ANNUAL REPORT

(April, 2010 to March, 2011)

CENTRAL AGRICULTURAL UNIVERSITY
COLLEGE OF HORTICULTURE AND FORESTRY
PASIGHAT- 791 102, ARUNACHAL PRADESH

Chapter -1

Introduction

The College of Horticulture and Forestry, a constituent institution of Central Agricultural University, Imphal, Manipur, was established on March 7th 2001 at Pasighat, Arunachal Pradesh. The college was established with mandate to impart education in different branches of horticulture and forestry and allied sciences, carry out research for promotion of horticulture and forestry and undertake different extension programmes that help in transfer of technologies generated to the end-users.

Since establishment, the College has developed many new building and structures such as Academic Block, Transit Hostel, Guest House, Girls Hostel, Common Utility Block, V.C. Camp Office, Health centre, Staff Residences etc. The College has well equipped Laboratories and interactive class rooms, Video conferencing studio, Library and Computer lab. The construction work of an auditorium is likely to be completed soon.

The campus is spread over in an area of 58 hectares which includes research farm, instructional cum demonstration farm, KVK farm, and experimental farm. The College has achieved remarkable progress in teaching, research and extension programmes since its inception. At present, the College has 11 departments to support academic, research and extension activities. The academic programmes are undergraduate degree in Horticulture and Forestry (B. Sc Hort. and B.Sc Forestry) as and post-graduate degree in Horticulture (M.Sc Horticulture in Fruit Science and Vegetable Science). The curriculum and syllabi of all degree programmes are updated, and implemented as per the ICAR-IVth Deans' Committee recommendation.

Beside curriculum, the college also gives due consideration for overall development of the students through their participation in extracurricular activities viz. games and sports, cultural programmes, declamation contests, arranging special lectures conducting regional and national tours. The college is fully dedicated to impart the best quality education in the areas under its jurisdiction which is well reflected through the outstanding performance of our students in the ICAR's JRF examination, securing admission in the advanced institutes across the country and employment of our graduates in public and private sectors. The teaching, research and extension activities in the college are executed by competent, energetic and well qualified faculty.

During the year 2010-11, the College handled 07 All India Coordinated Research Projects, 03 All India Network Projects sanctioned by ICAR, 10 Intramural Research Projects funded by the university and other 13 externally funded research projects sanctioned by different national bodies like DST, DBT, C-DAC, Ministry of Communication Technology, National Horticultural Board, NABARD and Technology Mission MM-I etc.

The College has also one KVK to facilitate the transmission of latest technologies in field of Agriculture, Horticulture and allied disciplines to the farming community.

Chapter -2

Teaching

2.1 State wise seats allocated to different UG programmes

Sl. No.	Degree Programmes	States								
		Arunachal Pradesh	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	ICAR/VCI	Total
1.	B.Sc. (Horticulture)	07	07	06	06	02	06	07	07	48
2.	B.Sc. (Forestry)	04	05	03	04	-	04	03	04	27

2.2 Intake capacity and Number of students Admitted in 2010-11

Sl.No.	Name of the Course	No. of students admitted in 1st year
1.	B.Sc.(Horticulture)	36
2.	B.Sc.(Forestry)	18
3.	M.Sc.(Horticulture)	07

2.3 Number of Passed Out Students in 2010-11

Sl.No.	Degree	No. of U.G. students passed out	No. of P.G. students passed out
1.	B.Sc.(Horticulture)	30	-
2.	B.Sc.(Forestry)	-	-
3.	M.Sc.(Horticulture)	-	-

2.4 First Rank Holder in UG degree programme during the year 2010-11

Sl.No.	Degree offered	Name of student	OGPA obtained
1.	B.Sc.(Horticulture)	Ms.Pushparani Senjam	8.64

2.5 Scholarship holders

2.5.1 National Talent Scholarship/Fellowship of ICAR

The list of students who received National Talent Scholarship/Fellowship of ICAR, New Delhi during 2010-11 is as given below:

Sl.No.	Name of the degree course offered	Name of the student	Year of the degree course
1.	B.Sc.(Forestry)	Mr. Purushottam Kumar Mr. Ajit Kumar Mr. Rakesh Roshan Mr. Sumit Sonalkar	1st year 1st year 1st year 3rd year

Sl.No.	Name of the degree course offered	Name of the student	Year of the degree course
2.	B.Sc. (Horticulture)	Ms. Jyoti Kumari Mr. Manas Kr.Patel Ms. Vandana Mr. Bhuvnesh Kumar Meena Mr. Manglam Arya Mr. Lalbahadur Singh Ms. Dipti Ranjan	1st year 1st year 1st year 1st year 1st year 2nd year 3rd year

2.5.2 University Merit Scholarship

The university merit scholarship holders of the college are given below:

Sl.No.	Name of the Degree Programme offered and Dept. in case of PG courses	Name of the student	Year of the degree course
1.	B.Sc.(Horticulture)	Ms.Ephilo Mena	1st year
		Mr.N. Rabichandra Meitei	2nd year
		Ms.Mocha Ajang	3rd year
		Ms.Henuka Rai	4th year
2.	B.Sc.(Forestry)	Ms. Mide Bage	1st year
		Mr. N.Rongmei	2nd year
		Ms. R.Panmei	3rd year
		Ms.Pempa Lamu Bhutia	4th year
3.	M.Sc.(Horticulture) in Fruit Science	Ms.Rebecca Eko Mr.Rinchin Khandu Thungon	1st year 1st year
		Mr.Jumgo Geyi Mr.Archan Rabha	2nd year 2nd year
4.	M.Sc.(Horticulture) in Vegetable Science	Ms. Tasso Yatung Ms.Nyaken Padu	1st year 1st year
		Mr.S.K. Thungon Mr.Teibormiki Challam	2nd year 2nd year

2.6. Students' Performance at National Level

The performance of the students in the year 2010-11

Sl. No.	Performance in JRF Examination				
	No. student appeared	No. of student qualified for counselling	No. of students in secured JRF	No. of students admitted in SAUs/CAU without JRF	No. of students admitted in National Institutes/DUs
1.	27	25	07	18	02

2.7. Students Strength in 2010-11

2.7.1 Under Graduates Programme

Sl. No.	Degree Programme	Year wise students strength						Students Passed Out in 2010
		1st Yr	2nd yr	3rd yr	4th yr	5th yr	Total	
1	B.Sc.(Horticulture)	39	39	15	24	-	117	30
2.	B.Sc. (Forestry)	20	10	15	10	-	55	-

2.7.2 Post Graduates Programmes

Sl.No.	Departments	Intake Capacity	Students Strength		Total	Students Passed Out In 2010
			1st year	2nd year		
1	Fruit Science	04	03	03	06	-
2	Vegetable Science	04	04	03	07	-

2.8. Male: Female Ratio

Sl.No.	Total No. of students	Male students		Female students		Male: Female Ratio
		No.	%	No.	%	
1	Under Graduate 172	100	58.1	72	41.9	1.39:1
2.	Post Graduate 13	07	53.8	6	46.2	1.17:1

2.9. Category wise Student Strength April-2010 to March-2011

Sl.No	Degree Programmes	Students Strength				Total
		Gen	S.C	S.T	O.B.C	
1.	B.Sc. (Horticulture)	15	07	83	12	117
2.	B.Sc. (Forestry)	04	03	37	11	55
3.	M.Sc.(Horticulture)	-	-	10	03	13

2.10. Hostel

The strength of boarders and facilities available in hostels are shown below:

Sl.No	Hostel	Strength	Facilities Available
1.	Boys	107	Modular Kitchen, Uninterrupted electric supply with generator backup, advanced facilities like recreation room equipped with LCD TV, Newspapers, Hostel Library, Magazine along with indoor and outdoor games facilities like TT, Carrom board, Chess, Badminton, Gym, Volleyball, etc.
2.	Girls	78	Uninterrupted electric supply with generator backup, advanced facilities like recreation room equipped with LCD TV, Newspaper, Library, Magazine along with indoor and outdoor games facilities like TT, Carrom board, Chess, Badminton, Gym, Volleyball, etc.

2.11 Human resource

2.11.1 Staff on Roll

Sl. No.	Category & Designation wise	Category, Cast wise					Sex	
		Gen	SC	ST	OBC	Tot	M	F
1.	Dean				01*			
2.	Professors					-		
3.	Associate Professors	05	-	01	02	08	08	-
4.	Assistant Professors	18	03	02	06	29	25	4
5.	Non-teaching* officers (AR/AC/MO etc.)					-		
6.	Technical	05	02	15	04	26	21	05
7.	Ministerial	02	-	03	03	08	05	03
8.	Supporting	05	03	17	05	30	24	06
	Total	35	08	38	20	101	83	18

* Associate Professor and Dean

2.12 Human Resource Development

As per the university norms the college encourages and supports faculty members and other staff members to improve their competency and skill on continuous basis by deputing them for short and long term training programmes, higher studies and also to attend national and international seminars, conferences, workshops etc. The college also arranges on-campus training programmes of common interests by inviting experts from outside institutions/organizations.

2.12.1 Prosecution of Higher Studies:

- Dr. L. Wangchu, Associate Professor (Fruit Science) has been deputed for Associateship at Michigan State University, USA under DBT Research Programme for one year.

2.12.2 Awards/Distinctions/Recognitions

Sl. No.	Name and Designation of Awardees	Details of Award
1	Dr. B.N.Hazarika, Associate professor.	Nominated as Reviewer for the Journal International Research Journal of Plant Science, IRJPS Nominated as Editor of Open Horticulture Journal.
2	Dr. R.K. Dubey Assistant Professor	Nominated as External Examiner at UBKV, Pundibari, Cooch Behar, West Bengal
2.	Dr. Nilay Kumar Assistant Professor	Nominated as External Examiner at SHAITS, Allahabad, U.P.
3.	Dr. Suresh Tiwari Assistant Professor	Nominated as Reviewer for the Journal of Hill Agriculture, GBPUAT, Ranichauri, Uttarakhand
4.	Mr. Amit Kumar Singh Assistant Professor	Nominated as External Examiner at Rajiv Gandhi University, Itanagar.
5.	Dr. T.S. Mehra Associate Professor	Nominated as Reviewer for the Journal of Biodiversity, KRE publication, New Delhi,
6.	Dr. P. Raja Assistant Professor	Nominated as Reviewer of Journal Indian Phytopathology, IARI, New Delhi

2.12.3 Faculty awarded Ph.D. Degree during 2010-2011

Sl. No.	Name & Designation	Details of Ph.D. Degree
1.	Dr. (Mrs) Tisu Tayeng, Assistant Professor (Tree Improvement & PBG)	Tree Improvement & PBG awarded from CSKHPKV, Palampur, Himachal Pradesh
2.	Dr. Sanjeev Kumar, Assistant Professor (Silviculture & Agroforestry)	Silviculture & Agroforestry awarded from Dr. YSPUHF, Nauni, Solan, Himachal Pradesh
3.	Dr. (Mrs) Ng. Piloo, Assistant Professor (Post Harvest Management)	Post Harvest Management awarded from BCKV, Mohanpur, West Bengal
4.	Dr. Arunkumar Phurailatpam, Assistant Professor (Medicinal & Aromatic Plants)	Medicinal & Aromatic Plants awarded from Kalyani University, Kalyani, West Bengal

Membership of professional society

Sl. No.	Name of Faculty & Designation	Name of Society
1	Dr. B.N.Hazarika Associate professor	1)The Horticultural Society of India, New Delhi 2) Indian Academy of Sciences, Bangalore 3) Indian Academy of Plant Sciences 4) The Indian Society of Agril. Biochemist 5) The Assam Horticulture Society 6) The Indian Journal of Hill Farming 7)International Society for Noni Sciences(ISNS)
2	Dr. B.R. Phukan	Life member- Agricultural Economics Research Association, New Delhi, India
3	Dr. R.K. Dubey	Life Member of International Society for Noni Science, World Noni Research Foundation, Chennai
3	Dr. Vikas Singh Assistant Professor	Life Member of International Society for Noni Science, World Noni Research Foundation, Chennai
4	Dr. Suresh Tiwari Assistant Professor	Life Member of International Society for Noni Science, World Noni Research Foundation, Chennai
5	Mr. Nilay Kumar Assistant Professor	Life Member of Asia-Pacific Chemical, Biological and Environmental Engineering Society (APCBEES), Hongkong
6	Dr. Naresh Kumar Assistant Professor	Life Member of Essential Oil Association, New Delhi
		Life Member of Indian Society of Hill Agricultural, GBPUAT, Ranichauri, Uttarakhand
7	Dr. Mukul Kumar Associate Professor	Annual Member of Indian Society of Plant Genetic Resources, NBPGR, New Delhi
		Annual Member of Indian Rice Research Workers Association, CRRI, Cuttack
8	Dr. Bhanu P. Mishra Assistant Professor	Life Member of Society of Extension Education, Agra, U.P.
		Life Member of National Council for Development Communication, Varanasi, U.P.
9	Dr. Ng. Piloo Assistant Professor	Life Member of Horticultural Society of India, New Delhi

10	Dr. T.S. Mehra Associate Professor	Life Member of International Society for Noni Science, World Noni Research Foundation, Chennai
11	Dr. P. Debnath Associate Professor	Life Member of Indian Society of Soil Science, IARI, New Delhi
		Life Member of Indian Society of Soil Pedology, NBSS & LUP, Nagpur
12	Dr. Sunil Kumar Assistant Professor	Life Member of International Society for Noni Science, World Noni Research Foundation, Chennai
		Life Member of Horticultural Society of India, New Delhi

2.12.4 Participation in Summer/Winter Courses and Short Term Advance Courses:

Sl. No.	Name and Designation of Faculty	Title of Course/Programme	Place	Period
1.	Dr. Sunil Kumar	Landscaping & Interior Plantscaping	Department of Pomology and Floriculture, KAU, Thrissur, Kerala	October, 11 – 20, 2010 (10 days)
2.	Dr. M.M. Kumawat	Advances in entomopathogenic nematode for eco safe and economic pest management	RCA, MPUAT, Udaipur, Rajasthan	September 14 – October 04, 2010 (21 days)
3.	Dr. Bikram Singh	Remote Sensing Applications in Agriculture with special emphasis on Enhancing Input Use Efficiency	IARI, Pusa, New Delhi	February 15 – March 11, 2011 (25 days)
4.	Dr. Debashish Sen	Application of Remote Sensing and GIS in Soil Resource Studies Towards Land Use Planning	NBSS and LUP, Regional Centre, Kolkata	February 02 – 22, 2011 (21 days)
5.	Dr. Mukul Kumar	Data Analysis using SAS of the NAIP Consortium "Strengthening Statistical Computing for NARS"	ICAR Research Complex for NEH region, Umaim, Barapani, Maghalaya	March 7 – 12, 2011 (06 days)

6.	Ms. M. Bishwapati Devi	Data Analysis using SAS of the NAIP Consortium "Strengthening Statistical Computing for NARS"	ICAR(RC) NEH, Barapani, Meghalaya	January 13 – 19, 2011 (6 days)
7.	Ms. M. Bishwapati Devi	NISAGENET	COA, CAU, Imphal	February 10, 2011 (01 day)
8.	Dr. Vikas Singh	Commodity Futures Market for officers of Arunachal Pradesh	CHF, CAU, Pasighat and Forward Market commission, Gov. of India	November 25 – 26, 2010 (02 days)
9.	Dr. Suresh Tiwari	Commodity Futures Market for officers of Arunachal Pradesh	CHF, CAU, Pasighat and Forward Market commission, Gov. of India	November 25 – 26, 2010 (02 days)
10.	Dr. Naresh Kumar	Commodity Futures Market for officers of Arunachal Pradesh	CHF, CAU, Pasighat and Forward Market commission, Gov. of India	November 25 – 26, 2010 (02 days)
11.	Dr. Barun Singh	Commodity Futures Market for officers of Arunachal Pradesh	CHF, CAU, Pasighat and Forward Market commission, Gov. of India	November 25 – 26, 2010 (02 days)
12.	Dr. Sunil Kumar	Commodity Futures Market for officers of Arunachal Pradesh	CHF, CAU, Pasighat and Forward Market commission, Gov. of India	November 25 – 26, 2010 (02 days)
13.	Dr. Sanjeev Kumar	Commodity Futures Market for officers of Arunachal Pradesh	CHF, CAU, Pasighat and Forward Market commission, Gov. of India	November 25 – 26, 2010 (02 days)
14.	Mr. Anil Kumar	Commodity Futures Market for officers of Arunachal Pradesh	CHF, CAU, Pasighat and Forward Market commission, Gov. of India	November 25 – 26, 2010 (02 days)
15.	Dr. M.M. Kumawat	Commodity Futures Market for officers of Arunachal Pradesh	CHF, CAU, Pasighat and Forward Market commission, Gov. of India	November 25 – 26, 2010 (02 days)
16.	Dr. Debashish Sen	Commodity Futures Market for officers of Arunachal Pradesh	CHF, CAU, Pasighat and Forward Market commission, Gov. of India	November 25 – 26, 2010 (02 days)
17.	Dr. B.P. Mishra	Commodity Futures Market for officers of Arunachal Pradesh	CHF, CAU, Pasighat and Forward Market commission, Gov. of India	November 25 – 26, 2010 (02 days)
18.	Dr. B.N. Hazarika	Commodity Futures Market	CHF, CAU, Pasighat	November 25

		for officers of Arunachal Pradesh	and Forward Market commission, Gov. of India	– 26, 2010 (02 days)
19.	Dr. A.S. Mailappa	Bio resource Exploration, Characterization and Conservation in Horticultural Crops	CHF, Pasighat	November 29 – December 19, 2010
20.	Dr. A.S. Mailappa	Modern Cultivation Techniques of Horticultural Crops	Horticulture Research Centre, Nagicherra, Agartala	May 10 – 14, 2010
21.	Dr. A.S. Mailappa	Modern Scientific Methods of Rubber Cultivation and Processing	Regional Rubber Training Centre, Agartala, Tripura.	May 3 – 8, 2010
22.	Dr. T.S. Mehra	Commodity Futures Market for officers of Arunachal Pradesh	CHF, CAU, Pasighat and Forward Market commission, Gov. of India	November 25 – 26, 2010 (02 days)
23.	Mr. T. Riba	Bio resources Exploration Characterization and Conservation in Horticulture Crops	CHF, CAU, Pasighat	September 28 – October 18, 2010 (21 days)
24.	Mrs. Rita Nongthombam	Bio resources Exploration Characterization and Conservation in Horticulture Crops	CHF, CAU, Pasighat	September 28 – October 18, 2010 (21 days)
25.	Mr. S.M. Hussain	Commodity Futures Market for Officers of Arunachal Pradesh	CHF, CAU, Pasighat and Forward Market commission, Gov. of India	November 25 – 26, 2010 (02 days)
26.	Miss. Th. Eloni Vida	Commodity Futures Market for Officers of Arunachal Pradesh	CHF, CAU, Pasighat and Forward Market commission, Gov. of India	November 25 – 26, 2010 (02 days)
27.	Mr. T. Riba	Organic Farming sponsored by Directorate of Extension Education, CAU Imphal	CAU, Imphal	January 10 – 12, 2011 (03 days)
28.	Mr. T. Riba	Capacity building of Extension Functionaries of Arunachal Pradesh for Entrepreneurship Development sponsored by Directorate of Extension Education, CAU Imphal	CHF, CAU, Pasighat	March 14 – 15, 2011 (02 days)
29.	Ms. Th. E. Vida	Capacity building of Extension Functionaries of Arunachal Pradesh for Entrepreneurship Development sponsored by	CHF, CAU, Pasighat	March 14 – 15, 2011 (02 days)

		Directorate of Extension Education, CAU Imphal		
30.	Mr. S.M. Hussain	Capacity building of Extension Functionaries of Arunachal Pradesh for Entrepreneurship Development sponsored by Directorate of Extension Education, CAU Imphal	CHF, CAU, Pasighat	March 14 – 15, 2011 (02 days)
31.	Mrs. Rita Nongthombam	Capacity building of Extension Functionaries of Arunachal Pradesh for Entrepreneurship Development sponsored by Directorate of Extension Education, CAU Imphal	CHF, CAU, Pasighat	March 14 – 15, 2011 (02 days)

2.12.5 Participation in Seminars/Symposia/Conferences/Workshops/Group Meeting

Sl. No	Participant	Name of the programme	Nature of participation	Period	Organizer & Place
1.	Dr. B.N.Hazarika	Indian biodiversity Congress,	Oral presentation	December, 28-30 2010	Thiruvanathapuran, Kerala
2	Dr. Sunil Kumar	National Consultation for Production and Utilisation of Orchids	Poster Presentation	February 19-21, 2011	NRC for Orchids, Pakyong, Sikkim
3	Dr. M.M. Kumawat	Workshop for Development of Training Curriculum for Trainers Training	Participation	December 08 – 10, 2010	NIPHM, Hyderabad
4	Dr. Nicolee Lyngdoh	Asia-Pacific Regional Workshop on "People in Biodiversity Conservation: Emerging Experiences, Opportunities and Challenges	Paper Presentation	November 16 – 18, 2010	NEHU, Shillong, Meghalaya
5	Dr. Nicolee Lyngdoh	Preventing extinction and improving conservation status of threatened plants through application of biotechnological tool	Participation	March 17 – 18, 2011	Dept. Of Botany, NEHU Shillong, Meghalaya
6	Dr. R.K. Dubey	Group meeting of AICRP on Vegetable Crops	Participation	January 27 – 30, 2011	JAU, Junagarh
7	Dr. R.K. Dubey	Group meeting of AICRP on Potato	Participation	September 10 – 12, 2010	CPRI, Shimla
8	Dr. Vikas Singh	Group meeting of AICRP on Spices	Participation	July 5 – 6, 2010	NRC on Seed Spices, Ajmer
9	Dr. Vikas Singh	National Seminar on spices	Participation	July 07, 2010	NRC on Seed Spices, Ajmer
10	Dr. Suresh	Interaction session	Participation	February	MoFPI,

	Tiwari	on "Research and Development in Food Processing Sector in NE States"		10, 2011	Govt. of India, Guwahati
11	Mr. Amit Kumar Singh	Group Meeting for the Establishment of Biotechnology Hub in NE Region	Participation	February 22, 2011	AAU, Khanapara, Guwahati
12	Dr. Mahesh Pathak	Sensitization programme on Partnering of KVKs/SAUs/ICAR Institutes with NABARD's initiatives for Rural Prosperity	Participation	September 6 – 9, 2010	BIRD, Lucknow, U.P.
13	Dr. Mahesh Pathak	Annual Zonal Workshop of KVKs in North East Region	Participation	September 28 – 29, 2010	RRTC, Umran (Ribhoi district), Meghalaya
14	Dr. Mahesh Pathak	5th National Conference on KVK-2010 & National Exhibition on Farm Innovations	Participation	December 22 - 24, 2010	MPUAT, Udaipur, Rajasthan
15	Dr. Mahesh Pathak	Interactive meet for formulation of Annual Action Plan of KVKs	Participation	March 20 - 21, 2011	KVK, Kahikuchi AAU, Assam

2.13 Faculty Served as Resource Persons

2.13.1 Lectures Delivered in Summer or Winter Schools/Training Courses etc. As Resource Person

Sl. No.	Name & Designation of faculty	Details of programme (organizer, place etc.)	Topic of lecture	Period
1.	Dr.B.N.Hazarika Associate Professor	Bio resources Exploration, Characterization in Horticulture crops, Sponsored by DBT held at CHF, Pasighat	*In vitro* conservation of germ plasm	October 23 – November 12, 2010

		Workshop on Climate change and agriculture, Centenary Celebration Committee, Pasighat	Global warming and its impacts on horticulture and agricultural crops	20.02.2011
		Training on intensive aquaculture in pond and tanks organised by KVK, East Siang, Pasighat, Arunachal Pradesh	Banana based integrated horticulture	03 Feb,2011
		Workshop on Farmers scientist interaction, CHF, CAU, Pasighat	Fruit drop in citrus and its control	Dec.23,2010
		Production Technology of Horticulture Crops, KVK, East Siang Pasighat	Nursery management in fruit crops	Nov 22,2010
		National Bamboo Mission	Bamboo in relation to horticulture	Dec 14, 2010
		Training on Nursery management in horticultural crops CHF, CAU, Pasighat	Nursery management in horticultural crops	Feb 26-27 2011
		Nursery management in horticultural crops CHF, CAU, Pasighat	Nursery management in fruit crops	March 5,2011
		Training on improved production technology of fruit crops, CHF, CAU, Pasighat	Production technology in fruit crops	March 21-29, 2011
2	Dr. B.R.Phukan Associate Professor	Training on improved production technology of fruit crops, CHF, CAU, Pasighat	Economics of Fruit Cultivation	March 21-29, 2011
		Awareness Programme on Food Processing organized by IICPT, MoFPI, Govt. of India, Takilalung village, East Siang, Arunachal Pradesh	Marketing strategies for processed products	July 29, 2010
3	Dr. Mukul Kumar, Associate Professor	Production Technology of Horticulture Crops, KVK, East Siang Distt.	Vegetable crop production for seed purpose	November 22, 2010
		Bio resources Exploration, Characterization in Horticulture crops, Sponsored by DBT held at CHF, Pasighat	Molecular markers in Characterization and Conservation	October 23 – November 12, 2010
3	Dr. Sunil Kumar,	District level farmers	Floriculture, its	September 20 – 22,

	Assistant Professor	training on floriculture at GTC camp FTC Hostel Pasighat	scope in economic upliftment	2010.
		Production Technology of Horticultural Crops at College of Horticulture & Forestry, Pasighat	Commercial Flower Production in NE Region.	November 19 – 26, 2010.
		Capacity Building of Extension Functionaries of Arunachal Pradesh for Entrepreneurship Development at College of Horticulture & Forestry, Pasighat, Organised by NABARD	Floriculture as Entrepreneurship in Arunachal Pradesh.	March 14 – 15, 2011.
4	Dr. Laikangbam Nongdren Khomba Singh, Associate Professor	IPM for Sustainable Crop Production in NER of India at CHF, Pasighat, Sponsored by CAU, Imphal	IDM in Cereal & Vegetable	February 28 – March 05, 2011
		Improved Production Technology of Fruits Crops organized by CHF, Pasighat	IDM in Guava & Litchi	March 21 – 29, 2011
5	Dr. Bikram Singh, Assistant Professor	Bio Resource Exploration, Characterization and Conservation in Horticultural Crops. CHF, Pasighat	Techniques involved in Plant Exploration.	21days (23/10/2010 to 12/11/2010)
		Entrepreneurship awareness camp. JNC Pasighat, Sponsored by DST	Nursery management of forest tree species	24/10/2010
		Model training on Production Technology of Horticultural Crops organized by Deptt. of Social Sciences, CHF and KVK, East Siang and funded by NABARD.	Nursery management and bamboo propagation	8days (19/11/2010 to 26/11/2010)
		Workshop on " Bamboo Cultivation"	Importance, use, scope & potential	14/12/2010

		under National bamboo Mission., State Horticulture Department, Pasighat	of Bamboo cultivation in A.P.	
6	Dr. Sanjeev Kumar, Assistant Professor	Workshop on " Bamboo Cultivation" under National bamboo Mission., GTC Pasighat	Propagation of Bamboo in Arunachal Pradesh.	14/12/2010
		Training on intensive aquaculture in pond and tanks	Fish based Integrated farming systems	3-7 Feb. 2011
		Training on Capacity building of extension functionaries of Arunachal Pradesh for entrepreneurship development	Agroforestry based integrated farming systems for better livelihood	14-15 march,2011
7	Mr. Anil Kumar, Assistant Professor	Bio Resource Exploration, Characterization and Conservation in Horticultural Crops. CHF, Pasighat	Significance of Morphological Marker in Characterization of Horticultural Crops	21days (23/10/2010 to 12/11/2010)
			Intellectual Property Right in relation to Horticultural Crop	
		Entrepreneurship awareness camp. JNC Pasighat, Sponsored by DST	Bamboo Preservation Technique	24/10/2010
		'Model training on Production Technology of Horticultural Crops' organized by Deptt. of Social Sciences, CHF and KVK, East Siang and funded by NABARD.	Processing and Value Addition of Non-Wood Forest Product	8days (19/11/2010 to 26/11/2010)
		Workshop on " Bamboo Cultivation" under National bamboo Mission., State Horticulture Department, Pasighat	Bamboo Preservation and Protection Technique	14/12/2010
8	Ms. M. Bishwapati Devi, Assistant Professor	Training of Non-Matric Group-D Employees on Multi-Skilled	Computer Concepts with Microsoft Office	November 12 – December 01, 2010

		Proficiencies at CHF and Sponsored by CAU, Imphal	Tools	
9	Dr. R.C. Shakywar, Assistant Professor	Farmers Training Programme organized by ATMA & KVK, East Siang	Disease Management in Mustard	June 02, 2010
		Production Technology of Horticultural Crop organized by KVK, East Siang and Department of Social Science and Sponsored by NABARD	Disease Management of Horticultural Crops	November 19 – 26, 2010
		Organized by e-village Project at Ayeng village and Merum village	Disease and Pest Management of Rice	September 16, 2010 & September 18, 2010
		Organic Farming organized by Director Sameti, Pasighat, Govt. Of Arunachal	Bio control Based Integrated Disease Management	February 10, 2011
		Organized by e-village Project at Detak village and Miklung village	Disease and Pest Management of Citrus	February 14, 2011 & February 18, 2011
		Organic Agriculture organized by e-village	Disease Management through Organic Farming	March 10, 2011
		Improved Production Technology of Fruit Crop organized by CHF	Integrated Disease Management in Arecanut	March 23, 2011
		Improved Production Technology of Fruit Crop organized by CHF	Integrated Disease Management in Aonla	March 24, 2011
10	Dr. P. Debnath, Associate Professor	Organic Management of Agriculture, Govt. of Arunachal Pradesh, GTC, Pasighat	Vermicomposting	February 09, 2011
			Organic Management in Soil Health	
			Importance and Objectives of Soil Testing	February 13, 2011
		Organic Agriculture, e-village, CHF, CAU, Pasighat	Nutrient Management Towards Organic Agriculture	March 09 – 11, 2011
			Vermicomposting – Production and Application	

11	Mr. Nilay Kumar, Assistant Professor	Training of Improved Agro-Techniques of Important Medicinal and Aromatic Plants	Agro-Techniques of *Acorus calamus* (Bach)	March 23 – 30, 2011
			Agro-Techniques of *Mucuna pruriens* (Kounch)	
			Soil Testing	
		Model Training Course on Production Technology of Horticultural Crop	Agro-Techniques of Medicinal Plants	November 19 – 26, 2010
12	Dr. R.K. Dubey, Assistant Professor	Capacity Building of Extension Functionaries of Arunachal Pradesh for Entrepreneurship Development organized by KVK, East Siang, Arunachal Pradesh	Seed Plot Technique for Disease free Potato Seed Production in NER	March 14, 2011
		Entrepreneurship awareness camp. JNC Pasighat, Sponsored by DST	Entrepreneurship through Seed Production of Exotic Vegetable Crops	October 24, 2010
13	Dr. Naresh Kumar, Assistant Professor	Intensive Aqaculture in Ponds and Lakes organized by KVK, East Siang, Arunachal Pradesh	Integrated Approaches in Farming System for Better Livelihood	February 03 – 07, 2011
14	Dr. Nicolee Lyngdoh, Assistant Professor	Bio resources Exploration, Characterization in Horticulture crops, Sponsored by DBT held at CHF, Pasighat	Biological Diversity at 2002	October 23 – November 12, 2010
			Biodiversity Register	October 23 – November 12, 2010
15	Dr. S.K. Pattanaaik, Assistant Professor	Entrepreneurship awareness camp. JNC Pasighat, Sponsored by DST	Agricultural Entrepreneurship through farm Mechanization	October 24, 2010
16	Dr. S. Manivannan, Assistant Professor	Awareness Programme on Food Processing organized by IICPT, MoFPI, Govt. Of India, Napit village, East Siang, Arunachal Pradesh	Farmers Awareness Programme on Food Processing	July 29, 2010
17	Dr. Suresh Tiwari, Assistant Professor	Awareness Programme on Food Processing organized by IICPT,	Farmers Awareness Programme on Food Processing	July 29, 2010

		MoFPI, Govt. of India, Takilalung village, East Siang, Arunachal Pradesh		
		Awareness Programme on Food Processing organized by IICPT, MoFPI, Govt. of India, Napit village, East Siang, Arunachal Pradesh		July 30, 2010
		Production Technology of Horticulture Crops, KVK, East Siang Distt.	Preservation of Fruits and Vegetables	November 19 – 26, 2010.
18	Dr.Ngangbam Piloo, Assistant Professor (PHT)	'Workshop on Bamboo' organized by State Department of Horticulture, Arunachal Pradesh under National Bamboo Mission at CHF, CAU	Post Harvest Management and Processing of Bamboos	1day (14/12/2010)
		'Short term training on Improved Production Technology of Fruit Crops organized' by Deptt. of Fruit Science, CHF, Under College Extension Activities, CAU	Post Harvest Handling of Khasi Mandarin	8days (21/03/2011 to 29/03/2011)
		'Model training on Production Technology of Horticultural Crops' organized by Deptt. of Social Sciences, CHF and KVK, East Siang and funded by NABARD.	Preservation of Fruits and Vegetables	8days (19/11/2010 to 26/11/2010)
		'Training on Value Addition of Lime and Lemon' organized by KVK, East Siang at Ayeng Village	Preparation of different lime and lemon pickles	1day (10/09/2010)
19	Dr. Dinesh Sah, Assistant Professor	ATMA, East Siang, Pasighat	Mustard production in Arunachal Pradesh	June 02, 2010
		Organic Farming, GTC, Pasighat	Organic production requirement Weed management	February 06, 2011 February 08, 2011

			in organic farming Accreditation, inspection and certification of organic production	February 09, 2011
		Arunachal Pradesh Statehood Day, ATMA, East Siang, Pasighat	Global Warming and its impact on agricultural/horticu ltural crops	February 20, 2011
		"Bio-resource Exploration-Characterization and Conservation in Horticultural Crops", DBT, New Delhi and CHF, Pasighat.	Participatory rural Appraisal techniques in exploring local resources	October 23 – November 12, 2010
20	Dr. Debashish Sen, Assistant Professor	Kishan Gosthi organized by the ATMA, East Siang District, Pasighat	Farmers-Scientist interaction on "Organic Farming"	March 15, 2011
21	Dr. T.S. Mehra, Associate Professor	Awareness Programme on Food Processing organized by IICPT, MoFPI, Govt. of India, Takilalung village, East Siang, Arunachal Pradesh	Farmers Awareness Programme on Food Processing	July 29, 2010
		Production Technology of Horticulture Crops, KVK, East Siang District	Production Technology of Lemon Grass	November 19 – 26, 2010.
22	Dr. Arunkumar Phurailatpam, Assistant Professor	Entrepreneurship awareness camp. JNC Pasighat, Sponsored by DST	Prospects and potential of some important medicinal and Aromatic Plants of Arunachal Pradesh	October 24, 2010
23	Mr. Amit Kumar Singh, Assistant Professor	Bio- resources Exploration, Characterization in Horticulture crops, Sponsored by DBT held at CHF, Pasighat	RFLP in characterization of germplasm	October 23 – November 12, 2010
		Bio- resources Exploration, Characterization in Horticulture crops, Sponsored by DBT held	PCR techniques in characterization	October 23 – November 12, 2010

		at CHF, Pasighat		
		Bio- resources Exploration, Characterization in Horticulture crops, Sponsored by DBT held at CHF, Pasighat	Methods of DNA extraction	October 23 – November 12, 2010
24	Dr. A.S. Mailappa, Assistant Professor	Bio- resource Exploration, Characterization and Conservation in Horticultural Crops held at CHF, Pasighat	Chemical Characterization of germplasm using HPLC- data analysis	October 23 – November 12, 2010
			Chemical Characterization of germplasm using HPLC- sample analysis	
			Application of GIS data in conservation of bio resources in situ	
			Instrumentation involved in Chemical characterization of germplasm	
			Chemical Characterization of germplasm using HPLC- basics	
			Usage of GIS and GPS in Biodiversity Exploration	
		Soil Testing	Soil Test Interpretation and Fertilizer Recommendation	December 06 – 11, 2010
			Determination of pH and EC	
			Determination of PD and BD	
			Soil Testing Laboratory and Usage of Soil Testing Kit	
			Determination of LR	

			Instrumentation Techniques and Principles	
			Determination of available P	
			Application of Remote Sensing in Soil Fertility Assessment	
			Determination of available K	
25.	Mr. Toge Riba, SMS	ATMA, East Siang	Farmers-Scientists Interaction Programme	January 4, 2011
26.	Mr. S.M. Hussain, SMS	ATMA, East Siang	Farmers-Scientists Interaction Programme	January 4, 2011
		PHM Department, CHF, CAU, East Siang, Pasighat	Training programme for farmers	February 28 – 02 March, 2011
		ATMA, East Siang	Demonstration Programme	March 26, 2011
27.	Miss. Th. Eloni Vida, SMS	PHM Department, CHF, CAU, East Siang, Pasighat	Training programme for farmers	February 28 – 02 March, 2011
		Department of Industries', Govt. of Arunachal Pradesh	Entrepreneurship Development Programme	March 18, 2011

2.14. Training for Induction of Group D Employees to Group C

For induction of Non-Matric Group-D Employees, a three months training on Multi-Skilled Proficiencies were organised at CHF Sponsored by CAU, Imphal. Twelve Non-Matric Group-D Employees were inducted to Group C category.

Three months training for Non-Matric Group-D Employees

Chapter 3

Research

3.1 All India Coordinated Research Projects

3.1.1 AICRP on Potato

(a) Crop Improvement

- Two early maturing hybrids viz., J/95-227 and J/97-168, with three checks, Kufri Pukhraj, K. Ashoka and K. Khyati were evaluated at 75 days crop duration in R.B.D. with three replications during *rabi* season 2010-11. Based on total tuber yield K. Pukhraj was found best check (41.25 t/ha). Out of two hybrids, J/95-227 yielded highest tuber yield of 32.17 t/ha.

- Hybrids, J/99-48 and J/99-242 were evaluated with three checks namely, K. Ashoka, K. Pukhraj and K. Khyati for 60 and 75 days crop duration in R.B.D. with four replications during *rabi* season 2010-11. For total tuber yield at 60 days K. Ashoka was found to be the best check with a tuber yield of 43.15 t/ha while hybrid J/99-242 yielded 41.0 t/ha. At 75 days crop duration, K. Pukhraj was adjudged as best check with 48.85 t/ha while hybrid J/99-242 yielded only 45.15 t/ha tuber yield.

- Three hybrids viz. 2001-P-26, MS/1-4353 and MS/1-4906 were evaluated along with four checks i.e., K. Pukhraj, K.Bahar, K. Pushkar and K. Jyoti (Local Check) for 75 and 90 days crop duration in R.B.D. with four replications during *rabi* season 2010-11. At 75 days crop duration K. Pukhraj was found to be the best check with 43.35 t/ha tuber yield. Out of three hybrids, MS/1-4906 gave higher tuber yield of 40.98 t/ha. However local check K. Jyoti yielded only 33.25 t/ha tuber yield. At 90 days crop duration K. Pukhraj resulted maximum tuber yield of 45.0 t/ha among the checks. Hybrid MS/1-4906 yielded highest tuber yield of 41.25 t/ha while local check K. Jyoti yielded only 34.0 t/ha tuber yield.

- Four new medium maturing hybrids viz. MS/99-1871, K. Pushkar, K. Bahar and K. Pukhraj were evaluated along with local check K. Jyoti during *rabi* 2010-11. K. Pukhraj resulted higher tuber yield of 39.25 t/ha. However, K. Jyoti (Local Check) yielded only 31.25 t/ha tuber yield.

(b) Crop Production

- Experiment was carried out by using different organic treatment viz., T_1(Crop residue incorporation), T_2(Crop residue incorporation of French bean and Cowpea + microbial culture to decompose crop residues), T_3(Crop residue incorporation + biofertilizer (Azotobacter and Phosphobacteria) + microbial culture), T_4(Crop residue incorporation + biofertilizer (Azotobacter and Phosphobacteria) + Vermicompost @ 5t/ha + microbial culture), T_5(T_3 + FYM@ 20 t/ha + microbial culture), T_6(FYM on N basis as per the recommended dose) and T_7(recommended dose package of practices) replicating four times in R.B.D. to find out their effect on tuber yield /ha in variety Kufri Jyoti. T_7 (recommended dose package of

practices) showed the maximum tuber yield of 22.34 t/ha followed by T_6(FYM on N basis as per the recommended dose) of 10.90 t/ha.

- Three varieties namely, K Khyati, K. Ashoka, and K. Jyoti were evaluated at three nitrogen levels i.e., 100, 125 and 150 kg N/ ha with an uniform dose of 120 P_2O_5 kg/ha and 100 K_2O kg/ha in factorial R.B.D. with three replications. Total tuber yield increased with increasing levels of nitrogen up to 150 kg /ha in all cultivars. The highest tuber yield was recorded in variety K. Khyati (48.0 t/ha) at 150 N kg/ha +120 P_2O_5 kg/ha and 100 K_2O kg/ha.
- The **e**xperiment was carried out by using seven treatments viz., T_1(No application of calcium), T_2(Application of 40 kg Ca/ha at the time of planting), T_3(Application of 20 kg Ca/ha at the time of planting and 20 kg/ha at the time of earthing up), T_4(Application of 80 kg Ca/ha at the time of planting), T_5(Application of 40 kg Ca/ha at the time of planting and 40 kg/ha at the time of earthing up), T_6(Application of 120 kg Ca/ha at the time of planting) and T_7(Application of 60 kg Ca/ha at the time of planting and 60 kg/ha at the time of earthing up) on post harvest qualities of potato tuber in variety K. Pushkar in R.B.D. with three replications. Least skin damaged tuber (0.93 t/ha) were recorded in treatment T_5 (Application of 40 kg Ca/ha at the time of planting and 40 kg/ha at the time of earthing up) at harvest. However, minimum skin damaged tuber (0.39 kg/ 5.00 kg tuber) recorded in T_6 (Application of 120 kg Ca/ha at the time of planting) under room storage.
- Four varieties viz., K Pushkar, K. Pukhraj, K. Ashoka and K. Chandramukhi were planted at five different planting dates viz., 10th October, 25th October, 16th November, 2nd December and 13th December 2010 in R.B.D. with three replications. The highest tuber yield recorded at 25th October 2010 date of planting in variety K. Pukhraj with 39.85 t/ha followed variety K. Ashoka (39.0 t/ha) at the same date of planting. On the basis of two years experiment second fortnight of October may be considered as best planting time for getting higher yield of variety K. Pukhraj and K. Ashoka.

(c) Crop Protection

- Late blight appears after 60 days of first date of planting i.e. 15/10/2010, 50 days after second date of planting i.e. 30/10/2010 and 35 days after third date of planting18/11/2010. Disease intensity was highest (22 %) in third date of planting.

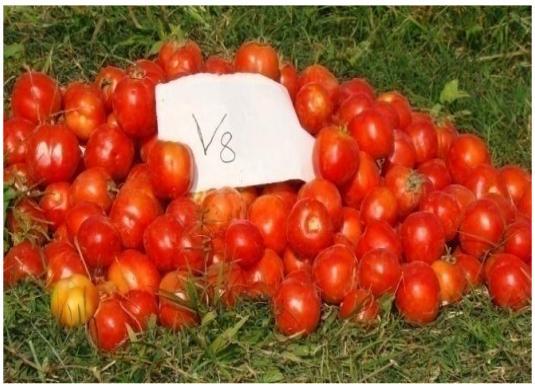
However, highest disease incidence was recorded (36.25 %) at the third date of planting.

- Five varieties viz., K. Pushkar, K. Surya, K. Pukhraj, K. Ashoka and K. Jyoti were planted in pest capture plots for surveillance of important foliage and soil pest. Maximum percent incidence of late blight (22 %), aphid and trips (26 %), severe mosaic (21.25 %), mild mosaic (4.6 %) and leaf roll (3.0 %) observed in variety K. Jyoti. and wilt (18.0 %) and percent intensity of late blight (14 %), aphid and trips (14.25%), white fly (7.4 %), Severe mosaic (8.25%), mild mosaic (3 %) and leaf roll (2.1 %) was observed in variety K. Jyoti in standing crop. However, maximum incidence of common scab noted in variety K. Pushkar at harvest.
- Experiment was carried in 400 m^2 area of variety K. Jyoti (unsprayed) for monitoring of aphid population. Population of M*yzus persicae* was highest (173/ 100 compound leaf) during 3rd week of January. However peak population of *Aphis gossypii* (11/ 100 compound leaf) was recorded in 2nd week of January.

3.1.2. AICRP on Vegetable Crops

(a) Crop Improvement

- Eight genotypes of tomato received from IIVR, Varanasi were evaluated in RBD with four replications along with check variety H-86 at Pasighat, Arunachal Pradesh. Among the genotypes evaluated genotype TODVAR-8 gave highest fruit yield with 84.28 t/ha followed by genotype TODVAR-2(81.09 t/ha). These two genotypes were significantly superior over the check variety H-86 (59.13 t/ha) at 5 % level.



- Eight hybrids of tomato received from IIVR, Varanasi were evaluated in RBD with four replications along with check variety ARTH-3 at Pasighat, Arunachal Pradesh. Maximum fruit yield recorded in hybrid 10/TODHYB-1(97.67 t/ha) followed by hybrid 10/TODHYB- 8 (73.55 t/ha) and 10/TODHYB-10 (70.74 t/ha). These two hybrids were significantly superior over the check variety ARTH-3 (50.60 t/ha) at 5 % level.
- Six hybrids of cabbage received from IIVR, Varanasi were evaluated in RBD with three replications along with two checks Kranti and Quisto at Pasighat, Arunachal Pradesh. Maximum head yield was recorded in Cabbage Hybrid-1(50.90 t/ha) followed by Cabbage Hybrid- 6(49.60 t/ha) and Cabbage Hybrid- 4(47.20 t/ha). None of evaluated hybrids shown significantly superior performance over both check i.e. Kranti (44.96 t/ha) and Quisto (46.80 t/ha).

3.1.3 AICRP on Spices

(a) Crop Improvement

- Growth, yield and quality parameters were studied among the nine varieties of ginger during 2010-11 at Pasighat, Arunachal Pradesh. The mean values of growth and yield pamameters showed that variety Nadia recorded maximum plant height (59.16cm.); Suprabha pruduced maximum number of tillers (16.40) ; Varada had maximum leaf area (23.71cm x 2.66cm) while variety Surabhi was found highest yielder (36.00 t/ha) of fresh rhizome followed by variety Nadia (34.47 t/ha) and lowest yield was recorded in variety Himgiri (19.84 t/ha). The mean values on quality parameters revealed that variety Suruchi had maximum dry recovery (23.10%) with maximum oleoresins (10.63 %)and essential oil (6.00 %) content

while variety Nadia gave highest crude fibre (7.47 %) content. On the basis of two years yield performance variety Surabhi may be promoted for commercial cultivation among the ginger growers of the region.

- Thirty five diverse genotypes of turmeric were collected from entire NE region and evaluated in Randomized Block Design with three replications. Maximum fresh rhizome yield (55.82 t/ha) recorded in genotype CHFT-8 followed by genotype CHFT-22, CHFT-30 (40.71 t/ha) and CHFT-36 (38.85 t/ha) while lowest yield (13.87 t/ha) was recorded in genotype CHFT-16. Genotypes CHFT-8, CHFT-22, CHFT-30 and CHFT-36 were significantly higher yielder as compared to local check Megha Turmeric-1 (31.37 t/ha) at 5 % level.

- Six genotypes of turmeric namely RH-9/90, RH-13/90, RH-80, RH-50, TCP-129 and TCP-70 were received from different coodinating centres of AICRP- spices and evaluated in Randomized Block Design with three replications along with Local Check Megha Turmeric-1 during 2010-11 at Pasighat, Arunachal Pradedh. Among the evaluated genotypes RH-80 shown significantly higher fresh rhizome yield (38.40 t/ha) as compared with local check Megha Turmeric-1(31.37 t/ha) at 5 % level. However maximum curcumin content was recorded in Megha Turmeric-1 (7.28%) followed by RH-9/90 (5.70%) and RH-50 (5.65%) where as least curcumin content was recorded in genotype TCP-70(4.59%).

3.1.4 AICRP on Biological Control on Crop Pest and Weeds

- During 2009-2011, surveys were conducted at different locations of Arunachal Pradesh to collect different biocontrol agents. During the survey, entomopathogenic nematode *Steinernema* spp. have been collected from five different locations of Arunachal Pradesh and they are maintaining in the laboratory and will be sending for identification at NBAII, Bangalore. Entomopathogenic fungi, *Metarhizium anisoplea* was also collected from the soil of Arunachal Pradesh.
- Bio-efficacy of *Steinernema* species/ strains collected from Arunachal Pradesh, were evaluated against rice stripe borer, *Chilo suppressalis* and rice leaf folder, *Cnaphalocrosis medinalis* for two consecutive years i. e. during *kharif* 2009 and 2010. Among the different species/ strains *Steinernema* collected from Runne, East Siang district, gave the highest mortality of *C. suppressalis* with 60.48 and 55.80 per cent mortality in 2009 and 2010, respectively. Similarly, against *C. medinalis*, *Steinernema* (runne) gave the highest mortality with 82.00 and 60.00 percent in 2009 and 2010, respectively among the different species/ strains.
- In the field evaluation of thelytokous *Trichogramma pretiosum* against *Helicoverpa armigera* infesting tomato, thelytokous strain release plot recorded 4.61 and 5.98 per cent infested fruit during *rabi*, 2009-10 and 2010-11, respectively. Higher fruit infestations were observed in the *Arrhenotokous* strain release plots than the *thelytokous* released plots in both the season.

Bio-efficacy of thelytokous *T. pretiosum*

- Bio-control based IPM plots following intercropping with mustard, mechanical collection of egg mass and young caterpillars of *Spodoptera litura*, six released of

Trichogramma brassicae at weekly interval starting from 30 DAT and installation of pheromone traps of *S. litura* @15 traps/ ha recorded an average *Plutella xylostella* infestation of 0.35 and 0.69 larvae/ leaf and *S. litura* infestation of 0.11 and 0.25 larvae/ plant during 2009-10 and 2010-11, respectively. Infestation of *P. xylostella* was significantly lower in the farmer's practice field adopting three sprays of profenophos 0.05 per cent at fortnightly interval starting from 30 DAT than the IPM field. However, infestation of *S. litura* in the IPM field was on par with the farmer's practice field in both the season.

- During rabi, 2009-10 and 2010-11, bio-control based IPM module following nursery treatment with *Trichoderma veride* @ 50gm/sq. m area, intercropping with marigold (1:10), six release of *Trichogramma chilonis* @ 50,000/ha, spraying of *Ha* NPV and *Sl* NPV as and when require and installation of pheromone traps of *Spodoptera litura* was set up in three locations of Arunachal Pradesh for validation of the technology. The efficacy of the IPM module was compare with the farmer's practice (soil drenching with blitox @ 0.25 per cent at 15 days after sowing in the nursery and three rounds of spray of profenophos @0.05% at 60, 75 and 90 DAT). Seedling mortality in the IPM nursery were 4.00 and 5.35 per cent in rabi 2009-10 and 2010-11, respectively and it was on par with the farmer's practice. During rabi, 2009-10, the per cent infested fruit in IPM field was 4.83 per cent with 16.15 tonnes/ ha healthy fruit yield. Both per cent infested fruit and healthy fruit yield was comparable with the farmer's practice field. Similar observation was also recorded in 2010-11. The per cent infested fruit of 4.42 and healthy fruit yield of 16.15 tonnes/ha were comparable with the farmer's practice field.
- Bio- control based IPM module following seed treatment with *Trichoderma veride* @ 4g/kg of seed, six releases of *Trichogramma chilonis* @50,000/ha starting from 45DAT, four sprays of neem oil @ 4ml/ lit sprayed at weekly interval from 80 DAT and installation of pheromone traps of *Leucinodes orbonalis* was demonstrated at three locations of Arunachal Pradesh during rabi, 2010-11. In the nursery, IPM recorded 4.38 per cent mortality of seedling and was on par with the farmer's practice nursery. Per cent infestation of fruit by *L. orbonalis* (5.25 per cent) and healthy fruit yield (23.45 tonnes/ha) in the IPM plots was comparable with farmer's practice fields.

3.1.5 AICRP on Mushroom

- Wild edible mushroom of Oyster (*Pleurotus* sp), Wood oyster (*Shizophyllum communae*), Tuber (*Tuber* sp), Shiitake mushroom (*Lentinus edodus*) and Jews ear (*Auricularia* sp) were collected and cultured in the laboratory. The oyster mushroom cultivation technology was standardized for Pasighat region. Maize grain identified as one of the best suitable substrate for multiplication of spawn. Low cost model mushroom house was constructed for training and demonstration. Paddy straw was the best substrate for mushroom bed preparation oyster. Four *Pleurotus* spp, three *Shizophylum* sp and Jews ear and one shiitake mushrooms were collected. All the edible mushrooms are collected from edible fruit trees. Ethnic knowledge is also explored during the identification of sp. Cooking and eating of pork with mushroom is created some health problem. Mushroom from Cesar tree is edible.

Shiitake

Jews ear

- Strain P6 has taken less cropping days followed by P10, P8 and P4. The average yield was very high in P4 strain (820g) followed by P10 (766g).

3.1.6 AICRP on Palms

- Primary nursery seedlings(350 Nos), 35 numbers, each of ten cross combinations viz NRCOP-21, NRCOP-22, NRCOP-23, NRCOP-24, NRCOP-25, NRCOP-26, NRCOP-27, NRCOP-28, NRCOP-29 and NRCOP-30 were brought from Directorate of Oil Palm, Pedavegi, Andhra Pradesh in July 2009 and planted in secondary nursery. The hybrid NRCOP-25 attends maximum plant height while the highest collar girth and no. of leaves per plant was recorded in hybrid NRCOP-21.

- Oil palm sprouts (500 nos), 50 numbers, each of 10 cross combinations *viz.* NRCOP-31, NRCOP-32, NRCOP-33, NRCOP-34, NRCOP-35, NRCOP-36, NRCOP-37, NRCOP-38, NRCOP-39 and NRCOP-40 were brought from

Directorate of Oil Palm, Pedavegi, Andhra Pradesh in the month of December, 2009 and were raised in primary nursery. The primary nursery seedlings were transferred to secondary nursery in October 2010. Growth parameters of the seedlings in the secondary nursery were recorded in March 2011. Result indicated that the hybrid NRCOP-38 attends maximum plant height and collar girth while the highest no. of leaves per plant was recorded in hybrid NRCOP-33.

- The **e**xperiment is being carried out in R.B.D. with four replications by using five treatments viz., **T_1:** Irrigation management through drip system, **T_2:** T_1+50% NPK as organic manure + 50% as chemical fertilizer, **T_3:** T_1+ 100% NPK as chemical fertilizers, **T_4:** T_1+ 100% NPK as organic manure and **T_5:** Rain fed + 100% NPK as organic manure on 'Tenera' hybrid from August, 2008. Morphological parameters such as plant height, girth and number of leaves was recorded in March 2011. Plant height (2.70 m) and collar girth (117.21 cm) was recorded maximum in treatment T_3 whereas number of leaves per plant (22.13) was highest in treatment T_1. Mean data reveals that the plants in T_4 showed maximum increase in growth with respect to plant height (158.03 %) and collar girth (355.32 %) over a period of one year. Increase in plant height (110.99 %) and collar girth (248.85 %) was least in T_2 and T_3 respectively.
- The 29 oil palm seedlings planted in the year 2006 is being taken up as the material for this "maximization plot and all the recommended crop management practices are being adopted to harvest maximum yield. The average plant height, coller girth and number of leaves per plant recorded in month of March 2011 are 3.62 m, 1.75 m and 24.17 leaves per palm, respectively. Flowering in all the plants have been

observed from April, 2010 to March, 2011. The average number of male and female flower per palm is 4.90 and 7.48 respectively. The sex ratio (Female: Male) per palm is **1:1.5**. The weight of the first fruit bunch harvested in March 2011 was 6.5 kg.

3.1.7 AICRP on Tropical Fruits (Citrus)

- AICRP on Tropical fruits (Citrus) has been sanctioned as a Voluntary centre for collection and evolution of citrus germplasm of Arunachal Pradesh and accordingly some citrus species were collected from nearby districts and their characterization is under progress.

3.2 All India Network Projects

3.2.1 AINP on Outreach of Technologies for Temperate Fruit Crops

- Planting material of elite apple cultivars viz,. Oregon Spur, Red Chief, Red Fuji, Silver Spur, Royal Delicious, Red Delicious, Lal Ambri, Golden Delicious, Gold Spur, Mollies Delicious, Gala Mast, Vesta Bella , Maayan, Scolmit were collected from the Central Institute of Temperate Horticulture(CITH) Srinagar, J & K and planted in the selected temperate area of Arunachal Pradesh i.e. Shergoan, West Kameng Dist . Grafted planting material of these elite cultivar were planted as per technical programme of the project and 95.33% plants survived.
- Planting material of elite walnut cultivars namely, CITH Walnut-1,2,3,4,5 and Hamdan were collected from CITH, Srinagar and planted in temperate area of

Arunachal Pradesh (Shergoan, West Kameng District). Survival per cent recorded is 85.7%.

- Five Apricot varieties (CITH Apricot-1, 2, 3 and Harcot) were collected from CITH, Srinagar and planted in temperate area of Arunachal Pradesh (Shergoan, West Kameng Dist) and Pasighat. Survival per cent recorded is 77.5%.
- Survey of major pest and disease of available temperate fruit crops viz., apple, pear, peach, kiwifruit has been done .Apple scab, powdery mildew, woolly apple aphid was found 20-30% incidence in apple and powdery mildew in peach was found 20% incidence. In kiwifruit leaf spot infection, fruit rot, collar rot was found 10% incidence in the surveyed areas.

Project site at Shergoan, West Kameng District, Arunachal Pradesh

3.2.2 AINP on Rodent Control

- The observation obtained regarding trap index and per cent damage caused by the rodents in rice ecosystem revealed that some effect of bamboo flowering was observed in koyu & its neighbouring villages and the rodent population was significantly higher than the other villages which are situated far away from the flowering area. The data of the year 2009-10 were also compared with the data of the year 2010-11 revealed that significantly higher trap index and per cent damage was observed in the year 2009-10 in which bamboo flowering occurred.
- The rodent meat is considered as a precious dish among all the tribal of Arunachal Pradesh for which the use of rodenticide is not preferred. Keeping in view the food habit of tribal's, AINPRC Pasighat centre suggest to farmers to use the non pesticidal techniques for rodent control in case of medium to low infestation of rodents. The following techniques are suggested by AINP Pasighat centre to the farmers:

- Etku: Equipments are to be placed on passage of rodent in border of the field, along irrigation channels and bunds.
- Odde: Equipments are to be installed in rodent shelter area near the field.
- Uju: This trap is to be installed on a bridge made up of bamboo stick over irrigation channel and water streams from where the rodents are entered in the field.
- Gorha: This apparatus are installed in passage with in the field and in front of burrows.

Etku

Uju

- AINP rodent control Pasighat suggested a technique by wrapping the pole with aluminium sheet 22 gauge of 1 feet height prevent upwards movement of rodents to store. The metallic sheet acted as slippery barrier for rodent. The technique is very much affective, prevent complete upward movement of rodent regardless to species. It is the refinements of traditionally practiced rodent prevent technique in granary using a metallic sheet at pole to avoid entry of rodent in store house. The technology is cost effective and easily adopted by farmers.

Rearing of *R. rattus*

Kumsung showing wooden plates avoiding for rat infestation

3.2.2 AINP on Agricultural Ornithology

Documentation of birds of North-Eastern region in different climatic regions

Checklists of birds for two states viz. Arunachal Pradesh and Manipur has been prepared. The check list of Arunachal Pradesh included six hundred different bird species along with colour photograph. A list of one hundred and forty five bird species found in Manipur is also prepared along with the color photographs.

Documentation of birds in agricultural landscape of North Eastern region

Survey was conducted in different agricultural landscapes of Arunachal Pradesh and Manipur. Munias were found to be a major depredatory bird in rice both in the valley and foothill of the two states. They attack the rice grains in the milky stage. In isolated fields, they completely damage the crops. Doves and sparrows cause minor damage in the nursery of rice. Common moorhen, purple moorhen, lesser whistling duck, water cock and common teal causes minor damages in deep water rice in Manipur. House sparrows also cause damages in the stores of rice. Parakeets cause heavy damages of maize crop in the plain areas of Arunachal Pradesh. Predatory birds like wagtails and common myna are commonly found in the freshly plough fields. Wagtails were also found visiting vegetable fields. Cattle egrets were found in the rice fields. Drongo were observed in the rice and vegetable fields.

Munias feeding rice grains

Documentation of existing ethnic/traditional knowledge methods in control of birds in different crops

Surveys were conducted to find out the existing ethnic/traditional knowledge methods for control of birds in Manipur and Arunachal Pradesh. The following methods are commonly practice by the farmers-

i. Bird watch tower.
ii. Installation of reflective ribbons
iii. Hanging polyethylene bags or colour papers
iv. Hanging of containers made of tin in poles
v. Scare crows
vi. Hunting of birds by using nets, guns, catapults, etc.
vii. Poison baiting using monocrotophos or sphamidon.
viii. Hanging of roasted birds.

Management of parakeets in maize

The experiment was carried out during *kharif*, 2010 at four different locations of Jhampani, East Siang District, Arunachal Pradesh. In each location, four different treatments *viz*. i) use of reflective ribbon, ii) wrapping of cobs with maize leaves, iii) use of reflective ribbon + wrapping of cobs with maize leaves and iv) untreated control were maintained . Among the different treatments, no parakeet damage was recorded in the plots where reflective ribbons were used. In the plots with only wrapping of the cobs with leaves, the average damage was 14.00 percent damage cobs, however, it was significantly lower than the untreated control (56.50 per cent damage cobs).

Reflective ribbon

Parakeet

3.3 Externally Funded Projects

3.3.1 Exploitation of native *Trichoderma* spp. for management of rhizome rots of Ginger in Arunachal Pradesh.

The experimental trial was conducted during 2009 in college field and farmer's field. The best IDM component was selected and demonstrated at college and

farmers field in the year 2009 and 2010. IDM on ginger rhizome rot field research experiment at college farm (2009) revealed that Germination percentage was high in treatment T10 (ST with BCA (5g per kg of slurry) for 30 minutes + Soil application of BCA (2.5kg) in FYM (50kg) mixed 7 days before sowing) and T9 (ST with carbendazim (1g/l) for 30 minutes + Soil application of BCA (2.5kg) in FYM (50kg) mixed 7 days before sowing). Less disease incidence was observed in T10 and T9 followed by T4 (Soil application of BCA (2.5kg) in FYM (50kg) mixed 7 days before sowing). Highest disease incidence was recorded in control. Average plot yield and projected yield was high in T10, T9 and T4. Ninety per cent increase over control was observed in T10 followed by T9. Field trial was conducted in farmer's field in Sille village, East Siang District, Arunachal Pradesh. The result revealed that higher disease incidence was observed in control. Lowest disease incidence was recorded in T10. Highest projected yield was observed in T10 and T9. Filed demonstration was conducted at college during 2009 and 2010. Training was given to ginger farmers in Lower Subansiri at two different villages. Trichoderma bioformulation was tested in Tomato, Brinjal, Cabbage and Cauliflower crops. It was observed that biocontrol treated plot has shown significant yield than untreated plot.

3.3.2 Screening and demonstration of wild edible mushroom of Arunachal Pradesh for commercial cultivation among tribal farmers of Arunachal Pradesh state of North East India.

Maize grain identified as one of the best suitable substrate for multiplication of spawn. It is observed that within 15 days the wild oyster strains are multiplied on P12 and P20. Low cost model mushroom house was constructed for training and demonstration. Paddy straw was the best substrate for mushroom bed preparation of pink variety *P.eous*. and PSC. Highest bio-efficiency was observed P20 followed by and lowest by P12. Average fruiting body weight of P20 and P12 isolates is 8-8.5g. Oyster mushroom isolate P20 is best one in terms of yield and other characters. Two training was conducted under DBT-Sponsored research project using low cost model mushroom house.

3.3.3 Plant growth promoting Rhizobacteria for the management of major seed borne diseases and enhancement of seed quality of vegetables and planting materials for north eastern region of India.

Seed material was collected from local market and farmers and studied the seed borne pathogens. Vegetable diseases were surveyed in Oiyamghat and Sikatode area. It was observed that cowpea was infected with rust and *Colletotrichum* leaf spot. *Alteneria* and mosaic virus diseases were observed in Chili. In Brinjal, *Alterneria* leaf spot was observed. Both *Rhizoctonia* and *Alterneria* leaf spot was observed in cabbage. In tomato *Alterneria* leaf spot was observed. Rhizosphere samples were collected from healthy plants and isolated more than thirty promising *Pseudomonas fluorescence.*

3.3.4 Technology Mission MM-1

- Yield and quality of 70 Khasi mandarin orchards from Pasighat –Along belt were surveyed and the orchards were subjected to pest and disease screening. Out of 70 orchards 42 orchards were selected for bud sticks production. 80,000 bud sticks of Khasi mandarin are produced in 2010-11.
- Seeds collected from fruits of selected orchards were sown and seedlings were raised in 2009-10. From selected mother plants based on survey scion sticks were subjected to viral indexing. 30, 000 scion buds are budded onto seedlings and Khasi mandarin plantlets are being prepared and will be distributed in the coming season.
- 33 different germplasms of citrus species collected from all over India with specific focus on North Eastern region. The collected germplasms were morphologically characterized and molecular characterization is being currently carried out.
- Ayeng village has been adopted and training in utilization of horticultural implements was given.

3.3.5 Survey, collection, characterization, evaluation and multiplication of Jatropha (*Jatropha curcas*) in Arunachal Pradesh

- Multiplication technique suitable for cuttings as well as seed propagation was standardized suitable for Pasighat condition
- A rain fed package of practice was standardized for the mild tropical conditions of Arunachal Pradesh

- A suitable inter crop for different seasons were identified. Peas were found to be suitable intercrop in winter.
- On multi location trial of eight different varieties collected from all over India PKVJ MDU1 found to be performing better in Arunachal Pradesh condition.
- 60 different accessions were collected from all over Arunachal Pradesh and they were tested for yield and adaptation at Pasighat condition. An accession collected from near Bam village of West Siang district proved to be best.

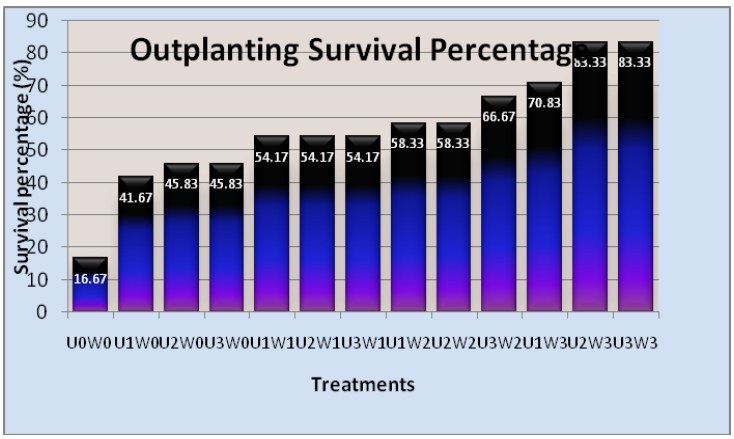
3.3.6 Establishment of Institutional Biotechnology Hub

The Department of Biotechnology, Government of India sanctioned Biotechnology hub for the college during the year 2010-11. The aim of hub is to establish well equipped biotechnology laboratory to create awareness, disseminate the biotechnological knowhow for practical application of modern biotechnological tools among students.

3.4 Internally Funded Projects:

3.4.1 Effect of undercutting and wrenching on *Chukrasia tabularis* A. Juss. for nursery production and outplanting performance.

Undercutting and wrenching conditions the tree saplings to withstand the stresses to which they are subject during and after planting in the forest, the utility of this technology are to create a compact and fibrous root system, improve out planting performance and feasible transportation to the planting site in difficult terrains. *Chukrasia tabularis* A. Juss. species was taken for the experiment. The practice was arrayed in *Randomized Block Design* (RBD) in the nursery which followed the same statistical design in field plantation. The out planting success was evaluated among the 13 treatments which was tested for the survival percentage where only two treatments viz., U_2W_3: Undercut at depth of 12-14 cm follows wrenching (9 times wrenching) and U_3W_3: Undercut at depth of 18-20 cm follows wrenching (9 times wrenching) was statistically at par with all the treatments exhibiting 83.33 per cent survival.



Survival percentage of *Chukrasia tabularis* in different treatments

Undercutted and wrenched bare rooted plants ready for planting

3.4.2 Effect of organic manure and drying methods on yield and carotenoid content of Marigold flower (*Tagetes erecta* L.)

A study was conducted to evaluate the effect of organic manure and drying mehods on yield and carotenoid content of marigold flower (*Tagetes erecta* L). Seeds of marigold variety viz. Pusa Basanti Gainda and Pusa Narangi Gainda were sown and transplanted under different treatments using well rotten FYM and vermi-compost. Maximum plant height (77.05cm and 68.77cm) was observed in Vermicompost treated plots followed by FYM in both the varieties, Pusa Basanti Gainda and Pusa Narangi Gainda. Maximum mean plant spread was shown by FYM followed by Vermicompost in 15 and 30 days interval whereas, Vermicompost followed by FYM was observed 30 days onwards in case of Pusa Basanti Gainda but at 75 days interval maximum plant spread (23.85cm). However, Pusa Narangi Gainda showed

maximum plant spread under Vermicompost treatment (32.5cm) during entire investigation. Maximum mean number of branches, primary branches, secondary branches and flower buds under FYM followed by Vermicompost in Pusa Basanti Gainda (11.4, 11.36, 8.53 and 27.14) and Vermicompost followed by FYM in Pusa Narangi Gainda (11.07, 14.67, 9.07 and 24.67) , respectively, was obtained. Minimum mean days for initiation of flower buds (41.67) and 50 per cent flowering (32.4) under FYM followed by Vermicompost in both varieties Pusa Basanti Gainda and Pusa Narangi Gainda, respectively was noticed, whereas, maximum flower diameter (68.7cm and 70.94cm) and fresh weight of single flower **(**12.37g and 10.67g) under FYM followed by Vermicompost in Pusa Basanti Gainda and Vermicompost followed by FYM in Pusa Narangi Gainda was observed. Maximum carotenoid contents in fresh petals of marigold was obtained with var. Pusa Basanti Gainda under the treatment FYM (6.31µg/g), while in case of Pusa Narangi Gainda , maximum carotenoid content in fresh petal (105.12µg/g) was observed under Vermicompost treated plot. However, in case of dried petals, maximum carotenoid contents under treatment FYM with shade dried petal in Pusa Basanti Gainda (13.37 µg/g) and Vermicompost with hot air dried petals (392.54 µg/g) in pusa narangi gainda, respectively was found. Maximum dry weight of single flower and dried petal yield was noticed under FYM treated plot (1.61g and 0.69g) with shade drying followed by Vermicompost in Pusa Basanti Gainda while, vermicompost treated plot (1.14g and 0.91g) when petals dried under hot air oven in pusa narangi gainda, respectively.

Marigold flowers under different treatments

3.4.3 Feasibility of growing potato through True Potato Seed (TPS) in East Siang District of Arunachal Pradesh

An experiment was conducted during December ’09 and April ’10 at College of Horticulture and Forestry, Pasighat, Arunachal Pradesh (28.33° N, 95.22° E and 152 m MSL) to find out the feasibility of growing potato through True Potato Seed (TPS) in East Siang District of Arunachal Pradesh. Transplanting of three TPS hybrids viz. HPS I/13, HPS II/67 & HPS 7/67 and planting of First Clonal Generation (FCG) of HPS II/67 along with Kufri Jyoti (check variety) was done in a randomized block design with 4 replications. Stem girth and number of leaves per plant were significantly higher in FCG of HPS II/67 than all seedling-raised crop during the grand bulking period. Number of stem per hill was also more in the TPS clonal crop and the field variety than the transplanted crops. Both number of tuber and tuber yield per plant were significantly more in FCG. Consequently, seedling tuber (<20g) yield, Marketable tuber (>20g) yield and total tuber yield were significantly higher in the FCG of HPS II/67. Present study on the growth and yield attributing factors of TPS raised potato crop reveals immense potential of the technology especially in the remote areas for growing ware potato in the first year itself as well as for producing seedling tuber being used in the following year as planting material generally termed as FCG, which proved to be more promising than the field variety of potato.

Seedling of True Potato Seed

TPS raised potato crop

Chapter – 4

Extension

4.1 Training Programmes Organized:

4.1.1 On-campus programmes:

College of Horticulture and Forestry, Pasighat, Arunachal Pradesh and Krishi Vigyan Kendra East Siang District

Sl. No	Broad areas of Training Programme	No. of Training and Date	Participants Nature and Number	Funded/ Sponsored by
1.	Improved production technology of fruit crops	(01) March 21 - 29, 2011 09 days	Rural youth (22)	CHF, CAU, Imphal
2.	Protected cultivation of commercial flowers	(01) March 07-14, 2011 08 days	Member of SHGs (22)	CHF, CAU, Pasighat
3.	Indoor gardening	(01) March 28-30, 2011 03 days	Unemployed Rural Youths (20)	CHF, CAU, Pasighat
4.	Medicinal and aromatic plants	(01) March 23-30 2011 08 days	Member of SHGs /Farmers (20)	CHF, CAU, Pasighat
5.	Home scale processing of horticultural produce	(01) Oct. 25-Nov. 01, 2010 08days	Member of SHG's and rural women (25)	CHF, CAU, Pasighat
6.	Post harvest handling, management and preservation of fruits and vegetables	(01) Nov. 25, 2010 01 day	Member of SHG's (20)	CHF, CAU, Pasighat
7.	Value addition of horticultural produce	(01) March 01-03, 2011 03days	Rural youths and school dropouts (26)	CHF, CAU, Pasighat

8.	Commodity futures markets for the officer of Arunachal Pradesh	(01) Nov. 25-26, 2010 02 days	Dy. Director, District Agri. Officer, ADO, Faculty members of university, programme coordinator and SMS of KVKs (29)	Forward Market Commission, Govt. of India
9.	Model training course on production technology of horticultural crops	(01) Nov.,19 – 26, 2010, 8 days	Rural youth of Tirap District (20)	NABARD Itanagar and CAU, Imphal
10.	Soil testing	(01) Dec.06-10, 2010 06 days	Officers of the line departments (20)	CHF,CAU, Pasighat
11.	Nursery management of vegetable crops	(01) March,25-26,2011 02 days	Farmers (20)	CHF,CAU, Pasighat
12.	Production of low volume and high value crops	(02) March 28,2011 March 29,2011 01 day each	Farmers (40)	CHF,CAU, Pasighat
13.	Exotic vegetables production	(01) March,25-26,2011 02 days	Farmers (20)	CHF,CAU, Pasighat
14.	IPM for sustainable crop production in North-East region of India	(01) March,3 – 8, 2011 06 days	ADO and HDO (8)	CHF,CAU, Pasighat
15.	Value addition of ginger	(01) Nov. 30, 2010 01 day	Practicing farmer (32)	ICAR, New Delhi
16.	Integrated pest management in vegetables	(01) Jan. 21, 2011 01 day	Practicing farmer (44)	ICAR, New Delhi
17.	Intensive aquaculture in ponds and tanks	(01) Feb. 3 – 7, 2011 05 days	Practicing farmer (32)	NFDB, Hyderabad
18.	Value addition in fishes	(01) Feb. 8, 2011	Rural Youth, (25)	NFDB, Hyderabad

		01 day		
19.	Value addition in Tapioca	(01) Feb. 11, 2011 01 day	Rural Youth, (30)	ICAR, New Delhi
20.	Preparation of Value added Products from Tomato	(01) Feb. 15, 2011 01 day	Practicing farmer (23)	ATMA, East Siang
21.	Preparation of products from locally available materials	(01) Feb. 22, 2011 01 day	Practicing farmer (27)	ICAR, New Delhi

4.1.2. Off-campus programmes

Sl. No	Broad areas of Programme	No. of programme period	Participants nature and number	Funding/Sponsoring Agency
1.	Nursery management in horticultural crops	(01) Feb. 26-27, 2011 02 days	Rural youth (31)	CHF,CAU, Imphal
2.	Nursery management in horticultural crops	(01) March 5, 2011 1 day	Rural youth (35)	CHF,CAU, Imphal
3.	Farmer's awareness training programme in food processing	(02) July 29 – 30, 2011 01 day each	Members of SHG's and farmers (60)	IICPT, MoFPI, Govt. of India
4.	Technology week	(04) June 03-07,2010 01 day each	Farmers (338)	CHF,CAU, Imphal
5.	Common disease and pest management	(01) Sept. 25,2010 01 day	Farmers (44)	e-Village project, CDAC, Hyderabad
6.	System of rice intensification	(01) Oct. 02,2010 01 day	Farmers (49)	CHF,CAU, Imphal
7.	Improved cultivation practices for buckwheat & mustard	(02) Oct. 22, 2010, Oct.25, 2010 01 day each	Farmers (58+45)	e-Village project, CDAC, Hyderabad
8.	Disease and pest management of citrus & ginger	(04) Feb.09,2011, Feb.10,2011, Feb.14,2011, Feb.18,2011	Farmers (40+40+33+40)	e-Village project, CDAC, Hyderabad

Sl. No	Broad areas of Programme	No. of programme period	Participants nature and number	Funding/Sponsoring Agency
		01 day each		
9.	System of rice intensification	(01) Feb.14, 2011	Farmers (33)	e-Village project, CDAC, Hyderabad
10.	Soil health management	(01) Feb.26, 2011	Farmers (66)	e-Village project, CDAC, Hyderabad
11.	Organic agriculture	(01) March 09-11, 2011 03 days	Farmers (40)	e-Village project, CDAC, Hyderabad
12.	Repairing and maintenance of plant protection equipments and centrifugal pumps	(02) March, 19, 2011, March, 23,2011 01 day each	Rural unemployed youth and farmers (40+30)	CHF,CAU, Imphal
13.	Oyster mushroom cultivation	(03) Feb.26,2011, March,01,2011, March, 9, 2011 01 day each	Farmers (150)	CHF,CAU, Imphal
14.	IDM on ginger rhizome rot	(01) Dec,15, 2010 01 day	Farmers (65)	CHF,CAU, Imphal
15.	IDM on vegetable crops	(02) March,25,2011 March,28,2011 01 day each	Farmers (66)	CHF,CAU, Imphal
16.	Camp on loranthus eradication	(01) April 10, 2010 01 day	Farmer, (40)	CHF,CAU, Imphal
17.	Camp on loranthus eradication	(01) April 14, 2010 01 day	Farmer, (36)	CHF,CAU, Imphal
18.	Transportation of fish seed, nursery management	(01) April 14, 2010 01 day	Rural Youth, (48)	ICAR, New Delhi
19.	Carp fry and fingerling rearing	(01) April 17, 2010 01 day	Farmer, (32)	ICAR, New Delhi
20.	Integrated horticulture cum aquaculture	(01) April 19, 2010 01 day	Rural Youth (35)	ICAR, New Delhi
21.	Value addition of mango	(01) April 22, 2010 01 day	Rural Youth (25)	ICAR, New Delhi

Sl. No	Broad areas of Programme	No. of programme period	Participants nature and number	Funding/Sponsoring Agency
22.	Fabric flower making for rural youth	(01) April 24, 2010 01 day	Rural Youth (25)	ICAR, New Delhi
23.	Pond preparation and management in carp fry and fingerlings	(01) April 26, 2010 01 day	Farmer (44)	ICAR, New Delhi
24.	Pest management in mango	(01) April 28, 2010 01 day	Farmer (30)	ICAR, New Delhi
25.	Field day on composite fish culture	(01) May 14, 2010 01 day	Farmer (34)	ICAR, New Delhi
26.	Integrated pest management in paddy	(01) May 18, 2010 01 day	Farmer (26)	ICAR, New Delhi
27.	Nursery management of paddy	(01) June 13, 2010 01 day	Farmer (35)	ICAR, New Delhi
28.	Paddy cum fish farming	(01) July 5, 2010 01 day	Farmer (30)	ICAR, New Delhi
29.	Preparation of Assam mix- an infant food	(02) July 07, 2010, July 09, 2010 01 day each	Farmer (41+36)	ATMA, East Siang
30.	Vermicomposting	(02) July 14, 2010, July 19, 2010 01 day each	Rural Youth (30+25)	ICAR, New Delhi
31.	Management of citrus fruit drop	(01) Aug. 04, 2010 01 day	Farmer (29)	ATMA, East Siang
32.	Integrated pest management in paddy	(01) Aug. 17, 2010 01 day	Rural Youth (66)	ICAR, New Delhi
33.	Integrated fish farming system	(01) Aug. 18, 2010 01 day	Rural Youth (73)	ICAR, New Delhi
34.	Bio control of	(01) Aug. 19, 2010	Rural Youth (83)	ICAR, New Delhi

Sl. No	Broad areas of Programme	No. of programme period	Participants nature and number	Funding/Sponsoring Agency
	insect pests	01 day		
35.	Production of stunted fish fingerlings	(01) Aug. 24, 2010 01 day	Farmer (26)	ICAR, New Delhi
36.	Value addition of lime and lemon	(02) Sep. 09, 2010, Oct. 10, 2010 01 day each	Rural Youth (27+34)	ICAR, New Delhi
37.	Value addition of Pineapple	(01) Oct. 01, 2010 01 day	Rural Youth (29)	ICAR, New Delhi
38.	Production technology of oilseed and pulses	(03) Oct. 06, 2010, Oct. 08, 2010, Oct. 12, 2010 01 day each	Farmer (20+22+20)	ICAR, New Delhi
39.	Integrated pest management in potato	(01) Nov. 06, 2010 01 day	Farmer (20)	ICAR, New Delhi
40.	Preparation of tapioca chips and flour	(02) Nov. 22, 2010, Jan. 31, 2011 01 day each	Farmer and Rural Youth (29+28)	ICAR, New Delhi and ATMA, East Siang
41.	Integrated fish farming system	(01) Nov. 24, 2010 01 day	Farmer (30)	ICAR, New Delhi
42.	Fish processing	(01) Nov. 27, 2010 01 day	Farmer (35)	ICAR, New Delhi
43.	Integrated pest management in vegetables	(01) Jan. 20, 2011 01 day	Farmer (31)	ATMA, East Siang
44.	Integrated pest management in citrus	(02) Jan. 22, 2011, Feb. 01, 2011 01 day each	Farmer (25+28)	ATMA, East Siang and ICAR, New Delhi
45.	Post stocking management in composite fish farming	(01) Jan. 24, 2011 01 day	Farmer (32)	ATMA, East Siang
46.	Pond preparation	(02) Jan. 27, 2011,	Rural Youth	ATMA,

Sl. No	Broad areas of Programme	No. of programme period	Participants nature and number	Funding/Sponsoring Agency
	for composite fish culture	Jan. 29, 2011 01 day each	(33+32)	East Siang
47.	Value addition on tapioca	(01) Feb. 11, 2011 01 day	Rural Youth (30)	ATMA, East Siang
48.	Preparation of products from locally available materials	(01) Feb. 22, 2011 01 day	Farmer (27)	ATMA, East Siang
49.	Importance of balance diet	(01) March 16, 2011 01 day	Farmer (27)	ICAR, New Delhi
50.	Pre stocking management in carp fry & fingerling rearing	(01) March 17, 2011 01 day	Farmer (47)	ICAR, New Delhi
51.	Repairing, maintenance of plant protection equipments and centrifugal pumps	(02) March 19, 2011, March 23, 2011 01 day each	Farmer (30+37)	ICAR, New Delhi
52.	Feeding and pond management in composite fish culture	(01) March 21, 2011 01 day	Farmer (31)	ICAR, New Delhi
53.	Minimizing loss of nutrients during cooking	(01) March 25, 2011 01 day	Farmer (30)	ICAR, New Delhi
54.	Construction of evaporative cool chamber	(01) March 30, 2011 01 day	Farmer (27)	ICAR, New Delhi

4.2 Conducting on Farm-Trials

College of Horticulture & Forestry, Pasighat, and Krishi Vigyan Kendra East Siang, Arunachal Pradesh.

Sl. No.	Title of OFT	Identified Problem	Technologies Selected for assessment/ refinement	Performance of the technologies selected for assessment /refinement	Recommendation for micro level situation
1	Performance of early and medium maturing potato varieties	Low yield of traditionally cultivated variety	High yielding suitable varieties viz. Kufri Khyati, Kufri Puskar and Kufri Pukhraj	-	Variety Kufri Khyati, Kufri Puskar and Kufri Pukhraj has to be cultivated for higher yield.
2	Performance of Brinjal variety Swarna Pratibha and Swarna Shymali and pest incidence	Low yield and high pest incidence	Swarna Pratibha, Swarna Shymali and Integrated Pest Management	12.00 q/ha (Swarna Pratibha), 14.41 q/ha (Swarna Shymali), 8% incidence of Fruit and Shoot borer.	Variety Swarna Pratibha, Swarna Shymali has to be cultivated in the field with high fertility status and were brinjal fruit and shoot borer incidence is high.
3	Performance of Pea Var. Swarna Amar and Swarna Pratibha and pest incidence	Low Yield and high pest incidence	Pea variety Swarna Amar , Pea variety Swarna Mukti	Yields of Swarna Amar (Pod) 4.52 q/ha and Swarna Mukti 4.26 q/ha (Pod), Leaf miner incidence high (10%), moderate pod borer incidence (7%), Moderate incidence of Powdery mildew (6%).	Both the varieties are suited to agro-climatic condition of this region in terms of yield and pest incidence, these may be cultivated on commercial scale.
4	Integrated pest management (IPM) on Toria var.TS-38	High incidence of pest and diseases	Integrated Pest Management (Seed treatment with Captap @ 2g/kg seed followed by spray of Metasystox @ 2.5 ml/liter of	IPM adopted field yield was 7.18 q/ha as compared to 6.37 q/ha in farmers practice (non-IPM) fields. High incidence of	Seed treatment with Captap @ 2g/kg seed followed by spray of Metasystox @ 2.5 ml/liter of water at 25 and 40 DAS reduced pest and disease incidence in

Sl. No.	Title of OFT	Identified Problem	Technologies Selected for assessment/ refinement	Performance of the technologies selected for assessment /refinement	Recommendation for micro level situation
			water)	Mustard Sawfly (12%), aphids (11%) and moderate incidence of cabbage caterpillar (7%) was recorded in IPM fields. However the incidence in non-IPM fields was more than double.	rapeseed (Toria).
5	Construction of polythene lined water storage tank and its uses for aquaculture and Horticulture production	High seepage, Seasonal ponds, low water level	Use of Silpaulin, Tarpaulin sheet for stopping peculation, Thickness of sheet 250 GSM for tanks 150 m^2 and above, Thickness of sheet 150 GSM for tanks 20 m^2 , Production of carried over fish fingerlings of Rohu, Catla, Mirgal, Common Carp, Grass Carp and Silver Carp using polythene lined tanks, Stocking @ 20 Fry/m^2, Feeding with MOC: Rice Bran at 1:1 ratio,	80 % survivality of fry (25-30 mm) to fingerlings (80-100 mm).	Agriflim (Silpaulin, Tarpaulin sheet 250 GSM) can be use for preparing plastic lined ponds. These ponds not only control the seepage losses but harvest water could also be utilized for providing life saving irrigation to agriculture and horticultural crops. In this tank the survivality of fry to carried over fingerlings is also high. In East Siang district overall better growth performance of pond fishes occurred during April-September when water temperature ranged between 24-30 ^{0}C. As growth performance in these summer months is better therefore if

Sl. No.	Title of OFT	Identified Problem	Technologies Selected for assessment/ refinement	Performance of the technologies selected for assessment /refinement	Recommendation for micro level situation
			Water Hyacinth, Azola and Toko Patta leaf for shading.		carried over fish seed is stocked in ponds in the late February or early March the fishes will get comparatively better water temperature for growth performance. This technology will also ensure availability of stocking material early in the year as fishes generally breeds in monsoon during April-July and fingerlings get available from the month of June or July.
6	Effectiveness of Zero energy cool chamber	High perishability of fruits & vegetables and lack of storage	Zero energy cool chamber	Increased shelf life of vegetables viz. Tomato, Pea, Knol Khol and Radish by 6, 5, 6 and 5 days respectively.	Increased shelf life of vegetables viz. Tomato, Pea, Knol Khol and Radish by 6, 5, 6 and 5 days respectively. It does not require electricity to operate and the materials required for constructing the chamber are cheap therefore farmers can adopt the technology.

4.3 Front Line Demonstration and Method Demonstration

Sl. No.	Title of FLD	Technology Demonstrated	No. of Farmers	Area (Ha)	Demo. Yield (q/ha)	Yield of local Check (q/ha)	Increase in yield (%)	Benefit-Cost Ratio
1	Performance of Toria var. TS-38	Toria var. TS 38	20	5	7.18	6.37 (M-27)	12.7	2.69
2	Performance of Rice variety CAU-R1 in East Siang District	Rice var. CAU-R1	25	3	68.51.	60.28 (Deku)	13.65	3.7
3	Performance of Pea var. Azad Pea-1 in East Siang district	Pea var. Azad Pea-1	13	1	4.81(pod)	3.66 (Local)	31.42	1.17
4	Performance of potato var. Kufri Khyati	Potato var. Kufri Khyati	4	0.5	310.7	286.3 (Kufri Jyoti)	8.52	3.45
5	Composite fish farming system	Growth performance of Indian Major Carp & Chinese Carps	16	3.0	18.5	7.0	54.1	2.22
6	Rice cum fish culture	Integration of Common carp, Catla, Rohu in Rice field with var. Deku	3	1.5	89.5	82.0	9.15	1.84
7	Popularization of Nutritional Gardening	Nutritional gardening with vegetables	3	0.02	128.6	76.2	68.76	2.8
8	Preparation of tapioca chips and flour	Value addition in local tapioca	93	-	Rs. 80/kg	Rs. 10/kg	Rs. 10/kg	1.6

4.4 Providing Diagnostic Services to Farmers

A multi-disciplinary team of scientists of Krishi Vigyan Kendra East Siang, College of Horticulture & Forestry, Pasighat, A.P. under took 75 diagnostic visits benefitting 200 farmers in different villages of East Siang district of Arunachal Pradesh. The team of Scientists diagnosed the farming system related problems/constraints and suggested suitable remedial measures.

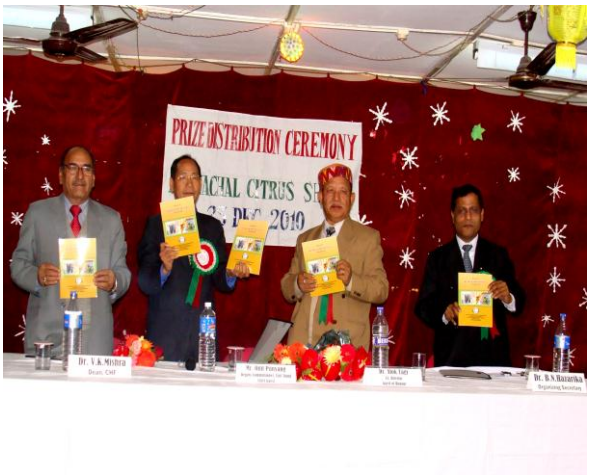
4.5 Organization of Exhibitions

ARUNACHAL CITRUS SHOW AND WORKSHOP-2010

The College of Horticulture and Forestry, and Krishi Vigyan Kendra, Central Agricultural University, Pasighat organized Arunachal Citrus Show and Workshop-2010 on 23 December 2010.

The show included exhibition and competition of citrus fruits among the citrus growers. In addition, an workshop on farmers-scientist interaction programme was organized simultaneously on various aspects of scientific cultivation and management of citrus fruits. The show received an overwhelming response from the citrus growers of as well as other public of Arunachal Pradesh. A total of 124 farmers participated in the competition and took active part in the interaction session.

The exhibition and competition were organized in 5 different groups. The participants were citrus growers of different villages of Arunachal Pradesh. Fifteen (15) cash prizes along with certificate of appreciation were distributed to the prize winners.



4.6 Organization of Interface Meetings, Scientific Advisory Committee Meetings and Farmers Meet, Kisan Gosthis etc.

- KVK East Siang organized Farmers Awareness Programme on Food Processing in collaboration with Indian Institute of Crop Processing Technology (IICPT), Ministry of Food Processing Industries, Government of India, Regional Centre Guwahati, Assam on 29th July 2010 at village Taki Lalung and 30th July 2010 at village Napit, Pasighat, Arunachal Pradesh benefitting 140 farmers.

- **2nd Scientific Advisory Committee Meeting of KVK, East Siang, Arunachal Pradesh** was conducted on **25th September, 2010** in the Conference Hall of College of Horticultural and Forestry, Central Agricultural University, East Siang District, Pasighat, Arunachal Pradesh.

  The Hon'ble Deputy Commissioner of East Siang District Shri. Onit Panyang graced the occasion as the chief guest. The meeting was chaired by Prof. M. Premjit Singh, Director of Extension Education, Central Agricultural University, and Prof. V.K. Mishra, Dean; College of Horticulture & Forestry was guest of Honour, Dr. Mahesh Pathak, PC, KVK, East Siang acted as the member secretary in the meeting. The meeting was attended by officers from the state line department representing Agriculture, Horticulture, Veterinary, Fishery, Forestry, ATMA, Apex Bank and progressive farmers.

  The chairman Prof. M. Premjit Singh highlighted about the purpose of the meeting and functions of KVK in details. He pointed out the importance of extension functionaries in transfer of the technologies developed in various research institutes. He also focused on the gaps in technology transfer and need of simple and easily adoptable technologies that suit the mindset and expectations of the farmers.

- **Farmers Club meeting at Village Mirbuk, Pasighat**

  23rd July, 2010: KVK East Siang organized a meeting at Mirbuk village with progressive farm women for formation of Farmers Club. Dr. Mahesh Pathak, Programme Coordinator KVK apprised the farmers regarding formation of Farmers club, its benefits and NABARD initiatives for financing farmer club for overall development of farmers. Mr. Toge Riba SMS Plant Protection explained the steps involved in formation of Farmers Club as per the guidelines of NABARD. All together 18 farm women participated and discussed their farm related problems. The house decided to form a Farmers Club "SIANG FLORICULTURE FARMERS CLUB".

  The club will be dedicated for the promotion of floriculture in the region. The member unanimously elected Mrs. Oti Sitang Eko, as Chief Coordinator of the Club.

- Organized training programme on "Capacity Building of Extension Functionaries of Arunachal Pradesh for Entrepreneurship Development", 14 – 15th March, 2011 at

College of Horticulture & Forestry, Pasighat, East Siang, Arunachal Pradesh sponsored by DEE, CAU, Imphal.

4.7 Distribution of Seeds/Chicks/Equipment etc.

Major group/class	Crop	Variety	Quantity (qtl.)	Provided to No. of Farmers
Oilseeds	Sesame	AST-1	1.0	24
	Toria	TS-36	1.0	23
Vegetables	Pea	Arkel	0.3	-
		Swarna Mukti	0.7	-
Spices	Turmeric	Megha Turmeric-1	20.0	20
Others	Dhaincha	Pant Dhaincha-1	1.0	13
	Fish Fingerlings	Rohu, Catla, Mrigal	6000 no.s	11

4.8 Consultancies provided

Consultancy for creation of Farmers Club in collaboration with NABARD, Itanagar, Arunachal Pradesh at Village Mirsam, Pasighat for NABARD.

4.9 Other Innovative Extension Educational Programme

Coordinated "Technology week" during 3rd to 7th June 2010 at Mikong, Sikatode and Sika Bamin, Ayeng and Ngorlung villages, respectively with full participation of 4th year students of College of Horticulture and Forestry who were undergoing Rural Horticulture Work Experience Programme (RHWE). A total of 318 farmers from the villages of East Siang District were exposed to various technologies.

4.10 Participation in Agri.-Fair and Exhibition

a. College of Horticulture & Forestry Pasighat and Krishi Vigyan Kendra East Siang, Arunachal Pradesh displayed Exhibition stall during North-East Agri. Expo at Dimapur from 15-19, December, 2010 and North East Marketing Sumit 2010 on Issues and Challenges in Agri. Sector. Around 4000 Visitors including Farmers, Rural Youth, and Dignitaries visited the Exhibition stall.

b. Participated in the 5th National Conference on KVK-2010 held at Maharana Pratap University of Agriculture & Technology, Udaipur Rajasthan, 22-24th December, 2010 and displayed exhibition stall.

c. College of Horticulture & Forestry Pasighat and Krishi Vigyan Kendra East Siang, Arunachal Pradesh displayed Exhibition stall during Regional Agriculture Fair at ICAR, Barapani, Meghalaya, 28th February to 2nd March, 2011, around 1000 Visitors including Farmers, Rural Youth, and Dignitaries visited the Exhibition stall. CAU, Imphal stall got **IInd position** among all stalls displayed in the Exhibition.

4.11 Organization of Farmer's Visit/Rallies

Sl. No.	No. of farmers	Visit to	Purpose
1.	200 farmers	Krishi Vigyan Kendra East Siang and College of Horticulture and Forestry, Pasighat	Discussions related to farmer's queries & problems

4.12 Organization of film shows:

Krishi Vigyan Kendra East Siang, College of Horticulture & Forestry, Pasighat, A.P. demonstrated technologies to farmers by conducting 10 film shows benefitting 300 farmers.

4.13 Extension Literature Published:

Item	Title	Authors name	Number of copies
Leaflets/folders	Preparation of Candies	Th. Eloni Vida & Ng. Piloo	200
	Pest Management in Citrus	T. Riba	200
	Management in Composite Fish Culture	S.M. Hussain	200
	IPM in Paddy	T. Riba	200
	Home Scale processing of Horticultural Crops	Th. Eloni Vida & Ng. Piloo	200
	Integrated Rice- Fish Farming System	S.M. Hussain	200
	Production of Common Carp Seed	S.M. Hussain	200
	Value addition of Citrus	Th. Eloni Vida & Ng. Piloo	200
	Preparation of Tapioca Chips and Flour	Th. Eloni Vida & Ng. Piloo	200
	IPM in Ginger	T.Riba	200
	Pickle Preparation Technology	Th. Eloni Vida & Ng. Piloo	200

4.14 Other Extension Activities

a. Field Day on Paddy Var.CAU R1 at Ayeng Village

Krishi Vigyan Kendra, East Siang District, College of Horticulture & Forestry, Pasighat, A.P. conducted Field Day on Paddy Variety CAU-R1 at Front Line Demonstration Site Ayeng Village. The demonstration was performed in the field of Mr. Pumto Perme, a progressive farmer of Ayeng village. All together 66 farmers and 07 experts from KVK & CHF, Pasighat and 03 extension officers from Department of Agriculture, Govt. of Arunachal Pradesh participated in the programme. The Farmers were invited from Takilalung, Runne, Napit and Ayeng Village of East Siang District. The crop gave an average yield of 5.8 tons per hectare in East Sang Agro-climatic conditions. CAU R1 is a HYV released from Central Agriculture University, Iroisemba, Imphal; Manipur .The crop is suited in rain fed condition and moderately tolerant to Bacterial Leaf Blight disease and Stem borer. It has an yield potentiality of 7.0 tons/hectare.

b. Field Day on Composite fish Culture (CFC) at Kangkong (Yagrung) Village

A Field day programme on Composite Fish Culture was organized by the Krishi Vigyan Kendra, East Siang, College of Horticulture & Forestry, Pasighat at Kangkong (Yagrung) village. This was a result of two years constant effort by KVK on CFC technology. CFC is technique in which different species of fishes are stocked together based on the feeding habits such as top, middle and bottom feeder thereby entire water in pond be utilized and avoid crowding and competition for space and food among fishes. 40 farmers from Yagrung area and officials of fishery department participated in the programme.

The composition of species and stocking density were at the rate of 2 Catla: 2 Rohu: 1.5 Mrigala :2 Silver carp:1 Grass carp:1.5 Common carp per cubic meter pond water with rice bran mix with muster oil cake feed through bag feeding method. The highest growth attained in Catla and Silver carp was 1 kg and 0.9 Kg/ fish respectively and overall average of other species were of 0.6 kg/fish within 10 months of stocking.

Chapter 5

Publications

A. Research Paper Published in Referred Journals

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3. Birbal, S. and Sah, D. 2011. Growth and Development of Indian Mustard as influenced by N, P & S. *Environment & Ecology*. 29(1):53-56

4. Debnath, P. and Ghosh, S.K. 2010. Status of available boron in relation to physic-chemical properties in soils of Red and Laterite zone of West Bengal. *Indian Journal of Crop Science*. 5(1-2): 69-72.

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7. Dubey, R.K., Singh, V., Devi, K. and Kartek, K. 2011. Effect of different planting dates on yield and yield components of potato (*Solanum tubersum* L.) in foot hills of Arunachal Pradesh. *Environment & Ecology*. 29 (2A): 745-751.

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22 Kumawat, M.M. and Kumar, A. 2010. Green clover worm, *Plathypena scabra* (Fab.): a new emerging pests of soybean in southern Rajasthan. *Entomon*. 34(3): 193-195.

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4. Kumar, S. and Gupta, A. K. 2011. Response of rose cultivars under climate change in East Siang District. *In:* Conference on Climate Change, Mayfair Garden Hotel, London March 18-22, 2011. (Abstract)
5. Kumar, S. and Kumar, R. 2011. Protected cultivation of orchid (Dendrobium) for East Siang District. *In*: National Consultation for Production and Utilisation of Orchids, National Research Centre for Orchids, Pakyong, Sikkim, February 19-21, 2011 (Abstract)
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7. Pattanaaik S.K., Hazarika, B.N. and Kumar, N. 2010. Towards Settled Cultivation from Traditional Jhum- A case study in Arunachal Pradesh. *In:* National conference on watershed management on slopping lands for environment and livelihood security held from 11-13 November 2010 at Shillong, Meghalaya (Abstract).
8. Piloo, Ng. and Kabir, J. 2010. Nutritional management for improved quality of okra (*Abelmoschus esculentus* L. Moench). *In*: International Congress of Environmental Research, ICER-10, held during 16-18 September 2010 at University of Mauritius, Reduit, Mauritius, page no. 225 (Abstract).
9. Raja, P., Tamut, Y., Mohanty, J. And Saravanan, R. 2010. Exploitation of wild edible fungi for commercial cultivation by tribal people for traditional food security and rural development *In:* International Mycologiacal conference 9 Edinburgh, August 1-6, 2010, UK.

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D. News Letters

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E. Bulletins/ Practical manuals

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Chapter 6

Farm Development

Polythene Lined Water Storage cum Fish Rearing Tank

The idea of construction of polythene lined water storage cum fish rearing tank was conceived seeing the high seepage in soil particularly in the area where the institute is located. The water source being seasonal there is a high scarcity of water in the winter season for all the agricultural activities. Hence an area of 0.2 ha was converted to storage cum fish rearing tank in order to collect the rainwater up to a capacity of 50 lakh liter; at present the tank is being used for pisci-culture as well as for life saving irrigation.

Polythene lined water storage cum pisciculture unit

Development of Rubber Block

A rubber block has been developed with the objective to evaluating suitable variety for the region. Around 600 grafted rubber plant (variety RRI-600, 417, 428,700 and RRIM-728, 760) were collected from Regional Rubber Research Centre, Aegia, Gowalpara, Assam under Zonal office Rubber Board Guwahati and planted covering an area of 1.6 ha in the campus maintaining a spacing of 5m x 5 m. The sprout of the grafts is coming out and 90% survival is achieved.

Sprouting of buds of rubber plants

Development of Bamboo Block

A bamboo block of 1.2 ha has been developed with an objective to evaluate the suitable variety of bamboo for the various end uses base on scientific index. Around 100 species of bamboo collected from different locations of NE region and planted by maintaining spacing 5 m x 5 m in the farm of the college. Each species having minimum 4 no of surviving clump.

A view of bamboo block

Development of Non-Wood Forest Products Block

A block of 1.5ha has been developed with an objective to demonstrate the student regarding various non-wood forest based products like gums, resins, oleo-resins, tannins, dyes, lacs, tree-borne oilseed and spices and medicinal plant plot and also to evaluate the suitability of various species, representative of various products are planted in various dimension in a plot of 30m x 50m of each products block having about ten representing tree species.

Tanins plot

Dyes plot

Agar plot

Oleo-resin plot

Resin plot

Medicinal plot

Medicinal plot

Tree-borne oilseed plot

Tree-borne gums plot

Sandal plot

Bio pesticide plot

Dye's plot

Development of Aonla Block

An Aonla block of 102 plants variety NA-7 has been developed in the research farm of the department to carry out various research activities. The plants were planted in the spacing of 6 m x 6 m covering an area of 0.37 ha. The plants attained profused vegetative growth.

A view of Aonla block

Development of Guava Block

A guava block of 102 plants variety L-49 has been developed in the research farm of the department with an objected to carry out various research activities. The plants were planted in the spacing of 6 m x 6 m covering an area of 0.37 ha. The plants attained profused vegetative growth.


A view of guava block

Development of Litchi Block

A litchi block of 120 plants variety Shahi has been developed in the research farm of the department with an objected to carry out various research activities. The plants were planted in the spacing of 8 m x 8 m covering an area of 0.77 ha. The plants attained profused vegetative growth.


A view of litchi block

Development of Banana Block

A banana block of 500 plants variety Grand Naine has been developed in the research farm of the department with an objected to carry out various research activities. The plants were planted in the spacing of 3 m x 3 m covering an area of 0.5 ha. The plants attained profused vegetative growth.


A view of banana block

Development of Pineapple Block

A pineapple block of 400 plants variety Kew has been developed in the Nutrition garden. The plants were planted in the spacing of 60cm x 60cm . The plants attained good vegetative growth.


A view of pineapple block

Development of Crop Museum

Around 1000 m^2 unproductive fallow land was utilized by NRM department to develop a "**Crop Museum**" which house various seasonal field crops. Major crops in the crop museum are cultivated and harvested by the students as a part of their course curriculum. Crop museum is very effective platform for better teaching and learning process of practical crop production.

Agro-meteorological observatory

Daily observation on agro-meteorological parameters viz. maximum temperature, minimum temperature, dry bulb and wet bulb reading, relative humidity, rainfall, evaporation, soil temperature at different depth, wind direction and bright sunshine hour being recorded at the Agrometeorological observatory. The databases of parameters are available in the department.

Experiential Learning (Protected Cultivation of Commercial Floriculture)

For the effective application of experiential learning concept a unit of protected cultivation of commercial flowers has been installed. The unit has started production of cut flowers *viz.* Rose, Gerbera, Anthurium and Orchid (Dendrobium). The unit will be used to impart trainings to the farmers and hands on training to the horticulture students.

Hedge garden and Poplar (*Populus deltoides*) block

The hedge garden is maintained in an area of 500 m^2 for providing materials to be used in vegetative propagation of different economic tree species. It also serves the purpose of conducting practical and meet out the requirement of materials used by allied departments. The garden comprises of 50 tree species planted at spacing of 1.5 x1.5 M and more species is being added every season.

The Poplar Block (*Populous deltoides*) is established for nursery production for Entire Transplants (ETPs) with spacing of 80 cm X 60 cm in an area of 300 m^2. The exotic species is newly introduced in this region. This is a fast growing tree species and widely used for plywood and match industry in India.

Hedge garden

Poplar Block

Herbal garden

A herbal garden comprised of 70 species of different medicinal and aromatic plants is maintained in an area of 1250 m^2 in first phase. The aim of garden is collection and conservation of rare, endangered and threatened species of NE region. It also serves the purpose of conducting practical and to develop package of practices.

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