categorized based on their feeding habits during the year. Crops, viz., *Withania somnifera* (Aswagandha) & *Solanum nigrum* (Makoi) were found to be infested by Coleopteran pest (*Henosepilachna virginliopunctata*), yellow thrips & white mites on Makoi were found to be the sucking complex on *Solanum nigrum*. Brinjal shoot & fruit borer (*Leucinodes arbonalis*) was recorded as fruit borer in *Solanum nigrum*. Similarly, Bhendi insect pests i.e. Leaf hopper (*Amrasca biguttula biguttula*) Red cotton bug (*Dysdercus cingulatus*), Red spider mite (Tetranychid species), Dusky cotton bug (*Oxycarenus hyalipennis*) and shoot and fruit borer (*Marias vittella*) were recorded in Musk mallow (*Jibelmoschus moschatus*).

In Aswagandha *Henosepilachna virginliopunctata* was recorded from one month old crop to crop maturity stage with peak infestation of 33grubs & adults/ 5plants during 2nd fortnight of December, 2011. The yield loss of 23.04 % to 74.05 % was observed in untreated plots when compared to neem oil treated plots. Natural enemies against hadda beetles on *Aswagandha* revealed that hadda beetle was parasitized during egg and grub stages by two *Eulophid* parasitoids. Among the parasitoids, *Pediobius foveolatus*, a tiny black wasp is found to be grub parasitoid along with egg parasitoid *Tamarixia* Species were identified.



Screening of germplasm against pests of mango (stone weevil, hoppers, thrips, scales, mealy bugs) at FRS, Sangareddy.



Population dynamics of major pests of mango (Hopper and fruit fly) at FRS, Sangareddy



Development of Integrated pest management module for Brinjal shoot and fruit borer at HRS, Mahanandi.



Screening of germplasm against powdery mildew disease in mango at FRS, Sangareddy



Management of mango anthracnose *Colletotrichum gloeosporioides* at FRS, Sangareddy.



Studies on mango malformation at FRS, Sangareddy



Management of Blossom blight of mango *Colletotrichum gloeosporioides* at FRS, Sangareddy





E. PLANT PATHOLOGY

Survey and surveillance of diseases in major horticultural crops existing in Rayalaseema Zone

At HRS, Mahanandi, survey was conducted in vegetable and fruit crop growing areas in Kurnool, Anantapur and Prakasam districts of Andhra Pradesh. In Kurnool district the damping off disease 5-10% in tomato, onion, brinjal, chillies and marigold nurseries, 10-15% of Groundnut Bud Necrosis virus disease observed in tomato crop, 40-50% root rot and wilt in chillies crop, 2-5% powdery mildew disease was recorded in chillies and marigold crops.

FRUITS

MANGO

Screening of germplasm against powdery mildew disease in mango.

At FRS, Sangareddy, 266 mango cultivars were screened for disease resistance against the disease of Powdery mildew in field condition by using 0-5 scale. In 0% incidence, 178 varieties mainly Amarpali, Jalal, Kesar, Litchi, Mallika, Manjeera, Pedda Jahangir, Prabha shanker, , Sulthan bhog, Thambuva, Vanraj, and Zardalu. The highly resistant varieties (1-20%) recorded in 53 cultivars viz Allampur Beneshan, Beneshan, Himsagar, Himayath, Navneetam, Neelum, Peddarasam, Royal special, and Zarda. The resistant (21-40%) cultivars recorded in 31 mainly are Dashehari, Khaja pasand, Khasulkhas, Nawab pasand, Totapari, and Zafarani fajri. Moderately susceptible cultivars (41-60%) in FRS Selection viz., Manoranjan and Rose. The susceptible (61-80%) variety is Pulihora whereas the highly susceptible (> 80%) variety was not recorded.

Studies on mango malformation

At FRS, Sangareddy, about 296 mango cultivars were screened against floral malformation by using scale. Resistant : (0 %) recorded in 211 varieties viz., mainly Alphanso, Himsagar, Himayuddin, Jalal, Kesar, Mallika, Manjeera, Prabha shanker, Suvarnarekha, and Zafarani and Zardalu. Moderately Resistant (Upto 10%) incidence recorded in 38 varieties viz., Amarpali, Beneshan, Dashehari, Himayath, Langra, Navneetam, Neelum, Totapari and Vattam. Moderately Susceptible (11-20%) recorded in 3 varieties viz., Aga saheb, Dalbia and Fernandin. Susceptible (21-30%) varieties (3) are Beauty Maclean, Kaju, Parasapalli Doodia Highly Susceptible (above 31%) variety is Manoranjan of mango.

Epidemiological studies of mango Powdery Mildew.

At FRS, Sangareddy, the powdery mildew disease was first noticed in fourth week of January, 2012 on Dashehari (Susceptible) and continued upto March first week (10th Std. week). In both the varieties (Dashehari -14.7% and Baneshan -8.0%) the maximum PDI was observed on 4th week of February (8th Std week) i.e., up to fourth week of March. It was observed that a range of critical temperature critical (15.00C -37.60C) and Relative humidity (65.90%) was found congenial for development for the disease. The minimum and maximum temperatures also positively correlated with PDI of Powdery mildew.





Management of mango anthracnose *Colletotrichum gloeosporioides*

At FRS, Sangareddy, among all the treatments, Tricyclozole (0.1%) followed by Chlorothalonil (0.2%) were found superior over the other treatments in controlling the disease.

Management of Blossom blight of mango *Colletotrichum gloeosporioides*

At FRS, Sangareddy, among all the treatments, Tricyclozole (0.1%) followed by Chlorothalonil (0.2%) were found superior over the other treatments in controlling the disease.

Seasonal occurrence of different diseases of Mango

At FRS, Sangareddy, survey (Roving) was conducted to record the disease incidence of mango during the period in the districts of Krishna, Mahaboobnagar and Rangareddy districts of Andhra Pradesh. The Anthracnose disease is severe during rainy season (22.9%) when compared to winter and summer. The Powdery mildew (21.0%) and Malformation(18.3%) diseases were severe during February month. The maximum disease severity was observed in the winter season were Red rust (12.60%), Grey blight (9.50%), Black banded disease (4.00%) and Gummosis (6.50%) where as in summer season Blossom blight (14.46%), Sooty moulds (21.80%) and Bacterial blight (13.76%) were recorded.

Cost effective management anthracnose of mango by pre and post harvest treatment

At FRS, Sangareddy, among the treatments, two sprays of Carbendazim @ 0.1% at 30 days prior to harvest found superior followed by One spray of Carbendazim with by hot water treatment over control the controlling the anthracnose disease incidence.

GUAVA

Integrated management of guava wilt

At FRS, Sangareddy, the resistant root stock material inter-specific hybrid (*Psidium mole* X *P. guajava*) grafted with Lalith variety was procured from CISH, Lucknow. The Horticultural Research Station, Nuziveedu farm has been selected to execute the experiment, where the four acres of guava garden removed due to wilt disease. The planting was taken up in sick plot during the October -2011. The wilting symptoms were observed in all the treatments.

SWEET ORANGE

Survey, incidence of disease and identification of causal agents

Roving Survey was conducted in 25 sweet orange gardens of Ananthapur, Mahaboobnagar, Prakasam and Nalgonda district. Citrus greening (42.22-22.75%) and citrus yellow mosaic (36.17-12.34%) are the major diseases observed. Incidence of dry root rot (13.55-10.35%), Scab (8.25-16.35%), twig blight (9.92-13.6%), were also observed along with Zinc (20.87-50.17%) and Magnesium (20.1-29.13%) deficiency in the four districts of Andhra Pradesh

Twenty acidlime orchards were surveyed for occurrence of diseases in four districts of Andhra Pradesh, revealed that bacterial canker (100%), bark eruption (10.67-20.86%), citrus greening (13.7-21.18%), root rot (6.13-18.18%) twig blight (10.25-21.88%), LBWSD (3.8-6.88%) and were the major diseases identified.





Fixed plot survey conducted and the bacterial canker was high during July to December and highest in November (56.67%). Greasy spot was recorded throughout the year with a peak during September and October. Its incidence was high in matured old leaves than young leaves on Sweet orange with a peak during September and October (11.67%).

Prediction equations are developed for greasy spot and twig blight in Sweet orange using five years (1998, 2001, 2002, 2003 & 2005) chronological weather data and the prediction models are validated using 2008, 2009 and 2010 disease index and weather data.

Validation was done for testing the goodness of fit using four years (2008, 2009 & 2010 and 2011). The three equations predicting the next week's disease incidence and showing the disease trend very efficiently in the pathosystems.

Crop	Disease	Prediction equation (Five years)	R square
Sweet orange	Greasy spot	$Y = 7.511 - 0.211X(T_{max}) + 0.211X(T_{min}) + 0.018X(Rh_1) - 0.134X(Rh_2) + 0.975X(Gs_{-1})$ <p>Y = Predicted Greasy spot T max = 15 days average Maximum Temperature T min = 15 days average Minimum Temperature Rh1 = 15 days average Morning Relative humidity Rh2 = 15 days average Evening Relative humidity Gs₋₁ = Previous weeks Greasy spot incidence</p>	R ² = 0.90
	Twig blight	$Y = 1.108 - (0.004XT_{min}) + (0.036XRh_2) + (0.926XTB_{-1})$ <p>Y = Predicted Twig blight T min = 15 days average Minimum Temperature Rh2 = 15 days average Evening Relative humidity TB₋₁ = Previous weeks Twig blight incidence</p>	R ² = 0.89
Acid Lime	Bacterial Canker	$Y = -16.67 + 0.565XT_{max} - 0.151XT_{min} + 0.086XRh_1 - 0.079XRh_2 + 0.859XCan_{-1}$ <p>Y = Predicted Leaf Canker T max = 15 days average Maximum Temperature T min = 15 days average Minimum Temperature Rh1 = 15 days average Morning Relative humidity Rh2 = 15 days average Evening Relative humidity Can₋₁ = Previous weeks Leaf Canke</p>	R ² = 0.89





Incidence of diseases and disorders on sweet orange during 2011

S No.	Diseases	Nalgonda	Ananthapur	Mehaboobagar	Prakasam
1	CYMV (%)	36.17	12.34	27.36	31.65
2	Huanglongbing (Greening) (%)	22.15	42.22	31.15	30.07
3	YCV (%)	0.0	0.00	0.00	0.00
4	Twigblight (%)	10.91	13.67	9.93	10.52
5	Diplodia gummosis (%)	3.18	2.80	2.34	3.58
6	Phytophthora gummosis (%)	3.10	2.70	2.15	2.87
7	Root rot (%)	13.55	14.07	10.35	10.55
8	Sooty mold (%)	3.38	2.78	0.00	1.01
9	Pre-harvest stem rot (%)	6.38	8.90	8.58	18.45
10	Pink disease (%)	1.00	1.00	1.00	0.50
11	Powdery mildew (PDI)	0.00	0.00	0.00	0.00
12	Scab (on fruit PDI)	10.50	12.56	16.34	8.25
13	Canker (on fruit PDI)	9.50	8.56	8.86	3.25
14	CTV (%)	1.00	1.50	1.50	1.00
15	Zn deficiency (%)	40.18	50.17	35.65	20.87
16	Mg deficiency (%)	28.4	29.13	20.46	20.11
17	Sun burn (%)	4.58	9.68	8.85	6.87
18	Bud Joint Rot (%)	8.00	8.67	3.89	6.96

Incidence of diseases and disorders on Acid lime during 2011

S.No.	Disease	Ananthapur	Nalgonda	Prakasam	Mehaboobnagar
1	Canker (PDI)	100.00	100.00	100.00	100.00
2	Bark eruption (%)	20.86	18.66	20.82	10.67
3	Huanglongbing (Greening) (%)	21.18	13.70	20.51	10.86
4	CYMV (%)	0.50	1.05	1.85	1.80
5	YCV (%)	0.00	0.00	0.00	0.00
6	CTV (%)	6.86	5.80	5.55	4.82
7	Root rot (%)	6.18	18.18	10.45	11.37
8	Pink disease (%)	0.18	0.18	0.89	1.80
9	Diplodia gummosis (%)	1.26	0.16	1.23	0.85
10	Phytophthora gummosis (%)	0.18	1.68	1.35	1.16
11	Twig blight (%)	21.88	10.25	13.86	14.17
12	Sooty mold (%)	4.88	7.85	7.86	6.88
13	LBWS disease (%)	4.80	3.80	6.88	5.50
14	Iron deficiency (%)	10.00	6.75	8.40	7.95

Integrated management of fungal disease of citrus

Dry root rot (*Fusarium, Rizoctonia*) (Pot culture experiment)

In the integrated management of dry root rot using the treatment Mancozeb (0.25%) + *Pseudomonas fluorescence* (100g/tree) + 2kg neem cake/ tree the percent recovery is significantly high (86.00%) when compared to Mancozeb (0.25%) + *Pseudomonas fluorescence* (100g/tree) and control.





Integrated management of root rot in citrus

T. No.	Treatment	No. of trees tested	No. of plants recovered	Dried plants
T1	T1 (Mancozeb (0.25%) + application of <i>Pseudomonas fluorescense</i> (100g/tree)	50	39 (78.00%)	11 (22.00%)
T2	T2 (T1 + 2kg neem cake/tree)	50	43 (86.00%)	7 (14.00%)
T3	Control	50	32 (64.00%)	18 (36.00%)
	CD at 5%		7.79	-
	Cv (%)		12.34	-

Screening of promising root stocks against dry root rot (*Fusarium*, *Rizoctonia*) (Pot culture experiment)

In pot culture experiment preliminary results showed that NRCC-2(21.4%) & Marmalade orange (rahuri) (28.1%) with high mortality, where as other five root stocks viz., NRCC4, 5, 6, Rough lemon Akola and Rangpur lime Shirampur showed low mortality (below 10%).

S.No.	Root stock	% Mortality
1.	NRCC 2	18.5
2.	NRCC 4	8.05
3.	NRCC 5	4.63
4.	NRCC 6	0.00
5.	Rough lemon Akola	6.75
6.	Rangpur lime Shirampur	6.36
7.	Marmalade orange (Rahuri)	38.15
8.	Rough lemon Akola	21.50
9.	Australian Sour orange (Tirupati)	1.05
10.	Rough lemon (Jatti Katti)	22.75
11.	Rangpur lime (Abhore)	4.75
	CD 0.05	2.78
	CV%	19.3

Identification and characterization of CTV isolates

The collected CTV isolates are indexed on acid lime and confirmed by DAC-ELISA. Extraction of RNA from acid lime bark using RNA extraction kit (Bangalore gene) was used for RT-PCR. For amplification, cMaster RT plus PCR system and cMaster RT kit (Eppendorf) were used. The primers used were

Forward primer 5' GGC GGA ATT CGA CGA CGA AAC AAA GGA A 3'.

Reverse primer 5' GAA GAT CTT CAA CGT CTG TTG AAT TTC C 3'

In RT-PCR assay the amplified product of 700 bp fragment was obtained in CTV infected sample and there was no amplification in healthy bark samples. The RT-PCR product of coat protein region was purified, cloned and sequenced. The sequence data was deposited in the Genbank. The clone is being used for production of recombinant antibodies for CTV diagnosis.



Nucleotide Sequence Analysis of CTV Isolates : The sequences of different CTV isolates, India-Tirupati (EF647587), India-Bangalore (AF501867), India-Mysore (HM853684), India-West Bengal (GQ475556), India-Rahuri (GQ475569), India-Delhi (AF501868), Pakistan (HQ329193), China (AY953983), Angola (DQ660351), Reunion (EU579435), Cyprus (EF491673), Cyprus (EF491672), USA (DQ355053), Egypt (DQ211658), Malaysia (HQ012393), Tunisia (EU579411), Croatia (EU579427), Iran (AY803277) and Morocco (EU579434) were obtained from GenBank and were aligned by using Clustal-X and comparison of aligned sequences was done with BioEdit sequence alignment Editor. It was also used to create phylogenetic tree using neighbor joining method. Robustness of tree was determined by bootstrap sampling of multiple sequence alignment and a consensus was generated with treecon for Windows (Version 1.36) package.

A maximum of 99.7% nucleotide sequence identity was observed between India-Tirupati and India-Mysore followed by 99.5% identity between India-Tirupati and India-Bangalore by 99.4% identity between India-Tirupati and India-West Bengal. While India-Tirupati and Morocco isolate showed only 94.0% homology and followed by 94.1% between India-Tirupati and Iran (Fig. 1). The similarity of the sequences was also studied at amino acid level. It also showed similar results (Fig. 2). However, the similarity was more at nucleic acid level in Indian CTV isolates when compared to amino acid level. The phylogenetic tree constructed based on nucleotide and amino acid sequences revealed very close relationship between India-Tirupati isolate and India-Mysore followed by India-Tirupati and India-Bangalore (Fig. 1 & 2). However, India-Tirupati CTV isolate maintained distant relationship with various other CTV isolates.

Fig. 1 : Phylogenetic tree depicting relationship of various CTV isolates based multiple nucleotide alignments of coat protein region

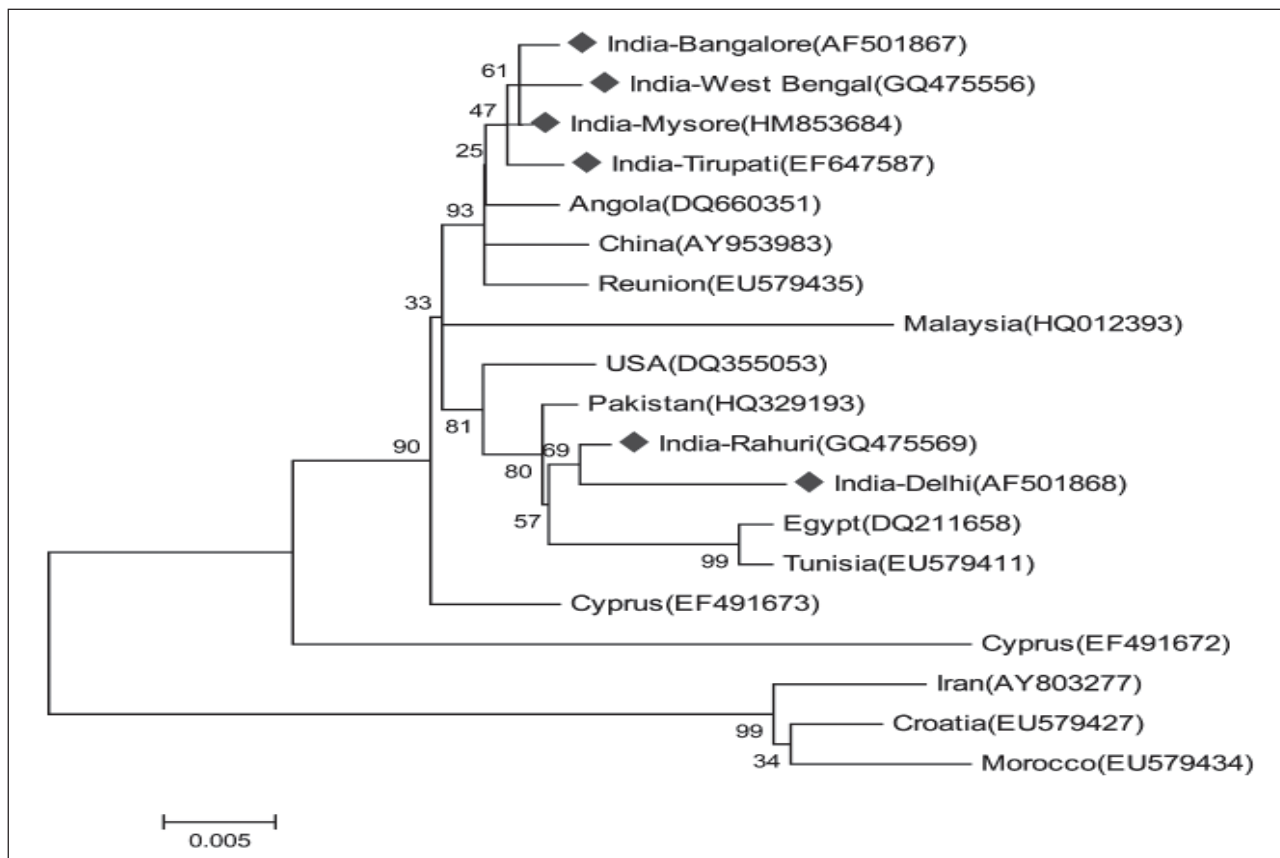
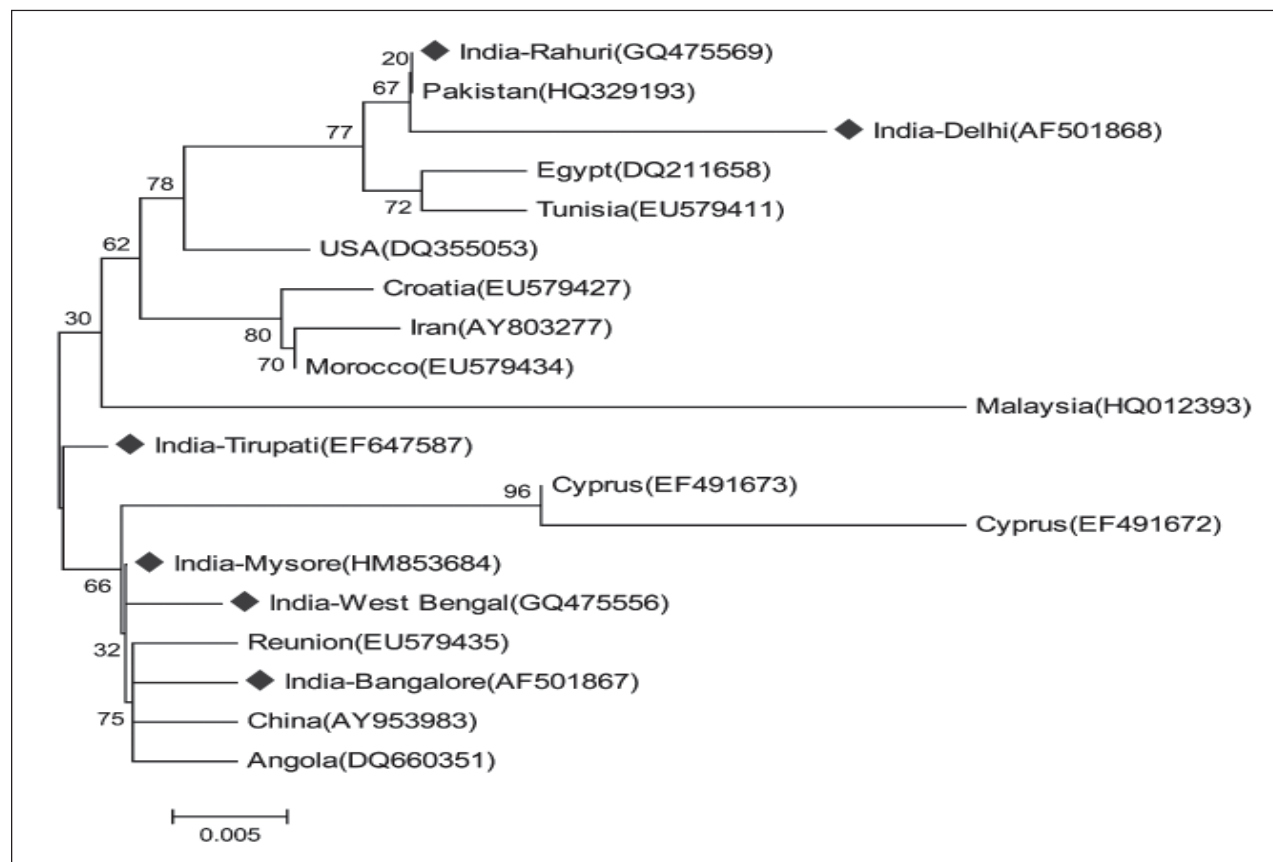




Fig. 2 : Phylogenetic tree depicting relationship of various CTV isolates based multiple amino acid alignments of coat protein region



Identification and Characterization of Citrus Yellow Mosaic Virus

The results on transmission of CYMV by *P. citri* showed that a minimum of 4 days of AAP is required to acquire and transmit the virus. Further, a single mealy bug is able to transmit the virus. Percent transmission increases with increase of number of insects/seedling A minimum of 1 day IAP required for 5 insects/seedling to inoculate the virus. Similarly percent transmission increased with increase of IAP and no. of insects/seedling and reached upto 100% with 10 insects/ seedling with 8hrs IAP. All the seedlings are tested by PCR and the positive one are used for calculation of present transmission.

Insect transmission of citrus mosaic during 2011

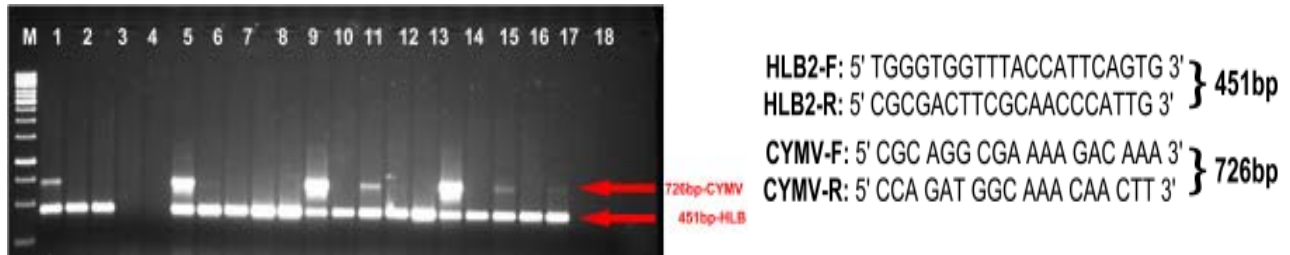
No of mealy bugs used / seedlings	APP ^a				IAP ^b			
	1	2	4	8	1	2	4	8
1	0	0	30	20	0	50	50	40
5	0	0	30	40	30	60	80	80
10	0	0	40	60	20	80	80	100

* No. of seedlings used were 5

a- IAP of 7 days was given; b- AAP of 7 days was given, * All plants are tested by PCR

The primer set CYMV-F(5'CGC AGG CGA AAA GAC AAA 3') and CYMV-R(5' CCA GAT GGC AAA CAA CTT 3') designed targeting ORF-III region and which amplified a product of 726bp. Field samples having mixed infection were screened for the detection of both diseases (CYMV and HLB) by multiplex PCR. The amplification of the desired product of 726bp for CYMV and 451bp for HLB were obtained in multiplex PCR in infected field samples. The HLB2 (F-5' TGGGTGGTTTACCATTTCAGTG3' and 5' GCGACTTCGCAACCCATTG 3') primer set has given very strong and bright bands compared to HLB1 (F-5'GCGCGTATCCAATACGAGCGGCA3' and R-5'GCCTCGCGACTTCGCAACCCAT3') primer set to amplify 16S ribosomal RNA region with a product size of 451bp (Fig-3).

Fig. 3 : Detection of CYMV and HLB by Multiplex-PCR in field samples of Sweet orange



Studies on greening disease

Isolation of HLB DNA and PCR amplification was established and being used for indexing and detection of HLB in Sathgudi sweet orange nucellar mother trees at this centre since February, 2004. The highest incidence of (30.54%) greening was recorded on sweet orange in Ananthapur district followed by Kadapa (23.5%). Incidence of vector was observed both on sweet orange and acidlime orchards in surveyed farmers' orchards.

The transmissibility of different citrus species against greening bacterium by patch inoculation method varied from 0 to 74.3%. Maximum transmission percentage was observed in *Citrus hystrix* and zero percent transmission was observed in Velaga, Calamandin, Citron, Lisbon lemon, Australian sour orange and Emmikaipoli after 28 months of inoculation of the plants with HLB. Transmissibility increased in Sungoyam (24.4%), *Citrus hystrix* (74.3%), Unshumandarin (19.5%) and chinnoto sour orange (50%). The plants are still under observation for symptom exhibition. In rest of the species transmissibility remained the same.

Screening of Citrus species against HLB resistance by bark patch inoculation

S.No.	Varieties	No. of plants inoculated	HLB* Positive 2010	Percent transmissibility (%) 2010
1	Sungoyam	123	30	24.4
2	Citrus hystrix	35	26	74.3
3	Unshumandarin	77	15	19.5
4	Velaga	9	-	0
5	Calamandin	2	-	0
6	Citron	3	-	0
7	Chinnotto sour orange	2	1	50
8	Lisbon lemon	19	-	0
9	Australian sour orange	36	-	0
10	Emmikaipoli	135	-	0

* Tested by PCR





To study the transmissibility a total of 441 plants belong to ten different citrus species were challenge grafted with HLB infected buds using patch grafting method under controlled conditions during 2009. Greening symptoms were observed eleven months after inoculation. DNA was isolated from all the inoculated plants and PCR was carried out using new set of CGB specific primers to confirm the HGB infection. Maximum transmissibility was observed in *Citrus hystrix* (74.3%) and zero percent transmission was observed in Velaga, Calamandin, Citron, Lisbon lemon, Australian sour orange and Emmikaipoli except Chinnotto sour orange which found free from HLB during 2009 and found 50% infected during 2010.

Supply of disease free plants

In 2011 a total of 0.741 lakh virus free sathgudi budlings budded on Rangpurlime are supplied to the orchardists of Andhra Pradesh, Karnataka, Tamil Nadu, Pondicherry and Maharashtra state. About 0.693 lakh virus free buds of Sathgudi sweet orange are supplied to registered nurseries below

Production and distribution of virus free planting material sweet orange cv. Sathgudi

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Sathgudi budlings	65,785	58,522	62,274	85,010	63,601	84,435	93,115	74,091
Sathgudi buds (lakhs)	4.517	5.3	2.53	1.04	1.03	94,140	1,17,496	69,634
Balaji acidlime	2,667	1,780	1,401	1,996	10,935	26,631	49,459	62,529

DNA Finger Printing Of Sathgudi Sweet Orange and Rangapur Lime

DNA was extracted from the eight selected citrus species viz., Sathgudi Sweet Orange, Kodur sathgudi, Rangpurlime Texas, Rangpur lime, Australian sour orange, Jambheri Assam, Rough lemon 8779, Balaji acid lime. Quantification of the DNA was done after RNase treatment. The purified and quantified DNA was stored at -20°C in small aliquots in sterile distilled water. The DNA of each isolate was subjected to polymerase chain reaction using 10 mer random primers (Operon Technology Inc. USA). The PCR conditions were optimized in terms of concentration of template DNA, Hot start *Taq* DNA polymerase and $MgCl_2$ concentration. A reaction volume of 25 μl , 75 ng DNA gave maximum number of reproducible bands and thus was considered ideal and used subsequently in all analysis. A titration of different concentration of Hot start *Taq* DNA polymerase and $MgCl_2$ showed that 1.5 Units of Hot start *Taq* DNA polymerase and 2.5 mM $MgCl_2$ in the final reaction mixture gave optimum, reproducible and well-resolved results. A higher or lower concentration resulted in either suboptimal or lack of complete amplifications. The final amplification assay contained 75 ng genomic DNA, 1.5 Units *Taq* DNA polymerase, 0.2 mM of dNTPs mix, 2.5 mM $MgCl_2$, 10 pmole primer and 1X *Taq* buffer in a PCR reaction volume of 25 μl .

Primer selection and survey

Primer survey was carried out by using 20 primers from OPA and 20 primers from OPM series (Operon technology). Out of 40 primers used for amplification of DNA, 39 primers gave reproducible and scorable bands with high percentage of polymorphism (94.0%).

PCR amplification using 40 primers were done twice before scoring for presence and absence of bands. Number of amplification products obtained was specific to each primer and it was ranged from 2 to 19. The 39 primers gave total of 393 with 369 amplification products which were found to be polymorphic. The maximum polymorphism was observed in PCR reaction with 39 primers. These primers





showed 94.0% polymorphism as all the bands obtained were polymorphic with size ranging from 200 bp to 3.0 kb.

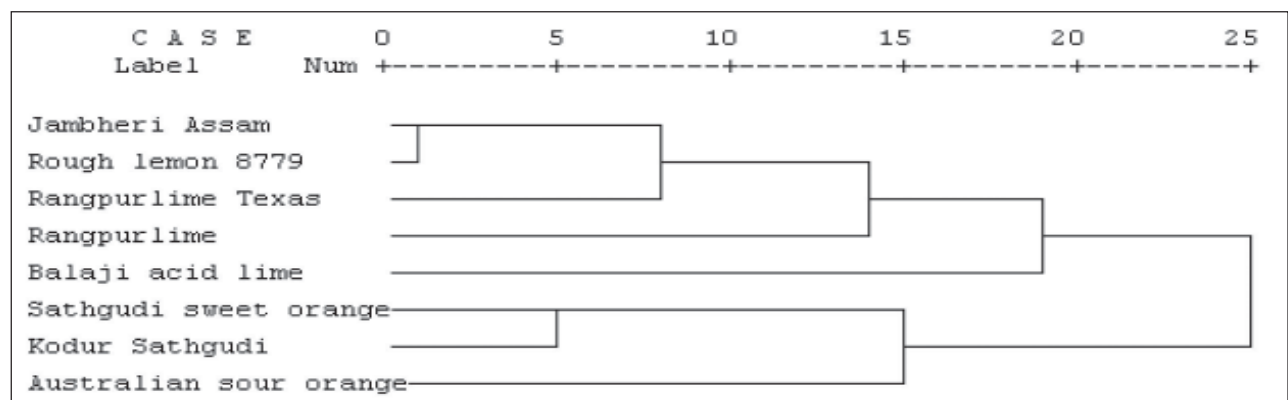
Jacquards similarity co-efficients between the citrus species were presented in Table 19. Similarity matrix thus produced indicated that 77.6% genetic variation was observed between Balaji acid lime and Australian sour orange closely followed by Sathgudi sweet orange and Balaji acid lime (77.3%). While the Rough lemon 8779 and Jambheri Assam were found to be genetically similar as 57.1% was observed and followed by 51.7% similarity between Sathgudi sweet orange and Kodur Sathgudi.

The similarity co-efficients subjected to SPSS package to produce a dendrogram, amplified two major clusters having Sathgudi sweet orange, Kodur Sathgudi and Australian sour orange were in one cluster and remaining citrus species formed another cluster.

Jacquard's similarity co-efficients of 8 species if citrus based on polymorphism obtained with 40 random primers

Citrus species	Sathgudi Sweet orange	Kodur sathgudi	Rangpur lime Texas	Rangpur lime	Australian sour orange	Jambheri Assam	Rough lemon 8779	Balaji acid lime
Sathgudi Sweet Orange	1.000							
Kodur sathgudi	0.517	1.000						
Rangpurlime Texas	0.307	0.308	1.000					
Rangpur lime	0.241	0.271	0.351	1.000				
Australian sour orange	0.429	0.397	0.335	0.260	1.000			
Jambheri Assam	0.263	0.338	0.508	0.471	0.340	1.000		
Rough lemon 8779	0.300	0.347	0.464	0.449	0.335	0.571	1.000	
Balaji acid lime	0.227	0.252	0.375	0.297	0.224	0.415	0.353	1.00

Dendrogram depicting variation among citrus species based on RAPD analysis



Management of Scab in Sweet orange

Treatments were imposed when fruits are in marble stage and fully matured fruits at monthly intervals. Plants treated with hexaconazole (0.2%) + streptomycin (100ppm) (T3) was found effective and significantly superior over all other treatments and control in sweet orange.





Percentage of scab infected fruits treated with different chemicals

Treatments	Mean
T1 : Calixin(0.1%) + Streptocycline (100ppm)	14.3
T2 : Carbendizum(0.1%) + Streptocycline (100ppm)	15.2
T3 : Hexaconazole(0.2%) + Streptocycline (100ppm)	6.8
T4 : Mancozeb (0.3%) + Streptocycline (100ppm)	24.3
T5 : CopperOxychloride(0.3%) + Streptocycline (100ppm)	22.1
T6 : Untreated	32.3
CD	6.7
CV	17.66 %

At CRS, Tirupati, the integrated management of dry root rot using the three treatments, treatment Mancozeb (0.25%) + *Pseudomonas fluorescence* (100g/tree) + 2kg neem cake/ tree percent recovery is significantly high (86.00%) when compared to Mancozeb (0.25%) + *Pseudomonas fluorescence* (100g/tree) application over control.

FLOWERS

MARIGOLD

Management of sweet potato weevil through barrier crops of yam bean and Marigold

At VRS, Rajendranagar, the effect of barrier crops (Yam Bean and marigold) indicated that planting of sweet potato with marigold as alternate planting is the best effective treatment to reduce the weevil infestation (12.33) among the non-chemical treatments followed by yam bean planting, which have similar trend in reducing the weevil(15.26). The alternate row (1:1) with marigold was better than the planting in 2:1 fashion and the combination with sweet potato and marigold was found better than other treatments. The mean score on the weevil damage was low in the plots of sweet potato with marigold as alternate row followed by alternate row of yam bean (22.7 %).

VEGETABLES

Survey for diseases in important vegetable crops in farmers' fields

At VRS, Rajendranagar, at Aziznagar, during kharif 2011, in tomato crop, the high incidence of TOSPO wilt and moderate early blight was whereas, the low incidence of TLCV, mosaic and wilt was recorded. In chilli crop, the incidence of powdery mildew disease was moderate but incidence of wilt and *Cercospora* leaf spots was low. In gourds, the incidence of powdery mildew, downy mildew and mosaic diseases was moderate whereas, incidence of wilt disease was low. In bottle gourd, incidence of gummy stem blight was severe. In okra crop the incidence of YVMV and powdery mildew diseases was moderate. In brinjal crop, the incidence of little leaf disease was moderate but, wilt was low. The incidence of mosaic disease was moderate in beans and pumpkin crops. The moderate incidence of powdery mildew disease in *Coccinia* and purple blotch disease in Onion was recorded. In rabi season there was high incidence of early blight disease in tomato crop.





ONION

At HRS, Mahanandi, purple leaf blotch disease was recorded from July 1st week to 3rd week of December. The results indicated that the leaf blotch disease incidence had significantly positively correlated with maximum temperature (0.52074) and minimum temperature (0.61) while the disease incidence was positively correlated with relative humidity in the morning (0.11) and evening (0.04)

TOMATO

At HRS, Mahanandi, Early blight disease incidence was recorded from July 1st week to 1st week of December. The results indicated that the disease incidence had significantly correlated with maximum temperature (0.39) and minimum temperature (0.68) and the disease incidence was positively correlated with relative humidity in the morning (0.33) and evening (0.37).

Integrated management of wilt in tomato crop

At HRS, Mahanandi, soil solarization with polyethylene sheets, seed treatment with Mancozeb @ 3g/Kg seed, soil drenching with copper oxy chloride @ 3g/L and soil application of *Trichoderma viride* and *Pseudomonas fluorescense* along with FYM @ 25T/h is found to be effective in controlling wilt disease in Tomato, The disease incidence 10.85%, 14.96%, 21.24%, 30.26% at 15, 30, 45, 60 days after planting was recorded.

Management of Leaf curl and bud necrosis virus disease of tomato

At HRS, Mahanandi, the seed treatment with Imidachloprid (Goucho) @ 5 g/kg seed. + NSKE@5% Spinosad 0.3ml/L is found to be superior in controlling the viral disease in tomato. Border crop with jowar and yellow sticky traps @ 4 per acre were also used in controlling the transmission of viral disease in tomato. The percent disease incidence was recorded 7.87, 8.56, 9.14 at 30, 45 at 60 days after planting.

Screening tomato entries against Tomato Leaf Curl Virus disease - IET

At VRS, Rajendranagar, eight entries along with two checks (one resistant check and one susceptible check) were evaluated. All the entries exhibited disease incidence of above 5.0 per cent except one entry 10/TOLCVRES - 5 which exhibited 4.4 % Maximum incidence of 22.8 per cent was recorded in the entry 10/TOLCVRES - 6. The resistant check H -24 recorded 13.2 per cent incidence. The susceptible check Punjab chuhara exhibited 33.0 per cent incidence. Among the entries 10/TOLCVRES - 4 recorded maximum yield of 189.5 q/ha followed by 10/TOLCVRES - 5 (151.2 q/ha) against the the susceptible check (Punjab Chuhara) of 49.4 q/ha.

Screening tomato entries against Tomato Leaf Curl Virus disease - AVT-I

At VRS, Rajendranagar, sixteen entries along with two checks were evaluated and all the entries exhibited disease incidence of above 5.0 per cent except two entries i.e. 10/TOLCVRES - 1 (3.9%) and 10/TOLCVRES - 3 (3.3%). Maximum incidence of 32.8% was recorded in the entry 10/TOLCVRES - 12.

The resistant check H -24 recorded 18.9% incidence. The susceptible check Punjab chuhara exhibited 37.2% incidence.

Among the entries 10/TOLCVRES - 4 recorded maximum yield of 141.6 q/ha followed by 10/TOLCVRES - 5 (126.0 q/ha) in tomato against susceptible variety Punjab Chuhara (45.7 q/ha)





Epidemiology of most important diseases of commercially important vegetable crops of the locality

At VRS, Rajendranagar, during the period of crop growth max temperature ranged from 27.5 to 33°C and minimum temperature from 8.1 to 20.6°C. Where as RH I (morning) ranged from 56 to 97 and RH II from 18 to 65 (evening). There was no rainfall received on the days of recording but a total rainfall of 10.6 mm was recorded during the entire period of crop growth. The disease appeared after one and half month after planting and it reached to 50.2 PDI by the end of the season.

Management of blight diseases of tomato

At VRS, Rajendranagar, all the treatments were significantly superior to control and the disease incidence ranged from 17.7 to 28.9. The treatment Foliar spray with Metiram @ 0.3% recorded minimum incidence of the disease (17.7 PDI) and 306.7 q/ha fruit yield over control plot.

Integrated management of TOSPO wilt disease of tomato (2009)

At VRS, Rajendranagar, among the treatments first spray of Acephate @ 1.5 g/l + Neem oil @ 2.0 ml/l, Second spray of Regent @ 1.5ml /l + Neem oil @ 2.0 ml/l, Third spray of Admire @ 2g / 15 l + Neem oil @ 2.0 ml/l, fourth spray of Acephate @ 1.5 g/l + Neem oil @ 2.0 ml/l at 10 days interval was found to exhibit low disease incidence of 9.1% with an fruit yield of 352.2 q/ha over control plot.

OKRA

Screening Okra accessions for resistance to Yellow Vein Mosaic Virus (YVMV) - IET

At VRS, Rajendranagar, among the entries tested only one entry viz., OK YVM Res-5 exhibited 73 per cent disease incidence. The remaining entries exhibited disease incidence ranged from 95 to 100 per cent against susceptible check Pusa sawani recorded 100% disease incidence. The highest yield of 85.6 q/ha was recorded in the entry OK YVM Res-5 in Okra.

Screening Okra accessions for resistance to Yellow Vein Mosaic Virus (YVMV) - AVT-I

At VRS, Rajendranagar, the experiment was carried out with nine entries (including four checks). among the entries tested only one entry viz., OK YVM Res-1 the disease incidence was not recorded and and completely free from YVMV incidence when compared to the susceptible check Parbhani Kranti recorded 100% disease incidence. The highest yield of 88.9 q/ha was recorded in the above entry.

TUBER CROPS

SWEET POTATO

At VRS, Rajendranagar, in sweet potato weevil infestation of 28%, wilt 5% and leaf spot disease incidence was <10 %, mosaic disease incidence was recorded 15% during this season.

COLOCASIA

At VRS, Rajendranagar, in colocasia, leaf blight incidence 22% was recorded. In yam, leaf blight incidence was 20 % and mosaic incidence of 32% was recorded.

In Colocasia, the leaf blight incidence was less than 20% in August - September months, and Aphid infestation was less than 18% on colocasia was recorded due to low rainfall in A.P.





YAM

In Krishna district farmers were growing yam - maize as a relay crop and the yam yields were more than 40 T /acre and maize yields were 40Q/ha. But in yam rhizome rot incidence was recorded in Krishna district.

Evaluation of Colocasia lines for *Phytophthora* leaf blight resistance / tolerance.

The experiment was conducted with 79 colocasia cultivars. The var. Maktakeshi and Telia were kept as resistant and susceptible check respectively and all the 79 cultivars showed low to moderate blight infection in the field. The susceptible cultivar 'Telia' has very high PDI of Phytophthora disease (30.2%) and 'Multakeshi recorded minimum PDI of 15.1 percent. RNCA - 1 recorded lowest leaf blight incidence. RNCA-1 and Jagitial local were very slow blighting varieties, however the highest yield of 25.2 t/ha was recorded in RNCA-1 of Colocasia.

ELEPHANT FOOT YAM

Integrated Disease Management in Elephant foot yam.

At VRS, Rajendranagar, the IDM package recorded significantly minimum incidence of Leaf blight (15.9%) , Mosaic (13.43%) and collar rot (1.89%) compared to other treatments and maximum yield of 56.18 t/ha in IDM treatment followed by chemical treatment (42.30 t/ha) was recorded.

Bio-intensive management of taro leaf blight

At VRS, Rajendranagar, the treatment T3 recorded minimum blight incidence of 11.34% when compared to susceptible check (cv Telia) of 30.2% PDI on leaves. When the same susceptible check (cv Telia) was applied with Seed tuber treatment with *Trichoderma viride* (5g /kg cow dung slurry) and soil application of 1 kg *Trichoderma viride* enriched compost per pit recorded the disease of 11.34% PDI on leaves and recorded an yield of 22.0 t/ha.

Integrated disease management in taro

At VRS, Rajendranagar, The minimum incidence of Leaf blight (6.2%) and Mosaic of 4.9% and with a maximum yield of 13.23 t/ha in IDM plots and in the chemical treatment 12.40 t /ha was recorded.

Evaluation of cassava lines for mosaic tolerance/ resistance

At VRS, Rajendranagar, cassava germplasm lines of 64 entries were screened, of them zero incidence of CMV in CH-2,MNGA-I,Ci-800,CMR-13,15, Sri Harsha, Palakonda, TCS-17,ambakadam, CMR-17,CO-3,TCH-I where as 100% CMV incidence was recorded in AK X S -731, M.Pendalam,KPSLO-4/92,ARK-E,PDP-I,PDP-2,H43.

SPICES

TURMERIC

At HRS, Mahanandi, turmeric leaf spot disease incidence was recorded from July 4th week to November 3rd week. The results indicated that disease incidence has significantly positively correlated with maximum (0.48401) and minimum 0.44173 temperature and negatively correlated with relative humidity morning (-0.56589) and evening (-0.56194).





MEDICINAL & AROMATIC PLANTS

At BRS, Venkataramanagudem, in demonstration plots on betelvine the IDM technology proved better over the farmers practice in reducing *Phytophthora* foot rot disease incidence with more leaf yields.

Yield loss due to Senna Alternaria leaf blight was 23% (185kg herbage yield per ha). Among the plant extracts tested against Alternaria leaf blight on senna, betel leaf extract significantly reduced the disease after 3 sprays at 15 days interval and is on par with the Copper oxychloride under field conditions.

In monitoring trial, *Mucuna pruriens* was affected by number of diseases out of which YMV was the major disease with 100 % PDI within 45 days after sowing followed by leaf spots (*Cercospora* sp and *Corynospora cassicola*), leaf blight (*Alternaria alternata*), and Rust (*Uromyces mucunae*).

In survey, leaf spots were recorded on *Centella asiatica*, *Rauvolfia serpentina*, *Carissa caranda*, while powdery mildew on *Anethum graviolens*, *Psoralea corylifolia*, *Phyllanthus amarus* and *Ocimum kilimandscharicum*.

In *Acorus calamus* Leaf spot (*Helmithosporium microsporium*) incidence was not significantly affected by different level of FYM and spacings, while on *Solanum nigrum* wilt percent disease incidence was more (26.69) when poultry manure was applied @ 4 t/ha but irrespective of biofertilizers. Similarly on *Solanum nigrum* percent disease incidence of wilt was more (39.49) at 45 days interval irrespective of spacing.

PLANTATION CROPS

COCONUT

Collection of *Ganoderma* isolates from various locations.

At HRS, Ambajipeta, a total of twenty three isolates of *Ganoderma applanatum* and *Ganoderma lucidum* were collected from different mandals of East Godavari, Srikakulam, West Godavari, Vijayanagaram and Visakhapatnam. The pathogen *Ganoderma* was also isolated from other hosts like Oil palm, and Palmyrah for better analysis of the *Ganoderma* isolates through molecular studies.

Conservation and molecular characterization of *Ganoderma*

Analysis of isozyme profile of *Ganoderma* isolates by native PAGE

At HRS, Ambajipeta, isozyme profiles of 24 isolates of *Ganoderma* and one isolate of Oil palm were carried out with four enzymes, Esterase, Catalase, Malate dehydrogenase and Peroxidase (Table 1) by native PAGE. All the four enzymes showed variation among the isolates. The isozymes Esterase and catalase showed the highest variation in the profiles of isolates. The number of bands among the various isolates in Esterase studies ranged from 1 to 7 where as that of catalase ranged from 4 to 8. The other enzyme, malate dehydrogenase showed the banding pattern from 1 to 5. And the Peroxidase showed minimum number of bands from 1 to 3. The experiments are being repeated with the above four enzymes and the isozyme studies with other enzymes like Acid Phosphatase and Poly phenol Oxidase are to be carried out.





Isozyme profile of 24 *Ganoderma* isolates

RAPD-PCR studies with the collected isolates are in progress. DNA extraction from all the isolates was carried out and PCR studies with RAPD primers 1, 2, 3, 4, 5 and 6 for 13 isolates of *Ganoderma* were carried out. RAPD studies with other isolates and other primers is being carried out.

S. No	Isolate	Esterase	Peroxidase	Catalase	Malate dehydrogenase
1	Ga	7	3	4	2
2	Ga1	7	3	8	3
3	Ga2	7	3	8	3
4	Gl	7	3	8	5
5	Gl2	7	3	8	3
6	Gl3	7	3	7	5
7	Gl4	7	3	8	5
8	Gl5	6	1	8	3
9	Gl6	5	1	8	3
10	Gwilt 1	6	1	8	3
11	G wilt 2	6	1	8	3
12	NJL	6	1	8	3
13	Oil palm	1	3	4	1
14	A2	6	3	8	3
15	Kalavacharla	6	2	8	5
16	Antarvedi	3	2	8	5
17	Komaragiripatnam	6	2	8	5
18	Vanapalli	3	2	6	4
19	Digamaruru	3	3	8	5
20	VK Rayapuram	6	3	8	5
21	Mukhteswaram	6	2	8	5
22	Appanapalli	6	2	8	5
23	Narsapuram	7	2	8	4
24	Gopalapuram	7	2	8	4

Epidemiology and disease forecasting

At HRS, Ambajipeta, the rate of linear spread of the basal stem rot disease with respect to the weather parameters was recorded and tabulated for the period January 2011 to March 2012.

Effect of weather factors on vertical spread of *Basal Stem Rot* disease of coconut (2011-12)

Month	Temperature		Rel. Hum.		Rainfall (mm)	Rainy days	Rate of linear spread of disease
	Min	Max	Mor.	Eve.			
Jan. 11	21.5	26.4	82.6	72.5	0	0	10.93
Feb. 11	23.9	28.8	87.7	64.9	24.8	1	9.85
Mar. 11	26.2	32.2	87.6	71.0	0	0	10.25
Apr. 11	36.0	27.0	77.0	61.0	26.8	1	3.49
May. 11	38.5	29.0	78.0	65.0	51.0	2	4.49





Month	Temperature		Rel. Hum.		Rainfall (mm)	Rainy days	Rate of linier spread of disease
	Min	Max	Mor.	Eve.			
June 11	26.0	35.4	66.9	55.4	219.1	9	4.30
July 11	33.3	28.4	85.8	76.9	21.91	9	4.12
Aug. 11	32.4	28.7	90.2	82.1	24.34	11	3.96
Sep. 11	34.0	29.2	91.5	82.3	31.4	3	3.80
Oct.11	32.5	27.5	92.6	84.3	12.6	7	5.50
Nov.11	30.4	25.6	90.2	79.5	—	0	22.12
Dec. 11	28.0	20.0	78.0	76.0	—	0	8.90
Jan. 12	23.0	74.0	79.0	75.0	—	0	6.50
Feb. 12	31.0	29.0	80.0	75.0	—	0	7.07
Mar.12	34.0	29.5	84.0	62.0	—	0	14.47

Impact of other palms and intercrops in coconut on occurrence and spread of disease

To study the impact of other palms and intercrops in coconut on occurrence and spread of disease, fifty palms in field with sole coconut and field with coconut + banana were selected in Gannavaram village of East Godavari District. Soil at the experimental site is of sandy in nature near the Godavari river basin. Cropping systems are sole coconut and coconut intercropped with banana.

Every month linear and horizontal spread of the disease in that 50 palms were recorded. In sole coconut crop, out of fifty palms, only one palm was infected with the disease up to August 2011. Three plants in October, four plants in November and five in March 2012 showed the symptoms (Table 3). Whereas, in coconut intercropped with banana out of fifty plants, four plants showed the symptoms till January 2011. Diseased plants increased to five in February 2011, 6 in March 2011, 7 in October 2011, 9 in December 2011 and 10 in March 2012.

Impact of other palms and intercrops in coconut on occurrence and spread of disease (Sole coconut)

No of palms infected out of 50 palms	Linear spread in cms							
	Nov. 2010	Dec. 2010	Jan. 2011	Feb. 2011	Mar. 2011	Apr. 2011	May 2011	June 2011
1 (4)	63	64	71	78	86	89	93	97

No of palms infected out of 50 palms	Linear spread in cms								
	July'11	Aug'11	Sep'11	Oct'11	Nov'11	Dec'11	Jan'12	Feb'12	Mar'12
1 (4)	101	105	109	115	124	129	134	134	134
2 (11)				89	89	89	89	89	89
3 (38)				83	115	125	135	145	155
4 (32)					153	153	154	154	155
5 (35)									38



Impact of other palms and intercrops in coconut on occurrence and spread of disease. Coconut intercropped with Banana.

No of palms infected out of 50 palms	Linear spread in cms							
	Nov. 2010	Dec. 2010	Jan. 2011	Feb. 2011	Mar. 2011	Apr. 2011	May 2011	June 2011
1 (17)	216	217	220	220	220	220	220	220
2 (28)	218	220	220	220	220	220	220	220
3 (37)	67	70	71	71	71	71	71	71
4 (43)	55	55	55	55	55	55	55	195
5 (4)				58	61	61	61	61
6 (39)					69	69	71	71

No of palms infected out of 50 palms	Linear spread in cms								
	July 2011	Aug 2011	Sep 2011	Oct 2011	Nov 2011	Dec 2011	Jan 2012	Feb 2012	Mar 2012
1 (17)	287	287	mid	dead	dead	dead	dead	dead	dead
2 (28)	236	236	mid	mid	mid	mid	mid	mid	mid
3 (37)	71	71	71	71	71	71	71	71	71
4 (43)	215	215	mid	mid	mid	mid	Mid	mid	mid
5 (4)	61	61	61	61	61	124	124	124	124
6 (39)	71	71	71	71	71	71	71	71	71
7 (36)				65	65	65	65	65	66
8 (42)						dead	dead	dead	dead
9 (12)						85	85	85	85
10 (22)									37

Correlation studies between weather factors and spread of basal stem rot disease for the period from January, 2000 to May 2011 indicated that number of rainy days, rainfall and relative humidity at 2 pm were found to have significantly negative relationship with vertical spread of basal stem rot disease in coconut (Fig-1). Developed the following regression equation to predict the *Ganoderma* wilt disease spread in coconut.

$$Y = 21.99 + 5.42 (\text{MIN TEMP}) - 1.00 (\text{MAX TEMP}) + 0.848 (\text{RH EVE}) - 1.579 (\text{RH MOR})$$

$$R^2 = 0.5417; R = (-) 0.7360; F = 5.31.$$

Management of basal stem rot disease in coconut

Collection, conservation and characterization of bioagents from different locations

At HRS, Ambajipeta, **Isolation of *Trichoderma* spp:** Seventeen new *Trichoderma* isolates were collected from Rhizosphere region of coconut palms from different villages of East Godavari and West Godavari districts viz., Gudapalli, Kesavadasupalem, Antarvedi, Kesanapalli, Sakhinetipalli lanka, Vedangi, Allavaram, Godilanka, Vodalarevu, Rameswaram, Antarvedipalem, Gondi, G.Pedapudi, H. Kotturu, Kadali, Gudimellanka and Turupupalem using *Trichoderma* specific medium. The identified *Trichoderma* spp are *T.viride*, *T.harzianum*, *T.hamatum*, *T.longibrachiatum*, *T.virens* and *T.polysporum*.

The newly isolated species when tested for antagonistic activity against *Ganoderma applanatum* and *Ganoderma lucidum* in dual culture studies were found effective and are under the process of identification.

Rhizosphere Management

The BSR management trial was initiated in August 2010 at Kesanapalli village of East Godavari District. The treatments are being imposed at the specified time intervals with the bioagents, *Trichoderma viridae* and *Pseudomonas fluorescens*. Among the various treatments imposed for management of basal





stem rot disease, basal application of bio agents such as *Trichoderma viridae* and *Pseudomonas fluorescens* were effective when compared to the root feeding of the same bio agents at different time intervals. Basal application of *Trichoderma viridae* talc formulation at the rate of 50 g combined with 5 kg of neem cake (T4) was found effective. None of the trees given this particular treatment showed appearance of disease symptom. Application of neem cake alone was also effective.

Bio control of Bud Rot and Stem Bleeding diseases of Coconut

Incidence of bud rot disease on coconut seedlings in nursery was high in rainy season and the incidence percentages of bud rot in nursery seedlings ranged from 4.2 to 5.5. Seedling death due to bud rot was found higher in Godavari Ganga (Hybrid coconut) when compared to the seedling death of East Coast Tall. Incidence of bud rot disease in 2011 was less when compared to 2010 as there is less rainfall during last year.

Stem Bleeding

Field evaluation of antagonists against stem bleeding disease in coconut

Field experiment on evaluation of various formulations of *T.viride* against stem bleeding disease of coconut was carried out. Application of *Trichoderma viridae* paste on the stem bleeding patches was continued on the diseased palms of HRS, Ambajipeta and by the time of June 2011, the diseased palms of the palm were reduced to 39. Incidence of stem bleeding by June was reduced to 1.43. But after that the number of diseased palms was again increased because of the rains as they washed out the *Trichoderma viridae* paste that was applied. The incidence of stem bleeding was again increased to 4.81% by December 2011.

In vitro antagonistic studies of native Trichoderma species against *Thielaviopsis paradoxa*

The dual culture plate assays of *Trichoderma* species against *Thielaviopsis paradoxa* proved that the tested *Trichoderma* species were effective against the stem bleeding pathogen, *Thielaviopsis paradoxa*. Per cent inhibition of *Trichoderma* species against *Thielaviopsis paradoxa* ranged from 43.33 to 78.89 of differed locations.

In vitro antagonistic effect of *Trichoderma spp* on mycelial growth of *Thielaviopsis paradoxa*

S.No.	Trichoderma collected from	District	Radial growth of test pathogen in mm	Radial growth of Trichoderma spp in mm	Percent inhibition of test pathogen over control
1	Y.Ramavaram	E.G.Dt.,	25	65	72.22
2	Sivakodu	E.G.Dt.,	46	44	48.89
3	Kaviti	Srikakulam	43	47	52.22
4	Nandampudi	E.G.Dt.,	26	64	71.11
5	Peruru	E.G.Dt.,	51	39	43.33
6	Antervedi	E.G.Dt.,	39	51	56.67
7	Tallavalasa	Srikakulam	47	43	47.78
8	Kesanapalli	E.G.Dt.,	42	48	53.33
9	Gopalapuram	W.G.Dt.,	49	41	45.56
10	Tallarevu	E.G.Dt.,	46	44	48.89
11	Zinnuru	Srikakulam	19	71	78.89
12	Kaviti kothuru	Srikakulam	31	59	65.56
13	Dagguluru	Srikakulam	39	51	56.67
14	Gannavaram	E.G.Dt.,	40	50	55.56
15	Vanapalli	E.G.Dt.,	45	45	50.00
16	Allavaram	E.G.Dt.,	45	45	50.00
17	Control		90	0	0



**In vitro antagonistic studies of native *Trichoderma* species against *Phytophthora palmivora***

The dual culture plate assays of *Trichoderma* species against *Phytophthora palmivora* proved that the tested *Trichoderma* species were effective against the Bud rot pathogen, *Phytophthora palmivora*. Per cent inhibition of *Trichoderma* species against *Phytophthora palmivora* ranged from 54.44 to 100.

In vitro antagonistic effect of *Trichoderma* spp on mycelial growth of *Phytophthora palmivora*

S.No.	<i>Trichoderma</i> collected from	District	Radial growth of test pathogen in mm	Radial growth of <i>Trichoderma</i> spp in mm	Percent inhibition of test pathogen over control
1	Y.Ramavaram	E.G.Dt.,	39	51	56.67
2	Sivakodu	E.G.Dt.,	21	69	76.67
3	Kaviti	Srikakulam	41	49	54.44
4	Nandampudi	E.G.Dt.,	25	65	72.22
5	Peruru	E.G.Dt.,	29	61	67.78
6	Antervedi	E.G.Dt.,	30	60	66.67
7	Tallavalasa	Srikakulam	23	67	74.44
8	Kesanapalli	E.G.Dt.,	21	69	76.67
9	Gopalapuram	W.G.Dt.,	21	69	76.67
10	Tallarevu	E.G.Dt.,	19	71	78.89
11	Zinnuru	Srikakulam	27	63	70.00
12	Kaviti kothuru	Srikakulam	32	58	64.44
13	Dagguluru	Srikakulam	25	65	72.22
14	Gannavaram	E.G.Dt.,	39	51	56.67
15	Vanapalli	E.G.Dt.,	0	90	100.00
16	Allavaram	E.G.Dt.,	36	54	60.00
17	Control		90	0	0

SURVEY AND SURVEILLANCE ON DISEASES OF COCONUT (BUD ROT, STEM BLEEDING AND GANODERMA WILT)

Surveys were conducted in different mandals of East Godavari, West Godavari, Srikakulam, vijayanagaram and Visakhapatnam districts of Andhra Pradesh during 2011-12. The major diseases observed in coconut gardens were basal stem rot, bud rot and stem bleeding along with minor incidence of grey leaf spot. Survey indicated that mean percent incidence of basal stem rot, bud rot and stem bleeding diseases on coconut recorded 12.19, 4.97 and 1.10 percent respectively. Incidence of Grey leaf spot disease was also observed to certain extent in East Godavari, Srikakulam and Vijayanagaram during last year.

EARLY DETECTION OF BASAL STEM ROT DISEASE IN COCONUT**Activity I : Development of Diagnostic Kit for Basal Stem Rot Disease**

The experiment was repeated by raising polyclonal antibodies in New Zealand White Rabbits against *Ganoderma applanatum* and *Ganoderma lucidum*. Pure cultures of *Ganoderma* strains were used to develop polyclonal antibodies. The developed antibodies were tested with the pure cultures as antigen in glass capillary tube assay, slide agglutination test and by indirect ELISA. Positive reaction of developed antiserum of *G. applanatum* and *G. lucidum* with their respective antigens was observed in glass capillary tube assay and slide agglutination tests by the formation of precipitations. The antiserum was then used to detect its sensitivity against the pathogens in indirect ELISA method. The method was standardized





and found to be sensitive to detect the antigen up to 1:20,000 dilution. Antiserum with its dilution of 1:10,000 was able to detect the antigen in 1:10, 1:100, 1:1000, 1:10000, 1:20000 dilutions. The experiments are being repeated and the detection of *Ganoderma* wilt or basal stem rot with the developed polyclonal antibodies from the diseased plants is in progress.

Activity II: Identification of indicator plants for basal stem rot disease

Studies were repeated for validating bengal gram plant as indicator plant for basal stem rot disease during 2011-12. Artificial inoculation of pure cultures of *Ganoderma* pathogen to the sterilized soil was done with each isolate before transferring of the germinated bengal gram seedlings in pots. Infected plants showed withering, yellowing, browning of the lower set of leaves followed by upper leaves and drying of the plants. When the infected seedlings were uprooted and observed, whitish fungal growth was observed on the cotyledons. In later stages, complete rotting of the basal stem region and death of the plants were observed. Entire symptoms were visible within a month under artificial inoculation studies. Pure culture of *Ganoderma* was isolated from the basal stem regions of infected bengal gram plant.

Indicator studies were also conducted with naturally sick soil of *Ganoderma* in pots along with artificial inoculation of the cultures. These plants also showed similar symptoms and culture of *Ganoderma* was isolated from the diseased plants. In another experiment, Bengal gram seedlings were sown in the tree basins of coconut palms in sick soil.

EARLY DETECTION OF BUD ROT DISEASE OF COCONUT

Activity I : Development of Diagnostic Kit for Bud Rot Disease

The experiment was carried out by raising polyclonal antibodies in New Zealand White Rabbits against *Phytophthora palmivora*. Pure cultures of *Phytophthora palmivora* strain was used to develop polyclonal antibodies. The developed antibodies were tested with the pure cultures as antigen in glass capillary tube assay, slide agglutination test and by indirect ELISA. Positive reaction of developed antiserum of *Phytophthora palmivora* with the pure culture of *Phytophthora* was observed in glass capillary tube assay and slide agglutination tests by the formation of precipitations. The antiserum was then used to detect its sensitivity against the pathogens in indirect ELISA method. The method was standardized and found to be sensitive to detect the antigen up to 1:20,000 dilution. Antiserum with its dilution of 1:10,000 was able to detect the antigen in 1:10, 1:100, 1:1000, 1:10000, 1:20000 dilutions.

Sero detection of *Phytophthora palmivora*

Indirect form of ELISA (I-ELISA): *Phytophthora palmivora* : The developed polyclonal antisera diluted in carbonate buffer (pH 9.6) were first added to the ELISA plate. Then test samples at various concentrations of 10^{-1} , 10^{-2} , 10^{-3} , 10^{-4} , 2×10^{-4} were added to the same plate. After two hours of incubation, secondary antiserum conjugate (antirabbit IgG ALP conjugate) at the concentration of 1:10,000 was added to the plate. Then the substrate was added & absorbance's were recorded with ELISA reader at 405 nm. The Indirect form of ELISA was found to be more sensitive in detecting the *Phytophthora palmivora* with antisera dilution of 1 : 10,000 and with antigen dilution up to 10^{-1} , 10^{-2} , 10^{-3} , 10^{-4} , 2×10^{-4} . The range of absorbance values for the antigen and buffer samples were between 2.306 – 2.969 and 0.114 – 0.156 respectively in ELISA reader. The experiments are being repeated and detection of *Phytophthora palmivora* pathogen or bud rot disease with the developed polyclonal antibodies is in progress.



**Sero detection of *Phytophthora palmivora* by Indirect form of ELISA (OD values at 405 nm)**

Antigen dilutions	Replications				
	1	2	3	4	Buffer
10 μ g(10 ⁻¹)	2.923	2.657	2.923	2.923	0.140
1 μ g (10 ⁻²)	2.561	2.561	2.482	2.306	0.151
100ng (10 ⁻³)	2.615	2.518	2.372	2.740	0.156
10ng (10 ⁻⁴)	2.532	2.896	2.754	2.896	0.114
5ng (2X10 ⁻⁴)	2.969	2.969	2.828	2.703	0.141

Primary antibody at 1:10,000 dilution and secondary antibody at 1:10,000 dilution was used for all the samples. From the test it was found that the Primary antibody at 1:10,000 dilution and secondary antibody at 1:10,000 dilution can effectively detect the antigen concentrations up to 2X10⁻⁴.

Collection of isolates and DNA studies of *Phytophthora palmivora*

Bud rot pathogen *Phytophthora palmivora* was collected from diseased coconut and cocoa plants of different places such as Ambajipeta, Malkipuram, Razole and Pulletikurru of East Godavari District. DNA isolation work was carried out and PCR studies is being carried out.

Identification of Indicator Plants for Bud Rot Disease

Studies indicated that the occurrence of bud rot disease in coconut is related to the existence of palmyrah palm in coconut gardens. There is a positive correlation between the number of palmyrah palms to the percent incidence of bud rot in coconut.

IDENTIFICATION OF COCONUT TYPES RESISTANT TO GANODERMA WILT DISEASE.

Seed nuts of 7 new varieties were obtained and planted in sick soil at Gannavaram, East Godavari District at 3X3 m spacing as on farm trial in October 2010. In addition, two local varieties, Pillalakodi and Jonnalarasi were also collected and planted along with the above varieties. The details of newly planted varieties along with number of seedlings.

New varieties planted for screening germ plasm Resistant to Basal stem rot disease of Coconut

S. No	Variety	Number of seedlings
1	Java Giant	5
2	Chandra Kalpa (LO)	4
3	Spicata	5
4	Laccadive Micro	8
5	ECT	14
6	Ceylon Red	3
7	GB X ECT	7
8	Pillalakodi (Local variety)	3
9	Jonnalarasi (Local variety)	3





STUDIES ON POST HARVEST DISEASES OF COCONUT

Activity I : Survey and Identification of Mycoflora associated with Coconut

Survey conducted on losses due to storage rots in coconut indicated that percentage of rotting in coconut is ranged from 3 to 20% depending upon the type of storage condition. Percentage of coconut rotting is maximum (15 to 20%) under home storage conditions. Isolation studies revealed that *Aspergillus flavus*, *A.niger*, *Rhizopus* spp, *Drechelera* spp, *Botyodiplodia* spp and *Penicillium* spp are the commonly associated mycoflora on copra during storage.

Types of storage conditions and rotting percentage

Sl.No	Type of Storage	No. of coconuts rotted out of 1000		% of Rotting	
		Old nuts	New nuts	Old nuts	New nuts
1.	Coconut Processing Unit (C.P.U.)	100	30-40	10%	3-4%
2.	Home	150-200	100	15-20%	10%
3.	Large tiled	150	70-80	15%	7-8%
4.	Small tiled	100-150	30-40	10-15%	3-4%
5.	Cement Sheeted	100-120	80-100	10-12%	8-10%
6.	Hut	100-140	80-100	10-14%	8-10%

Old nuts:- 6 to 12 months old

New nuts:- Below 6 months

Effect of Chemical Preservation Control of Post Harvest Diseases in Coconut

Chemical preservatives		<i>A.niger</i>		<i>A.flavus</i>		<i>Rhizopus spp</i>		<i>Pencillium spp</i>	
		Mycelial growth	% of growth inhibition	Mycelial growth	% of growth inhibition	Mycelial growth	% of growth inhibition	Mycelial growth	% of growth inhibition
Mena dione	500 ppm	0	100	0	100	33.5	62.6	0	100
	1000 ppm	0	100	0	100	24	73.3	0	100
Potassium meta bisulphate	500 ppm	68.5	23.8	90	0	90	0	16.46	40.7
	1000 ppm	59	34.4	50	44.4	43	52.15	12.91	53.5
Benzoic acid	500 ppm	77.5	13.8	87.5	2.7	90	0	17.75	36
	1000 ppm	53	41.1	76.5	15	0	100	10.65	61.63
Sodium Benzoate	500 ppm	48.5	46.1	49	45.5	90	0	23.25	16.28
	1000 ppm	16.5	81.6	15	83.3	90	0	21.93	21
Citric acid	500 ppm	90	0	90	0	90	0	15.75	43.05
	1000 ppm	90	0	90	0	90	0	12.34	55.55
L-Ascorbic acid	500 ppm	90	0	90	0	90	0	18.51	33.3
	1000 ppm	90	0	90	0	90	0	10.8	61.1
Propionic acid	500 ppm	86	4.4	79	12.2	90	0	23.27	16.16
	1000 ppm	64	28.8	55	38.8	90	0	18.37	33.82
Acetic acid (Glacial)	500 ppm	90	0	90	0	90	0	21.23	23.5
	1000 ppm	90	0	90	0	90	0	18.57	33.1
Control		90	90	90	34	90	0	22.75	



Activity II : Management of post harvest diseases of coconut

Studies on the inhibition effect of chemical preservatives on *Aspergillus flavus*, *A.niger*, *Rhizopus spp*, *Penicillium spp* revealed that chemical preservative Menadione at 500ppm concentration was found to be effective against *A.niger*, *A.flavus* and *Penicillium spp*, while Benzoic acid at 1000. ppm concentration was effective against *Rhizopus spp*. Citric acid, Propionic acid, L-Ascorbic acid and Potassium meta bisulphate at 500 ppm and 1000 ppm were ineffective against *Aspergillus flavus*, *A.niger*, *Rhizopus spp*, , while Acetic acid {Glacial} was found ineffective against *Aspergillus flavus*, *A.niger*, *Rhizopus* and showed some inhibitory effect on *Pencillium spp* under *in vitro* conditions. (Fig.1)

Activity II : Estimation of aflatoxin contamination in copra

To estimate the aflatoxin contamination in copra, polyclonal antibodies were developed in New Zealand White Rabbits using *Aspergillus flavus* pure culture as antigen. The developed antibodies were tested with the pure culture of *Aspergillus flavus* as antigen in glass capillary tube assay, slide agglutination test and by indirect ELISA in the initial studies. Positive reaction of developed antiserum of *Aspergillus flavus* with the pure culture of *Aspergillus flavus* was observed in glass capillary tube assay and slide agglutination tests by the formation of p00recipitations. The antiserum was then used to detect its sensitivity against the pathogens in indirect ELISA method. The method was standardized and found to be sensitive to detect the antigen up to 1:20,000 dilution. Antiserum with its dilution of 1:10,000 was able to detect the antigen in 1:10, 1:100, 1:1000, 1:10000, 1:20000 dilutions.

Sero detection of *Aspergillus flavus*

Indirect form of ELISA (I-ELISA) : *Aspergillus flavus*: The developed polyclonal antisera diluted in carbonate buffer (pH 9.6) were first added to the ELISA plate. Then test samples at various concentrations of 10^{-1} , 10^{-2} , 10^{-3} , 10^{-4} , 2×10^{-4} were added to the same plate. After two hours of incubation, secondary antiserum conjugate (antirabbit IgG ALP conjugate) at the concentration of 1:10,000 was added to the plate. Then the substrate was added & absorbance's were recorded with ELISA reader at 405 nm. The Indirect form of ELISA was found to be more sensitive in detecting the *Aspergillus flavus* with antisera dilution of 1 : 10,000 and with antigen dilution up to 10^{-1} , 10^{-2} , 10^{-3} , 10^{-4} , 2×10^{-4} . The range of absorbance values for the antigen and buffer samples were between 2.174 – 2.965 and 0.108 – 0.148 respectively in ELISA reader.

Sero detection of *Aspergillus flavus* by Indirect form of ELISA (OD values at 405 nm)

Antigen dilutions	Replications				
	1	2	3	4	Buffer
10µg(10^{-1})	2.474	2.916	2.474	2.407	0.119
1 µg (10^{-2})	2.174	2.555	2.918	2.555	0.146
100ng (10^{-3})	2.876	2.610	2.309	2.876	0.148
10ng (10^{-4})	2.377	2.268	2.887	2.887	0.115
5ng (2×10^{-4})	2.259	2.965	2.522	2.455	0.108

Primary antibody at 1:10,000 dilution and secondary antibody at 1:10,000 dilution was used for all the samples. From the test it was found that the Primary antibody at 1:10,000 dilution and secondary antibody at 1:10,000 dilution can effectively detect the antigen concentrations up to 2×10^{-4}

SURVEY AND SURVEILLANCE OF DISEASES OF COCOA

Surveys conducted during the year, indicated that pod rot, stem canker are the major diseases on cocoa. Percent incidence of pod rot and stem canker caused by *Phytophthora palmivora* during last year was 9.60 and 9.93 respectively. In addition to the *Phytophthora* pod rot, another pod rot of bacterial



origin was observed during the last year. Causal organism was isolated from the diseased pods and Koch postulates were proved. The organism was sent to Indian Type Culture Collection Centre at IARI New Delhi and the organism was identified. Report yet to be received. Further, the percent incidence of the bacterial pod rot during last year was observed up to 3.91. Further, a leaf spot on cocoa was also observed on cocoa during the surveys in East and West Godavari districts of Andhra Pradesh. When the spores from the leaf spot of cocoa were observed under the microscope, they were found to be similar to *Pestalotiopsis sp.* The pure culture was sent to Culture identification centre at Agharkar Research Institute. The causal organism was identified as *Pestalotiopsis species*.

Percent Incidence of diseases of cocoa

Disease	Causal organism	Percent Incidence
Pod rot	<i>Phytophthora palmivora</i>	9.60
Stem canker	<i>Phytophthora palmivora</i>	9.93
Leaf spot	<i>Pestalotiopsis sp</i>	Traces
Bacterial pod rot	Identification report yet to be received	3.91

Management of Phytophthora pod rot of cocoa: Biological control

In vitro antagonistic activity of the fungal bio agents against Phytophthora pod rot of cocoa

In vitro interaction studies of the selected antagonistic fungi (*Trichoderma viridae*, *Trichoderma harzianum* and *Trichoderma hamatum*) against *Phytophthora palmivora* was carried out. Among the three bio control used *Trichoderma viridae* found to be superior in suppressing the *Phytophthora* mycelium with a per cent inhibition of 72.22% followed by *Trichoderma harzianum* (67.77%) and *Trichoderma hamatum* (64.44%).

In vitro antifungal activity of the Trichoderma species against *Phytophthora palmivora* pathogen of cocoa

S.No	Name of the bio agent	Growth of the test pathogen (<i>Phytophthora palmivora</i>) (mm)	Growth of the bio agent (mm)	Percent inhibition over control
1	<i>Trichoderma viride</i>	25	65	72.22
2	<i>Trichoderma harzianum</i>	29	61	67.77
3	<i>Trichoderma hamatum</i>	32	58	64.44
4	Control	90	0	0

Efficacy of plant extracts against the pathogens of cocoa pod rots under in vitro conditions

Studies were also carried out to know the efficacy of various plant extracts against *Phytophthora* pod rot cocoa under in vitro conditions. Among the various botanical extracts tested against *Phytophthora palmivora* under in vitro conditions, *Morinda citrifolia* followed by *Datura stramonis*, *Aloe barbadensis*, *Annona squamosa* and *Glyricidia sepium* showed inhibitory effect on the growth of *Phytophthora palmivora*. The plant extract of *Morinda citrifolia* was able to reduce the growth of *Phytophthora palmivora* pathogen to an extent of 88.8% followed by *Datura stramonis* (86.6%), *Aloe barbadensis* (84.4%), *Annona squamosa* (73.3%) and *Glyricidia sepium* (70.0%).





F. SOIL SCIENCE, AGRONOMY

Studies on fertilizer application in oil palm through micro irrigation

At HRS, Vijayarai, revealed that the data was found non significant for all the characters. However, the highest number of bunches per palm and FFB yield per hectare were recorded in the treatment 1200:600:1800 NPK kg/tree through fertigation.

Evaluation of substrate dynamics for IPM in Mango

At FRS, Sangareddy, the non significant difference with respect to plant height, canopy height, plant spread (E-W), yield parameters like number of fruits tree⁻¹ and yield (kg tree⁻¹) as well as quality parameters like fruit length and pulp to stone ratio was recorded. However, there was significant differences with respect. Maximum plant spread (NS) (7.5 m) was recorded in trees treated with 50% RDF (Recommended dose of fertilizer) + 50 kg FYM + 250 g Azospirillum. The highest cost benefit ratio (2.41) was recorded in 50% of RDF + *Azotobacter* 250g + 50kg FYM treated trees.

Nutritional Survey in Mango

At FRS, Sangareddy, mango orchards were surveyed in Sangareddy, Sadasivpet, Kondapur and Kohir Mandal of Medak district. Leaf samples as well as soil samples at 3 depths (0-50 cm, 50-100 cm, 100-150 cm) were collected from 6 orchards. Banganpalli is the major mango variety cultivated by the farmers in the surveyed region. Surveyed orchards were falling under the age group of <25 years and 25-40 years. Maximum yield (100 kg tree⁻¹) was obtained in mango cv Banganpalli in Deepak orchard and maximum TSS (23.0° Brix) was obtained in mango cv Banganpalli of MBS garden the Kohir Mandal

Fertigation scheduling for quality fruit production of mango

At FRS, Sangareddy, the drip irrigation system, with the laterals running towards the specified treatments, was installed during November, 2010. The treatments were imposed during flowering and marble stage of fruit only.

Development of organic package of practices for mango

At FRS, Sangareddy, the non-significant differences with respect to various growth parameters plant height, canopy height, plant girth and plant spread, fruit weight and TSS and other various physico-chemical parameters were recorded. However, the significant differences with respect. Maximum number of fruits tree⁻¹ (115) and yield (32.13kg tree⁻¹) in trees treated with Vermicompost (50 kg tree⁻¹) + Azospirillum culture@250 g tree⁻¹ + PSB@250 g tree⁻¹ was recorded.

Evaluation of substrate dynamics for IPNM in Guava

At FRS, Sangareddy, the non-significant difference among the treatments with respect to the vegetative growth parameters of guava were recorded. However, the treatments differed significantly with respect. Maximum yield (159.46 kg tree⁻¹) in the treatment 50% RDF + 25 kg FYM + *Pseudomonas fluorescence* (250g) and cumulative yield (613.66 kg. tree⁻¹) from 2006-2010 in the treatment RDF + Zn (0.5%) + B (0.2%) + Mn (1%) as foliar + Organic mulching 10 cm thick was recorded.





G. TECHNOLOGIES ASSURED, REFINED AND DEMONSTRATED THROUGH KVK

Krishi Vigyan Kendra, Venkataramannagudem

The following technical programme for the year 2011-12 was implemented at KVK, V.R.Gudem by Dr. E.Karuna Sree Programme coordinator, Sri N. V. Rao, SMS (Fisheries), Dr. K. Vijay Prakash, SMS (V.Sci.) and Smt. P. Chandana SMS (Horti.).

Crop Enterprise	Identified Problem	Interventions				
		Title of OFT/FLD	Title of Training	Title of training for extension personnel	Extension activities	Supply of seeds, planting materials etc.
Mango	Fruit Borer	IPM for Mango Fruit Borer Management	IPM Components	IPM Components	Diagnostic Visits, Literature, Method demonstration	Pesticides
Banana	Water Use efficiency	Micro irrigation in Banana	Water requirement to Banana through micro irrigation & fertigation	—	Field Visits	Planting Material
Paddy	Labor intensive normal nursery management and transplantation	Introduction of Paddy transplanter	Usage of paddy transplanter and nursery raising techniques	Usage of paddy transplanter and nursery raising techniques	Field day, Diagnostic visits, Field Visits, Exposure Visits, Method demonstration	Seed, Nursery raising material and transplanter on hire basis
Maize	Resource Conservation	Introduction of zero tillage in Maize	—	—	Diagnostic visit & Exposure visit	Seed & Weedicide
Dairy	Silent Heat in Buffaloes	Detection of Silent heat in Buffaloes through IVSM Technique	—	—	Animal Health camps, Diagnostic Visits	Cyclix Hormone
Back Yard Poultry	Scope for rearing improved back yard poultry in tribal areas for supplementary family income	Assessment of performance of GRAMA PRIYA poultry breed in tribal areas	Rearing and chick management	—	Field visits, literature	10 GRAMA PRIYA poultry chicks to each family for 40 families
Fisheries	Pond pollution and low feed efficiency with mash feed	Usage of pelleted feed in IMC Culture	—	—	Diagnostic & field visits and literature	Pelleted feed





Crop Enterprise	Identified Problem	Interventions				
		Title of OFT/FLD	Title of Training	Title of training for extension personnel	Extension activities	Supply of seeds, planting materials etc.
Shrimp farming	Disease outbreak due to sudden changes in water quality parameters	Usage of Water probiotics in Shrimp cultrue	—	—	Diagnostic visits, popular article and TV programme	Water probiotics
Varietal trial Tomato	High seed cost of existing variety	Evaluation of Arka vikas var. Tomato	—	—	Field day and diagnostic visit	Seed
Flori-culture	Low returns with traditional crops	Introduction of Lilly var. Hyderabad singles	—	—	Field day and popular article	Bulbs
Oleri-culture	Lower returns with existing variety	Introduction of Shivam hybrid var. of Tomato	—	—	Field day	Seed
Maize	Long duration with normal maize and crop diversification	Introduction of Sweet Corn Hybrid Sugar 75	—	—	Field day & Exposure Visit	Seed
Paddy	High labor cost in normal method of transplantation	Introduction of 8 row Paddy drum seeder	Method of using Drum seeder	Method of using Drum seeder	Demonstration, field day, diagnostic visit, exposure visit	Seed & drum seeder for demonstration
Dairy	Low yields with available perennial fodder varieties	Introduction of Co 4 fodder variety	—	—	Field day, Filed visits, literature	Fodder Slips
Dairy	Increased Production cost of Milk	Introduction of Azolla as feed supplement	Maintenance of Azolla Units and its uses	Maintenance of Azolla Units and its uses	Demonstrations, field visits and literature	Azolla units
Shrim farming	Lower returns in existing tiger shrimp culture due to viral diseases	Introduction of L.vannamei	—	—	Field diagnostic visits, radio and TV programmes	L. vannamei seed
Poly (Fish + Prawn) culture	Lower returns with mono culture (only Fish)	Culture of M.rosenbergii along with IMC	—	—	Demonstration and field visits	seed





Krishi Vigyan Kendra, Ramagirikhila

Technologies assessed

Season	Crop	Name of the technology	No. of farmers	Area (ha)
Kharif	Cotton	Evaluation of performance and economics of Hybrid seed production of Cotton	10	4
Kharif	Chillies	Assessment of soil test based fertilizer management in Chillies	10	4
Kharif	Turmeric	Introduction of Turmeric	10	4
Rabi	Rice	Evaluation of Bio Integrated pest management (BIPM) in paddy	5	5
Rabi	Mango	Spraying of CaNO_3 @ 10 g/ lit + sugar @ 30g/lit to induce uniform flowering and fruiting in mango	10	

Performance of Frontline Demonstrations on Field and horticultural Crops

Year	Season	Crop	Name of the technology demonstrated	No. of Farmers	Area (ha)
2011-12	Kharif	Cotton	IPM package	17	10.0
2011-12	Kharif	bhendi	Varietal trail for YVMV resistance in bhendi	10	4.0
2011-12	Kharif	Chillies	Technology demonstration application trichoderma viridi	10	4.0
2011-12	Rabi	Tamoto	Foliar spraying of micro nutrients for increased productivity and quality of tomato	10	4.0
2011-12	Rabi	Maize	Zero tillage method of maize cultivation	10	4.0
2011-12	Rabi	Green gram	Variety HH - 37 with IPM	10	4.0
2011-12	Rabi	Sesamum	Variety Sweta till with IPM	10	4.0





Frontline Demonstrations in 2011-12 (FLD)

S. No.	Crop/ Enterprise	Thematic Area	Technology demonstrated
1.	Mango	Management of flower & fruit drop	Spraying of Planofix@1ml/4.5lit. at peanut stage & lemon fruit stage + spraying of urea@10grms/acre at peanut stage and after 20 days
2.	Cashew	Rejuvenation of old/senile cashew orchards	Top working
3.	Redgram	Management of Pod borer in Redgram	Using resistant varieties LRG-41
4.	Cashew	Tea Mosquito bug management in cashew	Spraying of Chloripiriphos@ 2ml/lit. in December month, Profenophos@ 1ml /lit-January Month, Lambda cyhalothrin@ 1.2ml/lit-February Month
5.	Blackgram	Management of Yellow Vein Mosaic Virus in Blackgram	Introducing resistant variety LBG-752
6.	Maize	Nutrient management	Balance use of NPK, Green manure, use of vermicompost, Use of neem cake and castor cake
7.	Fisheries	Composite fish culture	Composite fish culture - Optimum utilization of pond productivity- more fish production from unit area, introduction of Catla, Rohu and Common carp fish seed.
8.	Fodder	Varietal evaluation	Popularization of CO-4 variety fodder
9.	Backyard poultry		Improved backyard poultry for higher production Improved poultry birds (Vanaraja)
10.	Dhaincha Sunhemp	Integrated nutrient management and soil nutrient status improvement	Adoption of green manure crops





Fertigation scheduling for quality fruit production of mango at FRS, Sangareddy



Evaluation of substrate dynamics for IPNM in Guava at FRS, Sangareddy



Lilly Hyd- Singles



Co4-fodder variety



Azolla Production



IMC Culture



Bio Integrated Pest Management (BIPM) in Rice



Soil test based Fertilizer application in Chillies





FLD on Zero tillage of Maize



FLD of YMV tolerant Green gram variety - WGG-37



Composite fish culture



Tea Mosquito bug management in cashew



Integrated Management of Fruit Borer in Mango



Management of Yellow Vein Mosaic Virus in Blackgram



Improved poultry birds (Vanaraja)



Management of flower & fruit drop in mango





V. EXTENSION

A. DIAGNOSTIC VISITS

Horticultural Research Station, Darsi

Name of the scientist	Date of visit	Programme attended	Village
S.Narasimha Rao Scientist (Plant Path.) & Head	15.9.2011	Sweet orange	Mundlamur
S.Narasimha Rao Scientist (Plant Path.) & Head	22.11.2011	Chillies	Chandalur
S.Narasimha Rao Scientist (Plant Path.) & Head	4.1.2012	Water melon and chillies	Tangutur

Horticultural Research Station, Vijayarai

Dr. V.Vijaya Bhaskar, Senior Scientist (Hort.) has visited several sick horticultural farms and suggested the remedial measures to correct the deficiencies and to control pests and diseases on the crops.

Floriculture Research Station, Rajendranagar

Dr. P.Rameh Kumar, Director, DFR, New Delhi visited the Floricultural Research station, Hyderabad on 8th October, 2011 and evaluated the ICAR projects.

Mango Research Station, Nuzvid

Dr.A.Sujatha, Principal Scientist (Ent) & Head, MRS, Nuzvid conducted field survey in mango gardens of Sri G.Parthasaradhi garu, Hon'ble Minister for Primacy Education located at Mallavalli village on 17.6.2011.

Smt. D.Aparna, Scientist (Hort.), MRS, Nuzvid conducted field survey in Parvathapuram and Chatrai villages on 20.06.2011 for post harvest cultural practices to be followed in mango and advised farmers.

Dr.A.Sujatha, Principal Scientist (Ent.) & Head, MRS, Nuzvid conducted field survey in mango gardens of Sri Ramanujam garu, Retd. Lokayukta judge located at Burugugudem of Reddygudem mandal on 21.06.2011.

Dr.A.Sujatha, Principal Scientist (Ent.) & Head, MRS, Nuzvid conducted field survey in mango gardens in Musunuru, Gopavaram, Simhadripuram, Yanamadala, T.Gannavaram, Mylavaram, Cheemalapadu, Gampalagudem, Reddygudem, Rangapuram, Narsapeta, Siddardhanagar, Ganapavaram, Putrela, Edulagudem, and Nuzvid in Krishna district and Dharmagigudem, Rangapuram, Chintalapudi and Seethanagaram villages in West Godavari district and advised the farmers.

Smt. D.Aparna, Scientist (Hort.), MRS, Nuzvid conducted field survey for monitoring the present flowering status in mango in Buruggudem village of chaatrai mandal and advised farmers regarding steps to be taken for induction of flowering in mango.





Smt. D.Aparna, Scientist (Hort.), MRS, Nuzvid conducted field survey in Vissannapeta, Regunta, Rammanagudem, Ravicharla, Eedulagudem, Agiripalli, Madalavarigudem, Adavinekkalam, Digavalli, Putrela, Hanumanthulagudem, Kondaparva, Siddardhanagar, Reddygudem, Kunapurajuparva, Mylavaram, Raghavapuram, Sunkollu, Yanamadala, Seethampuram, Suravaram, Kothasuravaram, Pathasuravaram, Eedara villages during February and March months for pests, diseases incidence, flowering and fruiting pattern and advised the farmers various cultural aspects.

Fruit Research Station, Sangareddy

Date	Visits	Name of the Resource person
1-5-2011	Visited the Lemuru (V), Kandukuru (M) for diagnostic visit (Mango) and recorded the disease incidence. The major diseases are Anthracnose-12.2%, Bacterial blight-7.5%, Redrust-6.5%	Dr. D. Anitha Kumari, Scientist (Ento) & Sri B. Sri. Mahender, Scientist (Pl.Patho)
20-6-2011	Visited Guava orchard affected with wilt at Koheda (v), Rangareddy district. The guava plants were found in wilting condition (May be due to drought or Fusarium wilt). Suitable suggestions like fungicides drenching (carbendazim and COC) and fertilizer application were advised.	Sri B. Mahender, Scientist (Pl.Path)
1-7-2011	Survey of pest incidence in mango orchards at Sadasivpet and Kohir of Ranga Reddy district.	Dr. D. Anitha Kumari, Scientist (Ento)
July, 2011	Visited the mango orchards at Lemur village of Rangareddy district and recorded the pest and diseases. (Anthracnose-10-20%, Bacterial blight-8-10%, Redrust-20-22%, fruit cracking-5-8%).	Sri B. Mahender, Scientist (Pl.Path)
August, September, October and November, 2011	A diagnostic survey was conducted in the districts of Krishna, Mahaboobnagar and Rangareddy districts to record incidence of pest and diseases of Andhra Pradesh. The major crops covered during the visit were Mango, Banana, Guava, Potato, Tomato, Chillies, Zinger and Turmeric. The major pest and diseases recorded in Mango viz., Anthracnose, Bacterial blight, Black banded diseases, Scales, Mealy bugs, Hoppers, Stem borers and Fruit Cracking. In Banana, the main diseases recorded are Sigatoka leaf spot, Banana bunchy top virus and Mosaic, where as in Potato early and late blight symptoms were observed. For each disease the control measures were suggested to the farmers	Sri B. Mahender, Scientist (Pl.Path)
19-10-2011 Nallavilli (V) Jinnaram (M)	The tomato field was affected by tomato ring spot virus and damping & advised to spray Zolone @ 2ml/lit and Acephate @ 1g/lit for control the vector (thrips).	Sri B. Mahender, Scientist (Pl.Path)
21-10-2011 Jogipet	The ginger crop was affected by Rhizoctonia leaf rot, Pellicularia leaf blight and Thizome fly & advised to spray Bavistin @ 1 g/l, Captan @ 1 g/l, Chilli crop was affected by thrips and advised to spray Zolone @ 2ml/l.	Sri B. Mahendar, Scientist (Pl.Path) & Smt K. Prabhavathi, Scientist (SS&AC)





Dr. P.Rameh Kumar, Director, DFR, New Delhi visited the Floricultural Research station, Hyderabad on 8th October, 2011



Dr. G.Ramanandam, Senior Scientist (Hort.) & Head, HRS, Peddapuram performed field diagnostic visits in East Godavari district



Krishi Vigyan Kendra, Venkataramannagudem scientists were conducted diagnostic visits in W.G. Dt.



Dr.S.Amarender Reddy, Director of Extension, Programme Co-ordinator and SMS (Fisheries) of KVK, V.R.Gudem visited Fish & Prawn ponds at Eluru & Pedamalanka.





Farmers from Orissa visited Krishi Vigyan Kendra, Venkataramannagudem.



The team in Paddy field



Team in Pineapple field



Team in Maize crop



Team in Cashew plantation



Diagnostic visit on Shoot & Fruit borer in Brinjal



Wilt incidence in Cotton



Leaf blotch in turmeric





Horticultural Research Station, Peddapuram

Dr. G.Ramanandam, Senior Scientist (Hort.) & Head performed six field diagnostic visits in East Godavari district along with Dept. staff of Horticulture and local farmers during the crop period and observed the incidence of cassava mosaic disease, mite, mealy bug and suggested the remedial measures.

Diagnostic Field visit to Tapioca fields by Dr.G.Ramanandam Sr.Scientist(Hort),AICRPTC, Peddapuram along with ADA, AO, AEO and local tapioca farmers.

Krishi Vigyan Kendra, Venkataramannagudem

Krishi Vigyan Kendra, Venkataramannagudem scientists team visited to different villages of West Godavari District and 153 diagnostic visits were conducted on Agriculture, Horticulture, Animal Husbandry and Fisheries to assess field problems and recommendations were given. The important problems identified are as follows.

- 1) Dr.E.Karuna Sree, Programme Co-ordinator, Smt.P.Chanda, SMS (Horti.), Krishi Vigyan Kendra, and Smt. P.Ramadevi, Scientist (P.P.) & Head, Smt. Sunitha , Scientist (Ento.), Betelvine Research Station, Venkataramannagudem conducted Diagnostic visit to Ginger fields of Ananthapalli and suggested remedial measures.
- 2) Dr.E.Karuna Sree, Programme Co-ordinator and Sri.N.Veerabhadra Rao, SMS (Fisheries), visited the field of Paddy Transplanted through Drum Seeder and recorded productive tillers after 45 days of sowing in the demonstration plot.
- 3) Dr.S.Amarender Reddy, Director of Extension, Dr.E.Karuna Sree, Programme Co-ordinator and Sri.N.Veerabhadra Rao, SMS (Fisheries), attended Fish & Prawn ponds at Eluru & Pedamalanka on 30th August, 2011 for the assessment of pest and disease incidence.
- 4) Dr.S.Amarender Reddy, Director of Extension, Dr.E.Karuna Sree, Programme Co-ordinator, visited Dubhacherla, Ananthapalli and V.R.Gudem for exposure visit and for collection of economic survey on Agriculture and allied crops on 26th August, 2011.
- 5) Dr.E.Karuna Sree, Programme Co-ordinator and Smt.P.Chanda, SMS (Horti.), visited OFT field at Prakasharaopalem on Mango Fruit Borer management and suggested mechanical control measures on 29th August, 2011.
- 6) Dr.E.Karuna Sree, Programme Co-ordinator, Sri.N.Veerabhadra Rao, SMS (Fisheries) and Smt.P.Chanda, SMS (Horti.), conducted field visit on 17th October, 2011 at Kommugudem for diagnosing Guava wilt affected gardens.
- 7) Sri.N.Veerabhadra Rao, SMS (Fisheries) visited to Allavaram village for diagnostic field visit on Shrimp culture.
- 8) Dr.E.Karuna Sree, Programme Co-ordinator and Dr.K.Vijay Prakash, SMS (Vet.Sci.), participated Clinical Exposure visit to the trainees of vocational training on Veterinary First Aid & General Live Stock Management in tribal mandals sponsored by AGM, NABARD, West Godavari on 18th February, 2012.
- 9) Sri.N.Veerabhadra Rao, SMS (Fisheries) visited the village Tanuku for diagnostic field visit on Fish Culture





- 10) Dr.E.Karuna Sree, Programme Co-ordinator, Sri.N.Veerabhadra Rao, SMS (Fisheries), Smt.P.Chanda, SMS (Horti.) and Dr.K.Vijay Prakash, SMS (Vet.Sci.), visited paddy fields sown with drum seeder at Pulla village of Bhimadolu Mandal.
- 11) Smt.P.Chandana, SMS (Horti.), visited the village Nallamadu for diagnostic visit on Guava orchards.
- 12) Dr.E.Karuna Sree, Programme Co-ordinator, and Smt.P.Chanda, SMS (Horti.) along with NABARD, AGM proceeded to Polavaram to visit MATHOTA Programme fields on Cashew and Mango orchards and suggested care of young plants during summer.
- 13) Farmers from Orissa visited Krishi Vigyan Kendra , Venkataramannagudem for exposure visit and the KVK Team explained about various technological interventions introduced on Horticulture, Agriculture, Animal Husbandry & Fishery departments.

Krishi Vigyan Kendra, Pandirimamidi

Krishi Vigyan Kendra, Pandirimamidi scientists team visited the villages of East Godavari District and 125 diagnostic field visits were conducted on Agriculture, Horticulture, Animal Husbandry and Fisheries and identified the problems and recommendations were given. The team consists of Dr.A.Srinivas, Programme Co-ordinator, Sri V.Govardhan, SMS (PP), Sri B.Bhasker Rao, SMS (Hort.), Sri Ch.Kiran Kumar, SMS (SS & AC) and Smt. K.Dhana Sree, SMS (Home Science) from the visit from the visit.

KVK, Ramagirikhilla

The team of scientists of KVK, Ramagirikhilla conducted 20 diagnostic field visits in Horticulture and 19 in Entomology on various crops in Karimnagar districts of Andhra Pradesh.

Horticultural Research Station, Pandirimamidi

S. No	Name of the scientist	Date	Place	Diagnosis
1.	Dr. N.B.V.Chalapathi Rao, Dr. A.V.D.D. Rao and Dr. A. Snehalatha Rani	11-04-11	Charlapalli	Problems in crop management in coconut in closer spacing
2.	Dr. A. Snehalatha Rani	28.06.11	Ambajipeta, Potailanka	Problems due to raring in copra in coconut storage structures.
3.	Dr. N.B.V.Chalapathi Rao and Dr. A. Snehalatha Rani	18.07.11	Kalavacharla and Seethanagaram	Problems due to basal stem rot and papaya mealy bug incidence
4.	Dr. A. Snehalatha Rani	28.07.11	Degalavaripalem	Problems due to stem bleeding disease
5.	Dr.N.Emmanuel	27.09.11	Ranasthalam	Problems due to papaya mealy bug and release of parasitoids.
6.	Dr.N.Emmanuel	28.09.11	Kuthuma, Sompeta	Problems due to red palm weevil and Root feeding technique with Monocrotophos and Lures
7.	Dr.N.Emmanuel and Dr. A. Snehalatha Rani	01.10.11	Aatreyapuram and Mandapalli	Problems in crop management of Coconut and Cocoa





S. No	Name of the scientist	Date	Place	Diagnosis
8.	Dr.N.Emmanuel	21.11.11	Rangapuram	Problems due to red palm weevil and Root feeding technique with Monocrotophos and Lures
9.	Dr.N.Emmanuel	29.11.11	Malikipuram	Problems due to Application of T.viridae with neem cake
10	Dr. A. Snehalatha Rani	03.12.11	Pasarlupudi, Appanapalli, Doddavaram, Pedapatnam lanka	Problems in crop management of Coconut
11	Dr.N.Emmanuel	14.12.11	Annavam, Tetagunta	Problems in crop management of Coconut
12	Dr. A. Snehalatha Rani	30.12.2011	Ravulapalem, Kothapeta and Atreyapuram mandals	Problems in crop management of Coconut
13	Dr. N.B.V.Chalapathi Rao and Dr.A.Snehalatha Rani	31.12.2011	Kakinada, Tallarevu & Samalkota mandals	Problems in crop management of Coconut
14	Dr.N.Emmanuel		Itukulagunta	Problems in crop management of Coconut
15	Dr.N.Emmanuel	05.01.2012	S.Yanam	Problems in crop management of Coconut
16	Dr. A. Snehalatha Rani	07.01.2012	Seetharampuram, Narsapur	Problems in coconut diseases incidence
17	Dr. N.B.V.Chalapathi Rao and Dr. A. Snehalatha Rani	10.01.2012 - 13.01.201	Srikakulam, Vijayanagaram, Visakhapatnam and West Godavari districts	Problems in crop management of Coconut and Cocoa
18	Dr.N.Emmanuel	10.01.2012	Kothapeta	Problems in crop management of Coconut
19	Dr.N.Emmanuel	21.01.2012	N.Kothapalli	Problems in crop management of Coconut
20	Dr.N.Emmanuel	28.01.2012	Tapeswaram	Problems in crop management of Coconut
21	Dr. A. Snehalatha Rani and Smt. E. Padma	08.02.2012	Vegiwada	Problems in crop management of Coconut
22	Dr.N.Emmanuel	29.02.2012	Atreyapuram	Problems in crop management of Coconut
23	Dr.N.Emmanuel	01.03.2012	Vedireswaram	Problems in crop management of Coconut
24	Dr.N.Emmanuel	05.03.2012	Chiruthapudi, Palivela	Problems in crop management of Coconut
25	Dr.N.Emmanuel	15.03.2012	Ganti	Problems in crop management of Coconut
27	Dr.N.Emmanuel	19.03.2012	Gangavaram	Problems in crop management of Coconut





Horticultural Research Station, Venkataramannagudem

Place	Date	Participant & Designation	Particulars
Indukurupeta, Tantikonda, Potahvaram villages in Gokavaram mandal	15.02.2011	Dr.K.Rajendra Prasad Scientist (Hort)	Visited the mango orchards that are unproductive and suggested measures by planting with new grafts.

Betelvine Research Station, Venkataramannagudem

S. No.	Name and Designation	Place, purpose and date of visit
1.	Dr. R. Rajyalakshmi S(H)	Diagnostic visit to ginger fields attacked by rhizome rot at Chodavaram village on 18.5.2011
2.	Dr. M. Rajasekhar SS(H) Dr. R. Rajyalakshmi S(H)	Diagnostic visit to turmeric fields attacked by rhizome rot at Ananthapalli village on 23.9.2011
3.	Dr. M. Rajasekhar SS(H)	Survey to jackfruit orchards at Chintapalle village on 25.1.2012

Vegetable Research Station, Rajendranagar

Sl.No.	Name and Designation	Place of visit
1.	P. Rama Devi Scientist (PP)	Diagnostic visit to cocoa gardens affected by wilt disease and suggested control measures at Tadepalligudem on 5.5.11.
2.	P. Rama Devi,S(PP) P. Sunitha, S (Ento.)	Diagnostic visit to ginger fields affected by rhizome rot at Chodavaram village on 4.6.11
3	P. Rama Devi, S(PP) B. Tanuja Priya, S(H) P. Sunitha, S (Ento.)	Survey to betelvine gardens in East Godavari dist. on 21.6.11
5.	P. Rama Devi	Diagnostic visit to betelvine gardens affected by <i>Phytophthora</i> foot rot disease incidence and suggested control measures in Gopalapuram, East Godavari (dt) on 23.12.11.

Dr.M.Vijaya, Principal Scientist (Pl.Path.), Dr.Veena Joshi Scientist (Hort) and Dr. P. Madhavi Latha, Scientist (Agro) visited bottle gourd (Mahyco hybrid warda) field at Pedashapur village of Shamshabad Mandal. The crop was at 45 days old and had good growth but sucking pest complex was and suggested to spray rogor 2ml/lit and Multi K @ 5g/l for the management.

Dr.R.V.S.K.Reddy, Principal Scientist (H) attended field inspection of Tomato at Srirampuram, Moinabad Mandal to verify the purity of seed material.

Dr. B.K.M.Lakshmi, Scientist (Pl. Path) attended field diagnostic survey of banana fields at Kalivemula, Medak dt on 1/12/2011.

Dr. B.K.M.Lakshmi, Scientist (Pl. Path) attended as Resource Person "The mango farmers - Scientists interaction Programme" organized at Nuziveedu on 12-01-2012.

Dr.K.Sireesha, Scientist (Entomology) visited coccinia fields in Kharimnagar for the estimation of stem gall infestation and suggested remedial measures.





Citrus Research Station, Tirupati

All the scientists participated in production and protection aspects of sweet orange and acid lime cultivation at Anantharajupeta, Nalgonda and Mahaboobnagar parts of Andhra Pradesh.

B. TRAINING PROGRAMMES CONDUCTED

Herbal Research Station, Rajendranagar

Name of the scientist	Date	Training programme	Place
S.Narasimha Rao Scientist (Plant Path.) & Head	21.3.2012	Efficient use of irrigation water in different horticultural crops	ARS, Darsi
S.Narasimha Rao Scientist (Plant Path.) & Head	24.3.2012	Management of Diseases in vegetables cultivated during summer season	HRS, Darsi

Training programmes conducted at Herbal Research Station, Rajendranagar, Hyderabad during the year under the Project Facilitation Centre funded by National Medicinal Plants Board, New Delhi as detailed below.

Mango Research Station, Nuzvid

S.No	Date	Location	Title	No. of Participants
1.	25-06-2011	E.E.I, Acharya N.G.Ranga Agricultural University, Rajendranagar.	Aloe Vera Cultivation and Processing.	45
2.	02-07-2011	R.A.R.S. ANGRAU, Warangal.	Cultivation and Marketing of Medicinal plants	84
3.	08-07-2011	KVK, Zaheerabad, Medak dist.	Cultivation and Marketing of Medicinal plants	65
4.	16-07-2011	MPDO office, Tandur, Ranga Reddy dist.	Cultivation of Aloe and Gummadi Teku (<i>Gmelina arborea</i>)	90
5.	29-07-2011	HRS, Chintapalli, Visakhapatnam dist.	Cultivation of Medicinal and Aromatic crops	72
6.	29-08-2011	RHTI, Pillalamarrhi, Mahaboobnagar dist.	Cultivation and Marketing of Medicinal plants	45
7.	13-09-2011	RHTI, Ananthapur.	Cultivation and Marketing of Medicinal plants	80

Smt. D.Aparna, Scientist (Hort.) conducted a one day training programme on mango along with Department of Agriculture in Kunapurajuparva village, Reddygudem mandal on 27.2.2012.





Horticultural Research Station, Venkataramannagudem

Dr. M. Rajasekhar SS(H) Dr.R. Rajyalakshmi S(H) conducted one day training programme to farmers on alternate crops to tobacco on 29.3.2012

Betelvine Research Station, Venkataramannagudem

Smt. P. Rama Devi. S(PP), B. Tanuja Priya, S(H), P. Sunitha, S (E) conducted two farmers training programmes on Betelvine cultivation at Gopalapuram village of East Godavari and Doddipatla village of West Godavari districts on 20.3.2012 & 21.3.2012 respectively.

Smt. P. Rama Devi, S(PP) as resource person trained farmers on Mushroom cultivation as an alternative farming to tobacco cultivation on 29.3.2012.

KVK, Venkataramannagudem

The staff of Krishi Vigyan Kendra, Venkataramannagudem conducted 23 Training Programmes on Agriculture, Horticulture, Animal Husbandry and Fisheries at V.R.Gudem.

On campus Training Programmes

- 1) Training programme conducted on Mango fruit borer management at Kommarra, DwarakaTirumala Mandal along with Dr.S.Amerandra Reddy, Director of Extension, Dr.YSRHU, Venkatramannagudem on 7.7.2011.
- 2) KVK Programme Co-Ordinator & Scientists conducted Training programme on High density planting and Meadow Orchard in Guava with Scientists of FRS sangareddy as resource persons on 29.7.2011.
- 3) One day Training programme conducted on Mango fruit borer management at Kommarra on 6-09-2011.
- 4) Subject Matter Specialist (Fisheries) conducted training programme on "Induced breeding and seed production in Indian Major Carps" for rural youth and FDDs, IFTC, Badampudi & Fisheries Development Officer Badampudi attended training as resource persons.
- 5) Programme Co-Ordinator and SMS (SSAC) conducted one day training programme at Pulla village on paddy seed sowing by drum seeder method in W.G.Dist.
- 6) Programme Co-Ordinator and SMS (Vety.) conducted Animal Health Camp for selection of beneficiaries for OFT – I and detection of sailent heat on buffaloes on 30.7.2011.
- 7) Programme Co-Ordinator and Subject Matter Specialist (Horti.) conducted training programme on Better Management Practices in Guava and the farmers who went on an exposure visit to Ananthapur shared their experiences with local Guava farmers at KVK meeting hall on 6.9.2011.
- 8) Programme Co-Ordinator and Subject Matter Specialist (SS&AC) conducted training programme on weeding through Mechanical weeders in paddy fields.
- 9) Programme Co-Ordinator and Subject Matter Specialist (Fisheries) conducted two days training programme on vermicompost and vermiculture production technology at Lankapalli, Vagupalli & Kannapuram of W.G.Dist.





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- 10) Vocational Training on skill development initiative on “Veterinary First Aid & General Live Stock Management” to the members of farmers clubs of NABARD in Tribal Mandals (Jeelugumilli & Buttayagudem) conducted from 06-02-2012 to 06-03-2012.
- 11) One day Training Programme on Management Practices in Mango were conducted by the Programme Co-Ordinator, Subject Matter Specialists of KVK.
- 12) The Programme Co-Ordinator, SMS (Fisheries) and SMS (Horti.) conducted two days training programme on “Organic farming Vermicomposting & other Bio- Fertilizers as critical inputs in Turmeric and Chilli crops” at Lankapalli village of Buttayagudem Mandal of W.G.Dist.
- 13) Subject Matter Specialist (Horti.) and Subject Matter Specialist (Fisheries) proceeded to participate in training programme on “ Azolla cultivation and its uses” at Ravulaparru, Ungutur Mandal.
- 14) Distribution of Oral calcium drug to the farmer of downers cows syndrome by SMS (Vety.) at Chodavaram camp of W.G.Dist.
- 15) Subject Matter Specialist (Vety.) attended as a resource person on ‘Pasu Poshanalo Melakuvalu’ organised by Chaitanya Yuvajana Sangham at Bhimadolu.
- 16) Inauguration of the Chodavaram Health Camp by the farmers club of Chodavaram village maintained by KVK, V.R.Gudem. The Programme Co-Ordinator and Senior Scientist i/c, BRS, SVVU & Dr.Jagadamba i/c, VAS , Chodavaram were participated in the camp.
- 17) Training organized to the farmers on pest and disease management in Citrus by SMS (Horti.) in the village Jajulakunta.
- 18) Subject Matter Specialist (Vety.Sci.) participated as a resource person in training programmes on ‘Live Stock Management’ organized by Chuthanya Yuvajana Sangham at Agadalalanka & Annevarigudem of Bhimadolu Mandal and Timmaraogudem & Ponangi of Eluru.
- 19) The Programme Co-Ordinator , Subject Matter Specialist (Horti.), Subject Matter Specialist (Fisheries), and Subject Matter Specialist (Vety. Sci.) conducted 3 days training programme on advanced package of practices in Cashew production technology at Krishi Vigyan Kendra, Pandirimamidi, East Godavari District on 25.8.2011.
- 20) The Programme Co-Ordinator and Subject Matter Specialist (Fisheries) conducted training programme on PRA techniques to rural youth for village development plan.
- 21) Training programme conducted on “Nursery Management of Roopchand fish culture” for rural youth and farmers on 25-10-2011 at Nidamaru village.
- 22) Training programme conducted on usage of ‘Bio fertilizers’ and ‘Organic manure in Horticulture crops’ for rural women on 22-10-2011.
- 23) Training programme conducted on Best Management practices in Emu Bird farming for rural youth and farmers on 22-10-2011.

Off Campus Training Programmes

KVK, Pandirimamidi

The staff of Krishi Vigyan Kendra, Pandirimamidi conducted 52 On and Off campus Training Programmes on Agriculture, Horticulture, Animal Husbandry and Fisheries as detailed below.



**Training Programme on Cashew Rejuvenation and Management Practices on 21-06-2011**

S.No.	Discipline	No. of Trainings	ON	OFF	No.of Participants
1.	Horticulture	24	6	18	1746
2.	Plant Pathology	10	3	7	635
3.	Soil Science & Agril.Chemistry	10	2	8	300
4.	Fisheries	5	1	4	150
5.	Home Science	3	0	3	90
	Total	52	9	30	2321

KVK, Ramagirikhilla

The scientists of KVK, Ramagirikhilla conducted 9 training programme in Horticulture and 14 in Entomology in the Karimnagar district of Andhra Pradesh.

- One day on campus training programme on “Pruning and grafting techniques” was conducted at village Ramagirikhilla of Kamanpur mandal on 15.03.2012.
- One day Training on Soil reclamation of Alkaline soils with Gypsum application
- One day off campus training programme “Organic production of vegetables crops by using Bio-pesticides and Organic fertilizers” was conducted at Kataram village of Kataram mandal on 20.01.2012.
- One day off campus training programme on “Production technology of Water melon” was conducted at village Gunjapadugu of Manthani mandal on 21.01.2012.
- One day off campus training programme on “Production technology of Jasmine” was conducted at village Kalvacharla of Kamanpur mandal on 24.01.2012.
- One day off campus training programme on “Management practice for summer vegetables” was conducted at KVK adopted village Kajepally of Mutharam mandal on 27.01.2012.
- One day on campus training programme on “Preparation of Bio-fertilizers and botanicals and their using Horticulture crops” was conducted at village Kajepally of Mutharam mandal on 20.03.2012.

C. TRAINING PROGRAMMES PARTICIPATED**SKPP Horticultural Polytechnic, Ramachandrapuram**

Sri M. Satti Raju, Vice-Principal i/c. of this polytechnic visited Jaggampet, Nagaram fields on 07-1-2012 and interacted with farmers and discussed various aspects of Horticultural crops.

Sri M.Satti Raju, Vice-Principal i/c. on 12-1-2012 participated 12 years celebration of DAATT centre, Nadakuduru, Kakinada and interacted with farmers.

Sri M.Satti Raju, Vice-Principal i/c. on 23-1-2012 participated the Cashew Farmers meeting at Rampachodavaram and delivered the lecture on cashew crop.

Sri M.Satti Raju, Vice-Principal i/c. on 28-2-2012 visited the mango gardens at R. Kothuru, Tethagunta and interacted with farmers and suggested the remedial measures for pests.

Sri M.Satti Raju, Vice-Principal visited mango and cashew field at Sankavarm on 03-2-2012 interacted with farmers and discussed various management practices and also participated in State Level Seminar on Cashew at Kalavacharla on 22.2.2012.





Training programme conducted at EEL, Rajendranagar on 25-6-2011.



Training programme conducted at RARS, Warangal on 2-7-2011



Training programme conducted at KVK, Zaheerabad on 8-07-2011.



Training programme conducted at Tandur on 16-7-2011.



Training programme conducted at HRS, Chintapalli on 29-7-2011



Training programme conducted at RHTI, Pillalamarri, Mahaboobnagar



Training programme conducted at Ananthapur on 13-9-2011



Visit to Aloe Processing unit at Ananthapur on 13-9-2011.





High density orcharding in guava Fish seed production technology



Veterinary first aid & general livestock management



Mango fruit borer management



Organic vegetable cultivation



Rural youth training on PRA techniques



Vermi culture training



Organic citrus cultivation



BMP in milch animals





Training Programme on Cashew Rejuvenation and Management Practices on 21-06-2011



Training Programme on Dry Land Horticulture Crops from 02-11-2011 to 15-12-2011



State level training programme on Advances in Cashew Production Technology-DCCD, Kochi, from 23rd to 25th January, 2012



District level seminar on Advances in Cashew Production Technology-DCCD, Kochi on 14th, March, 2012





Honourable Minister Sri.Thota Narasimham and MLA Sri K.V.Viswanath and M.P Smt. Ratnabhai garu visited HRS, Pandirimamidi



Pest and Disease identification in different crops



Mushroom Cultivation on 18.01.2012



Visit to Kerala for study tour on Neera processing



Jasmine Cultivation Practices



Students awareness on plamyrah utilization at HRS, Pandirimamidi



Dr.N.B.V.Chalapathi Rao, Principal Scientist & Head conducted cocoa training programme at HRS, Ambajipeta.





SSPG Horticultural Polytechnic, Madakasira

Sri. R.Preetham Goud, Assistant Professor (Agronomy) participated in the 105th Training Programme conducted for NSS Programme Officers held at Training and Orientation Centre, Visakhapatnam from 16th -21st August 2011.

Sri. R. Preetham Goud, Assistant Professor (Agronomy) participated in the workshop on “Mushroom Cultivation” conducted by Indian Institute of Horticultural Research, Bangalore from 17th-21st January 2011.

Horticultural Research Station, Vijayarai

Dr.V.Vijaya Bhaskar, Senior Scientist (Hort.) has participated in the training programmes organized to the field level workers, A.E.O's, Adarsha Rythus and growers of Horticultural crops and delivered the 65 lectures on different aspects of Horticultural crops.

Participated in the field day on cocoa organized by the Krishi Vigyan Kendra, CTRI, Kalavacharla, Rajahmundry conducted at Oonagatla village of Chagallu mandal, West Godavari District.

Horticultural Research Station, Mahanandi

Sri. Y.Subba Rao, Scientist (Ento) participated in Training programme for Entomologists on “Mass production of parastitoids of papaya mealybug” on 18-04-2011 at NBAll, Bangalore.

Smt. Ch.Ruth, Scientist (Pl.path) participated in Rythuchaitnayayatra programme in Mahanandi (M) and Nandyal Mandals along with line departments in the villages Thimmapuram, Bukkapuram, Tekke, Chabolu, Gajulapalli, Basapuram, ,Gopavaram from 17.5.2011 to 28.5.2011.

Sri. Y.Subba Rao, Scientist (Ento) participated in Rythuchaitnayayatra programme in Mahanandi (M) along with line departments at Abbipuram, Mahanandi, Srinagaram on 19th and 20th May, 2011.

Smt. Ch.Ruth, Scientist (Pl.path) participated as guest speaker in Andhra pragathi Grameena Bank meeting with women farmers organized by Andhra Grameena Bank, Thimmapuram dt:01-06-2011.

Smt. Ch.Ruth, Scientist & Head, HRS, Mahanandi, attended and participated T & V meeting at RARS, Nandyal on 16th July, 2011.

Smt. Ch.Ruth, Scientist (Pl.path) & Head, HRS, Mahanandi participated in Mahila Rythusadassu dt:16-09-2011 at Rudravaram (M) of Allagadda Division along with ADA and Agricultural Officers.

Smt. Ch.Ruth, Scientist (Pl.path) & Head, HRS, Mahanandi participated in the training programme on production technology of turmeric crop on 24-09-2011 at Regadaguduru village of Velugodu Mandal organized by Coramandal Fertilizers, Kurnool District.

Dr. Ch.Ruth, Scientist (Pl.path) & Head, HRS, Mahanandi participated as resource person in the training programme in chillies at RARS, Nandyal organized by Nandi Rythu Samakhya on 10-10-11.

Dr. Ch.Ruth, Scientist (Pl.path) & Head, HRS, Mahanandi participated in T& V meeting at RARS, Nandyal on 05-11-2011.





Dr. Ch.Ruth, Scientist (Pl.path) & Head, HRS, Mahanandi attended and participated in Review meeting of Heads of Research stations” at university Head quarters on 30-11-2011.

Dr. Ch.Ruth, Scientist (Pl.path) & Head, HRS, Mahanandi participated in District Level Seminar on “Vegetable cultivation and marketing for betterment of farmers” at Uppara community Hall, Yemmiganur on 21-12-2011 organized by NHRDF, Kurnool.

Dr. Ch.Ruth, Scientist (pl.path) & Head, HRS, Mahanandi participated in the training programme as resource person on “Cultivation of Banana, turmeric crops” and “Fertigation for Horticultural crops” at Gajulapalli Village on 23-12-2011 organized by IFFCO Ltd., New Delhi.

Sri Y. Subba Rao, Scientist (Ento) participated as resource person in the training on “Cultivation of turmeric and vegetable crops” at Rudravaram village of Allagadda mandal on 13-12-2011 along with Horticultural Officers, Allagadda of Kurnool dist.

Dr. Ch.Ruth, Scientist (Pl.path) & Head, delivered a lecture an package of practices in “Banana and turmeric” to Horticulture Polytechnic students of Kalikiri at CRS, Tirupati on 23-01-2012.

Mango Research Station, Nuzvid

Smt. D.Aparna, Scientist (Hort.) participated in training programme on ‘Mamidilo Sasyarakshana-Yaagamaanya Paddathulu’ organized by Department of Horticulture and KVK, Pandirimamidi at Tuni and on 27.7.2011.

Dr.A.Sujatha, Principal Scientist (Ent.) & Head, MRS, Nuzvid and Smt. D.Aparna, Scientist (Hort.) participated in training programme on ‘Mamidilo Sasyarakshana – Yaajamanya Paddatulu’ organized by Department of Horticulture and KVK, V.R.Gudem at Kummara village of Dwaraka Tirumala mandal on 28.7.2011.

Smt. D.Aparna, Scientist (Hort.) participated in training programme on ‘Mamidi panta pai avagahana sadassu’ conducted by Paradeep Phosphates Ltd., at Ramanakkapeta village, Nuzvid mandal on 26.9.2011.

Smt. D.Aparna, Scientist (Hort.) participated in training programme on ‘Mamidi panta pai avagahana sadassu’ conducted by Coramandal Fertilizers Pvt. Ltd., at Vedurumedem village, Mylavaram mandal on 16.12.2011.

Smt. D.Aparna, Scientist (Hort.) participated in training programme and examination at divisional level to assess field level knowledge of adarsha rythulu at Market Yard, Nuzvid on 17.12.2011.

Smt. D.Aparna, Scientist (Hort.) conducted a one day scientists – farmers interaction programme on mango cultivation in collaboration with Department of Horticulture at MRS, Nuzvid on 12.1.2012.

Smt. D.Aparna, Scientist (Hort.) participated in training programme on mango conducted by KVK, V.R.Gudem on 13.2.2012.

Smt. D.Aparna, Scientist (Hort.) participated in training programme on mango organized by Department of Agriculture and Coramandel Fertilizers Ltd., in Putrela village, Vissannapeta mandal on 16.2.2012.





Fruit Research Station, Sangareddy

Date	Place /institution conducted	Topic of the Lecture	Resource person
5-3-2011	Krishi Vignana Kendra, Zaheerabad	Growing of Karonda as a live fence.	Dr. M. Raghava Rao, Principal Scientist (H)
7-3-2011	DATTC at Sangareddy	Rejuvenation of old Mango orchard by top working technique.	Dr. M. Raghava Rao, Principal Scientist (H)
17-3-2011	DATT at Sangareddy	Trained the farmers on nursery management.	Dr. M. Raghava Rao, Principal Scientist (H)
28-3-2011	FRS, Sangareddy organized by Vegetable Research Station, Rajendranagar.	NAIP training programme.	Dr. A. Bhagwan Sr. Scientist (H) and Dr. A. Kiran Kumar, Scientist (H)
16-4-2011	RHTI, Mahaboob nagar	Mango cultivation as a resource person.	Sri B. Ramesh Babu, Scientist (H)
22-5-11	Jubilee Hall, Public Garden, Hyderabad.	Exhibited the Mango different sizes of mango fruits of different varieties exhibited on the occasion of Biodiversity.	Dr. M. Raghava Rao, Principal Scientist (Hort.)
02-06-11 and 06-06-11	Fruit Research Station, Sangareddy.	Under NAIP programme on value chain of mango and guava for domestic and export market.	Dr. A. Kiran Kumar, Scientist (Hort)
28-07-11	Fruit Research Station, Sangareddy.	Pruning in Mango	Dr. A. Kiran Kumar, Scientist (Hort)
29-7-2011	Ranjole (V), Zaheerabad (M)	Demonstrate fruitfly traps for fruitfly management.	Dr. A. Kiran Kumar, Scientist (Hort) Dr.M.Raj Kumar, Principal Scientist (H) Dr. D. Anitha Kumari, Scientist (Ento)
19-8-2011	Shadnagar, Farooqnagar, Talakondapalli mandals, Mahboobnagar district	Survey of disease in mango	Sri. B. Mahender, Scientist (Pl.Path) & Dr. D. Anitha Kumari, Scientist (Ento)
20-8-2011	Kandukur and Maheswaram mandals, Rangareddy district	Survey of diseases in mango and guava	Sri. B. Mahender, Scientist (Pl.Patho) & Dr. D. Anitha Kumari, Scientist (Ento)





Date	Place /institution conducted	Topic of the Lecture	Resource person
27-8-2011	Bilalpur (V), Kohir (M)	Ginger crop management and Mango canopy management	Dr. M. Raghava Rao, Principal Scientist (H) & Dr. A. Bhagwan, Sr. Scientist (Hort.)
19-11-11	Nalivela (V)	Training programme on Vegetables	Sri B. Ramesh Babu, Scientist (Hort)
12-1-2012	Zaheerabad conducted by Department of Hort.	Potato cultivation	Sri B. Ramesh Babu, Scientist (Hort)
12-1-2011	HRS, Nuzivid,	Mango management	Dr. A. Kiran Kumar, Scientist (Hort)
31-1-2012	FRS, Sangareddy organized by ARS, Vijayarai	Sustainable management of little bee <i>Apis florea</i>	Dr. M. Raj Kumar, Principal Scientist (Hort) & other Scientists
04-2-2012	Karimnagar	Training programme on production and post harvest management of mango.	Dr. A. Kiran Kumar, Scientist (Hort)
4-02-2012	FRS, Sangareddy	The newly selected technical staff of AP forest academy on pest & diseases of mango, guava, and sapota and weather forecasting unit and its utilization in research programme.	Sri B. Mahendar, Scientist (Pl.Path) & Sri S. Venkatesh, AO
28-3-2012	Department of Horticulture at Kondareddypalli Village, Mahaboobnagar Dt.	Management of Mango	Dr. A. Kiran Kumar, Scientist (Hort)

Horticultural Research Station, Peddapuram

Date	Subject	Organized by	Venue
17.5.11	Cassava production technology to farmers	Hort.dept.	Marlova village
18.5.11	Cassava production technology to AEOs	Agrl.Dept.	FTC,Peddapuram
20.5.11	Cassava production technology to AEOs	Agrl.Dept.	FTC,Peddapuram
25.5.11	Cassava production technology to farmers	Agrl.Dept/Hort.dept.	Anuru village
26.5.11	Cassava production technology & value addition	Hort..Dept.	Kondapalli village
2.06.11	Cassava production technology to farmers	Agrl.Dept/Hort.dept.	Peddapuram
8.09.11	Cassava production technology to farmers	Hort.dept.	Mallisala
24.09.11	Cassava production technology to farmers	Hort.dept.	RB Kotturu
24.12.11	Cassava production technology & value addition	KVK, Srikakulam	KVK, Amadalavalasa
24.01.12	Cassava production technology & value addition	KVK,Kalavacherla.	KVK, Kalavacherla.





Horticultural Research Station, Ambajipeta

- Dr.N.B.V.Chalapathi Rao, Senior Scientist (Ent.) & Head, HRS, Ambajipeta has participated in training programme on 'Scientific Cultivation of Cocoa – Processing and Value Addition to Cocoa' in the seminar held at Eluru on 26.10.2011.
- Dr.A.Snehalatha Rani, Scientist (Pl.Path.), HRS, Ambajipeta participated in Farmers Training Programme on "Scientific Cultivation of Cocoa- Processing and Value addition to Cocoa" and presented a lecture on "Disease management of Cocoa" in the seminar at Eluru, conducted by HRS, Vijayarai on 29.10.2011.
- Dr.N.B.V.Chalapathi Rao, Senior Scientist (Ent.) & Head, HRS, Ambajipeta has participated in Farmers' training programme at Eluru on 'Scientific Cultivation of Cocoa – Processing and Value Addition to Cocoa' and delivered the lecture on "Rodent management in Cocoa in seminar on 30.10.2011.
- Dr.N.B.V.Chalapathi Rao, Principal Scientist & Head conducted three days cocoa training programme at HRS, Ambajipeta from 14th to 16th July, 2011.

College of Horticulture, Rajendranagar

Dr.S.S.Vijaya Padma participated National seminar on 'Biotechnological approaches in Agriculture at Loyola Academy, Alwal, Secunderabad on 24.2.2012 and 25.02.2012.

Dr.S.S.Vijaya Padma attended NSS training and orientation programme as NSS Programme officer (Unit I) at UTOC, Andhra University, Visakhapatnam on 17.3.2012 to 22.3.2012.

Smt. Venkat Laxmi participated in the workshop on 'Photocenticals from vegetables, fruits and non-food crops' at Division of Agricultural Chemicals, IARI, New Delhi on 21st to 23rd March, 2012.

Dr.Y.P.Venkatasubbaiah participated NSS training and orientation programme as NSS Programme officer (Unit I) at UTOC, Andhra University, Visakhapatnam on 23rd – 28th February, 2012.

Conducted a two week internship on field work experience on horticultural crops to the III semester students of S.K.P.P. Horticultural Polytechnic, Ramachandrapuram, Dr.Y.S.R. Horticultural University from 17.01.2012 to 31.01.2012.

Horticultural Research Station, Pandirimamidi

P C Vengaiah, Scientist (Food Sci. & Tech.) participated as resource person for "**Scientific cultivation of Cocoa- Processing and Value addition to Cocoa**" on 29th and October, 2011 and delivered lecture on processing and value addition in cocoa.

Er. P.C.Vengaiah, Scientist (Food Sci. & Tech.) delivered lecture on "Cashew processing and marketing" in DCCD sponsored State level seminar organized by KVK Pandirimamidi at ITDA Rampachodavaram from 23-24 January, 2012.

Smt.K.Ushakumari, Scientist (Hort) delivered lecture on "Rejuvenation of Cashew old and senile orchards" in DCCD sponsored State level seminar organized by KVK Pandirimamidi at ITDA Rampachodavaram from 23-24 January, 2012.

Dr.K.Rajendraprasad, Scientist (Hort) delivered lecture on "Soil and water conservation measures in Cashew orchards" in DCCD sponsored State level seminar organized by KVK Pandirimamidi at ITDA Rampachodavaram from 23-24 January, 2012.





Er. P.C.Vengaiyah, Scientist (Food Sci. & Tech.) delivered lecture on “Cashew processing” in DCCD sponsored District level seminar organized by KVK Kalvacharla on 22 February, 2012.

Er. P.C.Vengaiyah, Scientist (Food Sci. & Tech.) participated in RKVY sponsored farmers training on “Production of export quality Banana” organized by HRS Kovvuru on 23 February, 2012.

Dr.K.Rajendraprasad Scientist (Hort) delivered lecture on “Soil and water conservation measures and rejuvenation of old and senile orchards of cashew in Tribal areas” a training programme conducted by KVK Pandirimamidi at PMRC. Rampachodavaram on 14.03.2012.

Er. P.C.Vengaiyah, Scientist (Food Sci. & Tech.) delivered lecture on “Value added products from Palmyrah” in training programme organized by KVK Kalvacharla on 19 March. 2012.

Betelvine Research Station, Venkataramannagudem

Smt. P. Sunitha, Scientist (Entomology) participated in 21 days training programme on Precision Farming & Insect Pest Management conducted by CAFT from 8.2.2012 to 28.2.2012 at Department of Entomology, TNAU, Coimbatore .

Vegetable Research Station, Rajendranagar

Dr.M.Vijaya, Principal Scientist (Pl.Path) attended training programme on “ Management of pests and diseases of vegetable crops” to farmers of Medak district on 25-10-2011 at Horticultural Training Institute, Red Hills, Hyderabad.

Dr.M.Vijaya, Principal Scientist (Pl.Path) attended training programme on “ Management of pests and diseases of vegetable crops” to farmers of Medak, Nalgonda and Ranga Reddy districts on 28-10-2011 at Horticultural Training Institute, Red Hills, Hyderabad.

Dr.R.V.S.K.Reddy, Principal Scientist (H) attending “ National stake holder consultation on climate change plat form” from 19-09-2011 to 20-09-2011 at CRIDA, Hyderabad.

Dr. Sireesha, Scientist (Ento) participated in the Training programme on “SAS application in agricultural statistics” organized by NAARM, Hyderabad.

Dr. Sireesha, Scientist (Ento) attended as resource person at Horticultural training Institute to delivered lecture on “ Management of pests of vegetable crops” to farmers of Nalgonda district, at Horticultural Training Institute, Red Hills, Hyderabad.

Dr.R.V.S.K.Reddy, Principal Scientist (FT) attended training programme as resource person and delivered a lecture on “Water management in vegetables” on 30-04-2011 at RARS, Palem as part of training programme on “Water management” to Aadarsha Rytu under NHM.

Dr.R.V.S.K.Reddy, Principal Scientist (FT) attended training programme on “Hybrid Seed production in Tomato and cucurbits” as resource person on 13-09-2011 to Officers of NSC at Directorate of Oil seeds Research, Rajendranagar, Hyderabad organized by National Seed Corporation, Hyderabad.

Dr.R.V.S.K.Reddy, Principal Scientist (FT) attended Farmers Training programme at KVK, CRIDA, Hyderabad as resource person and delivered a lecture on “Nutrient Management in Vegetables on 01-11-2011.

Dr.R.V.S.K.Reddy, Principal Scientist (FT) attended training course on “Allele mining for abiotic stresses in vegetable crops from 24.2.2012 to 8.3.2012 at IIVR, Varanasi.





Citrus Research Station, Tirupati

S. No.	Name of the Scientist	Topic	Organized by
1.	Dr. K. Gopal	Diagnosis and Management of viral diseases of Sweet orange	Dept. of Horticulture under SHM, Ananthapur.
2.	Dr. K. Gopal	Protection Technology in Sweet orange and drought mitigation in citrus	Dept. of Horticulture under SHM at RHTI, during September at Hyderabad
3.	Dr. K. Gopal	Plant Protection in Sweet orange	Dept. of Horticulture, Mahaboobnagar.
4.	Dr. K. Gopal	Bud wood indexing, certification and disease management in citrus to registered nurserymen in one day training programme	CRS, Tirupati
5.	Dr K.M. Yuvaraj	Nursery production in acid lime to registered nurserymen in one day training programme	CRS, Tirupati
6.	Dr. L. Mukundalakshmi	Sweet orange nursery production and management" to registered nurserymen	CRS, Tirupati
7.	Smt G. Sarada	Insect pest management in citrus" to registered nurserymen in one day to training programme	CRS, Tirupati

D. METHOD DEMONSTRATIONS

Horticultural Polytechnic, Kalikiri

Preparation of Bordeaux paste, Bordaux mixture, cheshunt compound and soil sampling at Nagaripalli on 19.8.2011 and at Cheruvumundarapalli on 12.2.2012 and preparation of Trichoderma formulation at Cheruvumundarapalli on 13.2.2012 of Chittoor district.

Horticultural Research Station, Mahanandi

Sri. Y.Subba Rao, Scientist (Ento) went to Anantharajupet of Kadapa District to collect the papaya mealybug culture for mass production of parasitoids at HRS, Mahanandi.

Dr.Ch.Ruth, Scientist & Head, HRS, Mahanandi conducted method demonstrations and skill oriented demonstrations dt.19-10-11 at HRS, Mahanandi on the preparation of pesticide formulation for spraying.

Horticultural Research Station, Ambajipeta

On 29.8.2011 Demonstration on preparation of multiplication units for mass multiplication of *Acerophagus* parasitoid of papaya and tapioca mealy bug conducted at J.Thimmapuram, Peddapuram mandal, E.G.Dt and on 27.12.2011 for Yerupalem, Khammam district at HRS Ambajipeta.





Horticultural Research Station, Pandirimamidi

Students from Agricultural College Rajahmundry and are explained about farm activities, on going research projects and also demonstrated the grafting techniques of Mango and Cashew on 28.11.2011 on their field visit.

Horticulture Polytechnique students of 2nd year of Ramachandrapuram visited the farm on 23.11.2011 and demonstrated on cultivation of Capsicum, Turmeric and Ginger on their field visit.

Farmers from Visakhapatnam, Vizianagaram, Srikakulam, West Godavari district visited the farm on 25.01.2012 and demonstrated on the grafting techniques and in capsicum cultivation in polyhouse condition.

Farmers from KVK, Kalvacherla visited the farm and conducted the demonstrated on Grafting techniques in Cashew, Tapping of Rubber and preparation of Jaggary from Palmyrah on 19.1.2012 by the staff of HRS, Pandirimamidi.

KVK, Venkataramannagudem

A. Method demonstrations

1. Method demonstration was conducted on nursery raising of paddy & transplanting with paddy transplanter
2. Method demonstration was conducted on sowing paddy seed by drum seeder
3. Method demonstration was conducted on weeding through Mechanical weeders in paddy fields.
4. Method demonstration was conducted on weeding through Mechanical weeders in Papaya and other Horticultural crops.

B. Group discussions

Krishi Vigyan Kendra, Venkataramannagudem conducted Group discussions of 18 No's were conducted on Agriculture, Horticulture, Animal Husbandry and Fisheries on various topics with the farmer groups.

C. Field days

1. Field day was conducted on *Management of Fruit borer infestation* in Mango orchards
2. Field day was conducted on Paddy Transplantation with *Paddy Transplanter*
3. Field day was conducted on fodder grass of Co-4 variety and its importance.
4. Field day was conducted on seed sowing in Paddy with drum seeder
5. Field day was conducted on the cultivation of Lilly (*var. Hyderabad singles*) and Colocassia (*Var. KCS-3*) on campus.

KVK, Ramagirikhilla

- Method demonstration on Stem application of pesticide against sucking pests in Cotton
- Method demonstration on Drenching with C.O.C against wilt disease in Cotton
- Method demonstration on "Seed treatment in vegetables".
- Method demonstration on formulation of "*Tricoderma viridi*" preparation
- Method demonstration on "Staking in tomato to improve the quality of the fruits by reducing the infestation of fungal diseases in winter".
- Method demonstration on different grafting techniques in mango.





Method demonstration was conducted on nursery raising of paddy & transplanting with paddy transplanter



Method demonstration was conducted on weeding through Mechanical weeders in paddy fields.



Krishi Vigyan Kendra, Venkataramannagudem conducted Group discussions



Field day was conducted on *Management of Fruit borer infestation* in Mango orchards



Field day was conducted on Paddy Transplantation with *Paddy Transplanter*





Field day was conducted on fodder grass of Co-4 variety and its importance.



Field day was conducted on seed sowing in Paddy with drum seeder



Field day was conducted on the cultivation of Lilly (var. *Hyderabad singles*) and Colocassia (Var. *KCS-3*) on campus.



Method demonstration on Drenching with C.O.C against wilt disease in Cotton



XXI Annual Group Meeting of AICRP on Floriculture organized by Floricultural Research Station, Hyderabad at CTRI, Rajahmundry



Annual Group meeting of AICRP on Floriculture, FRS, R'Nagar.





KVK, Pandirimamidi

S. No.	Name of the Topic	Place	Resources personnel	Skill component	No. of participants
1.	<i>Trichoderma Viridie</i> application	I-Polavaram	SMS (PP), SMS (SSAC)	Method of Trichoderma viridie application to control fusarium wilt in Redgram.	35
2.	Preparation & application of chemicals spray fluid for the control of T-Mosquito bug in Cashew	I-Polavaram	SMS (PP) SMS (Horti) & Programme Coordinator	Method of Spraying of Endosalphon 2ml/l and COC @ 5gm/lit in Cashew	40
3.	Tricyclozole application against Paddy blast	Gangampalem	SMS (PP) SMS (SSAC)	Method of Spraying	30
4.	Zero Tillage Maize	Bandapalli	Programme Coordinator, SMS(Plant Patho- logy), SMS(SSAC)	Method of sowing maize seed	35

E. GROUP DISCUSSIONS

Floriculture Research Station, Rajendranagar

Floriculture Research Station, Hyderabad organized the **Annual Group meeting of AICRP on Floriculture from 4th to 6th Nov, 2011 at CTRI, Rajahmundry.**

Organization of XXI Annual Group Meeting of AICRP on Floriculture by Floricultural Research Station, Hyderabad at CTRI, Rajahmundry from 4th to 6th November, 2011

Scientists Participated in XXI Annual Group Meeting of AICRP on Floriculture organized by Floricultural Research Station, Hyderabad at CTRI, Rajahmundry from 4th to 6th November, 2011 and which was inaugurated by Dr.H.P.Singh, DDG (Hort.), ICAR, New Delhi.

Horticultural Research Station, Ambajipeta

Group discussion was organized to the farmers at Srikakulam districts along with the DAATTC scientists, Department of Agriculture, Department of Horticulture and ATMA officials on 11.1.2012 on coconut.

Vegetable Research Station, Rajendranagar

Dr.M.Vijaya, Principal Scientist (Pl.Path.) attended Technical support Group Meeting of State Horticulture Mission on 08-07-2011, 14.10,2011 and 18.11.2011 at Commissionerate of Horticulture, Hyderabad.

Dr.R.V.S.K.Reddy, Principal Scientist (H) attended Technical support Group Meeting of State Horticulture Mission on 24-06-2011, 8.7.2011 and 22.7.2012 at Commissionerate of Horticulture, Hyderabad.

Dr.R.V.S.K.Reddy, Principal Scientist (H) attended State of Horticulture Mission's Technical Support Group meeting on 12-08-2011, 20-08-2011, 9.9.2011, 23.9.2011, 14.10.2011, 11.11.2011, 8.11.2011, 25.11.2011, 13.1.2012, 30.1.2012 and 27.3.2012 at Commissionerate of Horticulture, Hyderabad.

Dr.R.V.S.K.Reddy, Principal Scientist (H) attended panel discussion on the identified theses for formulating approach/strategy for the state on 12th Five year plan organized by Centre for Economic and Social studies (CESS), Hyderabad and gave presentation on "Strategy for vegetables" on 28-07-2011.





F. MASS COMMUNICATION

(Press notes, TV coverage, Radio scripts etc.)

Horticultural Research Station, Vijayarai

Dr. V.Vijaya Bhaskar, Senior Scientist (Hort.), gave press notes on the “prevention of Black Pod disease in Cocoa during the rainy season” and “fertilizer application in Oil palm for better growth and yield”

Horticultural Research Station, Pandirimamidi

News bulletins by Dr.K.Rajendra Prasad published in Sakshi News paper

“Vividha vudyana pantalalo theesukovalsina jagrattalu-1”

- *Ryhu Nestam Sakshi News paper District edition* on **05.08.2011**

“Vividha vudyana pantalalo theesukovalsina jagrattalu-2”

- *Ryhu Nestam Sakshi News paper District edition* on **19.08.2011**

“Vividha vudyana pantalalo theesukovalsina jagrattalu-3”

- *Ryhu Nestam Sakshi News paper District edition* on **26.08.2011**

“Vividha vudyana pantalalo theesukovalsina jagrattalu-4”

- *Ryhu Nestam Sakshi News paper District edition* on **02.09.2011**

“September nelalo vividha vudyana pantalalo theesukovalsina jagrattalu”

- *Ryhu Nestam Sakshi News paper District edition* on **22.09.2011**

Smt.K.Ushakumari, Dr.K.Rajendraprsad, P.CVengaiah -“Vanijyaparamga Gerbera pula sagu”

- *Ryhu Nestam monthly* on **August 2011 in Page no.5**

P.C.Vengaiah “Neera pi adhyayana yatra”

- *Ryhu Nestam, August 2011*

Smt.K.Ushakumari, Dr.K.Rajendraprsad, P.C Vengaiah “Sampradayetara pandla thotala sagu,

Passion fruit”. In *Annadata, November 2011 Edition page no.34-35*

Horticultural Research Station, Ambajipeta

“Boppayi pantapai aasinchina pindi nalli” by Dr.N.B.V.Chalapathi Rao, Senior Scientist (Ent.) & Dr.N.Emmanuel, Scientist (Ent.), HRS, Ambajipeta on 01.06.2011.

“Boppayilo pindinallini nivarinchadamlo vijayam sadhimchina jeeva niyamtrala laboratory”, by Dr.N.B.V.Chalapathi Rao, Senior Scientist (Ent.) & Dr.N.Emmanuel, Scientist (Ent.), HRS, Ambajipeta on 01.06.2011.

“Phaelera Gongali purugu” by by Dr.N.B.V.Chalapathi Rao, Senior Scientist (Ent.) & Dr.N.Emmanuel, Scientist (Ent.), HRS, Ambajipeta on 09.01.2012.





a. Radio Programmes

Date	Topic	Name of the Scientist
13-08-2011	Package of Practices in Cabbage and Cauliflower	Dr. M. Ramakrishna Principal, SSPG Horticultural Polytechnic, Madakasira
19-10-2011	Package of Practices in Zerbera	
09-03-2012	Package of Practices in Jasmine	
01-04-2011	Package of Practices in Jasmine	Mr.R. Preetham Goud Asst. Prof (Agronomy) SSPG Horticultural Polytechnic, Madakasira
17-08-2011	Package of Practices in Chrysanthemum	
25-10-2011	Preparation and Rejuvenation of Mango Gardens for better yields in ensuing season	
20-12-2011	Integrated Pest management in Chilli and Vegetables	
29-07-2011	Disease Management on Bhendi and Onion crops	Smt. Ch. Ruth , Scientist (Pl.Path) & Head, HRS, Mahanandi
28-07-2011	Vegetable cultivation in under rainfed conditions in Kurnool District	Smt. Ch. Ruth , Scientist (Pl.Path) & Head, HRS, Mahanandi
19-07-2011	Nursery Management and Pest control in Onion, Tomato and Brinjal crops	Sri. Y. Subba Rao, Scientist (Ento), HRS, Mahanandi, HRS, Mahanandi
23-09-2011	Problems in Horticultural crops in Kurnool District and Mahaboobnagar District	Smt.Ch.Ruth, Scientist (Pl.path) & Head, HRS, Mahanandi
28-10-2011	Phone in Radio Hello Atma	Smt. Ch. Ruth , Scientist (Pl.Path) & Head, HRS, Mahanandi
21-10-2011	Oshadhala Pantala Saagu	Dr.G.Sathyanarayana Reddy, Senior Scientist & Head, Herbal Research Station, Rajendranagar
10-12-2011	Sugandha Pantala Sagu	Dr. T. Susila, Scientist, (SG) (Hort.), Herbal Research Station, Rajendranagar
12-01-2012	Kalabanda Sagu	Dr.G.Sathyanarayana Reddy, Senior Scientist & Head, Herbal Research Station, Rajendranagar
10-03-2012	Banjaru Bhoomullo Oushadha Pantala Saagu	Dr. T. Susila, Scientist, (SG) (Hort.), Herbal Research Station, Rajendranagar
25-4-11	Mallesagu lo melakuvalu	Dr.A.Girwani, Senior Scientist (Hort)
09-01-12	Vesavipoolasagukunarumadulapempakam	Smt. P. LalithaKameswari, Scientist (Hort.)
23-01-12	MallesaguloAdhikadigubadulakumelakuvalu	Dr.A.Girwani, Sr. Scientist (Hort)
27-04-2011	Mamidi muddi pucchu purugu - light trap and Mamidi kotha yegumathulalo teesukovalasina jagrathalu	Dr. A. Sujatha, Principal Scientist (Ent) & Head, MRS, Nuzvid
	Mamidi thotalaku prasthutham chepattavalasina Yajamanyam	Dr. A. Sujatha, Principal Scientist (Ent) & Head, MRS, Nuzvid





Date	Topic	Name of the Scientist
28-02-2012	Mamidi Egumathiki patinchavalasina melukuvalu nanyatha pramaanaalu	Smt D. Aparna, Scientist (Hort), MRS, Nuzvid
16-5-2011	Post harvest management on Mango	Dr. A. Kiran Kumar, Scientist (H)
28-10-2011	IPM of Zinger (Allamulo Sasya Rakshana)	Sri B. Mahendar, Scientist (Pl.Patho)
26-6-2011	Mirapa Sagulo Melakuvalu, AIR, Hyderabad.	Dr. M. Raghava Rao, Principal Scientist (Hort)
2-8-2011	Pruning in Pomegranate	Sri. B. Ramesh Babu, Scientist (Hort.)
6-8-2011	Danimmalo Komma Katirimpulu.	Sri. B. Ramesh Babu, Scientist (Hort.)
25-8-2011	Jamalo Sasyarakshna	Dr. D. Anitha Kumari, Scientist (Ento)
27-10-2011	Allamulo sasya rakshana	Sri B. Mahendar, Scientist (Pl.Patho)
18-11-2011	Mamidilo putakumunde teesukovalsina charyalu.	Dr. A. Bhagwan, Sr. Scientist (Hort.)
29.05.2011	Karrapendalamlo Melaina Rakalu- Yamanyam	Dr.G.Ramanandam, Sr.Scientist(Hort)
2.5.2011	Kobbarilo Tegullu – Vesavi Yahamanyam	Dr. A. Snehalatha Rani, Scientist (PP)
3.5.2011	Vesavilo Kobbari thotala yajamanyam	Smt. M. Kalapana, Scientist (H)
3.5.2011	Summer Management under Coconut	Dr. A.V.D.Dorajee Rao, Scientist (H)
3.6.2011	Pest Management in Cocoa	Dr. N. Emmanuel, Scientist (E)
26.8.2011	Kobbarilo Eriophyid Nalli – Yajamanya Paddatulu	Dr.N.B.V.Chalapathi Rao, Senior Scientist & Head
14.9.2011	Cocoa pantanu aasinchu tegullu – Samagra yajamanyam	Dr. A. Snehalatha Rani, Scientist (Pl. Pathology)
20.9.2011	Cocoa pantanu aasinchu purugulu – tegullu – vati yajamanyam	Dr.N.Emmanuel, Scientist (Entomology)
3.10.2011	Cocoa cheeda peedalu – Samagra sasya rakshana	Dr.N.Emmanuel, Scientist (Entomology)
5.10.2011	Kobbarilo Yerramuku purugu – Yajamanya Paddatulu	Dr.N.B.V.Chalapathi Rao, Senior Scientist & Head
14.10.2011	Kobbarini aasinchu tegullu – yajamanyam	Dr. A. Snehalatha Rani, Scientist (Pl. Pathology)
6.1.2011	Cocoa cheedapeedalu- samagra sasya rakshana	Dr.N.Emmanuel, Scientist (Entomology)





Date	Topic	Name of the Scientist
10.2.2012	Integrated disease management	Dr. A. Snehalatha Rani, Scientist (Pl. Pathology)
21.2.2012	Cocoa pantanu aasinchu purugulu – tegullu – vati yajamanyam	Dr.N.Emmanuel, Scientist (Entomology)
13.3.2012	Bud rot disease in coconut and its management	Dr. A. Snehalatha Rani, Scientist (Pl. Pathology)
26.7.2011	Kharif kuragayala sagulo melakuvalu	Dr.M.Vijaya, Principal Scientist (Pl.Path.)
18.8.2011	'Agakara Sagu'	Dr. Hameedunnisa Begum, Senior Scientist, (Hort.)
14.2.2012	Vesavi Aaku kuuralu	Dr. Hameedunnisa Begum, Senior Scientist, (Hort.)
30.11.2011	Cultivara of Cluster bean	Dr. M. Tirupathi Reddv, Scientist (Hort.)
17.3.2012	Tuber cultivation in summer	Dr. B.K.M.Lakshmi, Scientist (Pl. Path)
1.11.2011	Mirapaol Sashyarakshana	Dr. Sireesha, Scientist (Ento.)
3.8.2011	Kharif aaku kurala saagulo melakuvalu	Dr. Veena Joshi, Scientist (Hort.)
21.1.2012	Kuragayula Sagulo niiti yajamanyam Plant protection technologies in sweet orange Nimma Thotallo Neeti Yajamanyam	Dr. P. Madhavi Latha, Scientist (Agro.) Dr. K. Gopal, PS (PP) Dr. L. Mukunda Lakshmi, S (H)

b. Television Programmes forest

Date	Topic	Name of the Scientist	Recorded by
29.8.2011	Rejuvenation of Old and Senile Mango Orchards'	Dr.V.Vijaya Bhaskar, Senior Scientist (Hort.), HRS, Vijayarai	Door Darshan, Hyderabad.
25-07-2011	Oushadha pantala sagu	Dr.G.Sathyanarayana Reddy, Senior Scientist & Head, Herbal Research Station, Rajendranagar	Maha TV
04-08-2011	Sugandha taila pantala saagu	Dr.G.Sathyanarayana Reddy, Senior Scientist & Head, Herbal Research Station, Rajendranagar	Maha TV
08-08-2011	Oushadha pantala sagu	Dr. T. Susila, Scientist, (SG) (Hort.), Herbal Research Station, Rajendranagar	T. News Channel
24-08-2011	Aloevera cultivation and processing	Dr.G.Sathyanarayana Reddy, Senior Scientist & Head, Herbal Research Station, Rajendranagar	Maha TV





Date	Topic	Name of the Scientist	Recorded by
25-11-2011	Cultivation of Medicinal Plants	Dr.G.Sathyararayana Reddy, Senior Scientist & Head, Herbal Research Station, Rajendranagar	Doordharshan
28-04-2011	Chamanthilo nursery pempakam	Smt. P. LalithaKameswari, Scientist (Hort.)	Sapthagiri TV
01-06-2011	"Nursery management and package of practices for Cultivation of flowers "	Dr.A.Girwani, Senior Scientist (Hort)	Sapthagiri TV
01-07-2011	Lilly poolasagu, rakalu	Smt. P. LalithaKameswari, Scientist (Hort.)	Sapthagiri TV
01-07-2011	Kanakambaramlo narumadula pempakam	Smt. P. LalithaKameswari, Scientist (Hort.)	Sapthagiri TV
22-08-2011	Chamanthisagulomelakuvalu	Smt. P.Lalitha Kameswari, Scientist (Hort.)	Sapthagiri TV
03-02-2012	Vesavipoolasagu	Smt. P.Lalitha Kameswari, Scientist (Hort.)	Sapthagiri TV
07-02-2012	Mallelokommakathirimpulu	Smt. P.Lalitha Kameswari, Scientist (Hort.)	Sapthagiri TV
16-03-2012	Kanakambaram sagulo melakuvalu	Smt. P. Lalitha Kameswari, Scientist (Hort.)	Doordarshan
26-04-2011	Malle lo yeruvula vajamanyam	Smt. P. Lalitha Kameswari, Scientist (Hort.)	Sapthagiri TV
28-04-2011	Chamanthilo nursery pempakam	Smt. P. Lalitha Kameswari, Scientist (Hort.)	Sapthagiri TV
01-06-2011	"Nursery management and package of practices for Cultivation of flowers "	Dr.A. Girwani, Senior Scientist(Hort)	Sapthagiri TV
01-07-2011	Lilly poolasagu, rakalu	Smt. P. LalithaKameswari, Scientist (Hort.)	Sapthagiri T.V.
01-07-2011	Kanakambaramlo narumadula pempakam	Smt. P. LalithaKameswari, Scientist (Hort.)	Sapthagiri TV
22-08-2011	Chamanthisagulomelakuvalu	Smt. P.LalithaKameswariScientist (Hort.)	Sapthagiri TV
-	Management of major Mango diseases	Sri B. Mahendar, Scientist (Pl.Patho)	T news
16-5-2011	Post harvest management on Mango	Dr. A. Kiran Kumar, Scientist (H)	Doordarshan
20-5-2011	Mamidi kotha Anantharam Parignanam	Dr. A. Kiran Kumar, Scientist (H)	Doordarshan, Hyderabad
31-5-2011	Chilli crop nursery management	Dr. M. Raghava Rao, Senior Scientist (Hort)	Sakshi TV.
2-6-2011	Antla mokkalalo Tesukovalasina Jagrathalu	Dr. A. Kiran Kumar, Scientist (H)	Doordarshan, Hyderabad





Date	Topic	Name of the Scientist	Recorded by
7-12-2011	Mamidilo poothakumudu mariyu pootha dasalo chepatta valasina yajamanya padhatulu.	Dr. M. Raj Kumar, Principal Scientist (Hort.)	Doordarshan, Hyderabad
16-2-2012	Mamidilo Pootha, Pinde Samayamulo Melakuvalu.	Dr. M. Raj Kumar, Principal Scientist (Hort.)	Doordarshan, Hyderabad
06.06.2011	Cassava planting material selection and nursery raising	Dr.G.Ramanandam, Sr.Scientist(Hort)	DD, Hyderabad
17.06.2111	Land preparation, planting and fertilizer management for cassava	Dr.G.Ramanandam, Sr.Scientist(Hort)	DD, Hyderabad
27.07.2011	Weed management and fertilizer application for Cassava	Dr.G.Ramanandam, Sr.Scientist(Hort)	DD, Hyderabad
15.09.2011	Management practices for cassava for higher tuber yield	Dr.G.Ramanandam, Sr.Scientist(Hort)	DD Saptagiri, Hyderabad
08.9.10	Karrapendalam Sagulo – Melakuvalu Phone in live prog.	Dr.G.Ramanandam, Sr.Scientist(Hort)	DD, Hyderabad
13.10.2011	Red mite incidence & its control in tapioca	Dr.G.Ramanandam, Sr.Scientist(Hort)	Saptagiri DD, Hyderabad
27.10.2011	Drought management practices for cassava	Dr.G.Ramanandam, Sr.Scientist(Hort)	TV 9
29.10.2011	Plant protection measures in Cassava	Dr.G.Ramanandam, Sr.Scientist(Hort)	Sakshi TV
28.01.2012	Precautions to be taken during harvesting of tapioca tubers and its storage	Dr.G.Ramanandam, Sr.Scientist(Hort)	Saptagiri DD, Hyderabad
29.7.2011	Kobbarilo Adhika digubadiki Suchanalulu	Dr.N.B.V.Chalapathi Rao, Senior Scientist & Head	Doordarshan
16.11.2011	Coconut production and protection technologies	Dr.N.Emmanuel, Scientist (Ent.)	Doordarshan
29.2.2012	Coconut Black headed caterpillar and their IPM	Dr.N.Emmanuel, Scientist (Ent.)	Doordarshan
1.3.2012	Emergence of Slug caterpillar as major coconut defoliator in East Godavari district of Andhra Pradesh and their IPM	Dr.N.Emmanuel, Scientist (Ent.)	Doordarshan



Date	Topic	Name of the Scientist	Recorded by
5.3.2012	Field release of Oryctes Rhinoceros Virus infected beetles in management of Rhinoceros	Dr.N.Emmanuel, Scientist (Ent.)	Doordarshan
7.3.2012	Emergence of Slug caterpillar as major coconut defoliator in East Godavari district of Andhra Pradesh and their IPM	Dr.N.Emmanuel, Scientist (Ent.)	ZEE TV
16.3.2012	Integrated management of Slug caterpillar in coconut	Dr.N.Emmanuel, Scientist (Ent.)	E TV
17.3.2012	Intercrops in coconut and their advantages	Dr. A. Snehalatha Rani, Scientist (Pl. Pathology)	Saakshi TV
17.3.2012	Integrated management of Slug caterpillar in coconut	Dr.N.Emmanuel, Scientist (Ent.)	Sapthagiri
18.3.2012	Slug caterpillar in coconut and their IPM	Dr.N.Emmanuel, Scientist (Ent.)	MAA TV
18.3.2012	Slug caterpillar in coconut and their IPM	Dr.N.Emmanuel, Scientist (Ent.)	Saakshi TV
19.3.2012	Integrated management of Slug caterpillar in coconut	Dr.N.Emmanuel, Scientist (Ent.)	ETV
24.3.2012	Slug caterpillar in coconut and their IPM	Dr.N.Emmanuel, Scientist (Ent.)	HMTV
28.3.2012	Udyanapantallo sasya Rakshana	Dr.N.B.V.Chalapathi Rao, Principal Scientist & Head	Doordarshan
29.3.2012	Water management in coconut during summer season	Dr. A. Snehalatha Rani, Scientist (Pl. Pathology)	Saakshi TV
10-01-2012	Paalihouselo capsicum sagu	Dr.K.Rajendra Prasad Scientist (Hort.)	D.D Saptagiri
16-01-2012	Pasupu sagulo melukuvalu	Dr.K.Rajendra Prasad Scientist (Hort.)	D.D Saptagiri
03.01.2012	Allam sagulo lakuvalu	Sri.G.Narasimhamurthy	D.D Saptagiri
15.01.2012	Carrot sagulo agrattahlu	Sri. G.Narasimhamurthy	D.D Saptagiri
6.01.2012	Girijana prantalalo sagu cheyataniki anuvina cutflower rakalu vivaralu.	Smt.K.Usha kumari, Scientist (Hort.)	D.D Saptagiri
9.01.2012	Girijanapranthalalo labhyamayye Vanijayparamina chiru atavi vutpattulu	Smt.K.Usha kumari, Scientist (Hort.)	D.D Saptagiri





Date	Topic	Name of the Scientist	Recorded by
20.01.2012	Value added products from Palmyrah- importance"	Er. P.C.Vengaiah, Scientist (Food Sci. & Tech.)	D.D Saptagiri
27.01.2012	Palmyrah based rural industries and Income details	Er. P.C.Vengaiah, Scientist (Food Sci. & Tech.)	D.D Saptagiri
7.02.2012	Jeedi mamidilo tea doma nivarana	Smt.K.Usha kumari, Scientist (Hort.)	D.D Saptagiri
9.02.2012	Tomato sagulo melakuvalu	Smt.K.Usha kumari. Scientist (Hort)	D.D Saptagiri
1.03.2012	Vangalo Kaya Komma toluchu purugu nivarana	Smt.K.Usha kumari, Scientist (Hort.)	D.D Saptagiri
26.7.2011	Kharif kuragayala sagulo samagra sasya rakshana	Dr. M. Vijaya, Principal Scientist (Pl.Path.)	DD-I
21.6.2011	Kharif kuragayala Sagulo Melakuvalu	Dr.R.V.S.K.Reddy, Principal Scientist (H)	DD
24.6.2011	Kharif kuragayala Sagulo Melakuvalu	Dr.R.V.S.K.Reddy, Principal Scientist (H)	DD
23.10.2011	Vyavasaya Pattasala on Rabi vegetable cultivation	Dr.R.V.S.K.Reddy, Principal Scientist (H)	DD
21.10.2011	Vegetable cultivation	Dr.R.V.S.K.Reddy, Principal Scientist (H)	DD
28.10.2011	Frenchichikkudu Saagulamelakuvalu	Dr.R.V.S.K.Reddy, Principal Scientist (H)	DD
29.10.2011	Rabiki Anuvya kuragaluy - Saagumelakuvalu	Dr.R.V.S.K.Reddy, Principal Scientist (H)	DD
14.1.2012	Dumpa Kuragaayalu Saagu	Dr. B.K.M.Lakshmi, Scientist (Pl. Path)	DDI
21.1.2012	Mango cultivation - problems and scientists answers	Dr. B.K.M.Lakshmi, Scientist (Pl. Path)	ETV
25.8.2011	Varshika Munaga Saagulo kathuirimpulu	Dr. Veena Joshi, Scientist (Hort.)	DD I
29.8.2011	Carrot Saagulo melakuvalu	Dr. Veena Joshi, Scientist (Hort.)	DD I
3.11.2011	Rabi aaku kurala saagulo melakuvalu	Dr. Veena Joshi, Scientist (Hort.)	DDI
28.11.2011	Puccha Saagulo melakuvalu	Dr. Veena Joshi, Scientist (Hort.)	DDI
3.2.2012	Vesavi aakukoorala Saagulo Melina yajamanya paddatulu	Dr. Veena Joshi, Scientist (Hort.)	DDI
7.3.2012	Koora dosa Saagulo melakuvalu	Dr. Veena Joshi, Scientist (Hort.)	DDI
7.3.2012	Kuragayala Sagulo niti yamanyam	Dr. P. Madhavi Latha, Scientist (Agro.)	DD



KVK, Venkataramannagudem

Radio Programmes

Smt. P.Chandana, SMS (Horti) has given radio talk programme on “*leafy vegetable cultivation in rabi and pest and disease management in citrus*” at Bhimavaram.

Sri N.Veerabhadra Rao, SMS(Fisheries) has given radio talk programme on “*Vennamei Sagulo melakuvalu*” at Bhimavaram

TV coverages

Sri N.Veerabhadra Rao, Subject Matter Specialist (Fisheries) was delevered programme on Best management practices in shrimp culture to E-TV annadatha programme.

Sri N.Veerabhadra Rao, Subject Matter Specialist (Fisheries) was delevered programme on Best management practices for culture of Roopchand fish and Programme Co-ordinator was delevered programme Spine guard and Floriculture to E-TV annadatha programme.

Sri N.Veerabhadra Rao, Subject Matter Specialist (Fisheries) was delevered programme on “Vesavilo Chepala Cheruvulalo Pranavayuvukoratha – Teesukovalasina Jagrathalu” to ETV-Annadatha Programme.

Dr.E.Karuna Sree, Programme Co-ordinator was delevered programme on “Vari mariyu Pasuvula Danalo Azolla Pramukyatha” to ETV-Annadatha Programme.

Rythu Chaitanya Yatras

The staff of Krishi Vigyan Kendra, Venkataramannagudem Participated in Rythu Chaitanya Yatra’s in different Mandals of West Godavari District.

Village adoption programme

Krishi Vigyan Kendra, Venkataramannagudem staff was conducted Participatory Rural Appraisal (PRA) programme for village adaptation in 4 villages (Venkataramannagudem, Prakasaraopalem, Telikicherla and Ravulaparru) in West Godavari District.

S. No.	Date	Scientist Participated	Village & Mandal	Other officers participated	No. of farmers participated	Major crops grown	Topics covered
1	17/05/11	Dr. E. Karuna Sree, PC & Sri. N. Veerabhadra Rao, SMS (Fisheries)	Ravulaparru, Donthavaram, (Ungutur)	DDA, ADA, AO, Veterinary Doctor and other line dept. officials	75	Paddy, Fisheries & Animal husbandry	Package of paddy practices, BMP in fisheries and Animal husbandry
2	17/05/11	Dr. K. Vijay Prakash, SMS (Vety. Sci.) & Smt. P. Chandana, SMS (Horti.)	Bangarugudem, Veerampalem (Tadepalligudem) G. Kondepadu, Minavalluru, (Pentapadu)	MLA, T P Gudem and Other line department officials	123	Horticulture, Animal husbandry & paddy	Problems discussed about Horticulture, Agriculture & allied crops
3	17/05/11	Sri. J. Radha Krishna, SMS (Soil Sci. Agril. Chem.)	Telikicherla	Other line department officials	35	Agriculture, Horticulture crops & Animal husbandry	Package of paddy and subsidies regarding Horticulture crops





S. No.	Date	Scientist Participated	Village & Mandal	Other officers participated	No. of farmers participated	Major crops grown	Topics covered
4	18/05/11	Dr. K. Vijay Prakash, SMS (Vety. Sci.) & Sri. J. Radha Krishna, SMS (Soil Sci. Agril. Chem.)	Kommugudem, Neeladripuram	MLA, T P Gudem and Other line department officials	55	Agricultural crops & Animal husbandry	Problems discussed about Agriculture & allied crops
5	20/05/11	Dr. K. Vijay Prakash, SMS (Vety. Sci.) & Smt. P. Chandana, SMS (Horti.)	Ramannagudem, Jaggannapeta	MLA, T P Gudem and Other line department officials	63	Horticulture, Animal husbandry & paddy	Problems & packages, discussed about Horticulture, Agriculture & allied crops
6	21/05/11	Dr. E. Karuna Sree, PC & Sri. N. Veerabhadra Rao, SMS (Fisheries)	Ungutur	ADA, Animal husbandry & other Line department officials	32	Paddy, Fisheries & Animal husbandry	Problems & Package of paddy practices, BMP in fisheries and Animal husbandry
7	23/05/11	Sri.N.Veerabhadra Rao, SMS (Fisheries) & Smt.P.Chandana SMS (Hort.)	Vellamilli, Ungutur	Line Department Officials	35	Paddy, Sugar Cane, Fisheries & Animal husbandry	Problems discussed about Paddy, Sugarcane, fodder grasses, Animal husbandry & Fisheries
8	23/05/11	Dr. K. Vijay Prakash, SMS (Vety. Sci.)	Kunchenapalli, Mettupungunduru, Modugagunta, Venkatarao palem, Apparao pet (T.P. Gudem) Mandal	MLA, T P Gudem and Other line department officials	155	Paddy, Sugar cane Horticulture, Animal husbandry & Fisheries	Problems discussed about Horticulture, Agriculture & allied crops
9	24/05/11	Sri.N.Veerabhadra Rao, SMS (Fisheries) & Smt. P. Chandana SMS (Hort.)	Narayapuram (Ungutur)	Line Department Officials	38	Paddy, Fisheries & Animal husbandry	Problems discussed about Paddy, fodder grasses, Fisheries & Animal husbandry
10	24/05/11	Dr. K. Vijay Prakash, SMS (Vety. Sci.)	Amudalapalli, China Nindrakolanu (Nidamaru)	Line Department Officials	64	Paddy, Sugar cane Horticulture, Animal husbandry & Fisheries	Problems discussed about Horticulture, Agriculture, Fisheries & Animal husbandry
11	2/06/11	Dr. K. Vijay Prakash, SMS (Vety. Sci.)	Akuthigapadu (Pentapadu Mandal)	DDA, ADA, AO, Veterinary Doctor and other line department officials	44	Paddy, Fisheries & Animal husbandry	Package of paddy practices, BMP in fisheries and Animal husbandry
12	2/06/11	Smt. P. Chandana, SMS (Horti.)	V R Gudem & Pedatadepalli (Tadepalligudem Mandal)	MLA, T P Gudem and Other line department officials	74	Horticulture, Animal husbandry & paddy	Problems discussed about Horticulture, Agriculture & allied crops
13	2/06/11	Dr.E.Karunasree, PC & Sri.N.Veerabhadra Rao SMS (Fisheries)	Apparao pet & Thallapudi	Other line department officials	83	Horticulture, Animal husbandry & paddy	Problems discussed about Horticulture, Agriculture & allied crops



Guest Lectures

SSPGHP, Madakasira

Lecture on “Anti Plastics” was delivered by Sri. R.Preetham Goud, Assistant Professor (Agronomy) & NSS Programme Officer on 17th February 2012 at SSPG Horticulture Polytechnic, Madakasira.

SKPPHP, Ramachandrapuram

On 23-1-2012 Sri. M. Satti Raju, Vice-Principal participated the Cashew Farmers meeting at Rampachodavaram and delivered the lecture on Cashew cultivation.

Floriculture Research Station, Rajendranagar

Smt. P.Lalitha Kameswari, Scientist (H) delivered a lecture on “Polyhouse cultivation of cut flowers” to growers from Shillong on 20-3-2012.

Smt. P.Lalitha Kameswari, Scientist (H) delivered a lecture on “Commercial cultivation of flowers” to students of Horticulture polytechnic, Ramachandrapuram on 22-3-2011.

Dr.A.Girwani, Sr.Scientist (Hort) attended the Poly House Growers Association meeting on 14-2-12 at Kandukur village in Rangareddy district gave lecture on precaution to be taken during summer for polyhouse cultivation of flowers.

Dr.A.Girwani, Sr.Scientist(Hort) attended the polyhouse growers association meeting on 26-4-11 held at Bollaram village and Kukunoor village on 21.5.2011 and delivered the lecture on Gerbera cultivation.

Field Visits

HRS, Mahanandi

Sri. Y.Subba Rao, Scientist (Ento) attended field visits and survey on the papaya mealybug damage in Chittoor and Kadapa district on 25-04-2011 and 26-04-2011 along with team leader Dr.N.B.V.Chalapathi Rao, Senior Scientist (Ent.), HRS, Ambajipeta.

Ch.Ruth, Scientist (Pl.Path) & Head and Sri.Y.Subba Rao, Scientist (Ento) HRS, Mahanandi attended field visit on Brinjal crop in Valpanur village of Velugodu Mandal along with agricultural officer on 28-09-2011 and identified *Sclerotial* Wilt and suggested remedial measures.

The Scientists of HRS, Mahanandi conducted field visits in Gajulapalli village along with Associate Dean, Anantharajupet and observed thrips incidence with K.P. Onion on 12-10-2011 and 14-10-2011.

Dr.Ch.Ruth, Scientist (Pl. Path) and Sri.D.Sreedhar, Scientist(Hort) visited Marygold gardens of farmer fields at Thogarchedu village of Panyam mandal and observed Mite incidence in Marygold, fruit rot and dieback incidence in chillies and micronutrient deficiency symptoms in turmeric in Bandi, Atmakur mandal on 03-12- 2011.

The Scientists, HRS, Mahanandi visited Drumstick field at Govindapalli village and observed blackening of the stem portion on 15-11-2011 and suggested control measures.





G. RYTHU SADASSUS

Horticultural Research Station, Vijayarai

Participated in the Rythu Sadassu programme organized by the Joint Director of Agriculture, West Godavari district, on 9th June, 2011 at Chintalapudi in the Eluru division and on 10th June, 2011 in the Jangareddygudem division of in the West Godavari District.

Horticultural Research Station, Mahanandi

Participated in the Ryhtusadassu which was organized in the premises of Agricultural College, Mahanandi of Nandyal Revenue Division on 10-06-2011. The Scientists of HRS, Mahanandi organized a stall on Horticultural crops where. Sri.Y.Pratap Reddy, Minister of Law & Justice, District Collector and farmers visited the stall.

Advisory services were provided to 55 farmers along with Horticultural officer, Raichur (Dist), on 27-04-2011 and Scientists explained the new technologies of Horticultural crops viz., Onion, Brinjal, Bhendi, Tomato, Banana and Gladiolus and interacted with the farmers on cultivation aspects of horticultural crops.

Mango Research Station, Nuzvid

Smt D. Aparna, Scientist (Hort), participated as resource person in rythu sadassu organized by Dept of Agriculture on 7-6-11 at Vijayawada.

Dr. A. Sujatha, Principal Scientist (Ento.) & Head, participated in rythu sadassu organized by Dept of Agriculture on 9-6-11 at Machilipatnam.

Dr. A. Sujatha, Principal Scientist (Ent) & Head and Smt D. Aparna, Scientist (Hort), participated in rythu sadassu at Nuzvid organized by Dept of Agriculture on 11-6-11.

Dr. A. Sujatha, Principal Scientist (Ent) & Head, participated in rythu sadassu at Leelanagar organized by Coramandal Fertilizers on 23-6-11.

Fruit Research Station, Sangareddy

Date	Place/institution	Topic of the lecture conducted	Name of the Scientist
28-5-2011	ZP hall in Chittore	Mango	Dr. A. Kiran Kumar, Scientist (Hort)
1-6-2011	Narsapur	Pest management in mango	Dr. D. Anitha Kumari, Scientist (Ento)
7-6-2011	Sadasivapet Narsapur	Mango production technology	Sri. B. Ramesh Babu, Scientist (Hort.)
	Narsapur and Sadasivapet	Diseases of mango and their management	Sri B. Mahendar, Scientist (Pl.Patho)
7-6-201	Sadasivapet	Discuss about turmeric and ginger cultivation aspects	Sri B. Mahendar, Scientist (Pl.Patho)
7-6-2011	Sadasivapet	IPM on mango guava	Dr. D. Anitha Kumari, Scientist (Ento)
10-6-2011	Doultabad	Fertilizer management of mango	Sri. B. Ramesh Babu, Scientist (Hort.)
10-6-2011	Triumalapur (V), Doultabad (M)	Micro nutrients management in fruit crops	Smt. K. Prabhavathi Scientist (SS&AC)
11-6-2011	Narsapur	Turmeric and ginger cultivation and plant	Sri B. Mahendar, Scientist (Pl.Patho) protection aspects





Horticultural Research Station, Ambajipeta

Dr.N.B.V.Chalapathi Rao, Senior Scientist, has organized a farmers meet on World Coconut Day on 02.09.2011.

Dr.A.Snehalatha Rani, Scientist (Pl. Pathology) participated in Rythu Sadassu at Chiruthapudi conducted by Abhyudaya Karshaka Parishad, Mukkamala on 13.09.2011.

Dr.N.B.V.Chalapathi Rao, Senior Scientist & Smt.M.Kalpna, Scientist (Hort.), have attended cocoa awareness programme at Srungavriksham on 17.09.2011.

Dr. N.B.V.Chalapathi Rao participated in the Rythu sadassu at Chinatadepalli village of Tadepalligudem on 21.03.2012 and delivered lectures to the farmers regarding the pest and disease management in Horticultural crops.

Horticultural Research Station, Adilabad

Date	Particulars
24.06.2011	Chilli production technology and export, RARS, Warangal
19.12.2011	Mango varieties, exports and problems – Rythu sadassu conducted at Mancherial, Adilabad
08.01.2012	Turmeric cultivation and important problems – Rythu sadassu conducted at Nirmal
27.01.2012	Turmeric varieties, problems and cultivation – Rythu sadassu, conducted at Nizamabad
01.02.2012	Mango and its problems – Rythu sadassu, conducted at Mandamarri
09.12.2012	Rythu sadassu on Mango at Jangaon town, Warangal
13.02.2012	Rythu sadassu on Mango at Warangal
25.02.2012	Chilli and mango – Rythu sadassu at Bellampalli
14.03.2012	Turmeric field visits at Nirmal and training programme on Turmeric cultivation

Vegetable Research Station, Rajendranagar

Dr.M.Vijaya, Principal Scientist (Pl.Path.) participated in Rythu Sadassu at Ibrahimpatnam on 07-06-2011 organized by Department of Agriculture and addressed the farmers on plant protection.

Dr.R.V.S.K.Reddy, Principal Scientist (H) participated in Rytusadassu at Suryapet, Nalgonda District on 10-06-2011 organized by Department of Agriculture and addressed the farmers on Vegetable Cultivation.

Dr. M. Tirupathi Reddy, Scientist (Hort.) participated in Rythu Sadassu at Thirumalapur (village), Medak District on 10-06-2011 organized by Department of Agriculture and addressed the farmers on vegetable cultivation.

Dr. Veena Joshi, Scientist (Hort.) attended Rythu Sadassu at Narsapur, Medak district on 11-06-2011 organized by Department of Agriculture and addressed the farmers on vegetable cultivation.

H. RYTHU CHAITANYA YATRAS

Horticultural Research Station, Vijayarai

Dr.V.Vijaya Bhaskar, Senior Scientist (Hort.) and Dr.B.Pratap, Scientist (Agro.) participated in the Rythu Chaitanya Yatra from 17.05.2011 to 02.06.2011 sponsored by the Department of Agriculture,





Government of Andhra Pradesh and organized by the Joint Director of Agriculture, West Godavari District. During the RCY, trained the farmers on different aspects viz., importance of organic farming, need of crop rotation, crop diversification with horticultural crops, integrated pest management in vegetables, off-season cultivation of vegetables, usage of bio-pesticides in controlling pests and diseases, importance of seed treatment while raising the nursery, cultivation of fruit plants in the water scarcity areas and implementation of micro-irrigation techniques in the cultivation of Horticultural crops.

Floriculture Research Station, Rajendranagar

Dr. A.Girwani, Senior Scientist (Hort.) participated in the Rythu ChaitanyaYatras from 18-5-2011 to 2-6-2011 at different villages of Chevella Mandal and trained the farmers in the cultivation of horticultural crops.

Smt.P.Lalitha Kameswari Scientist (Hort.) participated in the RythuChaitanyaYatras from 18-5-2011 to 2-6-2011 at different villages of Shabad mandal and trained the farmers in the cultivation of flower crops.

Dr. A.L.N. Prasad, Sr. Scientist (Pl.Phy) participated in the RythuChaitanyaYatras on 2.6.11 at Maheswaram mandal and trained the farmers on the horticultural crops.

Mango Research Station, Nuzvid

Smt D. Aparna, Scientist (Hort), participated in Rythu Chaitanya Yatralu from 20.5.11 to 30.5.11 in Vissannapet, Agiripalli, Reddygudem and Chatrai mandals of Krishna district and trained the farmers in the mango and other crops.

Fruit Research Station, Sangareddy

Date	Place	Name of the Scientist
6-05-2011	Sadasivpet and Sangareddy	Sri B. Mahendar, Scientist (Pl.Path)
17-5-2011	Ismailkhanpet	Dr. M. Raghava Rao, Senior Scientist (Hort)
17-5-201	Ismailkhanpet (V), Sangareddy (M)	Smt. K. Prabhavathi, Scientist (SS&AC)
24-05-2011	Isruthabad and Venkatapur (V) Sadasivapet (M)	Sri B. Mahendar, Scientist (Pl.Path)
24-5-2011	Kalivemula and Cherlagudem	Dr. M. Raghava Rao, Senior Scientist (Hort)
24-5-2011	Kalivemula and cherlagudem (V) Sangareddy (M)	Dr. Anitha Kumari, Scientist (Ento).
24-5-201	Indrasham and Rameshwaram banda villages of Patancheru (M)	Smt. K. Prabhavathi, Scientist (SS&AC)
25-05-2011	Veltur and Mubarakpur (V) Sadasivapet (M)	Sri B. Mahendar, Scientist (Pl.Patho)
25-5-2011	Arutla, Chidruppa	Dr. M. Raghava Rao, Senior Scientist (Hort)
26-05-2011	Peddapu and Gudimalkapur Sadasivapet (M)	Sri B. Mahendar, Scientist (Pl.Patho)





Date	Place	Name of the Scientist
26-5-2011	Chidruppa, Arutla (V) Sangareddy (M)	Dr. Anitha Kumari, Scientist (Ento).
26-5-2011	Chinna kanjerla and pedda kanjerla villages of Patancheru Mandal	Smt. K. Prabhavathi, Scientist (SS&AC)
27-05-2011	Mallepally & CH.Gopularam Kondapur (M)	Sri B. Mahendar, Scientist (Pl.Patho)
31-5-2011	Ilapur & Ilapur (thanda) of patancheru mandal	Smt. K. Prabhavathi, Scientist (SS&AC)
31-5-2011	Yeddumylaram, Sangareddy	Dr. Anitha Kumari, Scientist (Ento).
1-6-2011	Kavalampet (V) Sangareddy (M)	Dr. Anitha Kumari, Scientist (Ento).
2-6-201	Mamidipally & Yerdanur (V), Sanagareddy (M)	Dr. Anitha Kumari, Scientist (Ento)
2-6-2011	Patancheru	Smt. K. Prabhavathi, Scientist (SS&AC)
10-6-2011	Ameenpur & Usikebai (V), Patancheru (M)	Smt. K. Prabhavathi, Scientist (SS&AC)
11-6-2011	Narsapur	Dr. M. Raghava Rao, Senior Scientist (Hort)

Horticultural Research Station, Peddapuram

Date	Topic	Venue	No.of participants
17.05.11	Tapioca cultivation practices	Malam vill of Peddapuram mandal	308
18.05.11	Management practices for Mango, Cashew, Oil plam and tapioca cultivation practices	Singampalli and Nallimalli village of Rangampeta mandal	268
20.05.11	Management practices for Mango, Cashew, Oil plam and tapioca cultivation practices	Kattamuru and J.Thimmapuram villages of Peddapuram mandal	210
25.05.11	Management practices for Mango, Cashew, Oil plam and tapioca cultivation practices	Anuru and Anuru Kotturu villages of Peddapuram mandal	152
26.05.11	Management practices for Mango, Cashew, Oil plam and tapioca cultivation practices	Kondapalli and Valu Thimmapuram villages of Peddapuram mandal	184

Horticultural Research Station, Ambajipeta

Village	Date	Scientist of HRS, Ambajipeta
Pulletikurru	05.04.11	Dr. A.V.D.D.Rao
Bandarulanka	21.04.11	
Sakurru	27.05.11	Smt. M. Kalpana





Smt. P.Chandana, SMS (Horti) has given radio talk programme on “**leafy vegetable cultivation in rabi and pest and disease management in citrus**” at Bhimavaram.



Sri N.Veerabhadra Rao, Subject Matter Specialist (Fisheries) was delivered programme on Best management practices in shrimp culture to E-TV annadatha programme.



Dr.E.Karuna Sree, Programme Co-ordinator was delivered programme on “Vari mariyu Pasuvula Danalo Azolla Pramukyatha” to ETV-Annadatha Programme.



The staff of Krishi Vigyan Kendra, Venkata ramannagudem Participated in Rythusadassus at Chinthalapudi





The staff of Krishi Vigyan Kendra, Venkataramannagudem Participated in Rythusadassus at K.R.Puram in ITDA Grounds of West Godavari District.



Krishi Vigyan Kendra, Venkataramannagudem staff was conducted Participatory Rural Appraisal (PRA) programme for village adaptation in West Godavari District.





Horticultural Research Station, Pandirimamidi

S. No.	Date	Ravenue village / Habitation	Resource person	Topic covered
1.	17-05-2011	Vootla & Folkspeta (Rampachodavaram)	Dr.K.Rajendra Prasad Scientist(Hort)	Manga Rejuvenation & Cashew Production
2.	18-05-2011	Beerampalli & B.V Kota	Dr.K.Rajendra Prasad Scientist(Hort.)	Rain water harvesting and its management in fruit crops
3.	19-05-2011	I.Polavaram & Irlapalli	Dr.K.Rajendra Prasad Scientist(Hort.)	Cashew Rejuvenation & Turmeric production
4.	20-05-2011	Tamarapalli & Burugubanda	Dr.K.Rajendra Prasad Scientist(Hort.)	Cashew Production Turmeric production
5.	21-05-2011	D.Ramavaram & Atukulavalasa	Smt.K.Usha Kumari Scientist(Hort.)	Precautions after Harvest in Cashew
6.	23-05-2011	Thungamadugula	Smt.K.Usha Kumari Scientist(Hort.)	Precautions after Harvest in Cashew
7.	25-05-2011	Sirigindalapadu	Smt.K.Usha Kumari Scientist(Hort.)	Precautions after Harvest in Cashew
8.	28-05-2011	Madicherla	Dr.K.Rajendra Prasad Scientist(Hort.)	Cashew Production & Turmeric production
9.	30-05-2011	Boosigudem	Dr.K.Rajendra Prasad Scientist(Hort.)	Cashew Production & Precautions in Mango Planting & Turmeric production
10.	31-05-2011	Gaddada & Cheruvupalem	Dr.K.Rajendra Prasad Scientist(Hort.)	Cashew Production & Turmeric production
11.	09.06.2011	Ramachodavaram	Dr.K.Rajendra Prasad Scientist(Hort.) Smt.K.Usha Kumari Scientist(Hort.) Er.P.C.Vengaiah Scientist(FS & T.)	Installed APHU stall in exhibition and also participated discussion with farmers

Vegetable Research Station, Rajendranagar

Dr.M.Vijaya, Principal Scientist (Pl.Path.) attended Rythu Chaitanya Yatra programme from 17th May, to 2nd June, 2011 at Ibrahimpatnam, Rangareddy district.

Dr.R.V.S.K.Reddy, Principal Scientist (H) Attended RCY meetings on 02-06-2011 at Tangatur and Prodatur villages in Shankarpally mandal of Ranga Reddy district.

Dr. Hameedunnisa Beeum, Senior Scientist, (Hort.) Participated in RCY at Ballapur village of Saroornagar mandal of Rangareddy district on 02-06-2011.





Dr. B.K.M.Lakshmi, Scientist (Pl. Path) participated in Rytu Chaitanya Yatra training programme in Keesaara and Ghatakesara mandals along with line department officers and explained vegetable and tuber crops cultivation practices from 17.05.2011 to 2.6.2011.

Dr. Sireesha, Scientist (Ento.) participated in Rythu Chaitanya Yatra training programme in Moinabad and Shamshabad mandals along with line department officers and explained integrated pest management in vegetables from 17.05.2011 to 2.6.2011 in Ranga Reddy district.

Dr. Veena Joshi, Scientist (Hort.) participated in Rythu Chaitanya Yatra training programme in Maheswaram mandal along with line department officers and briefed cultivation practices of vegetable crops from 17.05.2011 to 2.6.2011 in Ranga Reddy district.

Dr. P. Madhavi Latha, Scientist (Agro.) participated in the RCY meetings on 1st & 2nd of June, 2011 at Mallareddyguda, Kummarguda, Shabad and Sankarpallyguda villages of Shabad mandal of Ranga Reddy district.

I. VILLAGE ADOPTION PROGRAMME

Horticultural Research Station, Ambajipeta

Twenty three RAWEP students (Ladies) from College of Horticulture, Venkataramannagudem were trained at HRS, Ambajipeta regarding production and protection technologies of coconut and its inter crops under the guidance of Dr.N.B.V.Chalapathi Rao, Senior Scientist (Ent.) & Head, Dr.N.Emmanuel, Scientist (Ent.), M.Kalpana, Scientist (Hort.), Dr.A.Snehalatha Rani, Scientist (Pl.Path.). The students were positioned in the adopted villages (Munganda & Mukkamala) for learning field experiences on local horticultural crops.

Vegetable Research Station, Rajendranagar

Dr.K.Sireesha, Scientist (Entomology) under NICRA selected 10 villages are adopted for tomato crop and fixed plot survey was conducted throughout the growing season in all the villages.

J. INFRASTRUCTURE FACILITIES

During the year the infrastructure for three Colleges of Horticulture, three Polytechnics and two Krishi Vignan Kendras are completed and are in utilization.

University Head quarters: Gate, Administrative Office and International Hostel.

College of Horticulture, V.R.Gudem: College building, Boys & Girls Hostels and Staff Quarters.

College of Horticulture, Rajendranagar: College building, Boys & Girls Hostels.

College of Horticulture, Anantharajupet: College building, Boys & Girls Hostels, Staff quarters and Overhead Reservoir.

Horticultural Polytechnic, Madakasira, Ramagirikhila: College buildings, Boys & Girls Hostels.

Horticultural Polytechnic, Ramachandrapuram: Boys & Girls Hostels.

Krishi Vignan Kendras, V.R.Gudem: Administrative Block

Krishi Vignan Kendras, Ramagirikhila: Administrative block and Formers Hostel.





VI. PUBLICATIONS

(Books, Laboratory manuals, Technical bulletins, Research papers etc.)

A. Research papers

Books/ Book Chapters

Farm power and Machinery Laboratory Manual for B.Sc. (Hons.) Horticulture course prepared by Sri B. Chennakesavulu, Asst.Professor (Ag.Engg), Horticultural Polytechnic, Ramachandrapuram, E.G.Dt.

K.D.Vasanthi, M.Vasundhara, M.Chandre Gowda and C.N.Byanna published research paper on "Effect of spacing and fertilizers levels on leaf yield, quality and nutrients uptake of stevia" Crop Research (An International Journal) Vol.41, 2011.

K.D.Vasanthi, M.Vasundhara, M.Chandre Gowda and C.N.Byanna published research paper on "Effect of spacing and fertilizers levels on growth and productivity of stevia" Crop Research (An International Journal) Vol.41, 2011.

Dr.C.N.Byanna and Dr.I.N.Doreyappa Gowda research paper on "Standardization of Sweet orange and pomegranate blended RTS beverage preparation and its stage" Crop Research (An International Journal) accepted for publication.

Dr.C.N.Byanna and Dr.I.N.Doreyappa Gowda research paper on "Standardization of RTS beverage production from sweet orange (*Citrus sinensis*) Var. sathgudi) and storage" Crop Research (An International Journal) accepted for publication.

Smt. Ch. Ruth ,Scientist (Pl.Path) published an article on "Cultivation of Gladiolous" in Annadata monthly magazine (June -2011).

Sri.Y.Subba Rao,Scientist (Ento), HRS, Mahanandi published an article on "Management of Mealy bugs in papaya" on 01-08-2011 in Sakshi daily newspaper.

Sri.Y.Subba Rao,Scientist (Ento), HRS, Mahanandi published an article on "Influence of addition of host larval extract to medium on the virulence of *Beauveria bassiana* (Balsamo) Vuillemin and *Metarhizium anisopliae* (Metschnikoff) Sorokin against *Spodoptera litura* Fib." Journal of Biopesticides, 4(1) : 91-95(2011).

Sri. Y.Subba Rao, Scientist (Ento) published an article "Jeedimamidilo kandamu mariyu vaeru tholuchu purugu yajamanyam" in Annadatha monthly magazine (November, 2011).

Dr.G.Sathyanarayana Reddy, Senior Scientist & Head and Dr.T.Susila, Scientist (SG) (Hort.), HGS, Rajendranagar Published booklet on "Cultivation of Medicinal Crops" (English) 2011.

Dr.G.Sathyanarayana Reddy, Senior Scientist & Head and Dr.T.Susila, Scientist (SG) (Hort.), HGS, Rajendranagar Published booklet on "Medicinal and Aromatic Plants Stake Holders Directory 2011 (Telugu & English).

G.Sathyanarayana Reddy, T. Susila and M.Rajkumar published paper on Effect of seed rate and spacing on yield of Aswagandha (*Withania somnifera* Dunal.). Progressive Horticulture Vol. 43(1): 18-19, 2011.

T. Susila and M. Rajkumar, published paper on Effect of date of sowing of Ajowan (*Trachyspermum ammi* L.) Sprague of on seed yield in Southern Telangana, Andhra Pradesh. Madras Agriculture Journal, 98(1-3): 39-40.





T. Susila, S. Amarender Reddy, M. Rajkumar, G. Padmaja and P.V. Rao. published paper on "Influence of plant growth regulators on growth, physiological attributes and nutrient uptake in watermelon". *Progressive Horticulture*. 43(2): 196-199.

T. Susila and G. Satyanarayana Reddy, Collection and cultivation of medicinal plants. *Journal of Arecanut, Spices & Medicinal Plants*. 13(4): 7-11.

T.Susila and G.Sathyanarayana Reddy published paper on Influence of integrated nutrient management on dry root yield and alkaloid content of *Aswagandha (Withania somnifera Dunal.)* under rainfed conditions. Book of Abstracts of International symposium on Minor Fruits and Medicinal plants for Health and Ecological Security (ISM&MP) organized by Bidan Chandra Krishi Viswavidyalaya, Kalyani, Mohanpur, West Bengal.

T.Susila, G.Sathyanarayana Reddy, published paper on Biodiversity for Morphological and Quality traits in Aloe Germplasm. Souvenir & Abstracts of Current Trends in Medicinal, Aromatic Plants and Plant Products organized by Osmania University, Hyderabad.

M. Sivaprasad, R.S. Policegoudra, H.M. Swaroop Kumar and S.M. Aradhya published paper on "Changes in the biochemical and bioactive constituents of Indian hog plum (*Spondias mangifera* Willd.) fruit during ambient storage". *Journal of Horticultural Science & Biotechnology* (2011) 86(3): 267-276.

M. Sivaprasad, R.S. Policegoudra, H.M. Swaroop Kumar and S.M. Aradhya. Platelet aggregation inhibitory activity and radical scavenging activity of *Spondias mangifera* Willd. *South Asian Journal of Experimental Biology* (2011) 1(1): 25-30.

Breznev A., Suresh J., Brahmeshwar Rao M.V., Geeta A. and Saidaiah P. published paper on "Comparison of BT cotton hybrids with their non BT counter parts for yield traits, fiber and oil quality". *Journal of Research, ANGRAU*: 39(4):30-34; 2012.

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Fruit Research Station, Sangareddy

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Integrated management of Ginger	Annadhata	Sri B. Mahendar, Scientist (Pl.Patho)	July 2011.
Integrated management of Mango and Pomegranate	Annadhata	Sri B. Mahendar, Scientist (Pl.Patho)	August-11.
Mamidilo Kaya kotha ananthram Sasya rakshana Charyalu	Annadata	D. Anitha Kumari, Scientist (Ento) B. Mahender, Scientist (Pl.Patho) K. Prabhavathi, Scientist (SS&AC)	September, 2011
Dhanimmalo Kattirimpulu mariyu eruvula Yajamanyam	Vyavasayam	Smt. Prabhavathi, Scientist (SS&AC) Sri. B. Ramesh Babu, Scientist (Hort.) Dr. D. Anitha Kumari Scientist (Ento) Sri. B. Mahender, Scientist (Pl.Patho)	September, 2011 (Pg 29 and 32)
Dhanimmalo Samagra sasya rakshana	Vyavasayam	Sri. Mahender, Scientist (Pl.Patho) Dr. D. Anitha Kumari, Scientist (Ento) Smt. K. Prabhavathi, Scientist (SS&AC) Sri. B. Ramesh Babu, Scientist (Hort.)	October, 2011 (Pg 12 and 15)
Marutunna Vatavarana paristhidulalo adhika digubadulakosam mamidi rythulu pattinchavalasina jagrathulu	Rythunestham	Ravi Chandrashekar, Professor Dr. M. Raj Kumar, Principal Scientist (Hort.)	November, 2011
Adhika sandratalo jama sagu - Melakuvalu	Rythunestham	Dr. A. Kiran Kumar, Scientist (Hort.) Dr. A. Bhagwan, Sr. Scientist (Hort.) Dr. M. Raj Kumar, Principal Scientist (Hort.)	January, 2012
Mamidi totalo adhika digubadulaku prasustam tisukuwalasina jagrathalu	Rythunestham	Dr. M. Raj Kumar, Principal Scientist (Hort.) Dr. A. BhagwanSr. Scientist (Hort.) Dr. A. Kiran Kumar Scientist (Hort.)	March, 2012



C. Participation of Teachers / Scientists in International and National conferences/symposiums/workshops.

Horticultural Research Station, Vijayarai

Dr.V.Vijaya Bhaskar, Senior Scientist (Hort.) has participated in the 'UGC sponsored one day workshop on Modern Trends in Horticulture organized by the Government Degree College, Rajahmundry, East Godavari district on 5.3.2011 and delivered an invited guest lecturer on 'Modern Trends in Floriculture to Improve the Employment Generation Potential'.

Dr.V.Vijaya Bhaskar, Senior Scientist (Hort.) has participated in the 'State Level Seminar on Advances in Cocoa Cultivation organized by the Dr.YSR Horticultural University, Venkataramannagudem" from 7.3.2011 to 8.3.2011 and delivered a guest lecture on "Cocoa as intercrop in Coconut – Practices and Techniques to be adopted for higher production and productivity."

Dr.V.Vijaya Bhaskar, Senior Scientist (Hort.) has participated in the 'Orientation Training for Horticultural Officers and Field Functionaries organized by the Department of Horticulture, West Godavari district at Hotel Athidhi International, Eluru on 28.6.2011 and delivered a guest lecture on 'Pre-planting and post-planting care and Maintenance of Fruit crops'.

Dr.V.Vijaya Bhaskar, Senior Scientist (Hort.) has participated in the 'District Level Training Programme on Cocoa Cultivation organized by the Dr.YSRHU at the premises of Horticultural Research Station, Ambajipet from 14.7.2011 to 16.7.2011 and delivered a guest lecture on 'Propagation and Nursery Management of Cocoa' and 'Training and Pruning of Cocoa'.

Dr.V.Vijaya Bhaskar, Senior Scientist (Hort.) has participated in the 'Scientific Cultivation of Cocoa – Processing and Value Addition to Cocoa organized by the Dr.YSRHU & HRS, Vijayarai at Hotel Athidhi International, Eluru from 29.10.2011 to 31.10.2011 and delivered a guest lecture on 'Propagation and Nursery Management of Cocoa', 'Cocoa and its importance as an inter crop in the plantation crops in Andhra Pradesh', 'Scientific cultivation of cocoa in coconut plantations' and 'Importance of pruning and training in cocoa cultivation'.

Herbal Research Station, Rajendranagar

Dr. G. Satyanarayana Reddy, Senior Scientist (Hort.) participated in the National Conference of State medicinal plant boards and State mission on medicinal plants at MHRD Institute of Andhra Pradesh, Jubilee Hills, Hyderabad organized by NMPB and AP State Medicinal plant Board held from 5-5-2011 to 7-5-2011.

Dr. G.Sathyanarayana Reddy, Senior Scientist (Hort.) participated in the International Conference on Herbal cosmetics and wellness organized by LVHM Research Perfumes & Cosmetics France and Heritage Bio-natural systems Pvt. Ltd India at Park Hotel, Hyderabad held from 26-11-2011 & 27-11-2011.

Dr G. Satyanarayana Reddy, Senior Scientist (Hort.) and Dr T. Susila Scientist (SG) (Hort.) participated in National Workshop on Cultivation and Marketing aspects of Medicinal Plants of Deccan Region on 5-12-2011 held at Kotla Vijaya Bhaskar Reddy Indoor Stadium, Yusufguda, Hyderabad organized by A.P. Medicinal and Aromatic Plants Board, Hyderabad.

Dr T. Susila, Scientist (Hort.) has participated in "International symposium on Minor Fruits and Medicinal plants for Health and Ecological Security (ISMF&MP)" on 19-12-2011 to 22-12-2011 held at Bidan Chandra Krishi Viswavidyalaya, Kalyani, Mohanpur, West Bengal and presented paper on





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“Influence of integrated nutrient management on dry root yield and alkaloid content of *Aswagandha* (*Withania somnifera* Dunal.) under rainfed conditions.”

Dr.G.S.N Reddy, Senior Scientist (Hort.) participated in “National Conference on Medicinal Plants for State Medicinal Plants Boards (SMPBs) held at Bhopal from 30-01-2012 to 01-02-2012.

Dr. T. Susila, Scientist (SG) (Hort.) Participated in National conference on Current Trends in Medicinal, Aromatic Plants and Plant Products held at Osmania University, Hyderabad from 17-03-2012 & 18-03-2012 and presented paper on Biodiversity for Morphological and Quality traits in Aloe Germplasm.

Mango Research Station, Nuzvid

Dr. A. Sujatha, Principal Scientist (Ent), participated in National Seminar on “Current trends in bio technological strategies for eco-friendly crop protection” at University of Madras, Guindy campus, Chennai, organized by Sun Agro Biotech Research Centre (SABRC) Chennai and Department of Zoology, University of Madras, Chennai from 16.12.11 to 17.12.11.

Fruit Research Station, Sangareddy

Dr. A. Bhagwan Sr. Scientist (Hort.) participated in Global Conference on Augmenting Production and Utilization of Mango: Biotic and Abiotic Stresses at Lucknow, Uttar Pradesh on 20-25, June, 2011,

Dr. A. Bhagwan Sr. Scientist (Hort.) participated in Workshop on partnership under the NICRA Project at CRER, Ranchi, Uttarachal on 29th -30m June, 2011.

Dr. A. Bhagwan, Sri B. Mahendar participated in XX Group workers meeting of STF at HC & RI, Periyakulam from 22-9-2011 to 2-10-2011.

Dr. A. Bhagwan Sr. Scientist(H) participated in Work shop on NICRA, IIHR, Bangalore Discussion on the flowering of mango of NICRA. Workshop 12th March, 2012.

Sri B. Mahendar, Scientist (Pl.Patho) participated in Diagnostics, Genomics, implications and integrated management of plant Pathogens at Dept. of Plant pathology, B.A, College of Agriculture, Anand Agricultural University, Anand from 2nd to 22nd November. 2011.

Dr. A. Kiran Kumar, Scientist (H), participated in CeRA training programme on utilize scientific journals website at Venkataramannagudem, West Gadavari Dist., on 20-01-2012.

Horticultural Research Station, Peddapuram

Participated in recording of TV programme by the Saptagiri DD, Hyderabad on “Precautions to be taken during harvesting of tapioca tubers and its storage” on 19.01.2012 and telecasted on 28.01.2012

Participated in the inaugural day of State level three day training programme on “Advances in cashew production technology” being organized by KVK, Pandirimamidi.

Participated as a resource person in Technology week celebrations being organized by KVK, Kalavacherla and delivered a lecture on “Production technologies in Tapioca” on 24.01.2012.

Participated as a resource person in Technology week celebrations being organized by KVK, Amadalavalasa, Srikakulam district and delivered a lecture on “Scope for increasing productivity in Orchard crops in Srikakulam District” on 24.12.2011.





Horticultural Research Station, Ambajipeta

Dr.N.Emmanuel, Scientist (Entomology), HRS, Ambajipeta attended 80 days training programme on Pesticides Residue Analysis from 27.06.2011 to 15.09.2011 at National Institute of Plant Health Management, Hyderabad - 30.

Dr.N.B.V.Chalapathi Rao, Senior Scientist (Ent.) & Head, M.Kalpana, Scientist (Hort.) & Dr.A.Snehalatha Rani, Scientist (Pl.Path), HRS, Ambajipeta have participated in XXth Biennial Workshop of All India Coordinated Research Project on Palms held at CPCRI, Kasaragod during October 15-17, 2011.

Dr.N.Emmanuel, Scientist (Ent.), HRS, Ambajipeta participated in the National Seminar "Environment and Sustainable Development" at Acharya Nagarjuna University, Guntur for oral presentation entitled "Impact of climate change on the outbreak of pests in the coconut farming systems in the Godavari districts of A.P." on 29th Oct 2011.

Dr.N.B.V.Chalapathi Rao, Senior Scientist (Ento.), Dr.N.Emmanuel, Scientist (Ent.), HRS, Ambajipeta have participated in XXI Annual workshop of Floriculture, CTRI, Rajahmundry from 1st & 2nd November, 2011. Dr.N.B.V.Chalapathi Rao, Senior Scientist (Ent.) has participated and delivered a lecture on "Eco-friendly Management of Pest & Diseases in Coconut" in National Conference on "Recent Trends in Plant Sciences" at PR College, Kakinada on 18.11.2011.

Dr. N.B.V.Chalapathi Rao, Senior Scientist from Ambajipeta centre attended the three day training programme at CPCRI regional centre, Kayangulam, Kerala from 18.01.2012 to 20.01.2012 to get acquainted with the protocol, sampling and other details regarding field evaluation of the acaropathogenic fungus *Hirsutella thompsonii* against coconut mite.

Dr. N.B.V.Chalapathi Rao, Senior Scientist (Ento.), attended to Technology Week organized by Krishi vigyan Kendra of Central Tobacco Research Institute, Rajahmundry from 24.01.2012 to 30.01.2012 and delivered a lecture on "Integrated Pest and Disease Management in Coconut" on 27.01.2012.

Dr. N.B.V.Chalapathi Rao, Senior Scientist (Entomology), Dr. N Emmanuel, Scientist (Entomology) and Dr. A. Snehalatha Rani, Scientist (Plant Pathology) participated in the National seminar on "Secondary metabolites from Horticultural crops – A boon for better life via Biotechnological practices" on 15 – 16 February, 2012 held at Horticultural College and Research Institute, Dr. Y. S. R. Horticultural University, Venkataramannagudem, Andhra Pradesh.

Horticultural Research Station, Pandirimamidi

G Narasihma Murthy, Scientist (Hort.) and P.C Vengaiah, Scientist (Food Sci. & Tech.) participated in XXth Biennial Workshop of AICRP on Palms held at CPCRI, Kasargod during 15th to 17th October, 2011 and presented progress of work under AICRP Palms at Horticultural Research Station, Pandirimamidi.

Dr. K Rajendra Prasad, Scientist (Hort.) and P C Vengaiah, Scientist (Food Sci. & Tech.) participated in "XXIth Annual Group Meeting AICRP on Floriculture" held at CTRI, Rajahmundry PCRI, during 4th to 6th November, 2011.

Horticultural Research Station, Venkataramannagudem

Rajasekhar M, Srihari D, Purushottam K and Raghava Rao D V 2011 Evaluation of diversity in sapota (*Manilkara achras* (Mill.) Fosberg) genotypes through Principal component analysis of fruit characters. International symposium on minor fruits and medicinal plants for health and ecological safety held at Kalyani from December 19-22, 2011.





Harshavardhan A, Rajasekhar M and Uma Krishna K 2011 Effect of environmental condition, method and time of grafting on graft success in two varieties of jackfruit. Proceedings of the International Symposium on Minor Fruits and Medicinal Plants for Health and Ecological Security held from 19th to 22nd December 2011. Kalyani, India.

Narendra Kumar B, Naram Naidu L and Rajasekhar M 2011 Studies on fruit growth and development in different cultivars of sapota {*Manilkara achras* (Mill.) Fosberg} under coastal region of Andhra Pradesh. Proceedings of the International Symposium on Minor Fruits and Medicinal Plants for Health and Ecological Security held from 19th to 22nd December 2011. Kalyani, India.

Rajasekhar M, Rajyalakshmi R, Babu Ratan P and Purushottam K. 2011. Evaluation of certain sapota {*Manilkara achras* (Mill.) Fosberg} genotypes for coastal region of Andhra Pradesh. 99th Indian National Science Congress to be held at Bhubaneswar, from 3-7, January 2012.

Rajyalakshmi R, Rajasekhar M and Chandrasekhar N 2012 Evaluation of turmeric (*Curcuma longa* L.) varieties for curcumin, oleoresin and essential oil content for *in vitro* production of secondary metabolites. National seminar on secondary metabolites from horticultural crops- A boon for better life via biotechnological practices held at HCRI, Venkataramannagudem on 15th & 16th February, 2012.

Rajasekhar M, Rajyalakshmi R and Subba Rao AV 2012. Secondary metabolites for plant defence in organic farming systems. National seminar on secondary metabolites from horticultural crops- A boon for better life via biotechnological practices held at HCRI, Venkataramannagudem on 15th & 16th February, 2012.

Lavanya A, Sudhavani V, Rajyalakshmi R, Syam Sundar Reddy P and Sasikala K 2012. Root yield and pungency levels of radish as affected by sowing dates and spacing. National seminar on secondary metabolites from horticultural crops- A boon for better life via biotechnological practices held at HCRI, Venkataramannagudem on 15th & 16th February, 2012.

Harshavardhan A, Rajasekhar M, Reddy PSS and Uma Krishna K 2011 An investigative approach on anti-microbial property of jackfruit {*Artocarpus heterophyllus* Lam.) seeds. Proceedings of the National Seminar on Secondary Metabolites from Horticultural Crops - A Boon for better life via Biotechnological Practices held from 15th to 16th February 2012. Dr. YSR Horticultural University, Venkataramannagudem, Tadepalligudem, India.

Rajyalakshmi R, Vijayapadma SS and Rajasekhar M. 2012 Studies on Genetic Divergence in Brinjal (*Solanum melongena* L). National seminar on Trends in Agricultural Biotechnology And Environmental Protection, held at Loyola Academy, Alwal, Secunderabad on 24th & 25th February, 2012.

Rajasekhar M, Krishna Mohan K and Rajyalakshmi R 2012 Studies on improvement of vase life of rose cut flowers. National seminar on Trends in Agricultural Biotechnology And Environmental Protection, held at Loyola Academy, Alwal, Secunderabad on 24th & 25th February, 2012.

Rajasekhar M, Krishna Mohan K and Rajyalakshmi R 2012 Transgenic crops - Boon or Bane ?. National seminar on Trends in Agricultural Biotechnology And Environmental Protection, held at Loyola Academy, Alwal, Secunderabad on 24th & 25th February, 2012.

Tanuja Priya B, Rajyalakshmi R, Sunitha P and Ramadevi P. 2012 DNA finger printing in *kororus calamus*. National seminar on Trends in Agricultural Biotechnology And Environmental Protection, held at Loyola Academy, Alwal, Secunderabad on 24th & 25th February, 2012.

Bindu Praveena R, Sudhavani V and Rajasekhar M 2012 Effect of packaging and ventilation on the post harvest shelf life and quality of ethereal treated sapota {*Manilkara achras* (Mill.) Fosberg} cv. Kalipatti





at ambient conditions. National seminar on Trends in Agricultural Biotechnology And Environmental Protection, held at Loyola Academy, Alwal, Secunderabad on 24th & 25th February, 2012.

Rajasekhar M, Rajyalakshmi R, Baburatan P, Naramnaidu L, and Suresh K 2012 Influence of canopy volume on yield and yield attributes of sapota {*Manilkara achras* (Mill.) Fosberg } under high density planting. Accepted for “5th International symposium on tropical and sub tropical fruits” to be held at Guangzhou, China on 18th to 20th June, 2012.

Rajasekhar M, Reddy Y N and Sudhavani V 2012 Changes in ethylene and polyamine levels and their influence on shelf life in antioxidant treated ripening tomato fruits. Accepted for 7th international postharvest symposium to be held at Kuala Lumpur, Malaysia on 25th to 29th June, 2012.

Bindu praveena R, Sudhavani V and Rajasekhar M 2012 Influence of low temperature on shelf life and quality of sapota (*Manilkara achras* (Mill.) Forsberg) fruits packed in polybags. Accepted for 7th international postharvest symposium to be held at Kuala Lumpur, Malaysia on 25th to 29th June, 2012.

Sudhavani V, Rajasekhar M and Reddy Y N 2012 Shelf Life and quality of baby corn (*Zea mays* L.) as affected by storage at low temperature in polybags with different gauges and ventilations. Accepted for 7th international postharvest symposium to be held at Kuala Lumpur, Malaysia on 25th to 29th June, 2012.

Naram Naidu L, Haribabu K, Purushottam K, Yuvaraju K M, Rajasekhar M and Ramana C V 2012 Influence of post harvest treatments on the activity of cell wall softening enzymes during ripening of tomato (*Solanum lycopersicon*). Proceedings of the International Post harvest Symposium held from 25th to 29th June 2012. Kuala Lumpur, Malaysia

Vegetable Research Station, Rajendranagar

Center	Name of the participant	Title of Seminar / Symposium / Group meeting	Date
Kalyani	Dr. M. Rajasekhar Dr. R. Rajyalakshmi	17 th group meet and biennial work shop on tropical fruits	18.07.11 to 21.07.11
Rajhamundry	Dr. M. Rajasekhar	XXI Annual Group Meeting of Floriculture	30.10.11
Kalyani	Dr. M. Rajasekhar	International symposium on minor fruits and medicinal plants for health and ecological safety	19.12.11 to 22.12.11
Bhubaneshwar	Dr. M. Rajasekhar	Indian National Science Congress	03.01.12 to 07.01.12
Venkataramanna gudem	Dr. M. Rajasekhar Dr. R. Rajyalakshmi	National seminar on secondary metabolites from horticultural crops-A boon for better life via biotechnological practices	15.02.12 to 16.02.12
Hyderabad	Dr. R. Rajyalakshmi	National seminar on Trends in Agricultural Biotechnology And Environmental Protection	24.02.12 to 25.02.12





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Dr.R.V.S.K.Reddy, Principal Scientist (H), attended “State level inter-departmental workshop on convergence of NAP (National Afforestation Programme) and other schemes for the JFMC and field level staff in the State of Andhra Pradesh and gave a guest lecture on “Role of Horticultural crops in Afforestation and waste land Development” on 28-12-2011.

Dr. B.K.M. Lakshmi, Scientist (Pl.Path.) attended National Workshop on Floriculture at Rajahmundry from 4th to 6th November, 2011. Attended and “Global Conference on Aroids” at Bhubaneswar, Orissa, India from 23rd to 25th January, 2012 and presented at paper on “New challenges to crop pest management in Traditional aroids growing agro-ecosystem under a changing climate”.

Dr.B.K.M.Lakshmi., P. Narayan Reddy and R.D Prasad (2011), “Sustainable Integrated Management of post harvest incidence of mango anthracnose by using Gamma radiations of resistance” in “ Biology of infection, Immunity and disease control in pathogen - Plant Interactions” conducted at University of Hyderabad in December 2-4, 2011.

Dr. Veena Joshi, Scientist (Hort.), presented a poster on “Genetic diversity in Leaf Amaranthus (*Amaranthus* sp)” in the National Symposium on “Vegetable Biodiversity” held at JNKVV, Jabalpur from 4-04-2011 to 5-04-2011 and a paper on “ Study of secondary metabolites in grape wine under semi-arid conditions of Andhra Pradesh” in the National Seminar on secondary metabolites from Horticultural Crops- A boon for better life via Biotechnological practices” held at HC&RI, Dr.YSRHU, Venkataramannagudem from 15-16 February 2012.

Presented a poster on “Bio-chemical properties of blended wine prepared from white and coloured varieties of Grape (*Vitis vinifera* L” in the National Seminar on new frontiers and future challenges in Horticultural Crops” held at PAU, Ludhiana from 15-17 March 2012.

KVK, Venkataramannagudem

Dr.E.Karuna Sree, Programme Co-ordinator, KVK, VRG participated programme in International Conference on Innovative Approaches for Agricultural Knowledge Management – Global Extension Experiences organized by INSEE & ICAR at New Delhi from 9th to 12th November, 2011.

Dr.E.Karuna Sree, Programme Co-ordinator, KVK, VRG participated in National Conference of KVKs held at Jabalpur, Madhyapradesh from 3rd to 5th December, 2011.





VII. FINANCE AND BUDGET

The major financial grants to the Andhra Pradesh Horticultural University come from the A.P. Government under Plan by way of grants-in-aid for running the institution. The block grants approved in the budget for the year 2011-12 was Rs.5900.00 lakh, including salaries grant of Rs.2500.00 lakh and other grants-in-aid of Rs.3400.00 lakh.

The ICAR assistance was Rs.1319.81 lakh (including NAIP) and the Govt. of India assistance was Rs.111.00 lakh while the amount received from other agencies was Rs.76.71 lakh and Departmental sponsored schemes Rs.290.00 lakh.

Thus, the total budget of the University for the year 2011-12 was Rs.7697.52 lakh.



VIII. AWARDS AND HONOURS

Admn. Office

Dr. B.Srinivasulu, Registrar & Director of Research (FAC) of Dr.YSRHU received the “Best officer” award on the occasion of Ugadi on Ugadi Puraskaram by Sri N.Kiran Kumar Reddy, Hon’ble Chief Minister of Andhra Pradesh on 23.3.2012 at Hyderabad.

Dr. B.Prasanna Kumar, Professor (Hort.) & Technical Officer to Dean, Dr.YSRHU received the “Best officer” award on the occasion of Ugadi on Ugadi Puraskaram by Sri N.Kiran Kumar Reddy, Hon’ble Chief Minister of Andhra Pradesh on 23.3.2012 at Hyderabad.

Floriculture Research Station, Rajendranagar

Dr. K.Dhanumjaya Rao, Principle Scientist (H) & Head received the “Best officer” award on on the occasion of Ugadi as Ugadi Puraskaram by Sri N.Kiran Kumar Reddy, Hon’ble Chief Minister of Andhra Pradesh on 23.3.2012 at Hyderabad.

Horticultural Research Station, Malyal

Sri M.Hanuman Naik, Scientist (H) & Head received the “Best officer” award on on the occasion of Ugadi as Ugadi Puraskaram by Sri N.Kiran Kumar Reddy, Hon’ble Chief Minister of Andhra Pradesh on 23.3.2012 at Hyderabad.

Horticultural Research Station, Mahanandi

Smt. Ch.Ruth, Scientist (Pl. Path) awarded Ph.D degree for “Molecular characterization and Management of Groundnut bud necrosis virus infecting tomato *Lycopersicon esculentum* Mill, by ANGRAU, Hyderabad during the year 2011-12.

Fruit Research Station, Sangareddy

Dr.A.Bhagwan, Senior Scientist (Hort) WAS CONFERRED SOCIETY FOR DEVELOPMENT OF SUB TROPICAL HORTICULTURE (SDSH) FELLOWSHIP AWARD for his contribution in increasing the productivity of mango in India and in Andhra Pradesh in particular on the Occasion of “Global Conference on Augmenting Production and Utilization of Mango: Biotic and Abiotic Stresses” held on 21-24th June, 2011 at Lucknow, Uttar Pradesh. The award was constituted by Society for the Development of Sub-tropical Horticulture, CISH, Lucknow.

BEST ORAL PRESENTATION AWARD to Dr.A.Bhagwan, Senior Scientist (Hort) for paper entitled “Effect of different doses of irradiation on the shelf life and quality of mango cv Dashehari stored at low temperature. Presented in “Global Conference on Augmenting Production and Utilization of Mango: Biotic and Abiotic Stresses” held on 21-24th June, 2011 at Lucknow, Uttar Pradesh. The award was constituted by Society for the Development of Sub-tropical Horticulture, CISH, Lucknow.





BEST POSTER PRESENTATION AWARD to Dr.A.Bhagwan, Senior Scientist (Hort) for paper entitled “Effect of climatic change on the productivity of mango cv Banganpalli under Andhra Pradesh conditions” . Presented in “Global Conference on Augmenting Production and Utilization of Mango: Biotic and Abiotic Stresses” held on 21-24¹ June, 2011 at Lucknow, Uttar Pradesh. The award was constituted by Society for the Development of Sub-tropical Horticulture, CISH, Lucknow.

Fruit Research station, Sangareddy has got two 2nd prizes in Totapari and Hybrid category during the exhibition in the “Global Conference on Augmenting Production and Utilization of Mango: Biotic and Abiotic Stresses” held on 21-24¹ June, 2011 at Lucknow, Uttar Pradesh.

Fruit Research Station, Sangareddy has been adjudged as Best performing centre nation wide under AICRP, on mango and Guava during the XX Group worker’s meeting held recently at Periakulam from 29-9-2011 to 2-10-2011.

Horticultural Research Station, Ambajipeta

Research paper on “Toxic and Insect Growth Regulatory Effects of Secondary Metabolites from Vital Horticultural Crops Against the Coconut Black Headed Caterpillar *Opisina Arenosella*” by Dr. N.Emmanuel and Dr. N.B.V.Chalapathi Rao was selected as best oral presentation among the papers received at the seminar.

Horticultural Research Station, Venkataramannagudem

Dr. R. Rajyalakshmi Scientist (Hort.) is a recipient of Certificate of appreciation for best oral paper “Studies on Genetic Diversity in Brinjal (*Solarium melongena* L.)” presented at National seminar on Trends in Agricultural Biotechnology And Environmental Protection organized at Loyola Academy 24th - 25th February, 2012

Betelvine Research Station, Venkataramannagudem

Smt. B. Tanuja Priya, Scientist (Hort.) is a recipient of best poster award for the poster presentation entitled “Genetic divergence in betelvine (*Piper betle*) in the National symposium on “Exploiting Spices Production Potential of the Deccan Region” held at University of Agricultural Science. Dharwad during 8th to 10th December, 2011.

Citrus Research Station, Tirupati

Dr. K. Gopal, Zonal Research Head, Citrus Research Station-Tirupati was awarded with Dr. Shyam Singh Best Scientist Award on 27-02-2012 for Citrus Research during National Conference on National Dialogue on Citrus Improvement, Production & Utilization, February 27-29 by The secretary, Indian Society of Citriculture, NRC on Citrus, Nagpur – 440 010.

Dr. K. Gopal, Zonal Research Head, Citrus Research Station-Tirupati was awarded with Indira Gandhi Shiromani Award on 17-12-2011 For outstanding individual achievements & distinguished services to the nation by India International Friendship Society, New Delhi.

Dr. K. Gopal, Zonal Research Head, Citrus Research Station-Tirupati was awarded with Rashtriya Gourav Award on 11-11-2011 For outstanding individual achievements & distinguished services to the nation by India International Friendship Society, New Delhi.





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Dr. K. Gopal, Zonal Research Head, Citrus Research Station-Tirupati was awarded with Glory of India Gold Medal on 11-11-2011 For outstanding individual achievements & distinguished services to the nation by International Institute of Success Awareness, New Delhi.

Smt. Dr.L.Mukunda Lakshmi, received three gold medals viz., University of Agricultural Sciences gold medal, Dr. Suresh Sondur Memorial gold medal, Indo American Hybrid Seed gold medal for securing highest OGPA of 9.21 out of 10 in Doctor of Philosophy in Horticulture during 2010-11 at 45th convocation at UAS, GKVK, Bangalore held on 6-08-2011.

Admn. Office

Best ORAL PRESENTATION AWARD to Dr.B.Prasanna Kumar, Technical Officer to Dean, for paper entitled "Effect of peclobutrozol on growths and development of Cashew (*Anacardium occidentale* L) in the first International symposium on Cashew nut held at ACRI, Madurai on 9-12th December, 2011 by Dr.Mc Gale of International Society for Horticultural Science, FAO, Rome.

BUILDING AND CONSTRUCTION PROGRAMMES

FRS, Sangareddy

An amount of Rs.12 lakhs was allotted to Fruit Research Station during 2008 towards renovation of Office building, Biochemistry lab and ICAR block. Till today, the work has not been completed in spite of several appeals. A lot of problem is being faced in the office & lab work.

Bio-control Lab: The construction of bio control lab was completed without partition work. Recently, during the visit on 6-3-2012, the Director of Research has sanctioned an amount of Rs.4.5 lakhs for partition work. Accordingly, the work has been completed and the production of Trichoderma has also been initiated.

Vehicle Garage : An amount of Rs.3 lakhs has been sanctioned towards the construction of vehicle garage. The work will be started shortly.

HRS, Ambajipeta

False roofing, floor tiling, renovation of the lab and construction of bath rooms at plant pathology department of HRS, Ambajipeta was carried out.

Horticultural Polytechnic, Ramagirikhilla

The Horticulture buildings complex of Horticulture Polytechnic, Ramagirikhilla consists of College building and separate hostels for boys and girls. The building complex works are in progress.

HRS, Pandirimamidi

Construction of food science and technology lab is under progress. Installation of pipeline under farm development programme was completed.





IX. OTHER SIGNIFICANT EVENTS IF ANY

SSPGHP, Madakasira

No. of Students		
Joined in B.Sc. (Hons)HCRI, Anantharajupet and HCRI, Venkatramannagudem	Private NGO's	Department of Horticulture, Govt Organizations (Plantation supervisors, Technical Assistants, & Field Consultants)
5	3	11 + 5 + 1 (17)

Floriculture Research Station, Rajendranagar

Floriculture Research Station, Hyderabad organized the Annual Group Meeting of AICRP on Floriculture from 4th to 6th Nov, 2011 at CTRI, Rajahmundry.

Herbal Research Station, Rajendranagar

Dr G. Satyanarayana Reddy Senior Scientist (Hort.) and Dr T. Susila Scientist (SG) (Hort.) organized **Stake Holders meet on Cultivation and Marketing of medicinal Plants** at ANGRAU auditorium under the Project Facilitation Centre Sponsored by National Medicinal and Aromatic Plants Board, New Delhi on 29-11-2011. About 100 farmers from Rangareddy, Adilabad, Khammam, Prakasam, Nizambad, Nalgonda, Warangal, Karimnagar, Medak and Mahaboobnagar districts attended the programme.

Horticultural Research Station, Peddapuram

Dr.H.P.Singh, DDG(Hort), ICAR, New Delhi visited AICRP on Tapioca centre at Peddapuram on 6.11.2012. DDG(Hort) released technical broacher on "Tapioca cultivation" and also distributed parasitoids (*Acerophagus papae*) for the control of tapioca mealy bug to the tapioca farmers.

Dr.H.P.Singh, DDG(Horticulture),ICAR, New Delhi distributing the Parasitoids (*Acerophagus papae*) to tapioca farmers for the control of tapioca Mealy bug

HRS, Pandirimamid

Er. P.C.Vengaiah, Scientist (Food Science & Technology) visited Palmyrah Neera processing units at Maharastra and Gujarat States along with Sri. Pithani Satyanarayana garu, Hon'ble Social Welfare Minister, Govt. of A.P., Sri. Bikshamaiah Goud garu, MLA in the month of April 2011.

Er. P C Vengaiah (Food tech.) participated as member for study tour to Tamilnadu and Kerala on "Evaluation of Palmyra (*Borassus Flabellifer*) for Production and marketing of Neera" during 7th to 14th August, 2011 along with committee under Chairmanship of Sri P.Satyanarayana garu, Hon'ble Minister of Social Welfare, Government of Andhra Pradesh.





Dr. B.Srinivasulu, Registrar & Director of Research (FAC) of Dr.YSRHU received the "Best officer" award on 23.3.2012.



Dr. B.Prasanna Kumar, Professor (Hort.) & Technical Officer to Dean, Dr.YSRHU received the "Best officer" award on 23.3.2012.



Dr. K.Dhanumjaya Rao, Principle Scientist (H) received the "Best officer" award on 23.3.2012.



Sri M.Hanuman Naik, Scientist (H) received the "Best officer" award on 23.3.2012.



Dr.N.Emmanuel, Scientist (Entomology), HRS, Ambajipeta attended 80 days training programme.



Subject Matter Specialist (Horti), KVK, V.R.Gudem attended workshop on ICT applications and mobile advisory services at MANAGE, Hyderabad.



Stake Holders meet on Cultivation and Marketing of medicinal Plants



Dr.H.P.Singh, DDG(Hort), ICAR, New Delhi visited AICRP on Tapioca centre at Peddapuram





Campus Beautification : Consequent to the joining of staff and students at College of Horticulture and at Hostels of VR'Gudem & at Head Office of Dr.Y.S.R.Horticultural University, the Campus Beautification works were initiated w.e.f. October, 2010 and are being continued under the expertise and supervision of Dr.M.B.N.Rao, Prof. of Horticulture, College of Horticulture, Venkataramannagudem.



Campus Beautification at New Entrance Gate of Dr.Y.S.R.Horticultural University



Campus Beautification at Head Office of Dr.Y.S.R.Horticultural University



Campus Beautification at College of Horticulture, Venkataramannagudem of Dr.Y.S.R.H.U.



Campus Beautification at International Guest House, Venkataramannagudem of Dr.Y.S.R.H.U.





COLLGE OF HORTICULTURE, ANANTHARAJUPET



Boys Hostel, Anantharajupet



Girls Hostel, Anantharajupet



COLLGE OF HORTICULTURE, MOJERLA



Boys Hostel, Mojerla



Girls Hostel, Mojerla



Administrative Office, Dr. YSRHU, Venkataramannagudem