Annual Report

2008-2009

Rajendra Agricultural University, Bihar
PUSA (SAMASTIPUR) 848 125
BIHAR

Annual Report

(2008-09)

Compilation & Editing

Dr. Dibyanshu Shekhar
Dr. Neeraj Kumar
Sri Uday Kumar

RAJENDRA AGRICULTURAL UNIVERSITY, BIHAR
PUSA (SAMASTIPUR) – 848 125, BIHAR

FOREWORD

Rajendra Agricultural University is the only agricultural university of the state playing a multidimensional role in the field of education, scientific research and extension of need based technologies to the farmingcommunity. Concerted efforts are being made by the scientists of this university to accelerate the agriculture development of the state. In addition to these, university is also working in joint collaboration with several national and international organizations to solve the problems of poor/weaker section of the state. The overall enhancement in the field of research, teaching, extension and other allied sectors by the RAU during 2008-09, has been systematically summarized in the form of Annual Report. The information contained in this manuscript would help increating awareness among the scientists, students, farmers and extension personnel about latest crop varieties, implemntable and viable productionand protection technologies.

I feel happy in presenting this publication of the University highlighting the educational, research and extension achievements as well as the financial and development progress. A number of educational key events, research and extension achievements have taken place during the year 2008-09 which contributed towards the viable agricultural growth of Bihar state.

I would like to congratulate the entire group of scientists and the teachers for carrying out the various activities under multidisciplinary programme as per plan and bringing out results in a comprehensive manner as presented in this write-up.

All Directors, Deans of the Faculties, Associate Deans of the Colleges, Statutory Officers, Chairman of Departments, Programme Coordinators of KVKs deserve appreciation for providing valuable information for the report.

I compliment the scientists and staff of Technical Cell who very ably collated and compiled all information and pursued publication of the report. It is hoped that the information contained will be useful to researchers, academicians, policy planners and managers as well as other stakeholders including farmers and students.

Pusa
February14, 2013

(R. K. Mittal)
Vice-Chancellor

CONTENTS

1. INTRODUCTION

1.1 BACKGROUND INFORMATION

Pusa has a great historical importance. The seed of agriculture research and education was sown here, about a century ago, when the then Viceroy and Governor General of Imperial British India had laid the foundation stone of the proposed Agriculture Research Institute on April 1, 1905. The grand edifice name of the building, 'Phipps Laboratory' came up during 1907 which was named after its donor, Mr. Henry Phipps. The institute was renamed as "Imperial Agricultural Research Institute" (IARI) in 1919. It was shifted to New Delhi in 1936 on account of extensive damage to the Phipps Laboratory due to the devastating earthquake of 1934. Pusa is also credited to have first Sugarcane Research Institute, which was established in 1936 and is serving the country even today. Other campus of the university, Agricultural College at Sabour, Bhagalpur was established on 17th August 1908 by Sir Andrew Henderson Leith Freizer, the then Governor of Bihar, Bengal and Orissa. Veterinary College at Patna was established on 2nd April, 1927. When the need of an Agriculture College was felt in North Bihar, the State Government decided to have it at Dholi (Muzaffarpur), a place in the vicinity of Pusa and it was established in 1960. The college was named as 'Tirhut College of Agriculture'. Rajendra Agricultural University, established on December 3, 1970 by reorganizing three Agricultural Colleges at Sabour, Kanke and Dholi, two Veterinary Colleges at Ranchi and Patna, four Regional Agricultural Research Institutes located at Patna, Dholi, Sabour and Kanke and Sugarcane Research Institute, Pusa, the birthplace of agricultural research and education, has played a significant role in enlightenment of people concerned with agriculture.

Later, the University established one college each of Basic Sciences & Humanities, Dairy Technology, Agricultural Engineering, Home Science and Fisheries. The main Administrative Complex, the University Library, the Faculty of Agricultural Engineering, Faculty of Basic Science & Humanities, Faculty of Home Science, Post-Graduate Departments of the Faculty of Agriculture, Dairy Farm of the University, Sugarcane Research Institute, University Apiary, Sanchar Kendra, and University Guest House are located at Pusa. The College of Dairy Technology and Bihar Veterinary College are located at Patna and College of Fisheries at Dholi. The Seed Production and Processing Unit of the university is located at Dholi which plays a pivotal role in production of quality seeds for the state.

Subsequently, the University under National Agricultural Research Project established a few research stations, sub-stations, farm science centres, operational research projects and such other wide ranging programmes for the benefit of the rural community. Now, Bihar has the privilege to have one KVK in each district.

1.2 MANDATE OF THE UNIVERSITY

- To impart education in different branches of agriculture and allied fields.
- To undertake basic, strategic and applied research for developing technologies to enhance productivity and quality of agricultural and animal produce.
- To disseminate scientific information to farmers.
- To plan, organize and conduct *on campus* and *off campus* training programmes for different functionaries and clientele in order to develop human resource capability in the field of agriculture.
- To help the state government in supplying breeder seeds towards production and multiplication of foundation and certified seeds.
- To provide consultancy services and expertise in the agricultural research and development to the industries, NGOs and others.
- To serve as a repository of national and international scientific information on various aspects of agricultural and animal production.
- To collaborate with relevant national and international agencies for all round development of agriculture in the state.

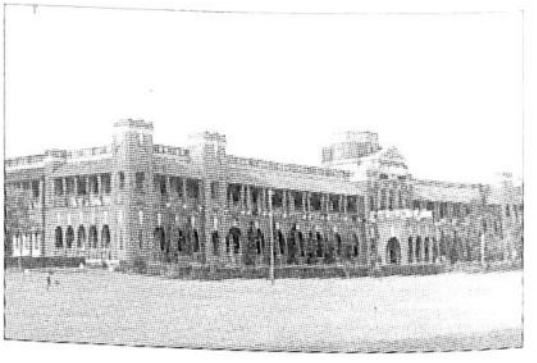
1.3 FACULTIES OF THE UNIVERSITY

- ❑ Faculty of Agriculture
- ❑ Faculty of Veterinary and Animal Sciences
- ❑ Faculty of Agricultural Engineering
- ❑ Faculty of Basic Sciences & Humanities
- ❑ Faculty of Home Science
- ❑ Faculty of Post-Graduate Studies

1.4 CONSTITUENT UNITS OF THE UNIVERSITY

Bihar Agricultural College, Sabour

Bihar Agricultural College, Sabour is one of the six Agricultural Colleges in India established during 1906 to 1910 and has been a premier Institution of agricultural education and research in the country. It was established on 17th August,1908.



Tirhut College of Agriculture, Dholi

Tirhut College of Agriculture, Dholi was founded on 18th August, 1960 by first Chief Minister of Bihar Late Dr. Srikrishna Singh. More than four decades have passed after the establishment of the College and during this period notable successes have been achieved in the field of teaching, research and extension.

Bihar Veterinary College, Patna

The Bihar Veterinary College, Patna, one of the four pioneer and the oldest veterinary colleges in undivided India was established on 2nd April, 1927. Institution has actively been involved in development of veterinary and animal husbandry through teaching, research and extension.

College of Home Science, Pusa

The college of Home Science was established in the year 1982 at Pusa with major objectives to foster the growth, development and well being of individuals, families and communities. The College of Home Science stands for academic excellence, where young women are equipped to meet successfully the challenges of the family and get opportunity. Besides this, the college has also started vocational courses for 6 months duration in different areas of Home Science

College of Agricultural Engineering, Pusa

This college is located at Pusa and was established on 7th December, 1983 with the objective to impart good quality teaching to students for the B.Tech and M.Tech degrees, to conduct basic and applied researches in all the aspects of Agricultural Engineering, to develop suitable technologies for farmers, entrepreneurs, industrialists.

Faculty of Basic Sciences & Humanities, Pusa

Faculty of Basic Sciences and Humanities was established at Pusa in November, 1981 with the objective to strengthen the teaching and research programme in different disciplines of basic sciences so that it can act as a strong supporting programme for the other faculties.

College of Fisheries, Dholi

The College of Fisheries was established on 13th January, 1987 at Dholi, Muzaffarpur. This college is creating trained human resource to develop the great potentiality of the fisheries sector in Bihar.

Sanjay Gandhi Institute of Dairy Technology, Patna :The Sanjay Gandhi Institute of Dairy Technology was established on 14th December, 1980 at Patna for creating human resource in the field of Dairy Technology. The practical aspects of the teaching programme are supported by well equipped laboratories on various aspects of dairy science and technology.

College of Horticulture, Noorsarai (Nalanda) : The College of Horticulture, Noorsarai was established on 15th July, 2006. The college was established specifically for overall development of horticulture in the state and for creating human resource.

Mandan Bharati Agricultural college, Agwanpur : The Mandan Bharati Agricultural college, Agwanpur was established in 2007 at Agwanpur, Saharsa for creating human resource and agricultural development of Kosi region.

1.5 DEGREE PROGRAMMES OF THE UNIVERSITY

- **Under-graduate programmes** in the fields of Agriculture, Veterinary Sciences, Home Science, Fisheries, Agricultural Engineering and Dairy Technology.

Degree	Intake capacity
B. Sc. (Ag.)	200
B.Sc. Horticulture	25
B. V. Sc. and A. H.	120
B. Sc. (H. Sc.)	50
B. Tech. (Ag. Engg.)	50
B.Tech. (D.T.)	50
B. F. Sc.	50

- **Post-graduate programmes in 33 fields** of specialization with a total intake capacity of 304 students.

Disciplines	Intake capacity
Agriculture	174
Agricultural Engineering	17
Basic Science & Humanities	10
Home Science	12
Veterinary & Animal Science	82

- **Ph.D. programmes in 17 departments with** a total intake capacity of 73 students.

Departments	Intake Capacity
Agronomy	8
Plant Breeding	8
Soil Science	8
Plant Pathology	6
Entomology	5
Agricultural Economics	3
Extension Education	3
Horticulture (Pomology)	3
Horticulture (Olericulture)	3
Plant Physiology	3
Genetics	3
Veterinary Anatomy & Histology	3
Veterinary Microbiology	5
Veterinary Parasitology	3
Animal Breeding & Genetics	3
Veterinary Pharmacology	3
Veterinary Medicine	3

2. SALIENT ACHIEVEMENTS

2.1 EDUCATION

2.1.1 Under-graduate Programme

2.1.1.1 Number of students admitted (1.4.08 to 31.3.09)

Name of the College	Degree programme	Male	Female
BAC, Sabour	B. Sc. (Ag)	42	24
TCA, Dholi	B. Sc. (Ag)	36	21
MBAC, Saharsa	B. Sc. (Ag)	22	06
CAE, Pusa	B.Tech.(Ag. Engg.)	34	07
COHS, Pusa	B. Sc. (H.Sc.)	-	22
FBS&H, Pusa	B.Tech. (Biotech.)	21	02
COH, Noorsarai	B. Sc. (Hort)	20	08
BVC, Patna	B.V.Sc. & AH	44	08
SGIDT, Patna	B. Tech.(DT)	16	05
COF, Dholi	B.F.Sc.	27	05
	Total	**262**	**108**

2.1.1.2Number of students on roll, semester wise (as on 31.3.09)

S. N.	Name of the College	Degree programme	Student strength											
			I		III		V		VII		IX		X I	
			M	F	M	F	M	F	M	F	M	F	M	F
1.	BAC, Sabour	B.Sc . (Ag)	42	24	46	19	47	17	16	08	02	01	03	Nil
2	TCA, Dholi	B. Sc. (Ag)	36	21	20	37	51	17	23	13	02	Nil	01	Nil
3	MBAC, Saharsa	B. Sc. (Ag)	22	06	18	05	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
4	CAE, Pusa	B.Tech.(Ag. Engg.)	34	07	28	03	34	06	09	04	01	Nil	Nil	Nil
5	COHS, Pusa	B. Sc.(H.Sc.)	Nil	22	Nil	07	Nil	01	Nil	Nil	Nil	Nil	Nil	Nil
6	FBS&H, Pusa	B.Tech. (Biotech)	21	02	14	09	08	05	Nil	Nil	Nil	Nil	Nil	Nil
7	COH, Noorsarai	B. Sc. (Hort)	20	08	25	06	07	Nil	Nil	Nil	Nil	Nil	Nil	Nil
8	BVC, Patna	B.V.Sc. & AH	44	08	57	11	38	06	21	05	21	05	Nil	Nil
9	SGIDT, Patna	B. Tech. (DT)	16	05	31	05	26	06	11	Nil	01	Nil	Nil	Nil
10	COF, Dholi	B.F.Sc.	27	05	27	03	26	05	05	03	Nil	Nil	Nil	Nil
		Total	262	108	266	105	237	63	85	33	27	06	04	Nil

2.1.1.3 Number of students passed out (1.4.08 to 31.3.09)

S.N.	Name of the College	Degree programme	Student passed out		
			Male	Female	Total
1.	BAC, Sabour	B. Sc. (Ag)	19	05	24
2	TCA, Dholi	B. Sc. (Ag)	26	10	36
3	MBAC, Saharsa	B. Sc. (Ag)	Nil	Nil	Nil
4	CAE, Pusa	B.Tech.(Ag. Engg.)	24	02	26
5	COHS, Pusa	B. Sc.(H.Sc.)	Nil	Nil	Nil
6	FBS&H, Pusa	B.Tech. (Biotech)	Nil	Nil	Nil
7	COH, Noorsarai	B. Sc. (Hort)	Nil	Nil	Nil
8	BVC, Patna	B.V.Sc.& AH	23	04	27
9	SGIDT, Patna	B. Tech.(DT)	25	05	30
10	COF, Dholi	B.F.Sc.	05	02	07
		Total	122	28	150

2.1.2 Post-graduate Programme

2.1.2.1 Number of students admitted (1.4.08 to 31.3.09)

S.N.	Department	Master's Degree Student		Ph.D. Student	
		Male	Female	Male	Female
1	Agronomy	-	-	02	-
2	Plant Pathology	-	-	01	-
3	Entomology	-	-	01	-
4	Extension Education	-	-	01	-
5	LPM	02	-	-	-
6	ABG	01	-	-	-
7	ARGO	05	-	-	-
8	Animal Nutrition	02	-	-	-
9	Parasitology	01	01	-	-
	Total	11	01	05	-

2.1.2.2 Number of students on roll, semester-wise (as on 31.3.09)

i) Master's Degree programme

S.N.	Discipline / Semester	Number of students									
		I		II		III		IV		Total	
		M	F	M	F	M	F	M	F	M	F
1	Agronomy	-	-	07	-	-	-	01	-	08	-
2	Soil Science	-	-	02	01	-	-	01	-	03	01
3	Pl.Pathology	-	-	01	01	-	-	04	-	05	01
4	Pl. Breeding	-	-	03	-	-	-	-	-	03	-
5	Entomology	-	-	01	-	-	-	01	-	02	-
6	Stat.	-	-	01	-	-	-	-	-	01	-
7	Extn.Edn.	-	-	-	-	-	-	01	-	01	-
8	Ag. Econ.	-	-	02	-	-	-	-	-	02	-
9	Genetics	-	-	-	-	-	-	01	02	01	02
10	Home Sc. E.E	-	-	-	-	-	-	-	02	-	02
11	Home Sc.Food Nut.	-	-	-	-	-	-	02	-	02	
12	M.Tech		-	02	-	-	-	01	-	03	-
13	LPM	02	-	-	-	-	-	02	-	04	-
14	ABG	01	-	-		-	-	02	-	03	-
15	ARGO	05	-	-	-	-	-	02	-	07	-
16	Ani. Nutrition	02	-	-	-	-	-	02	-	04	-
17	Parasitology	01	01	-	-	-	-	02	-	03	01
18	Medicine	-	-	-	-	-		02	-	02	-
19	MBA	10	06	-	-	-	-	18	08	28	14
	TOTAL	21	07	19	02	-	-	42	12	82	21

ii) Ph.D. Degree programme

S.N.	Discipline	Number of students									
		I Year		II Year		III Year		IV Year		Total	
		M	F	M	F	M	F	M	F	M	F
1	Agronomy	02	-	-	-	01	-	03	-	06	-
2	Soil Science	-	-	-	-	03	01	01	-	04	01
3	Pl.Pathology	01	-	-	-	-	-	01	-	02	-
4	Pl. Breeding	-	-	-	-	01	-	01	01	02	01
5	Entomology	01	-	-	-	-	-	-	-	01	-
6	Extn.Edn.	01	-	-	-	02	-	-	01	03	01
7	Ag. Econ.	-	-	-	-	-	-	01	-	01	-
8	Genetics	-	-	-	-	01	-	-	02	01	02
9	Bot. & Pl. Physiology	-	-	-	-	-	-	01	-	01	-
10	Hort.(Pomo.)	-	-	-	-	02	-	-	-	02	-
	TOTAL	05	-	-	-	10	01	08	04	23	05

2.1.2.3 Number of students passed out (1.4.08 to 31.3.09)

S.N.	Discipline	Master's		Ph.D.	
		M	F	M	F
1	Agronomy	02	01	00	00
2	Soil Science	02	01	01	00
3	Pl. Pathology	02	00	01	00
4	Pl. Breeding	04	00	00	00
5	Entomology	03	00	00	00
6	Stat.	01	00	00	00
7	Extn.Edn.	01	00	01	00
8	Ag. Econ.	00	00	02	00
9	Hort.(oleri.)	01	00	00	00
10	Genetics	01	00	00	00
11	Home Sc. E.E	00	01	00	00
12	Home Sc.Food Nut.	00	01	00	00
13	Hort.(Pomo.)	01	00	00	00
14	M.Tech	01	00	00	00
15	LPM	03	00	00	00
16	ABG	06	00	00	00
17	ARGO	03	01	00	00
18	Ani. Nutrition	03	00	00	00
19	Parasitology	03	02	00	00
20	Medicine	04	01	00	00
21	VPH	01	00	00	00
22	VPT	03	00	00	00
23	LPT	01	01	00	00
24	Physiology	01	01	00	00
25	VSR	02	00	00	00
	TOTAL	49	09	04	00

2.1.2.4 Fellowship / Scholarship awarded (1.4.08 to 31.3.09)

Name of student	Degree programme	Fellowship / Scholarship	Awarding Organisation	Amount
Horticulture				
Suraj Prakash	Ph.D.	Univ. Fellowship	RAU, Pusa	Rs. 1700 p.m.
Rashmi Rai	M.Sc.(Ag.)	Univ. Fellowship	RAU, Pusa	Rs. 1500 p.m.
Ranju Ranjana	M.Sc.(Ag.)	Univ. Fellowship	RAU, Pusa	Rs. 1500 p.m.
Mukesh Kr.	M.Sc.(Ag.)	Univ. Fellowship	RAU, Pusa	Rs. 1500 p.m.
Alok Ranjan	M.Sc.(Ag.)	Univ. Fellowship	RAU, Pusa	Rs. 1500 p.m.
Bharat Kumar	M.Sc.(Ag.)	Univ. Fellowship	RAU, Pusa	Rs. 1500 p.m.

(Contd. to P. 9)

(Contd. from P. 8)

Name of student	Degree programme	Fellowship / Scholarship	Awarding Organisation	Amount
Soil Science				
Kanti Kumari	M.Sc. (Ag.)	Univ. Fellowship	RAU, Pusa	Rs. 1500/- p.m
Barun Kumar	M.Sc. (Ag.)	Univ. Fellowship	RAU, Pusa	Rs. 1500/- p.m
Abhishek	M.Sc. (Ag.)	Univ. Fellowship	RAU, Pusa	Rs. 1500/- p.m
Prem Kishor Prasad	M.Sc. (Ag.)	Univ. Fellowship	RAU, Pusa	Rs. 1500/- p.m
Sanjeev Kumar	M.Sc. (Ag.)	Univ. Fellowship	RAU, Pusa	Rs. 1500/- p.m
Ashwani Kr Chandrawal	M.Sc. (Ag.)	Univ. Fellowship	RAU, Pusa	Rs. 1500/- p.m
Amit Kumar Pandey	Ph.D.	Univ. Fellowship	RAU, Pusa	Rs. 1700/- p.m
Madhvi Kumari	Ph.D.	Univ. Fellowship	RAU, Pusa	Rs. 1700/- p.m
Ag. Economics				
Rajeev Kumar Raj	M.Sc (Ag.)	Univ. Fellowship	RAU, Pusa	Rs. 1500 p.m
Agronomy				
Devendra Mandal	M. Sc. (Ag.)	Univ. Fellowship	RAU Pusa	Rs. 1500 p.m
Ritesh Ranjan	M. Sc. (Ag.)	Univ. Fellowship	RAU Pusa	Rs. 1500 p.m
Dhananjay Kumar	M. Sc. (Ag.)	Univ. Fellowship	RAU Pusa	Rs. 1500 p.m
Mithilesh Kumar	M. Sc. (Ag.)	Univ. Fellowship	RAU Pusa	Rs. 1500 p.m
Ambuj kumar	M. Sc. (Ag.)	Univ. Fellowship	RAU Pusa	Rs. 1500 p.m
Vinay Kumar	M. Sc. (Ag.)	Univ. Fellowship	RAU Pusa	Rs. 1500 p.m
Md. Jamshir	M. Sc. (Ag.)	Univ. Fellowship	RAU Pusa	Rs. 1500 p.m
Rajan Kumar	Ph. D.	Univ. Fellowship	RAU Pusa	Rs. 1700 p.m
Pankaj Kumar	Ph. D.	Univ. Fellowship	RAU Pusa	Rs. 1700 p.m
Irshad Alam	Ph. D.	Univ. Fellowship	RAU Pusa	Rs. 1700 p.m
Entomology				
Pramod Sahani	M.Sc. (Ag.)	Univ. Fellowship	RAU, Pusa	Rs.1500 p.m
Amit Kumar	M.Sc. (Ag.)	Univ. Fellowship	RAU, Pusa	Rs.1500 p.m
Santa Kumar Choudhary	M.Sc. (Ag.)	Univ. Fellowship	RAU, Pusa	Rs.1500 p.m
Abhishek Kumar	M.Sc. (Ag.)	Univ. Fellowship	RAU, Pusa	Rs.1500 p.m
Kumar Rahul Ranjan	M.Sc. (Ag.)	Univ. Fellowship	RAU, Pusa	Rs.1500 p.m
Manisha Kumari	M.Sc. (Ag.)	Univ. Fellowship	RAU, Pusa	Rs.1500 p.m
Rakesh Kumar	Ph.D.	Univ. Fellowship	RAU, Pusa	Rs.1700 p.m
Preeti Kumari	Ph.D.	Univ. Fellowship	RAU, Pusa	Rs.1700 p.m
PBG				
Sima Sinha	Ph.D	Univ. Fellowship	RAU, Pusa	1700 p.m
Pravin Kumar	M.Sc (Ag.)	-do-	RAU, Pusa	1500 p.m
Chandan Kishore	M.Sc. (Ag.)	-do-	RAU, Pusa	1500 p.m
AB&AM				
Sugandh Suman	M. Sc, Genetics	Univ. Fellowship	RAU, Pusa	Rs. 1500 p.m
Suchi Smita	M. Sc, Genetics	Univ. Fellowship	RAU, Pusa	Rs. 1500 p.m
Sonal Kashyap	M. Sc, Genetics	Univ. Fellowship	RAU, Pusa	Rs. 1500 p.m
Archana Rani	Ph. D., Genetics	Univ. Fellowship	RAU, Pusa	Rs. 1700 p.m
Ranju Kumari	Ph. D., Genetics	Univ. Fellowship	RAU, Pusa	Rs. 1700 p.m
K.K.Rajak	Ph.D., Genetics	Rajiv Gandhi Foundation Award	New Delhi	Rs. 8,000 p.m
Adeline Tigga	Ph.D	Student Fellowship	RAU, Pusa	Rs. 1700 p.m

(Contd. to P. 10)

(Contd. from P. 9)

Name of student	Degree programme	Fellowship / Scholarship	Awarding Organisation	Amount
CAE, PUSA				
Chandan Kumar	B.Tech. (Agril. Engg.)	Merit Scholarship	R.A.U.,Pusa	Rs. 1500 p.m
Brajesh Kumar Singh	B.Tech. (Agril. Engg.)	Merit Scholarship	R.A.U.,Pusa	Rs. 1500 p.m
Kumar Sanjay	B.Tech. (Agril. Engg.)	Merit Scholarship	R.A.U.,Pusa	Rs. 1500 p.m
Pramod Kumar	B.Tech. (Agril. Engg.)	Merit Scholarship	R.A.U.,Pusa	Rs. 4500 p.m
Tausif Alam	B.Tech. (Agril. Engg.)	Merit Scholarship	R.A.U.,Pusa	Rs. 4500 p.m
Sandeep Ranjan	B.Tech. (Agril. Engg.)	Merit Scholarship	R.A.U.,Pusa	Rs. 4500 p.m
Yatish nupur	B.Tech. (Agril. Engg.)	Merit Scholarship	R.A.U.,Pusa	Rs. 7500 p.m
Ranjeet Kumar	B.Tech. (Agril. Engg.)	Merit Scholarship	R.A.U.,Pusa	Rs. 7500 p.m
Kumari Namrata	B.Tech. (Agril. Engg.)	Merit Scholarship	R.A.U.,Pusa	Rs. 3000 p.m
Sweeti kumari	B.Tech. (Agril. Engg.)	Merit Scholarship	R.A.U.,Pusa	Rs. 4500 p.m
Akansha Raman	B.Tech. (Agril. Engg.)	Scholarship for SC	DWO, Samastipur	Rs. 12730 p.m
Surender Kumar Bharti	B.Tech. (Agril. Engg.)	Scholarship for SC	DWO, Samastipur	Rs. 9200 p.m
Pramod Kumar Prabhakar	B.Tech. (Agril. Engg.)	Scholarship for SC	DWO, Samastipur	Rs. 9200 p.m
Rabindar Kumar	B.Tech. (Agril. Engg.)	Scholarship for SC	DWO, Samastipur	Rs. 9200 p.m

2.1.3 Thesis Accepted (1.4.08 to 31.3.09)

2.1.3.1 Ph.D.

Department	Name of Student	Name of Advisor	Title of Thesis	Date of Viva Voce Exam.
Horticulture	Vijay Kr.Singh	Dr.D.N.Choudhary	Effect of biofertilizers and inorganic fertilizers on growth, yield and quality of hybrid cabbage	13.04.09
	Vinit Kr. Singh	Dr.I.D.Prasad	Effect of biofertilizers and chemical fertilizers on growth, yield and quality of onion	24.12.08
Soil Science	Ghanshyam	Dr. R. R. Singh	Reactions and availability of sulphur in Ganga diara land soils of Bihar	17.11.08
Plant Pathology	Sanjeev Kumar	Dr. (Mrs.) Bimla Rai	Epidemiology and management of Brown Spot Disease of rice caused by *Drechslera oryzae* (Breda de Haan) Subramaniam and jain	05.04.08
Entomology	Thakur Prasad Mahto	Dr. R.P. Yadav	Growth of *Eisenia foetida* (Savigny) in oilcake mixed cow dung, microbial diversity in vermicompost and its effect on succivorous arthropods infesting summer okra [*Abelmoschus esculentus* (L.) Moench]	06.03.08
Ext.Edn.	Awadhesh Kr. Singh	Dr. K. K. Sinha	Training impact of mushroom production technology and its consequential change in behavioral pattern	30.07.08
	Vinod Kumar Singh	Dr.Madan Singh	Training needs of litchi growers in Muzaffarpur district of Bihar	25.05.07

2.1.3.1 M.Sc./ M.Sc. (Ag)/ M.V.Sc./ M.Tech./ M.Sc.(Home Science)

Department	Name of Student	Name of Advisor	Title of Thesis	Date of Viva Voce Exam.
Soil Science	Shailendra Kumar Pandey	Dr. S. Tiwari	Effect of long term application of organics and inorganics in calcareous soil under rice-wheat cropping system	16.10.08
Plant Pathology	Anand kumar Singh Arun	Dr. (Mrs.) Bimla Rai	Integrated management of Brown Spot Disease of rice caused by *Drechslera oryzae* (Breda De Haan) Subrianiam and Jain	18.08.08
	Pramod Kumar	Dr. R.C. Rai	Integrated disease management of Sheath rot of rice	
Agronomy	Rishikesh Raj	Dr. C P Singh	Cultural and chemical weed management in maize+potato intercropping system	21.04.08
	Archana Kumari	Dr. N. K Choudhary	Performance of wheat (*T. aestivum*) varieties under limited irrigation	15.05.08
	Himanshu Kumar	Dr. G. Jha	Response of potato varieties to varying levels of nitrogen	12.08.08
	Madhu Priya Chaudhary	Dr. R. P. Sharma	Integrated nutrient management in rice-wheat cropping system	24.10.08
Entomology	Shanta Kumar Choudhary	Dr. U. Mukherjee	Eco- friendly management of banana scarring beetle, *Basilepta subcostatum* Jacoby in North Bihar	17.12.08
Genetics	Bijay Kr. Tirkey	Dr. M. Kumar	Genetic characterization and improvement of button mushroom (*Agaricus spp.*)	25.07.08
Ext. Edn.	Pawan Kumar	Dr. K. K. Sinha	A study of effectiveness of training in relation to sugarcane production technology	22.02.08

2.2 RESEARCH HIGHLIGHTS

NUMBER OF TRIALS CONDUCTED

2.2 A CROP IMPROVEMENT SECTION

Sl. No.	Crop	IVT/IHT/ IET	AVT/AHT/ AET	Others	Total	Line tested	No. of entries promoted
1.	Rice	11	14	18	43	836	6
2.	Wheat	4	3	7	14	353	4
3.	Maize (Kharif)	2	3	2	7	125	-
4.	Maize (Rabi)	5	6	4	15	-	19
5.	Pigeonpea	2	1	3	6	605	-
6.	MULLaRP	6	3	3	12	139	-
7.	Small millets	2	4	4	10	167	-
8.	Oilseeds	13	7	3	23	356	-
9.	Tuber	4	1	1	6	342	-
10.	Linseed	3	-	-	3	37	-
11.	Sugarcane	2	6	-	8	108	-
12.	Mango	-	-	8	8	-	-
13.	Guava	-	-	5	5	-	-
14.	Vegetables	4	-	3	7	-	-
15.	Spices	4	-	5	9	205	-

2.2. B CROP PRODUCTION SECTION

Sl. No.	Crop	Varietal trial nitrogen level	SRI/ Other cropping system	Date of sowing/ Weed management/ Inter-cropping	Micron-utrient/ INM	Phosphorus + Biofertilizer	Others	Total
1.	Rice	5	2	1				8
2.	Maize (Kharif)	2			1			3
3.	Maize (Rabi)	2						2
4.	Wheat	1		2			1	4
5.	Chickpea			2				2
6.	Pigeonpea	3		1	2			6
7.	MULLaRP	2		3	1		2	8
8.	Tuber crops	2		1	1		3	7
9.	Potato	2		1	1	1	2	7
10.	Spices	2		1		1	2	6
				12				

(Contd. to P. 131)

(Contd. from P. 12)

Sl. No.	Crop	Varietal trial nitrogen level	SRI/ Other cropping system	Date of sowing/ Weed management/ Inter-cropping	Micron-utrient/ INM	Phosphorus + Biofertilizer	Others	Total
11.	Vegetables				1	4		5
12.	Sunflower				1		2	3
13.	Sugarcane			2			3	5
14.	Mango						5	5
15.	Guava					1	3	4
16.	Litchi					1	1	2
17.	Banana	1				1	1	3
18.	Papaya					1		1

2.2.C PLANT PROTECTION SECTION

Sl. No.	Crop	Disease resistance screening	Insect pest screening	IPM/ IDM	Nematology	Others	Total
1.	Rice	6	3	4		2	15
2.	Maize (Kharif)	13	4				17
3.	Maize (Rabi)	2	1				3
4.	Wheat	1			2		3
5.	Pigeonpea	8	4	1		1	14
6.	Chickpea	3	5		1	2	11
7.	MULLaRP	7	3		3	3	16
8.	Tuber crops	1	2	6		2	11
9.	Jute					1	1
10.	Sunflower	3				1	4
11.	Castor	3					3
12.	Spices	1					1
13.	Sugarcane	2	1	1	4	1	9
14.	Vegetables	1	2	1		1	5
15.	Mango	2				2	4
16.	Litchi					1	1
17.	Banana					2	2
18.	Citrus			1		1	2
19.	Papaya					1	1

2.2.D ALLIED FIELD RESEARCH SECTION

Sl. No.	Discipline	No. of trials
1.	E.C.F.	3
2.	Cropping System Research	6
3.	Weed Science	24
4.	Water Management	3
5.	STCR	11
6.	Soil Survey and Land use Planning	12
7.	M.N.S.	11
8.	Agrometeorology	2
9.	Betelvine	13
10.	Agril. Economics	8
11.	Extension Education	3
12.	Seed Technology	7
13.	Forestry	10
14.	Food Science and Technology	4
15.	Agroforestry	5
16.	AICRP on Honey bee	8
17.	Food & Nutrition	2
18.	Family Resource Management	1
19.	Textile & Apparel Designing	2
20.	Home Science Extension Education	1
21.	Animal Breeding & Genetics	1
22.	Livestock product & Technology	1
23.	Veterinary Physiology	2
24.	Farm Machinery	16
25.	Post Harvest Technology	3
26.	Soil & Water Conservation	6
27.	Ground Water Utilization	3
28.	Water Management	5
29.	Ag. Biotechnology &Molecular Biology	3
30.	Botany & Plant Physiology	6
31.	Microbiology	3
32.	Stat, Math & Computer Application	4

2.2.1 CEREALS

2.2.1.a Crop Improvement

Rice :

In the variety evaluation programme, 9 State, 24 DRR (AICRIP), 2 Shuttle Breeding (ICAR-IRRI) and 2 STRASA (BMGF – IRRI) trials were conducted at Patna, Pusa, Sabour and Bikramganj under different eco-systems.

Promising entries identified for testing in Agronomy trial and Farmer's field :

Entry No.	Name of trial	Designation
13	UVT-3	RAU 639-200-55
31	UVT-3	RAU 763-15-33
5	SGVT	RAU 3055
36	SGVT	RAU 759-5-41

Promising entry in pipe line for release :

RAU 759-5-41: This culture is consistently performing well and giving very high yield (5000 – 5500 kg/ha) at various locations since last 3 years. The culture has fine grain quality and is suitable for medium to shallow lowland conditions.

Maize :

- Total 15 trials were conducted during kharif 2008 under maize breeding component of All India Co-ordinated Maize Improvement Project. Out of 15 trials, 8 trials were on normal maize (Co-ordinated), 3 trials on specialty corn i.e. pop corn, baby corn, sweet corn, one trial on QPM, one station trial and two zonal trials of early maturity and medium maturity, respectively.
- In initial evaluation of full season maturity group, total 51 entries were evaluated and PRO-375, a hybrid from Bayer – Bio Science gave significantly highest yield of 72.45 q/ha as compared to the best check SEEDTEC-2324 (55.68 q/ha).
- In IET of medium maturity (Trial no. 62) group, PRO-376 gave significantly highest yield of 69.07 q/ha as compared to the best check HM-9(37.95 q/ha) out of a total 38 entries.
- In initial evaluation trial of early maturity (Trial no. 63), a total of 32 entries were evaluated and MO6-108 a Hybrid from MAHYCO gave significantly highest yield of 50.72 q/ha as compared to the best check Prakash which yielded 41.58 q/ha and was at par with MO6-108.
- In IET of extra early maturity (Trial no. 64) group, FQH-55, a hybrid from Almora gave significant highest yield (47.63 q/ha) as compared to the best check VIVEK QPM-9 (30.21 q/ha) out of a total 14.
- In advance evaluation trials – 1st year of full season maturity group (Trial no. 65Z3), total 18 entries were evaluated and CP-808, a hybrid from charoen Pokhphand gave significantly highest yield of 74.29 q/ha as compared to the best check SEEDTEC-2324 (59.76 q/ha).
- In another trial of AET – 1st year (Trial no. 66Z3) of medium maturity BH-40706, a hybrid from Hyderabad gave significantly highest yield of 63.88 q/ha as compared to the best check, Malviya hybrid-2 (42.04 q/ha).
- In AET – 2nd year of full maturity group (Trial no. 69Z3) NECH-132, a hybrid from Syngenta gave significantly highest yield of 80.53 q/ha as compared to the best check SEEDTEC-2324 (57.58 q/ha) out of a total 6 entries.
- In advance evaluation trials – 2nd year of extra early maturity group (Trial no. 71-72 Z-3), total 6 entries were evaluated and FH-3358, a hybrid from Almora gave significantly highest yield of 50.28 q/ha as compared to the best check VIVEK hybrid-33 (30.83 q/ha) out of a total six entries.
- Performance of QPM experimental hybrid : In initial evaluation trials of QPM group, QPM MMH 07-1, a single cross hybrid developed from Dholi centre got 1st rank with respect to yield with more than 10% superiority in yield

(57.35 q/ha) than the best check HQPM-5 (45.48 q/ha) and promoted to AET – 1st (QPM-2) stage of testing in coordinated trials.

- In zonal trial (Trial no. 301) of early maturity group, total 18 entries were evaluated at different locations and MEH-08-13, a single cross hybrid from Dholi centre ranked first with significantly highest yield of 53.98 q/ha followed by MEH-08-5 (41.12 q/ha), MEH-08-8 (40.25 q/ha), MEH-08-3 (38.78 q/ha) as compared to the best check PRAKASH (38.06 q/ha).

Wheat :

Sabour Centre

A total of 578 entries from national and international sources in various nurseries were evaluated. Out of which 84 desirable fixed lines and 368 segregating lines were selected for further evaluation and selection.

Under hybridization programme, 63 crosses were made with parents having desired agronomic characteristics and resistant to major diseases. Various segregating generations were also grown and 915 desirable plants were selected for further evaluation and selection.

Pusa Centre

Altogether three nurseries and one trial were conducted at Pusa centre. First nursery was conducted with 53 entries under late sown irrigated condition and the genotype GW 2007-80 recorded the highest yield (50.00 q/ha). This along with another four entries were significantly superior to the best check DBW 14 (32.00 q/ha). Two segregating nurseries were conducted and from them, 339 desirable single plants were selected for further evaluation and selection.

Patna Centre

Under hybridization programme, 06 fresh crosses were made and F_1 generation of 15 cross combinations were also grown. A total of 142 single plants were selected from various segregating generations. 10 Homozygous lines were selected and harvested in bulk.

2.2.1.b Crop Production

Rice :

Rainfed upland direct seeded rice

- Under this condition, cultural practices like rice alone and rice with sunhemp incorporation did not yield significantly. Among fertilizer schedules, 60:60:40 kg NPK/ha recorded maximum grain yield (24.87 q/ha) which was at par to 60:40:40 and 60:30:30 kg NPK /ha.

Aromatic rice

- Both factors, date of planning and nutrients schedules have significant influence on grain yield.

Integrated Nutrient Management

- Organic sources of nutrients like FYM / Vermicompost might be substituted with either 25 % N or 50 % N of RDF through integrated nutrient management at Bikramganj, thereby minimizing the real deficit of fertilizer and maintain sustainability.

Weed Management (IWM + INM)

- Application of Pretilachlor @ 0.75 kg a.i./ha + one hand weeding at 40 DAT produced highest grain yield (60.88 q/ha) which was at par with two hand weeding at 20 & 40 DAT at Bikramganj.

Deep Water Rice

- Maximum total yield in terms of rice equivalent was recorded in Rice 100 % + Mung 100 % at par to Rice 75 % + Mung 100 % combination at Pusa.

Wheat :

- Altogether six experiments were conducted. In the 1st experiment, 10 genotypes, evaluated under normal and late sown conditions, revealed that wheat genotypes performed significantly better (44.57 q/ha) under normal sown condition than under late sown condition (38.83 q/ha).

- Similarly in the 2nd experiment also, wheat genotypes recorded significantly higher mean grain yield (37.93 q/ha) under late sown condition than under very late sown condition (31.61 q/ha).
- Wheat genotypes were evaluated at different levels of nitrogen under rain fed condition. It was observed that the grain yield increased with increasing level of nitrogen application. Maximum mean grain yield of 34.26 q/ha was recorded from the plots fertilized with 80 kg N/ha which in turn was at par with the mean grain yield of 33.32 q/ha obtained under 60 kg N/ha and both were significantly superior to the mean grain yield obtained from 40 kg N/ha.
- Experiment on application of boron on the productivity of wheat was conducted. It was observed that the treatment effect of boron application was significant whereas the effect due to genotypes was non-significant.
- Performance of wheat genotypes was Evaluated under different tillage practices. Maximum mean grain yield of 37.64 q/ha was obtained from the genotypes sown under traditional tillage practices and it was at par with the mean grain yield obtained from zero tillage technique (37.27 q/ha). 6th Experiment was conducted on integrated weed management and it was observed that hand weeding at 20 and 40 DAS performed best.

Maize :

- Trial of Tillage x genotype interaction in maize, Shaktiman-4 gave maximum yield of 75.56 q/ha in Bed planting against conventional planting of Shaktiman-4 which yielded 75.37 q/ha and zero tillage S_4 gave a yield of 72.78 q/ha. Yield differences due to different genotypes viz, S_4, HQPM-1 and 900 M Gold with different planting systems were observed to be significant.
- In tillage management of maize based cropping system (Maize-wheat system) differences in yield due to different tillage management viz., zero tillage, conv. tillage, fresh bed and permanent bed were found to be non-significant. However, fresh bed planting system gave numerically higher yield than other system of planting.
- In site specific nutrient management trial, yield differences due to different treatment viz., no fertilizer, 100 : 60 : 40 0 (NPK Zn), 150 : 60 : 40 : 25 (NPK Zn), and 225 : 105 : 36 : 25 (NPK Zn) were found to be non-significant probably due to high cv. (23.9%).

2.2.1.c Crop Protection

Rice Pathology :

Surveillance :

At Patna, a team of Scientists surveyed three districts namely Patna, Nalanda and Jahanabad. The Sheath blight disease remained recorded as first economic disease in Zone IIIB followed by False smut. The grain discoloration was recorded in low to severe form in hybrid varieties. The Brown spot, blast, Bacterial leaf blight and Bacterial leaf streak were recorded in low to mild form, whereas, Sheath rot was recorded in low form. Zinc deficiency was also observed in three districts under survey.

At Pusa centre – During Kharif 2008, five districts namely Muzaffarpur, Samastipur, Siwan, Gopalganj and East Champaran were surveyed. Brown spot incidence was 20.5 to 35.5 per cent, Sheath rot incidence varied from 12 to 25 per cent. The False smut incidence was 10 to 50 per cent, whereas Bacterial leaf blight incidence was 2 to 5 per cent.

Evaluation of germplasm :

At Patna - N S N – 1 (National Screening Nursery):140 entries / germplasm were evaluated against Bacterial blight and Sheath rot diseases. N S N-II (National Screening Nursery II) – 211 entries were evaluated against Bacterial leaf blight and Sheath rot diseases. The promising cultures of this centre are given here under: IET No. 21090, IET No. 21092, IET No. 21097, IET No. 21136, IET No. 21137, IET No. 21218, IET No. 21221 and IET No. 21228 against Bacterial blight and Sheath rot diseases. IET No. 1 to 407 and Entry no. 506 failed due to heavy rainfall and submergence in water.

At Pusa – Screening of Brown spot disease to 193 entries of NSN-1, 622 entries of NSN-II, and 123 entries of SSN was conducted. Sixteen and fifteen entries / cultures under NSN-I and NSN-II, respectively were identified up to score 2. Two entries / germplasm i.e. Ajaya and Triguna were identified up to score 2 under NHSN. Under DSN and SSN, not a single

entry / germplasm was identified. Under disease observation nursery to observe the various diseases intensity at Pusa centre on Pankaj variety, Brown spot and BLB severity were 31.5 % and 3 %, respectively in early sown crop. The false smut and Sheath rot were not observed in early sown crop. In medium sown crop, the disease severity of Brown spot and BLB was 16.5 % and 2 %, respectively whereas in late sown crop, the Brown spot, BLB, False smut and Sheath rot severity were recorded 22.5 %, 6.5 %, 15 % and 10 %, respectively.

Disease management :

At Patna - Amongst different fungicides, Contaf 5 SC – 2 ml/L was found effective in reducing Sheath blight disease intensity to 11 per cent over control (53 per cent) and increasing grain yield to 3883 kg/ha over control (2125 kg/ha.).

At Pusa - An experiment was conducted to evaluate the fungicides against location specific disease i.e. Brown spot disease. Among nine treatments, the best result was recorded by the application of Taquat 75 WP followed by Metominostrobin 20 SC @ 2 ml/L. Under Integrated disease management, variety Rajshree gave the best result when 80 kg N was applied in case of BB. The disease severity was recorded only 5.1 % and yield was 6.52 kg/plot.

Rice Entomology :

- In epidemiological study at Patna in light trap, maximum catches of rice insect-pests were noticed during the month of October (2nd fortnight). Intensity of their incidence was higher than that of previous year but field population was low. This was attributed to high rainfall during the period from June to September (1928 mm). High rain caused detrimental effects on the growth of population. Population began to multiply from the month of October but it was too late to inflict damage in field crops.
- In NSN-2 and MRST, altogether 657 (622 + 35, respectively) entries were evaluated against rice insect-pests at Pusa and Patna. In NSN-2 at Pusa, 13 entries viz; IET 20692, 20772, 19483, 19673, 20342, 20885, 20979, 21012, 21029, 2788, RP 4645-688, RP 4685-44-921 and Suraksha were found tolerant against Stem borer and Leaf folder. In MRST at Pusa, 4 entries (RNR-RNR-2458, RP-4686-47-1-928 and RP 4686-48-1-937) were found tolerant against Leaf folder.
- In AET at Pusa, maximum mite mortality was observed due to application of Milbemectin 1 EC @ 4.5 gm a.i./ha.

Wheat :

Plant Pathology :

- One trial on Trap Plot Nursery was conducted. Only Brown rust appeared and the first appearance of the disease was recorded on 25.02.09. Out of 20 genotypes grown, only 4 genotypes namely Agra Local, Lal Bahadur, K 8804 and Janak showed disease symptom and the remaining genotypes were free from rust. Maximum severity of 40s was recorded with Lal Bahadur followed by Agra Local (30s).
- Only two entries, WL 711 and Agra Local were found infected by loose smut in traces, while all the genotypes were infected by leaf blight and the severity varied from 25 in Lr 24 to 58 in HP 1102.

Nematology :

- Out of 15 places surveyed for ear-cockle disease of wheat, only 02 places revealed the presence of ear-cockle galls. Under the survey of plant parasitic nematodes of wheat, 150 soil samples were collected and analyzed. Nematode species *Tylenchorhynchus* predominated over others. Under rice-wheat cropping system, there was increase in plant parasitic nematodes both after rice as well as after wheat.
- Under the screening of 45 wheat entries of AVT 1st year against root-knot nematode *M. graminicola*, none was found susceptible. Similarly, out of 43 entries of AVT 2nd year, none was found susceptible.

Maize :

Maize Entomology :

In maize entomological trials, out of 4 entries in early maturing group 3 were moderately susceptible and 1 (one) highly susceptible against *Chilopartellus* (stem borer). In medium maturity group, out of 21 entries 16 were moderately

susceptible and 5 highly susceptible. In full season maturity group, out of 32 entries 26 were found to be moderately susceptible and 6 highly susceptible.

Maize Pathology :

- Altogether 10 trials were conducted during Kharif 2008 related to different maturity groups. Among the screening trials, altogether 243 entries/varieties were evaluated under artificial inoculated conditions against *Helminthosporium maydis*. Out of 243, only 5 entries/varieties namely KMH SUPPER-244, FH3773, CP-848, VEH QPM-3027 and QPM-5 showed resistant reactions against Maydis leaf blight .
- In survey and surveillance, Maydis leaf blight was recorded in all surveyed areas under Bihar, Jharkhand and Eastern Uttar Pradesh. In experimental area, Pythium stalk rot and Bacterial stalk rot incidence was much higher, Rust and Banded leaf and sheath blight diseases were also recorded in trace amount.

2.2.2 OILSEEDS

2.2.2.a Crop Improvement

AICRP on Linseed :

- Under genetic enhancement programme, 66 germplasm of linseed were tested at multi- location and the germplasm, namely, EC-1424, 41585, RL-99-4-5, Polf-23, EC-517M, LMS-63-6, NL-260 and SLS-71 were identified for seed type.
- Similarly, LCK-9211, 89512, 9436, 9209 and GS-288 were identified for dual purpose and GS-401, Polf-31, H-40, LCK-2945, and PCL-12-3-06 for flax type.
- Fifty-six F_1's crosses of previous year were advanced to the next generation and F_2 seeds of the respective crosses were harvested.
- New 30 triallel crosses were made and 103 germplasm of linseed were also maintained.

2.2.2.b Crop Production

Linseed :

- Variety "Shikha" was found as highest seed yielder (1376 kg/ha) and LCK-6028 as highest fiber yielder (563 kg/ha) in three different dates of sowing. However, these varieties performed better in Ist sowing date (22.11.8) than 2nd (07.12. 08) and 3rd (22.12.08).
- In the trial on "Different level of fertilizer application", significant differences between varieties and fertilizer levels were found. Out of four varieties, "Shikha" and "Parvati" were the highest seed yielder (1114 kg/ha) and fibre yielder (402 kg/ha), respectively at 100% RDF.
- In the trial on "Phosphorus management in double cropping system in Kharif crop paddy", treatment effect was found significant for plant stand and non-significant for seed yield whereas in Rabi, linseed treatment effect was found to be significant for seed yield and plant stand. The best treatment in Kharif was 50% P +PSB+ 5 t/ha FYM and in Rabi was 75% P + PSB.

2.2.3. PULSES

2.2.3.a Crop Improvement

Pigeonpea :

- In IVT (Late), out of sixteen entries including four checks evaluated, four viz; IPA-203 (1611 kg/ha), KA-01-8-4 (1592 kg/ha), MAL-30 (1407 kg/ha)and NDA-7-2 (1388 kg/ha) proved significantly superior to the checks like Bahar (1111

kg/ha) and MAL-13 (1240 kg/ha) but none was found significantly better than the remaining two check entries viz; NDA-1 (1666 kg/ha) and MA-6 (1537 kg/ha).

- Out of 95 progenies of chemically induced mutants in M5 generations, 63 were selected for further evaluation and advancement for pre-rabi season.
- 486 desirable single plants of F_2 population were selected for further evaluation and advancement. None of the 35 progenies of F_1 population could survive due to heavy rain fall and prolonged water logging.
- Five fresh crosses were made involving NDA-1, Pusa-9, L-153, L-83 and L-13 as female parents and ICP-8863 as male (donor of wilt resistance).
- 86 Germplasm lines of pigeon pea were grown for evaluation and characterization.

MULLaRP (Lentil, Lathyrus, Rajmash & Pea) :

- Among fourteen mungbean entries in IVT (Spring), SML -859 recorded the highest yield (2361 kg/ha) followed by Pusa Vishal (ch) (2088 kg/ha), IPM 02-17 (2083 kg/ha), IPM-05-03-22 (1955 kg/ha) and Pusa 08-31 (1953 kg/ha).None of the high yielding entries matured earlier than Pusa Vishal.
- Out of seven mungbean entries in AVT-1 (Spring), the entry IPM-02-14 gave highest yield (1962 kg/ha) followed by Pusa Vishal (ch) (1853 kg/ha), Pusa 9531(ch) (1662 kg/ha), Pant M2(ch) (1381 kg ha) and Pusa 0731 (1362 kg/ha)
- Of the seventeen entries of urdbean in IVT (Spring), maximum yield (1166.66 kg/ha) was recorded by the entry SU-557 (Coded) and it was followed by SU-573 (1116.66 kg/ha), SU-560 (1083.32 kg/ha), SU-564 (1072.0 kg/ha) and SU-554 (1038.87 kg/ha).

2.2.3.b Crop Production

Pigeonpea :

- Trial on yield performance of three pigeonpea genotypes viz; Bahar, NDA-1 and Pusa-9 under delayed planting conditions revealed that earlier sowing on 6th August produced significantly higher grain yield (13.97 q/ha) than late sowing on 20th August (11.53 q/ha).
- Trial on effect of integrated nutrient management in pigeonpea based intercropping system showed that pigeonpea+ urdbean intercropping (1:1) gave pigeonpea equivalent yield of 18.81 q/ha which did not differ significantly from Pigeonpea + Maize (1:1) inter-cropping system (17.11 q/ha).
- Trial on field performance of promising long duration pigeonpea genotypes viz; Bahar, NDA-1, Pusa-9 and Azad under intercropping systems showed that the pigeonpea genotype NDA-1 was highest yielder (16.69 q/ha). However, its yield performance did not differ significantly from that of Pusa-9 (15.29 q/ha) and Azad (15.74 q/ha) but was significantly superior to Bahar (14.87 q/ha).
- Field performance of *Rhizobium* strains under different agro- ecological conditions showed that all the eight *Rhizobium* strains obtaind from different coordinating centres enhanced root nodulation and grain yield in pigeonpea cv, Bahar.Grain yield due to inoculation of these strains increased to the tune of 0.8 to 2.9 q/ha over uninoculated control, the highest yield (10.1 q/ha) being due to CRR-9 (Coimbatore) followed by RA-43 (Varanasi), AKPR-1 (Akola) and LAR-05 Ludhiana), each of which recorded better yield performance than application of 20 kg N/ha (7.8 q/ha).

MULLaRP :

- In trial on performance of urdbean genotypes under maize intercropping system, urdbean sole recorded significantly higher grain yield (883.0 kg/ha) than that under intercropping system. Grain yield of maize remained unaffected due to intercropping of different urdbean genotypes, although yield was more in sole maize (2997.0 kg/ha). Among the urdbean genotypes, KU-300 recorded highest yield (566 kg/ha) which was at par with Pant U-19 (555 kg/ha), Pant

U-31 (544 kg/ha) and Type-9 (528 kg/ha) but significantly superior to other genotypes. Over all, urdbean equivalent yield was maximum with Maize +KU-300 (1502 kg/ha) followed by Maize + Pant U-19 (1474 kg/ha), Maize + Pant U 31 (1458 kg/ha) and Maize + Type-9 (1436 kg/ha) which were significantly higher than sole maize and sole urd bean.

- Trial on planting pattern and weed management under urdbean + ragi intercropping system revealed that the grain was significantly higher under sole cropping. A row ratio of 2:1 recorded significantly higher urdbean equivalent yield (1255 kg/ha) than ragi sole (660 kg/ha) and urdbean + ragi at 1:1 row ratio (992 kg/ha) but proved at par with urd bean sole (1166 kg/ha).
- Trial on population management in urdbean under raised bed system recorded higher grain yield of urdbean (1070 kg/ha) but was at par with flat bed (1015 kg/ha). Maximum yield of 1096 kg/ha was obtained at the seed rate of 20 kg/ha which was at par with the seed rate of 15 kg/ha (1068 kg/ha) but significantly superior to lower seed rate of 10 kg/ha (963 kg/ha). Yield obtained with 100% RDF was significantly higher (1131 kg/ha) than that with 50% RDF (922 kg/ha) but closer with 75% RDF (1073 kg/h).

2.2.3.c Crop Protection

Pigeonpea

Entomology :

- Among 16 genotypes of late maturity, four genotypes viz; KA-01-8, DA-05-1, IPA-07 along with the check entries viz; Bahar, NDA-1 and MAL-6 showed relatively higher level of resistance against pod fly as well as *Heliothis*.
- Out of six genotypes of long maturity group, three entries-PA 303, MAL-28 and KBA-11-2 were found less susceptible to both pod fly as well as *Heliothis*.
- Among the newer insecticides evaluated against pod borer complex on pigeonpea cv.Bahar, Indoxacarb 14.5 SC (60.0 g a.i./ ha) recorded lowest pod fly infestation (15.3%).

Plant Pathology :

- In National Nursery for evaluation of pigeonpea entries in IVT and AVT against *Fusarium* wilt in sick plot, out of 69 entries only one entry BDN 2001-9 exhibited resistant reaction against the disease.
- In identification of races of *Fusarium udum* through host plant differentials, out of ten pigeonpea differentials, three viz; ICP 8858, ICP 9174 and BDN-2 recorded resistant reaction while two viz; Bahar and ICP 2376 showed highly susceptible reaction to the disease.
- In multilocation evaluation of promising entries of pigeonpea for identification of donors against wilt, out of 37 entries only five viz; AKT 222492, IPA 8FD, IPA 204,JSA 59 and NDA 6-5 exhibited resistance against wilt.
- In National Nursery for evaluation of pigeon pea entries of AVT and IVT against sterility mosaic, out of 56 entries only two viz; BDN 2004-1 and IPA 8F showed resistant reaction against the disease under epiphytotic conditions.
- The entry IPA 8F was found promising to wilt and SMD as well.
- In National Nursery for evaluation of long duration pigeon pea, of the nine entries evaluated against wilt and sterility mosaic under high disease pressure, two viz; IPA 92 and NDA 7-5 showed resistance against wilt while IPA 92 and MAL 28 were resistant to SMD. IPA 92 showed dual resistance against both the diseases.
- In pigeon pea wilt and sterility mosaic disease nursery, out of 30 entries from ICRISAT evaluated along with two susceptible checks, only two entries ICPL 20094 and ICPL 20106 recorded moderate resistance against sterility mosaic under high disease pressure. In wilt trial, disease pressure was low.

Nematology :

- Out of 21 pigeonpea lines/ cultivars evaluated for resistance against root-knot nematode (*Meloidogyne incognita*), two entries (coded) viz; IVT-3 and IVT-14 showed highly resistant reaction while four entries (coded) viz;IVT-10, IVT-13, IVT-15 and IVT-21 were found resistant against the nematode. Five entries (coded) viz. IVT-1,IVT-2, IVT-5, IVT-8 and IVT-19 proved moderately resistant while remaining entries were susceptible.
- Among 12 germplasms of pigeonpea screened under pot conditions, two entries (coded) viz; G4 and G 10 were found highly resistant, while two entries (coded) viz; G-5 and G -6 showed moderately resistant reaction against root knot nematode .Remaining entries were rated as susceptible.
- Results of the first year experiment on management of root-knot nematode with organic manuring and seed treatment revealed that all the treatments viz; soil application of vermicompost (1.0 t/ ha), neem cake (0.5t/ha), seed dressing with carbosulfan 25 SD (3.0% w/w), vermicompost (0.5 t/ha) +seed dressing with carbosulfan 25 SD (3.0% w/w) and neem cake (0.25 t/ha)+ seed dressing with carbosulfan 25 SD (3.0% w/w) proved significantly superior to untreated control in suppressing root knot formation and final nematode population on pigonpea cv. Bahar. However, the soil application of neem cake (0.5t/ha) gave the best result followed by neem cake (0.25 t/ha) + seed dressing with carbosulfan (3.0% w/w).
- The first year trial on efficacy of seed treatments revealed that soaking of pigeonpea seeds cv. Bahar in Imidacloprid 17.5 EC (0.3%) and carbosulfan 25 SD (3.0%) for four hours significantly increased shoot length in comparison to untreated control while root length, fresh shoot weight and fresh root weight at 45 DAS recorded non-significant effect of the treatments. Both the seed treatments however, significantly reduced root knot formation and final nematode population.

MULLaRP

Entomology :

- Among 25 mungbean genotypes, six viz; IPM-05-2-8, MH-564, IPM-05-3-22, IPM-02-16,IPM-06-10 and NDM -6-62 recorded considerably low thrips infestation (10.5-15.5 thrips/50 flowers) as against the same being quite high (44.5-58.8 thrips/50 flowers) in the check i.e. PDM -11. Two genotypes viz; Samrat and MH-565 suffered minimum due to pod borer with mean pod damage of 8.8-9.6 percent while the genotypes like NDM-6-62 and MH-564 suffered most due to this pest (30.0-33.3 %)
- Of the eleven urdbean genotypes, two viz; Pant U-40 and Pant U-31 recorded significantly less damage (5.4-5.5 %) due to Bihar hairy caterpillar as against the same being highest (15.5%) in the genotype TU-94-2. Mean pod borer damage ranged from 9.4 percent in T-9 to 28.5 percent in Pant U-40. From productivity point of view, two genotypes viz; Pant U-19 and Pant U-31 with mean grain yield of 658.0 and 616.60 kg/ha were at par with the best check i.e. T-9 (624.60kg/ha)
- Neither of the two bioinoculants viz; *Beauveria bassiana* ST and *Pseudomonas florescens* ST either alone or in combination proved more efficacious in reducing the infestation of pod borer and Bihar hairy caterpillar or enhancing the productivity in urdbean cv. Pant U-19 in comparison to untreated control.Seed inoculation with *Pseudomonas florescens* or *Beuveria bassiana* followed by one spraying of Profenophos (2g/l.) recorded significantly lower pod borer damage (8.3-10.4%) as well as Bihar hairy caterpillar infestation (8.1-10.5 %) and higher grain yield (1388.80-1557.70 kg/ha) in comparison to control which yielded as low as 931.0 kg/ha.
- IPM module consisting of seed treatment with Imidacloprid (3ml/kg seed) + Trichoderma (4g /kg seed), inter-cropping with sorghum (4:2 row ratio), mechanical collection and destruction of gregarious caterpillars of Bihar hairy caterpillar and spraying of Spinosad 45 SC (60 g. a.i. /ha) at pod initiation stage recorded lower foliage as well as pod damage, higher grain yield (1570.0 kg/ha) and better cost benefit ratio (1:3.5) as compared to higher level of corresponding pest damage (21.2 and 19.4%), low grain yield (1050.0 kg/ha and poor cost-benefit ratio (1:1.4) in non IPM plot of urdbean cv. Pant U-19.

Plant Pathology :

- A local survey was conducted at farmer fields of Muzaffaarpur and Samastipur district in the first fortnight of June, 2008 to record the status of yellow mosaic on local varieties of mungbean. The observations clearly indicated that local varieties of mungbean grown by farmers were highly susceptible to yellow mosaic disease in summer season. The disease incidence ranged between 60-80% in several plots.
- In National nursery for evaluation of IVT, AVT and germplasm entries against important diseases, out of 34 mungbean entries, P 1038 (coded) exhibited resistance against yellow mosaic and P 1021 (coded) against *Cercospora* leafspot disease.
- Of 24 entries of urdbean IVT, AVT and germplasms evaluated in National nursery, twelve (coded) viz; P1051, P1052, P1053, P1055, P1056, P 1059, P1061,P1064, P1065, P1068, P1070 and P1072 showed resistance against YMV and two viz;P1075 and P1093 against powdery mildew disease.
- Studies on variability in MYMV and PM disaease infecting mungbean and urdbean revealed that mungbean differential PAU 911 and urdbean differentials T9, DPU 88-31, IPU 94-1 and M 1-1 were resistant to yellow mosaic disease while urdbean entry Pragya was resistant to powdery mildew.
- In evaluation of Gentic stock Nursery of mung and urdbean, out of 29 entries of mungbean, five viz; ML1354, ML 1392, ML 1451, ML 1476 and PDM 139 recorded resistant reaction against YMV disease. Out of 21 entries of urdbean three viz; KUG 205,UL 416 and IPU 94-1 showed resistance against YMV and LBG 752, DPU 88-31 and BDU-1 against powdery mildew.
- The area under mungbean and urdbean in kharif season in farmers plot was negligible. However, observations on experimental plots at Dholi and Muraul indicated high disease pressure of yellow mosaic, 4-6 in urdbean and 4-9 in 1-9 rating scale in mungbean. *Cercospora* leaf spot was severe in mungbean with score of 6-7 in 1-9 rating scale.Powdery mildew was severe in both the crops (4-5 in 0-5 rating scale).

Nematology :

- Of the three urdbean genotypes, only one viz; U-2007-1 showed resistant reaction against *M. incognita* while, another one viz; U-2007-2 was found moderately resistant.
- All the four mungbean entries evaluated for resistance were found susceptible to the root knot nematode.

2.2.4 TUBER CROPS OTHER THAN POTATO

2.2.4.a Crop Improvement

IET on Sweet potato :

- Among twelve entries, only two entries viz., S-1-60 and CO-3-4 recorded significantly highest marketable tuber yield, (32.87 and 33.33 t/ha, respectively), 70.05 and 79.56 percent harvest index as well as 23.15 and 24.66 percent dry matter, respectively as against 25.00 and 28.70 t/ha marketable tuber yield, 31.54 and 26.70 percent dry matter and 62.58 and 80.47 percent harvest index in local check RS-47 and RS-92, respectively.

URT on Orange fleshed sweet potato :

- Among eight OFSP, SV-98 gave highest harvest index (91.88 %), and obtained organolaptic test score of 1.3 while the entry 440038 recorded significantly highest dry matter (36.36 %) and marketable tuber yield (23.14 t/ha) as against 71.80, 30.40 percent and 14.14 t/ha harvest index, dry matter and marketable tuber yield, respectively.

IET on Colocasia (Taro) :

- Among eleven entries under test, significantly highest corm yield was obtained with the entry Halkesu (23.33 t/ha) followed by AAUcol-32 (22.23 t/ha) and Aaucol-46 (23.33 t/ha) as against 17.33 t/ha with national check i.e. Sree Kiran.

IET on Lesser Yam :

- None of the entry performed better than the national check (Sree Kala) as well as local check (Sree Latha) in respect of tuber yield (20.00 and 22.00 t/ha, respectively). However DE-11, DE-17 and DE-96 gave better tuber yield (17.50, 16.30 and 16.36 t/ha, respectively) which were at par with each other.

MLT on Yam Bean :

- Four promising entries were tested at five different locations and DPH-70 gave highest marketable tuber yield (38.00 t/ha) followed by WF x Deshi as against check RM-1 (33.56 t/ha).

2.2.4.b Crop Production

- Application of 75 % RDF (Inorganic) + 25 % RDF (Organic) along with 5 kg PSB + 5 kg Azospirillum/ha gave significantly superior corm yield (64.4 t/ha) which was found at par with 75 % RDF (Inorganic) + 25 % RDF (Organic) along with 5 kg AMF + 5 kg Azospirillum/ha (63.3 t/ha). The lowest corm yield (41.1 t/ha) was obtained where only 75 % inorganic fertilizer was applied.
- Pre-planting application of FYM @ 10 t/ha along with Azospirillum 5 kg/ha + AMF @ 5 kg/ha + Ash 5 t/ha gave significantly higher corm yield (38.8 t/ha) which was at par and followed by soil application of FYM @ 10 t/ha along with Azospirillum @ 5 kg/ha + Phosphobacteria @ 5 kg/ha + Ash @ 5 t/ha (36.6 t/ha) and recommended package of practices for conventional system (36.6 t/ha). The lowest corm yield (30.0 t/ha) was obtained when poultry manure and ash were applied @ 5 t/ha each.
- Among different intercrops, elephant foot yam in mango orchard with full dose of fertilizer (80:60:80 kg NPK ha^{-1}) recorded highest corm yield (48.0 t/ha) with net return of Rs. 228507 t/ha followed by the same crop at half recommended dose (42.0 t/ha) with net return Rs. 187729 t/ha. Sweet potato was found to be the next best to elephant foot yam in terms of profitability (Rs. 47234 t/ha) than cassava.

2.2.4.c Crop Protection

Entomology :

- Among 12 entries tested against sweet potato weevil and termite under natural conditions, the entries IGSP-14 and S-1-60 recorded lowest weevil infested tubers varying from 2.97 to 6.20 % as against 4.37 & 5.37 percent in local check RS-47 and RS-92, respectively. Only two entries POL-19-9-3 and S-1-60 performed better against termite in respect of tuber infestation (8.59 and 9.40 %, respectively).
- Among 8 cultivars tested under natural condition, the mean percent tuber infestation varied from 0.73 to 17.89 with minimum and maximum being in 440127 and Cross-4, respectively. Among remaining entries CIPSWA-2, S-594 and 440035 recorded lowest weevil infested tubers (559-6.98 %). Among different entries, SV-98, 440127 and Kamlasundari recorded lowest termite infested tubers varying from 9.35 to 10.74 percent as against 15.32 percent in local check i.e. Cross-4.
- Among different treatment barriers, crops of sweet potato and yam bean – 2:1 ratio recorded lowest weevil infested tubers (7.49 %) and highest marketable tuber yield (19.19 t/ha) as against 23.03 percent and 13.94 t/ha, tuber infestation & marketable tuber yield in sole crop, respectively.
- Soil application of neem cake (10 t/ha) recorded lowest weevil infested tubers (5.62 %) and gave highest marketable tuber yield (19.42 t/ha) which was at par with neem cake 5 t/ha (7.13 %) and performing equal to the chemical control (7.92 %) in respect of tuber infestation.
- Pre-planting soil application of neem cake @ 2 t/ha afforded maximum protection (7.70 %) to sweet potato tubers against termite which was at par with neem cake @ 1 t/ha and YBSP (5 %) @ 20 kg/ha and gave highest marketable tuber yield (27.08 t/ha) as against 21.58 percent tuber infestation and 17.36 t/ha marketable tuber yield in untreated control, respectively.
- Among various treatments, foliar spray of dimethoate (0.03 %) showed its superiority in minimizing pod borer infestation (9.33 %) and recorded highest seed yield (1.67 t/ha) which was at par with foliar spray of NSKE (5 %) i.e. 1.42 t/ha and carbaryl (1.25 t/ha). Among neen products, foliar spray of NSKE (5 %) performed better in recording lower pod infestation (16.00 %) which was at par with neem gold (16.67 %) and neem oil (17.33 %).
- Among various formulations of tuber crops, YBSE (5 and 2 % aqueous) proved most efficacious in minimizing aphid population (6.7 and 14.3/plant) and gave maximum reduction 81.5 and 73.9 percent at 10th days after 2nd spray and at par with endosulfan (82.4 %). The highest seed yield 11.0 q/ha was recorded with endosulfan which was at par with YBSE (5 and 2 % aqueous) 10.70 & 10.00 q/ha, respectively.

Plant Pathology :

- Among twelve Colocasia lines, C-32 and Muktakeshi recorded lowest disease incidence (6.70 %) and intensity (4.3 %), respectively as against susceptible variety Telia (37.8 and 25.7 %, disease incidence and intensity, respectively). Maximum side tuber yield (12.30 t/ha) was recorded with Muktakeshi while lowest in Telia (8.50 t/ha).
- Minimum disease incidence (10.71, 5.00 and 16.43 %) and intensity (5.43, 2.14 and 9.57 %) of leaf spot, mosaic and collar rot were recorded under IDM package followed by chemical control (12.86, 9.29, 18.5 % and 8.43, 3.17 and 11.28 %, respectively). The highest and lowest corm yield 34.5 and 24.3 t/ha was recorded under IDM and farmers practices, respectively.
- The lowest disease incidence (10.78 %) and intensity (4.45 %) were recorded in soil mulching with straw and Muktakeshi, respectively. The highest corm yield (12.97 t/ha) was recorded were Muktakeshi as resistant variety and lowest yield in Telia (7.63 t/ha) as susceptible variety.

2.2.5.a Horticulture

2.2.5.a Crop Improvement

Spices :

Ginger :

Among fourteen promising genotypes including local check Nadia, none of the entries was found significantly superior over check variety Nadia regarding yield. However, genotypes RG-3, RG-43 and RG-35 gave maximum yield (22.77, 21.78 and 20.74 t/ha, respectively) as compared to check variety Nadia i.e 19.50 t/ha.

Turmeric :

Eleven genotypes of turmeric were tested under environmental condition of Dholi. Among the varieties, Rajendra Sonia was found significantly superior regarding yield (82.78 t/ha) as compared to other varieties. Next superior variety was found Narendra Haldi – 1 (55.89 t/ha). Lowest yield was produced by IISR-Kedaram (16.67 t/ha).

Tropical Fruits :

- With addition of six new accessions, the number of genotypes in the existing gene pool rose to 98. The genotypes that showed better performance in the genebank were Basrai, Robusta, AC-73-9, Pedalse hanuman, FHIA-17, Bhimkel, Poovan, Champa, Kanthali, Najali Poovan, Alpan (Mahanar), Saba, FHIA-1, Kothia, FHIA-3, B.B. Battisa.

Subtropical Fruits :

Mango

- In germplasm collection & evaluation trial, out of 43 germplasms,Dudhia Maldah produced maximum fruit yield (56.00 kg/plant) followed by Surajgarha Maldah(53.00 kg/plant).Four new germplasms were collected i.e Tommy Atkins,Arka Neelkiran,Sindhu & Elden.
- Out of 31 seedling germplasms, collection No.10/85 produced maximum fruit yield of 42.00 kg/plant.Ten new promising collections were made during the year.
- In clonal selection, 3 more clones of Langra were added.
- Superior clones of Dashehari experiment initiated with Clone No.-35, Clone No.-51 and Local :-Growth is satisfactory.
- Variety Mallika showed its superiority in another released hybrid trial.

Guava

- In collection and evaluation of germplasm trial, variety Allahabad Safeda gave the maximum fruit yield (39.65 kg/plant) and average weight of fruit (210.00 g/fruit).
- In guava hybridization experiment, hybrid 1(Sardar X Allahabad Safeda) recorded highest yield (45.00 kg/plant).

Vegetables :

Brinjal

- In long group trials, variety KS – 331 produced the highest yield of 351.3 q/ha, which was at par with the variety Rajendra Baigan – II (335.23 q/ha).

Cowpea

- The variety VRCP – 6 superseded all the varieties in respect of yield and produced the maximum yield of 87.87 q/ha.

Dolichos bean (Pole type)

- In AVT – I trial, variety IIVR – SEM – 11 gave the highest yield of 90.68 q/ha. which was alike with variety IIVR – SEM – 186 (75.24 q/ha) whereas, in AVT – II, the highest yield of 92.19 q/ha was observed in variety VRDB – I which was similar to variety Swarna Ut Krishta (83.11 q/ha).

Ridge gourd

- The variety PRG – 12 was superior to all the varieties yielding 81.35 q/ha.

Spongegourd

- In AVT – I trial, the variety VR – 2 excelled all the varieties under trial yielding 136.41 q/ha. But in AVT – II trial, variety VR – I gave the maximum yield of 129.51 q/ha which was similar to variety Rajendra Nenua – 1 (122.40 q/ha).

HYBRID EXPERIMENTS

Brinjal

- In hybrid trials of long group, the highest yield of 369.11 q/ha was recorded in Pusa Hybrid – 5 which was alike to the hybrid ARBH – 201 (360.51 q/ha) and HABH – 13 (332.69 q/ha). In hybrid trials on round brinjal, Pusa Hybrid – 6 produced the maximum yield of 372.05 q/ha which was at par with Muktakeshi (363.35 q/ha).

Okra

- The hybrid VROH – 8 gave the highest yield of 102.06 q/ha which was statistically alike to hybrid VROH – 7 (98.11 q/ha).

Cauliflower

- Cauliflower Early (out of 18 collections, 07 promising), cauliflower Mid season (out of 14 collections, 07 promising), pointed gourd (out of 20 collection, 08 promising) and tomato (out of 52 collection, 08 promising) were screened.

Garlic

- The local line RAU G-5 produced the highest yield of 135.48 q/ha which was at par with G-282 (123.48 q/ha).

Onion

- The variety B-780-5-2-2 (AVT II-0-7) gave the highest yield of 341.63 q/ha which was similar to Pusa White Round, AVT II-0-8 (313.33q/ha).

Tomato Determinate type

- The variety VR-415 produced the highest yield of 525.68 q/ha which was alike to DVRT-2 (509.41 q/ha) and Co-3 (481.11 q/ha).

Tomato Indeterminate Type

- The maximum yield of 565.21 q/ha was obtained in NDT-9 which was similar to Arka Vikas (518.12 q/ha).

Bittergourd

- The hybrid MC-84 produced the highest yield of 196.40 q/ha which was at par with PBIGH-6 (188.90 q/ha).

Bottlegourd

- The maximum yield of 318.17q/ha was obtained in VRH-1 which was alike to Hybrid NDBGH-4 (311.32 q/ha) and Rajendra Charnatkar (296.30 q/ha).

Cucumber

- The Pusa Sanyog superseded all the hybrids and produced highest yield of 131.53 q/ha.

Tomato Determinate Type

- The highest yield of 578.15 q/ha was obtained in ARTH-3 which was similar to TH-1389 (542.15 q/ha).

Tomato Indeterminate Type

- The hybrid ARTH-2104 exhibited the maximum yield of 631.26 q/ha which was at par with VRTH-102 (584.07 q/ha).

2.2.5.b Crop Production

Tropical Fruits :

- Banana responded almost similarly to different Nitrogenous fertilizers, used either alone or in different combination. Ammonium Sulphate was found little more effective than urea alone or different combination like Urea + Ammonium Sulphate or Urea + Ammonium Sulphate + CAN. The result was fairly consistent and almost similar to that of R_1 crop but the impact was statistically non-significant.
- In a plant density trial, plant densities ranging from 2500 to 5001 plants /ha were tried. Results indicated that planting three suckers per pit at 1.8 x 3.6 m distance accommodating 4629 plants/ha have statistically comparable results with 5001 plants at 2m x 3m spacing. The B : C ratio was also at par at the two densities and thus a plant density of 4629 plants/ha was recommended for Kothia and Alpan varieties.
- In banana, five bio-fertilizers like vermicompost, *Azospirillum, Tricoderma harzianum,* VAM and PSB were used with 100 percent recommended dose of NPK and 25 and 50 per cent reduction in the recommended dose of fertilizers (RDF). The results indicated that bio-fertilizers had little influence on vegetative growth of banana plants but the yield attributes like bunch mass and number of fingers differed significantly due to the treatments. Twenty-five per cent reduction in the recommended (NPK) dose produced at par results with full dose of NPK when the four bio-fertilizers were used with RDF. When there was 50% reduction in RDF, the yield declined significantly even after all the four bio-fertilizers were applied. The highest benefit: cost ratio was obtained with 100 % RDF + VAM + PSB + Azospirillum.
- In papaya, application of bio-fertilizers had significant influence on growth and productivity of plants. The best result was obtained with application of 100 % RDF + VAM (50g) + PSB (25g) + *Azospirillum* (50g/plant). Fifty percent reduction in RDF brought marked reduction in the fruit yield.

Subtropical Fruits :

Mango

- Variety Mallika recorded the highest yield (42.50 kg/plant). Maximum incidence of powdery mildew was observed in Chausa. Maximum incidence of mango malformation was obtained in Neelam i.e. (43%). Maximum infestation by mango hopper and mealy bug were recorded at the time of flowering & marble stage.
- Square system produced maximum fruit yield of 41.00 kg/plant while total fruit yield/plot was maximum 560.00 Kg in Double Hedge Row system of planting. Pruning was done by mechanised pruner.
- In a trail on the effect of Ca, B & Sorbitol on pollination & fruit set in mango, the treatment of Boric acid + Sorbitol noted minimum fruit drop.

Guava

- In a plant density trial, 5 densities ranging from 204 to 968 plants/ha were compared with different planting geometry. Square system produced maximum fruit yield of 46.00 kg/plant while total fruit yield/plot was maximum 656.00 Kg in Double Hedge Row system of planting.
- Foliar spray of 15% fertilizer grade urea at 50 % bloom stage and second spray of 15% urea after 10 days of first spray during rainy season was found very effective in crop regulation in guava cv. Sardar.

Vegetables :

Bittergourd

- Three sprayings of mixture of all micronutrients (B, Zn, Mo, Cu, Fe and Mn), started application at 40 DAS and the next two spraying at an interval of 10 days, gave the highest yield (150.25 q/ha) and net profit (Rs. 73978.63/ha) with C:B. ratio of 1:2.37 in bittergourd (Variety: Pusa Do Mausami)

Cucumber

- Application of half rec. NPK @ 60:30:30 kg/ha + FYM 10 t/ha along with Biofertilizer - Azotobacter @ 5 kg/ha exhibited better yield (133.81 q/ha) and maximum net profit (Rs. 74263.00/ha) with C:B ratio of 1:2.27 in cucumber (Variety: Balam Khira).

Bottlegourd

- The maximum yield of 285.60 q/ha was obtained in vermicompost @ 2.5 t/ha + half NPK through fertilizers which was similar to FYM @ 20 t/ha yielding 279.66 q/ha.

Tomato:

- The highest yield of 492.56 q/ha was recorded in Zinc sulphate 100 (0.246 g/l) which was alike to boric acid 100 (0.571 g/l). Mixture of all and commercial formulation multiplex 100 ppm yielded 488.26, 475.24 and 465.55 q/ha, respectively.

2.2.5.c Crop Protection

Tropical Fruits :

Entomology

- Minimum population of scarring beetle (*Basilepta subcostatum*) on banana was observed in the second fortnight of October, whereas maximum population in the second fortnight of August.
- In Vaishali Zone (Zone 1) of Bihar, four insect pests viz. scarring beetle, pseudostem borer, corm weevil and aphid caused major loss to banana crop.

Plant Pathology

- The experiment was conducted to evaluate the efficacy of plant extract, bio-agents and chemicals against citrus canker. All the treatments effectively suppressed the disease over control. However, the combined application of Copper oxychloride (CoC)@ 3g per litre+ Streptocycline @ 0.3 g per litre was most effective which showed maximum inhibition of disease (92.88%) with least lesion/leaf i.e.1.66 lesion/leaf. It was followed by spraying of Copper oxychloride (CoC)@ 3g per litre showing 57.14% inhibition with 10 lesions per leaf. Interestingly 2% Neem seed kernel extract also exercised almost similar disease control (54.43% inhibition).
- Eye spot disease of banana incited by *Drechslera gigantea* was first time reported from Kosi belt of Bihar. Its PDI was observed to vary between 10-16.5%.Further studies are in progress.
- An experiment was conducted to manage Panama wilt of banana at RAU, Pusa experimental site of AICRP (TF). Carbendazim and biocontrol agents (*Trichoderma viride, Pseudomonas fluorescence* and Neem cake) were used alone or in combination to combat the disease. Planting of disease free suckers after dipping in 0.2% carbendazim for 45 minutes showed minimum disease incidence which was significantly superior to rest of the treatments. Use of disease free sucker + application of neem cake @ 250 g /plant + soil application of Trichoderma @10 g /sucker thrice was the second best treatment.

- PRSV incidence was most rampant showing cent percent incidence in all the districts under survey.
- First time bud necrosis viral disease of papaya was noticed from Pusa. But its incidence was quite less (trace).
- An experiment was conducted to manage PRSV disease at Pusa. The minimum disease incidence (i.e. 76.67%) was recorded when a combination of neem oil (1%) + Dimethoate (1.5%)was applied at 15 day interval, 30 days after planting, and recorded maximum yield. Two rows of maize as border crop + Zn (0.5%) + B (0.1) spray showed 81.67% incidence as against 100% in the control. This was the second best treatment.

Subtropical Fruits :

Fruit Entomology

- In population dynamics of major pests of mango (hopper & fruit fly), the hopper population was recorded higher during April to June & Dec.- March. Fruil fly is maximum during June-Sept.
- In crop loss assessment of mango hopper, three foliar sprays of imidacloprid @0.005% at panicle emergence followed by two sprays of Endosulfan @0.07% after 21 days and 15 days interval has been found most effective and recorded highest yield(71.90 kg/plant).
- In integrated pest management, imidacloprid followed by NSKE and endosulfan was found very effective in controlling mango hopper with highest yield(111.6 kg/plant).
- In the survey and surveillance of pollinators trial, honey bee, stingless bee and coccinillid were found to play a major role.

Fruit Pathology

- Mango malformation (Floral): Out of 43 germplasm, Amrapalli was highly affected (27%) followed by Erwin (24%) and the remaining had below1-10% incidence.
- Powdery mildew: During investigation, 43 germplasms have been taken into consideration, out of which 4 germplasms namely Calcuttia maldah, Maldah(Surajgarha) and Maldah (Dholi kothi)were found free from the incidence. Rest were infested below 10 %.
- Anthracnose: The foliar spray of 0.1% Carbendazim was found to be very effective.
- Blossom blight: Mancozeb 0.2% foliar spray had proved to be the best.
- During survey for the seasonal occurrence of diseases: Anthracnose, blossom blight and red rust were the major diseases in this area.

Vegetable Pathology :

Bhindi

- In resistant varietal trial against Y.V.M.V., out of 11 entries none of the entries were found to be disease tolerant. The yellow vein mosaic disease incidence was recorded between 82.31 to 92.6 percent.

Sponge gourd

- Integrated management of downy mildew disease in cucurbits : Amongst the treatments, T_{11} comprising bower system with seed treatment with Ridomil M_2 – 0.25% + removal of lower infected leaves three times alongwith spraying of Mancozeb @ 0.25% was found to be most effective with disease intensity of 4.6% and highest yield of 104.44 g/ha.

Bottle gourd

- Green manuring followed by treatment with Carbendazim @ 0.25% and soil drenching with *Trichoderma harzianum* @ 10 g/l water at 25 DAS + Carbendazim @ 0.25% was found to effective in reducing fusarium wilt incidence in bottlegourd.

Cabbage

- Raising seedling in solarized bed, green manuring along with seed treatment with Carbendazim (0.25%) and use of Trichoderma was found effective to reduce the disease incidence (7.18%).

Peas

- Among the treatments, Bayliton @ 0.25% was found effective to reduce the disease severity of Powdery mildew (25.33%) as compared to control (45.47%).

Vegetable Entomology :

Brinjal

- Sex pheromone based IPM technology for brinjal shoot and fruit borer management : Mass trapping alongwith shoot clipping at weekly interval and NSKE @ 4% with 4 sprays had lowest fruit damage up to 14.52% as compared to control 34.22%. The highest yield of 322.58 q/ha was also recorded in the mass trapping as compared to no mass trapping (229.30 q/ha).
- Bio-efficacy of chemicals against brinjal borer : All the treatment were found to be superior over control. Among the treatments, Emamectin @ 0.4 g/lit had lowest damage with highest yield of 352.57 q/ha.

Okra

- Evaluation of bio-intensive IPM module against insect-pest – In respect of borer damage : IPM module had lowest shoot and fruit damage of 3.86 and 4.20%, respectively with higher yield of 92.35 q/ha. Both IPM and chemical module were found to be comparable with each other.

Bittergourd

- Bower (*pandal*) trailing system with Bait spray of Malathion @ 0.2% mixed with molassess 10% was found effective to reduce fruit fly damage.

Chilly

- Four sprayings of Acepthate (0.06%) was found to be effective against chilli thrips.

2.2.6 Forage Research

2.2.6.a Crop Improvement

Maize

- Under advanced varietals trial of forage maize, five entries including two checks were evaluated for their green forage yield and dry matter yield. Entry JHM-07-2 recorded maximum green fodder yield (297.5 q/ha) and dry matter yield superior over BAIF maize-1.

Ricebean

- In IVT Ricebean, six entried including one check were evaluated in RBD with three replications. Mean values for green fodder and dry fodder yields of the trial were 281.6 q/ha and 56.7 q/ha, respectively. Entry JRB-9 recorded significantly higher green fodder of 312.2 q/ha, followed by JRBJ 05-2 (293.3 q/ha) and KRB-16.

Soybean

- Four entries of soybean under IVT were tested with mean green fodder yield of 146.5 q/ha. Among the entries, JSO7-20-5 recorded maximum green fodder yield of 162.5 q/ha followed by JSO7-20-1 (154.1 q/ha).

2.2.7 POTATO

2.2.7.a Crop Improvement

New Early Maturing Hybrids

- Two hybrids were evaluated with three checks. Based on average tuber yield, best check var. RA-3 with 12.04 t/ha & 12.96 t/ha tuber yield was significantly superior to the best hybrid J/97-243 in 60 & 75 days crop duration, respectively.

Old Early Maturing Hybrids

- Seven hybrids were evaluated with two checks during 2007-08 & 2008-09. In 60 days crop, best check var. K. Ashoka was superior with 23.24 t/ha tuber yield. But in 75 days crop, hybrid J/96-238 with 26.48 t/ha tuber yield was superior to the best check var K. Ashoka (22.68 t/ha tuber yield).

Old Medium Maturing Hybrids

- Three hybrids were evaluated with four checks in the years (2007-08 & 2008-09). As per mean tuber yield, none of the hybrids performed better to the best check var. K. Pukar (24.35 t/ha & 27.86 t/ha tuber yield in 75 days & 90 days crop).

Processing Hybrids

- Four hybrids were evaluated with five checks during 2007-08 & 2008-09. The hybrid MP/98-172 with 14.77 t/ha tuber yield, 8.33 t/ha processing grade yield and 4.72 t/ha French fry grade (70 mm length) was superior to the best check var K. Chipsona-3 (tuber yield 8.59 t/ha 6.67 t/ha processing grade yield and 0.37 t/ha French fry grade yield).

2.2.7.b Crop Production

Potato production through organic fertilizer source : Out of six organic fertility levels, application of FYM @ 30 t/ ha on the basis of recommended dose of N as basal dose produced significantly higher (8.85 t/ha) tuber yield with a net return of Rs. 13, 530/ha.

Integrated nutrient management in potato : Application of FYM @ 20 t/ha + 100 per cent recommended dose of NPK produced significantly higher tuber yield (23.26 t/ha) with net return of Rs. 89, 150/ha.

Selection of N efficient cultivar for zone I. Out of four varieties var- K. Pukhraj with 180 kg N/ha produced significantly higher (16.98 t/ha) tuber yield with a net return of Rs. 66, 280/ha.

Water management in potato : Irrigation at 20 CPE and mulching with paddy straw at the rate of 5 t/ha produced significantly higher tuber yield (16.94 t/ha) with a net return of Rs. 43, 510/ha.

Role of calcium sulphate on post harvest quality of potato : 5 Levels of calcium sulphate ware applied. The difference in % tuber dry matter content was non significant.

Nitrogen requirement of newly released potato cultivar : The variety K. Ashoka with 150 kg N/ha produced significantly higher tuber yield (19.53 t/ha) with a net return of Rs. 71,010/ha.

Studies on the shift of planting date in view of the rising temp. : The variety K. Pukhraj planted on 2nd Dec produced significantly higher tuber yield (19.63 t/ha) with a net return of Rs. 77, 860/ha

2.2.7.c Crop Protection

- Out of five varieties, K. Pushkar was least affected by the major potato disease (Late blight, Early blight phoma & leaf roll). Aphids, *Myzus persicae* & *Aphis gossypii* population was recorded in the early sown with overall heavy loss of crop growth & yield.

2.2.8 ALLIED FIELD RESEARCH

Departmental Research :

DEPARTMENT OF AGRONOMY

Effect of phosphorus levels on promising entries of cowpea

The treatment consisted of 6 entries including three checks and 3 P levels (40, 60 & 80 kg P_2O_5/ha). Among the entries, UPC-629 recorded highest green fodder yield (300.2 q/ha) closely followed by UPC-628. Response of P to cowpea was significant up to 60 kg P_2O_5/ha. Maximum green fodder yield was obtained at 80 kg P_2O_5/ha. With regard to dry matter yield, the trend was almost similar to those of green fodder production.

Intensification and diversification of existing cropping system in order to achieve stability in crop productivity

Among five rice based cropping system evaluated, rice-potato-moong fetched the highest net return of Rs. 66,493/- ha/yr as well as REY (199.58 q/ha/yr) which were significantly superior to all other cropping systems. The other

systems that followed net return & REY in descending order were rice-wheat-moong; rice-wheat, rice-winter-maize & lowest in rice-lentil.

To develop agronomic management practices for sustainable rice-wheat system

REY of 75.47 q/ha obtained under farmer's practices increased to 106.00 q/ha with the adoption of all the recommended package of practices in rice-wheat cropping system. Line sowing with proper spacing increased the REY of system by 14.35% where as, adopting of all recommended package of practices increased REY by 40.45% over farmers practice. Net return of Rs. 47,504/ha & B:C ratio of 1.32 of were registered by adoption of recommended package of practices in R-W cropping system followed by farmer's practice + transplanting/line sowing and lowest in farmer's practice.

Performance of new wheat genotypes at different dates of sowing under irrigated conditions

Five test entries (HD 2967, HUW 612, HUW 616, DBW 39 and KO 607) were evaluated against five checks (HD 2733, PBW 343, K0 307, Raj 4120 and CBW 38) at two times of sowing {timely (18-25 Nov.) and late (15-22 Dec.)} in split plot design with time of sowing in main plots and the genotypes in sub-plots replicated thrice. The results revealed that the test entry CBW 38 produced the highest grain yield of wheat (51.01 q/ha) which was at par with KO 307 (50.56 q/ha) and HD 2733 (49.95 q/ha) under timely sown condition. However, under late sown condition the similar trend was observed i.e. the highest grain yield of wheat (44.07 q/ha) was produced by the test entry CBW 38 which was at par with K0 307 and HD 2733 and significantly superior over rest of the entries.

Performance of new wheat genotypes at different dates of sowing under irrigated conditions

Four genotypes (HD 2982, HD 2983, HD 2925 and MP 3224) were evaluated against four checks (HUW 234, DBW-14, NW2036 and PBW 343) at two sowing dates {late (15-22 Dec.) and very late (1-7 Jan.)} in split plot design with date of sowing in main-plots and genotypes in sub-plots replicated thrice. The results revealed that test entry HD 2985 produced the maximum grain yield under late sown condition (40.03 q/ha) which was at par with MP 3224 and significantly superior than rest of the entries. Delay in sowing from mid Dec. to 1st week of Jan. resulted in significant reduction in grain yield but under very late condition, the test entry MP 3224 (26.56 q/ha) produced the maximum grain yield which was at par and closely followed by HD 2985 (26.24 q/ha) and HUW (25.35 q/ha).

Performance of new wheat genotypes at different nitrogen levels under rainfed conditions

Three new genotypes (KO 616, KO 617 and PBW 612) were evaluated against three checks (C 306, K 8027 and HD 2888) at three levels of nitrogen (40, 60 and 80 kg/ha) in split plot design under rainfed condition. The results revealed that the test entry PBW 612 (18.39 q/ha) only could reach to the level of check variety K 8027 at 40 kg/ha nitrogen level. The highest grain yield (26.19 q/ha) was produced by the check variety HD 2888 (26.19 q/ha) at 80 kg N/ha level.

Effect of Irrigation levels, sowing date and varieties on yield of wheat crop

Irrigation level has exerted significant impact on grain yield. The highest grain yield was recorded under I_4 (Irrigation at CRI + LT+ Flowering + Doughing) which was at par with I_3 (Irrigation at CRI + LT + Flowering) level. Among different sowing dates D_1 (sowing on 30th Nov.) recorded the highest grain yield. Both the varieties remained statistically at par among themselves in terms of grain yield. Interaction effect was significant in between date of sowing and varieties in terms of grain yield.

DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY, B.A.C., SABOUR

Use of tomato and carrot as bio-colour in guava jelly

- The product was prepared by replacing 10, 20 and 30% of guava fruits with tomato and carrot juice.
- 20% Carrot juice when mixed with 80% of guava juice gave an excellent quality of guava jelly.
- Good set of guava jelly was found when blended with 20-30% of tomato juice.
- Jelly containing carrot as a colouring source was founded slightly better than that coloring tomato.
- Organolaptically, 30% tomato and 20% carrot juice blendedly prepared guava jelly was found better in respect to taste, colour and crispiness.

Standardization of guava based pineapple jelly

- Guava based pineapple jelly prepared by using different combinations of fruit extract had good shelf life with better organolapitc rating after preparation.
- 20 and 30% pineapple juice mixed with guava juice gave the better setting and taste.
- Acceptability of 70% guava based pineapple jelly is better than other combinations on the basis of sensory evaluation.
- Slight changes in chemical constituents i.e. TSS , acidity and vitamin C were found among the treatments after 90 days at room temperature.

Standardization of RTS of mixed fruit juice and their storability

- RTS using different fruit juice had maintained its chemical quality and sensory parameter at preparation and after storage upto 9 months.
- Juice combination of green mango , guava and pineapple in the ratio of 2:1:1 had best acceptability due to excellent flavour of pineapple.
- Colour of the product was maintained except a slight foggy appearance.

Storage stability of watermelon beverages

- Blending of sugar @ 15% in watermelon juice with and without pectine had better acceptability during preparation and under room temperatue upto 6 months.
- RTS prepared with 15% sugar and 1% pectine was found best among the treatments.
- Watermelon juice alone had better acceptability at preparation but storage life upto 3 months and revealed loss of colour and taste upto a greater extent.

DEPARTMENT OF ENTOMOLOGY

- Organophsophorous group of insecticides were the predominant group used on banana in Vaishali zone in Bihar.
- Spraying of carbaryl 50 W.P. @ 0.3% at fortnightly interval was the most effective treatment against scarring beetle which was at par with *Beauveria bassiana* (a bio-pesticide).
- Different weather parameters (temperature, R.H. and rainfall) altogether produced 92% impact on scarring beetle population.
- Out of 86 banana germplasms screened against scarring beetle, 12 germplasms were found highly resistant, 16 germplasms resistant, 26 germplasms moderately susceptible, 18 germplasms susceptible, 5 germplasms highly susceptible, 3 highly resistant to resistant, 2 germplasms resistant to moderately susceptible and 4 germplasms susceptible to highly susceptible in respect to plant and finger infestation.
- Application of neem leaf powder @ 10 g / kg seed of pigeonpea was the most effective treatment against *Callosobruchus chinensis* under storage conditions.

Honey bee

- For stock improvement through selection among the better performing colonies of *Apis mellifera*, best performing colonies at three sites were multiplied further.
- Propolis production in different treatments in different months indicated that maximum propolis was extracted from *A. mellifera* colonies in the month of rainy seasons. Among the different methods of propolis collection, maximum production was obtained in scrapping followed by plastic net placed on stick and lowest in plastic net placed on bottom board.
- On an average 32.00 mg bee venom can be obtained from one colony of *Apis mellifera* in a year.
- Pollen was harvested in the *Apis mellifera* colonies in the peak season of mustard flowers in *Apis mellifera* honey bee

colonies. Though pollen harvest showed slightly lower development but harvesting of pollen has not much effect on development of colony.

- *Tropilaelaps clarae* infestation recorded in *Apis mellifera* hives after chemical application reduced pest infestation and oxalic acid (35g) and 200 g sugar dissolved in warm water applied @ 2 ml per frame proved best. All the treatments decreased the mite infestation in the hive.
- Artificial reared queen of *Apis mellifera* during mustard bloom have better potentiality and could be utilized for maximizing honey production. This might be due to fact that mustard flower were rich source of pollen and its flowering time (autumn) was congenial to *Apis mellifera* bees.
- Pollinators other than honey bee viz., lepidopteran, coleopteran and dipteran also visited sunflower.
- Jamun flower is a preferred source of *Apis mellifera*.

DEPARTMENT OF SOIL SCIENCE

Soil Carbon Sequestration by Conservation Agriculture in Rice-Wheat Cropping Sequence

- There was little variation in organic carbon content among the various resource conservation practices like zero tillage, brown manuring and crop residue retention. Zero tillage with residue rentention had lower bulk density than puddled soil.
- Brown manuring by sesbania had higher dissolved organic carbon than without brown manuring plots. Zero tillage treatments had more DOC contents than the puddled and bed planted rice.
- The grain yields obtained in the control traffic plots were similar among themselves and also to puddled condition.
- More number of fungi was observed in brown manuring plots than without brown manuring plots. Brown manuring provides good substrate for growth and multiplication of microflora.
- Bed planting with brown manuring favoured greater population of *Aspergillus terreus* and *Penicillium japonicum* while traffic control (with and without crop residues) harbour higher population of *A. niger, A. fumigatus and A. Sydowi*

To study the nutrient content and total microbial population of vermicompost and its influence on physico- chemical and biological properties of soil.

- Six fungal species viz. *Fusanium, Aspergillus, Penicillium, Myrothecillum, Alternaria, Trichoderma* were explored from the vermicompost and their phosphate solublising efficiency was assessed. It was observed that *Trichoderma* sp.performed best and solublised highest % (5.81 %)of added insoluble phosphate (Tricalcium phosphate) followed by *Aspergillus* species (5.41%).Hence, *Trichoderma* strains ought to be identified at genetical level for its dual utilization (as biocontrol agent and phosphorus solublizer).
- The effect of different organic substrates on the *Trichoderma* was also evaluated. Highest *Trichoderma* population was recorded on caster cake followed by karanj cake and neem cake. The best supporting O M was caster cake followed by Karanj and neem cake. However, the FYM and vermicompost were found at par and were significantly superior over control. The time also significantly influenced the growth. The interaction between time and OM was also found significant.

To study the fungal diversity under different ecological condition and excavation of beneficial fungal species for nutrient solublisation and antagonist effect against plant pathogens.

- The wide diversity of significant fungal species were recorded even under stress conditions (salt effected soil and water logged condition).
- Twenty one prominent fungal species explored from different adverse situations were explored and their phosphate solublising efficiency was measured. It was observed that species of *Aspergillus* solublised highest % of tricalcium phosphate followed by *Trichoderma*
- The antagonist effect of *Aspergillus* and *Trichoderma* spp. were evaluated against disease causing organisms *Rhizoctonia solani*.

DEPARTMENT OF FORESTRY

NOVOD Board Project on R & D Programme of *Jatropha* and *Karanja* in Bihar

- Under propagation techniques, rooting and sprouting were best at 100 ppm IBA or NAA in case of *Jatropha* and 800 ppm IBA or NAA in case of *Karanja* of thick stem cutting (1.5 cm diameter) after 24 hrs soaking treatment.
- Among seed treatments, best germination of seed was recorded with hot water followed by 20 ppm IBA or GA_3 in *Jatropha* and *Karanja*.
- Under plantation programme, best survival of *Jatropha* seedlings was recorded in boundary plantation (up to 100%), agri-silviculture (80-95%) and minimum in and around gardens (0-5%).
- Moderate pruning was beneficial for improvement of pod size, seed size, flowering and fruit initiation and number of fruits.
- Effect of organic manures and vermiwash : FYM 5 kg/bed and vermiwash @ 5l/plot along FYM showed better growth performance.
- Among the faunal species, *Oxyopes* species and *Coccinella septempurnotata* were recorded as bio-agents during blooming period while the bug *Coccus* spp. *Myllocerous discolor, Aulacophora intermedia* behaved as pests causing infestation. Mosaic leaf and leaf spot disease caused infection in *Jatropha* and *Karanja* foliages, respectively.

National Bamboo Mission sponsored Project on "Promotion and Production of commercial bamboo species in Non-forest fallow land and wasteland areas of Bihar"

- Under vegetative propagation trials, sprouting and rooting of different lots were in the range of 18-30 days. The percentage survival and sprouting varied form 40-100 and 20-98, respectively. Maximum sprouting was in *B. vulgaris* and minimum in *D. strictus*. Single nodded and double nodded cutting-lots showed 18-90 per cent sprouting. Mortality of the different planting materials ranged from 2 to 51 percent.

DEPARTMENT OF FARM MACHINERY, COLLEGE OF AGRICULTURAL ENGINEERING

Design, fabrication and testing of low cost worm sieving machine

A machine, both manually and motorized operated, for worm separation from vermi compost was designed, fabricated and tested under B. Tech. student's project in the month of November, 2008. The over-all performance of machine was found satisfactory. It was observed that the compost production capacity of machine under manual operation with handle as well as motorized operation were found to be 3.60 q/hr and 7.40 q/hr, respectively over conventional method (55.5 kg/hr) i.e. manual operation under wire-net sieving. Similarly, the worm sieving efficiency of machine was 96% and 98% under manual and motorized operation which were quite above than its efficiency (93.52%) under conventional method. The economics of operation of machine was also evaluated and a net benefit per hour of Rs. 116.86 and Rs. 270.39 were found under manual as well as motorized operation, respectively over the conventional method of worm separation i.e. manually by wire-net sieve.

Performance evaluation of self propelled vertical conveyor reaper for wheat and paddy

The performance of self propelled vertical conveyor reaper was tested in the farmer's field under B. Tech. student's project during the year 2007-08 at village Piparpatiya for wheat and paddy. The actual field capacity was found to be 0.197 ha/hr and 0.175 ha/hr for wheat and paddy, respectively. The field efficiency of this machine for wheat and paddy were 76.36% and 67.83%, respectively. On the basis of break even point analysis, the machine was found under economical operation with a minimum coverage area of 6.58 ha and 6.97 ha in a year for harvesting wheat and paddy crops, respectively to ensure annual payback of Rs. 8000.00 calculated on the basis of total purchase cost assuming 10 years life period. The cost of harvesting including losses, was calculated to be Rs. 933.66/ha and Rs. 1002.77/ha for wheat and paddy, respectively with a saving of Rs. 1216.34/ha (56.57%) and Rs. 1147.23/ha (53.36%) over manual harvesting by sickle for both the crops.

Performance evaluation of Amar maize-dehusker-cum-sheller

Maize dehusker-cum-sheller was tested with swan variety of maize obtained from Central Farm, Pusa with cob grain moisture content of about 16% (db) in order to determine optimum feed rate for maximum shelling of grain and machine capacity and minimum grain damage. It was observed that maximum capacity of the machine for the used sample was 380 kg/h with optimum feed rate of 610 kg/h. The shelling efficiency was found to be 94% with maximum grain damage of 1.1%. The cost of shelling maize with this machine was found to be Rs. 40.00/q.

DEPARTMENT OF SOIL & WATER CONSERVATION ENGINEERING

Fertigation studies on high density litchi planting with and without plastic mulch

Based on harvested data, it was found that in case of high density litchi orchard amongst different treatments on fertigation without mulch, the treatment F1 (application of 100% recommended dose of fertilizer + V vol. of water without mulch) was found to be the best indicating av. plant height 4.05m; plant girth 0.37m and canopy area 20.35 m^2 which is 26.56%, 14.84 % and 17.37 % higher than the control treatment, respectively. While amongst the treatments with mulch, the treatment F5 (application of 100% recommended dose of fertilizer + V vol. of water with mulch) revealed best results, i.e. the plant height (4.20m), plant girth 0.50 m and canopy area 23.2 sq. m, which is 31.25%, 28.2% and 25.0% higher than control treatment, respectively.

Effect of fertigation and black plastic mulch on Sapota (Acharas-zapota)

Amongst fertigation without mulch treatments, the treatment F1 (application of 100% recommended dose of fertilizer + V vol. of water without mulch) was found better than the other treatments with respect to the plant height (182.3cm), plant girth (14.2 cm) and canopy area (1.40 sqm),which were 18.18,7.92 and 36.71% higher than the control. Likewise, amongst fertigation treatment with mulch, F5 (application of 100% recommended dose of fertilizer + V vol. of water with mulch) was the best treatment in terms of plant height (195.6 cm), plant girth (17.8 cm), and canopy area (1.92sqm), which were 26.94,10.20 and 31.25% higher than the control treatment.

Precision farming in banana with soil solarization, fertigation, plastic mulching and vermi –composting

A new trial was stared to study the effect of soil solarization , fertigation and vermi – compost with and without plastic mulch on yield and quality of banana . Planting was done in the last week of September. The plants were in vegetative growth stage. On the basis of measured data , the treatment T1 (soil solarization + vermi compost + 80% RDF + 80% V vol. of water through drip with mulch) was found to be the most effective with faster vegetative growth having the plant height 2.6m and average canopy spread 3.4m which are 28.09 and 22.28% more as compared to the control treatment (no soil solarization + vermi compost + 100% RDF + V vol. of water through Flood irrigation).

Effect of fertigation through drip and plastic mulch on pointed gourd

Total eight treatments were applied to study the fertigation and black plastic mulch in pointed gourd. The first picking was about 17days earlier in the treatment F5 (100% fertigation with plastic mulch) over control treatment. The yield per vine par to the treatment F6 (80% fertigation + plastic mulch), i.e. 5.97 kg per vine. The other parameters like fruit length and width were also recorded to be maximum in treatment F5, i.e. 10.55 and 3.96 cm fruit length and width, respectively which was about 16.57 and 4.76% more over control treatment, respectively. Similarly, the average number of fruits per vine was also found to be maximum to the tune of 164.5, while in control it was 133 fruits per vine, which is about 23.68% higher over control.

DEPARTMENT OF IRRIGATION & DRAINAGE

Ground Water Pollution

Impact of sewage water on the qualitative parameters of ground water has been carried out in different water bodies. Amongst the sources, well water showed high values of EC (>2.2 dSm^{-1}), calcium and magnesium (>12 me/L), total dissolved solid TDS (>1000 ppm) and chloride content (>8.5 me/L) and was beyond permissible range. Hand pump and open well throughout the area yielded high content of NO_3-N (i.e> to ppm) indicating that water of these sources are unsafe for potable use which might be due to indiscriminate disposal of organic wastes.

Studies on the effects of industrial effluent and ash content of thermal power plant on ground water quality indicated that some hand pump nearby thermal power and open well located in surrounding area of fertilizer factory yielded Cl^- and NO_3^- content and exceeded the safe limit (<i.e.>8.5 me/L and 10 ppm), respectively.

Similarly, at Samastipur the study revealed that intensive use of agrochemicals in domestic operation of the cattle may influence the ground water to the greater extent. It was noticed that hand pump at cattle farm and open wells located at marina farm disclosed high Cl^- content (i.e.> 8.5 me/L). Similarly some hand pumps and open well showed high NO_3-N

content (i.e. >10 ppm). It is obvious from the data that hand pump located in middle portion of cattle farm is not suited for drinking as well as agricultural use.

DEPARTMENT OF MICROBIOLOGY

Bionutrient package for rice

- Increase in the colonization of root by introducing *Azospirillum sps.*
- Higher ARA activity of detached rice root.
- Higher ARA activity of phtotrophic nitrogen fixer *in vivo*.
- Significant increase in grain and straw yield due to application of bionutrient package alone or integration with chemical fertilizer.

DEPARTMENT OF AGRICULTURE BIOTECHNOLOGY AND MOLECULAR BIOLOGY

Application of Microorganisms in Agriculture and Allied Sector (AMAAS) Project

To study molecular diversity in *Rhizobium* isolates, nearly full length 165 rDNA gene regions have been amplified using gene specific primers. The amplicon retrieved are being subjected for PCR-RFLP analysis.

DEPARTMENT OF ANIMAL BREEDING & GENETICS, BIHAR VETERINARY COLLEGE, PATNA

Genetic analysis of performance records of purebred and crossbred livestock and birds species

Sub-Project :Genetic analysis of milk production efficiency of buffalo in and around Patna (Bihar)

Diara buffaloes had superiority over Non-descript type with respect to lactation milk yield, peak yield, days to attain peak yield, milk yield per day of lactation length and milk yield per day of calving interval. Therefore, similar type of work may be repeated in the entire Tal and Diara area of the rivers Ganges, Gandak and Sone pertaining to Bihar to identify and enumerate the number of Diara buffaloes so that a suitable breeding plan can be chalked out for their improvement.

DEPARTMENT OF VETERINARY MICROBIOLOGY

All India Coordinated Research Project for Epidemiological Studies on Foot and Mouth Disease, Network Unit, Patna

Suitable epithelial samples (foot and mouth lesion) from outbreaks of FMD infected animals were collected in buffered glycerol and brought to the FMD laboratory, Patna. The samples were analyzed by employing "Sandwich ELISA" to find out the virus serotypes involved in respective outbreaks. A total of 43 outbreaks of FMD were recorded from different district of Bihar during the period April 2008 to March 2009. Out of total of 9514 susceptible animals, 1529 animals (cattle-928, Buffalo-462, Goat-139) were found to be affected by FMD. The representative samples from each outbreak were send to Central Laboratory, Mukteshwar for further characterization and deposition in National Repository. The FMD virus was tested to be positive by sandwich ELISA in eighteen of the samples brought from the outbreaks and in rest of the available samples either the ELISA testing process was in progress or the presence of the virus was not detected.

From the March, 2009 a new technique, liquid phase Block-ELISA was introduced which is sort-in-hands for Scientist working in the project for retrospective analysis of the virus involved in an outbreak, identification of the animals carrying virulent strain of FMDV, virus serotype circulating among susceptible animal and immune status of the animals vaccinated for FMD. A total of 356 (Cattle -242; Buffalo – 48; Goat – 66) sera samples were tested for immune status of FMD vaccinated animals and 186 (Cattle – 142; Buffalo-18; Goat-26) were collected for retrospective analysis.

As far as animal husbandry, zone wise outbreak was concerned, FMD outbreaks have been detected in all the zones during the period, out of 43 outbreaks, districtwise outbreaks recorded were Patna-17, Saran-3, Muzaffarpur-3, Samastipur-2, Darbhanga-2, Katihar-1, Araria-3,Purnia-3, Vaishali-3, Arwal-1, Sahrasa-3, Nawada-1, Banka-1) during the period.

Long term trial on tillage in rice-wheat cropping system

Tillage and weed management treatments significantly reduced weed counts and weed biomass. In rice, the lowest weed counts were recorded with ZT-ZT which was followed by ZT-CT and the highest weed count was observed under CT-CT however, the grain yield was higher under CT-CT practice. Among weed management treatments, hand weeding showed the lowest weed count and weed dry weight which was at par with recommended herbicide (Anilophos 0.4 kg/ha).

Long term trial on rice-wheat cropping system

Among the weed control treatments in rice, the lowest weed population was recorded from two hand weeding (30 and 60 DAT). Butachlor 1.5 kg/ha caused significantly lower weed density than Anilophos 0.5 kg/ha. Yield and yield attributes were recorded higher under two hand weeding followed by Butachlor 1.5 kg/ha.

Long term trial on rice-chickpea cropping system

The lowest weed count and weed dry weight were recorded under the treatment Anilophos 0.5 kg/ha + 1 HW in case of rice crop. Higher grain and straw yields were recorded under Anilophos 0.5 kg/ha + 1 HW treatment.

Long term trial on maize-lentil cropping system

The lowest weed count and weed dry weight and highest WCE were recorded under Atrazine 0.75 kg/ha *fb* 2, 4-D 0.5 kg/ha in maize crop which was at par with Atrazine 1.0 kg/ha P.E. The highest maize yield was also found in the treatment Atrazine 0.75 kg/ha *fb* and 2, 4-D 0.5 kg/ha followed by Atrazine 1.0 kg/ha P.E. which was closely followed by mechanical weeding twice.

Effect of time of sowing and weed control methods in direct seeded rice

Results of experiment on effect of time of sowing and weed control methods in direct seeded rice revealed that sowing after onset of monsoon resulted in comparatively less weed density and weed dry matter. Application of butachlor 1.5 kg/ha + 1 hand weeding resulted in reduced weeds and higher yield of rice.

Effect of rice establishment techniques under different weed management practices

SRI method of rice establishment was comparatively efficient in minimizing weeds and obtaining higher grain yiled of with Pyrazosulfuron + mechanical weeding.

RABI 2008-09

Long term weed management in direct seeded rice-chickpea cropping system

The highest grain and straw yield of rice were recorded under treatment-Butachlor 1.5 kg/ha + 1 HW fb Anilophos 0.5 kg/ha + 1 HW. However, the highest grain yield and straw yield of chickpea were recorded under treatment-mechanical were weeding twice which was at par with Pendimethaline treatment @ 0.75 kg/ha + One hand weed.

Effect of long term trial on tillage in rice-wheat cropping system

Rice : The lowest weed count and weed dry weight was recorded under ZT-ZT *fb* ZT-CT and the highest weed count and weed dry wt. was observed under CT-CT. The highest grain yield of rice was recorded in CT-CT *fb* CT-ZT. Under weed management treatments, the highest grain and straw yields were recorded in the treatment-one hand weeding which was *fb* the treatment rec. herb. Anilophos 0.4 kg/ha.

Wheat : Highest grain and straw yields were recorded under CT-ZT treatment which was *fb* the treatment ZT-ZT. Under weed management treatments, the highest grain and straw yields were recorded under treatment-one hand weeding which was at par with treatment application of recommended herbicide i.e. Post emergence application of 2, 4-D Sod. Salt @ 0.8 kg/ha.

Long term weed management in rice-wheat cropping system

Rice : The lowest weed count and weed dry weight were recorded under mechanical weeding (2) which was followed by butachlor 1.5 kg/ha and Anilophos 0.5 kg/ha. The highest grain and straw yield of rice were recorded under Butachlor 1.5 kg/ha which was at par with Anilophos 0.5 kg/ha.

Wheat: The lowest weed count and weed dry weight were recorded under mechanical weeding which was at par with Isoproturon 1.0 kg/ha. However, the highest grain and straw yield were recorded with mechanical weeding which was at par with Isoproturon 1.0 kg/ha. The highest WCE was recorded under mechanical weeding.

Long term herbicidal trial on maize-lentil cropping system

Maize : All the weed control treatments reduced the weed population and weed dry weight. The lowest weed count and wed dry weight was recorded under Atrazine 0.75 kg/ha *fb* 2,4-D 0.5 kg/ha which was followed by Atrazine 1.0 kg/ha and mechanical weeding (twice). The highest maize grain yield was recorded under mechanical weeding twice which was the par with the treatment Atrazine 0.75 kg/ha *fb* 2, 4-D 0.5 kg/ha.

Lentil : The lowest weed count and weed dry weight was recorded under Pendimethalin 0.75 kg/ha *fb*. MW which was closely followed by mechanical weeding (twice). The highest grain and straw yields were recorded under mechanical weeding (twice) followed by Pendimethalin 0.75 kg/ha *fb* MW. The highest weed control efficiency was recorded under the treatment mechanical weeding (twice).

Management of *Orobanche* in tobacco

It was observed that *Orobanche* infestation under non-solarized condition showed earlier emergence in tobacco and chemical treatment delayed the infestation duration where as in solarized condition under non chemical situation, there was slight delay of *Orobanche* emergence which further delayed under the situation of solarized treatment.

AICRP ON MICRONUTRIENTS

Reassessment of micro nutrients deficiency in soils of Bihar

About 690 soil samples were collected from Begusarai, Supaul, Araria, Patna, Nalanda and Sheikhpura districts. The soil samples were analysed for available Zn, Cu, Fe, Mn, B and S besides general properties like pH, EC, OC, avail. P_2O_5 and K_2O. After Koshi flood (2008), 177 soil samples were also collected from flood affected area of Araria, Purnea and Katihar districts. The overall mean values of available Zn, Cu, Fe and Mn were 0.62, 3.8, 39.1 and 11.37 ppm, respectively. The extent of Zn deficiency was 91% in Araria, 89% in Purnea and 39% in Katihar districts. The deficiency of other micronutrients is very less.

Effect of changing cropping pattern and management practices on yield trend and micronutrients status of soil

The result of 70th crop rice cv. Rajshree under rice - wheat - sorghum and rice cv. Prabhat under rice – mustard – moong are given. The grain and straw yield of Rajshree varied from 12.5 to 45.9 and 21.5 to 81.0 q/ha, respectively, while those of Prabhat ranged from 11.0 to 48.0 and 12.0 to 71.0 q/ha in above order. Increasing fertility levels greatly enhanced the yield of rice under both rotations. The superimposition of treatments also increased the yield and highest grain yield was recorded for both rice crops at 10 kg Zn + 10 t FYM/ha alternate year. The result indicated that Zn + FYM treatment was best in sustaining the higher yield production. However, all the treatments in soil were effective over control at all fertility levels. The cumulative dry matter yield (grain + straw) up to 70th crop varied from 191.68 to 576.54 with an average of 402.98 t/ha under R-W-S and from 182.45 to 523.67 with an average of 366.76 t/ha under R-M-M rotation. Total dry matter production as well as per cent response at different fertility levels was higher in first rotation than second. The cumulative yield response of total dry matter due to increasing fertility levels varied from 88 to 201 % under R-W-S and 76 to 187 % under R-M-M rotation.

Optimizing zinc levels and crop residue management under rice-wheat cropping system

The grain and straw yield of 29th crop rice varied from 31.0 to 44.3 and 60.3 to 80.7 q/ha, respectively. Increasing the levels of crop residue increased the grain and straw yields significantly from 31.8 to 41.6 and 65.5 to 76.9 q / ha, respectively. Significant increase in grain and straw yields after 15th cycles due to Zn application indicated that there was reduction in yield at zero Zn level with times and solubilization of fixed and native Zn at higher Zn levels. The rate of increase was more pronounced at higher level of crop residue.

Effect of green manuring and FYM on micro- and secondary nutrients availability to crops

The grain and straw yields of 17th crop rice varied from 30.83 to 43.67 and 50.67 to 71.67 q / ha, respectively due to various green manuring treatments. The effect of all green manuring treatments except sunhemp alternate year and green gram alone was significant over control. Each year green manuring application was superior over alternate year. Among green manuring, the effect of Dhaincha was superior, however, a little higher yield of rice was obtained when green gram was incorporated with 5t FYM/ha each year. The grain and straw yield response varied from 1.17 to 12.84 and -0.83 to 20.17 q/ha, respectively due to green manuring treatment. The highest grain and straw yield response was obtained at T8 where green gram was incorporated in conjoint with 5t FYM/ha each year.

AICRP ON SOIL TEST CROP RESPONSE CORRELATION

Nutrient recycling through crop residues

Grain and straw yield of rice (40th crops) increased significantly with increasing levels of fertilizers up to 100% NPK, however, grain and straw yield at 150 % NPK were at par with 100 % NPK. The relative performance of organic manure and crop residues on the yield of wheat varied in the order: Compost + crop residues > compost > crop residues > no compost or no crop residues. The result indicates that crop residues could substitute compost @ 10 t/ha. The results suggest that compost + crop residues could save 50 % recommended dose of NPK *i.e.* 60 kg N, 30 kg P_2O_5 and 20 kg K_2O/ha. The compost, crop residues and compost + crop residues increased the grain yield of rice 26.47, 17.13 and 37.85 %, respectively and that of straw yield 20.71, 16.66 and 37.06 %, respectively.

Basic data and targetted yield equations for sweet flag (Bach)

N, P and K requirement for production of one quintal of Sweet Flag (Bach) tuber in calcareous soil were 0.34, 0.10 and 0.53 kg, respectively. Fertilizer use efficiencies were 86.07, 40.99 and 70.29 per cent for N, P and K, respectively. Similarly, contribution of soil available nutrients for N, P and K were 12.59, 77.00 and 53.84 per cent, respectively and those for FYM were 11.47, 5.72 and 5.21 per cent, respectively in calcareous soil. Fertilizer prescription under integrated nutrient supply system for yield targetting of Sweet Flag (Bach) indicated that 42, 30 and 56 kg/ha were required for N, P_2O_5 and K_2O/ha, respectively at 200 q/ha at 250, 10 and 125 kg/ha fertility level of N, P and K, respectively without FYM. For the same fertility and same yield target (200tq/ha), only 39 kg N, 29 kg P_2O_5 and 54 kg K_2O /ha will be required if 5 t/ha FYM is applied. The application of 5 t/ha FYM could save 3 kg N, 1 P_2O_5 kg and 2 kg K_2O /ha.

Creation of fertility gradient

The grain and straw yield of paddy in fertility gradient experiment increased with increasing fertility levels. The grain and straw yield of paddy varied from 25.00 to 55.65 and 60.25 to 135.75 q/ha, respectively. The crop in the highest fertility level was also lodged. The highest yield recorded in the highest fertility level and lowest in control or lowest fertility level. The increase in yield with fertility indicates the creation of fertility gradient.

Front line demonstration (FLD) on rice under IPNS

Three front line demonstrations on yield targetting of rice indicated that the per cent deviation between yield target and actual yield were – 1.89 to + 6.96 and response varied from 9.11 to 26.36 kg grain / kg nutrient. The benefit/cost

ratios varied from 5.45 to 14.10. In majority of cases, it was observed that response of rice to STCR calibrated fertilizer doses, net profit and benefit /cost ratios due to soil test based fertilizer dose were greater than that of GRD and FP. The response of rice (kg/kg nutrients) to STCR calibrated fertilizers (7.94 to 20.74) increased further under IPNS (11.83 to 26.36) at 35 and 45 q/ha yields targets. Similarly at the same targets net profits (Rs.18692 to Rs.27125) also increased under IPNS system (Rs. 20033 to Rs.29606).

Front line demonstration (FLD) on sesame under IPNS

The result of one front line demonstration on sesame revealed that per cent deviation between actual yield obtained and yield target of sesame ranged from + 2.76 to + 12.57 which is under reasonable limit. The response of sesame to total nutrient application based on STCR ranged from 4.63 to 7.05 kg grain/kg nutrients. Net profit due to STCR calibrated dose varied from Rs. 14,548 to Rs. 23,320 / ha with yield target of 8 to 12 q/ha. The net profit Rs. 23,320 12 q/ha of yield target were highest but benefit/cost ratios was lower than farmer's practice and GRD. Thus farmer can be advised to grow up to 8 q/ha yield of sesame through STCR based fertilizer recommendations for economic return and 12q / ha yield of sesame for maximum return.

Front line demonstration (FLD) on pigeonpea under IPNS

Two front line demonstrations on yield targetting of pigeonpea under IPNS indicated that per cent deviation between yield target and actual yield were – 5.54 to + 9.25 and response varied from 12.67 to 25.00 kg grain/kg nutrient. The benefit/cost ratios varied from 15.67 to 32.96. It was also observed that response of pigeonpea to STCR calibrated fertilizer doses (16.93 to 25.00 kg/kg nutrients), net profit (Rs. 20200 to Rs. 32800) and benefit /cost ratios (21.13 to 32.96) due to soil test based fertilizer dose were greater than that of GRD (13.28 to 16.88 kg/kg nutrients, Rs. 17,000 to Rs. 21600 and 15.99 to 20.32) and FP (12.67 to 13.00 kg/kg nutrients, Rs. 7,600 to Rs. 7,800 and 15.67 to 16.08). The response of pigeon pea (kg/kg nutrients) to STCR calibrated fertilizers (16.93 to 22.60) increased further under IPNS (18.64 to 25.00) at 20 and 25 q/ha yields targets. Similarly at the same targets net profits (Rs.20, 200 to 29,800) also increased under IPNS system (Rs. 22,000 to 32,800).

Front line demonstration (FLD) on cauliflower under IPNS

Two follow-up trials on yield targeting of cauliflower under IPNS indicated that the percent deviation between yield target and actual yield obtained varied from – 13.64 to + 10.63 in which – 1.01 to + 10.63 under IPNS indicates that equation is very much suitable under IPNS system. Response ratios varied from 42.73 to 76.23 at 20 - 25 t/ha yield target which were higher than GRD (33.72 to 51.58) & FP (33.81 to 45.85). Benefit / cost ratios (6.44 to 8.61) were higher than GRD (5.55 to 8.49) and FP (5.39 to 7.31) at 20 t/ha yield target. The net profit was Rs. 17,800 to Rs.33,080 which was higher than FP (Rs.17,580 to Rs. 23,840)) and GRD (Rs.14,500 to Rs. 22,180) up to 25 t/ha yield target. Hence, the fertilizer recommendation through STCR basis for obtaining the yield target up to 20 t/ha is economical and 25 t/ha is profitable.

Medicinal & Aromatic Plants and Betelvine

In a trial on Integrated crop management(INM+IPM), sanitation of bareja along with 3-drenches of BM(1%) plus use of organic insecticide (maintaining plant population of 1.5 lakh/ha) with nutrient supply of 200:100:100 kg N:P:K/ha in organic form(4 splits) was found most effective producing highest yield(24.20lakh leaves/ha); which was also at par with treatment having 4-applicatioin of *Trichoderma viridae* (inoculated in mustard oil cake) plus use of organic insecticides maintaining similar plant population with same level of nutrient supply.

2.3 EXTENSION

2.3.1 TRAININGS CONDUCTED BY THE UNITS

Name of Institution	Name of training	Period	No. of Participant	
			Male	Female
University Apiary SRI, Pusa	Beekeeping training (15)	6-days	453	152
	Training of extension functionaries of sugar factories & cane deptt. Govt.of Bihar	10.9.08 to 12.9.08	71	-
BVC, Patna Extension Education	Extension approaches for live stock development	June 25 – 27, 2008	35 (TVO)	-
	Recent advancement in veterinary pathology and microbiology	July 14 – 16, 2008	32 (TVO)	-
	Animal husbandry and management	July 31 – Aug 02, 2008	23 (Farmers)	-
	Animal husbandry and management	Aug 11 – 13, 2008	40 (Farmers)	-
	Professional animal husbandry practices	Aug 29 – 31, 2008	3 (Farmers)	-
	Disease diagnostic	Aug 16 – 20, 2008	23 (TVO)	-
	Disease diagnosis technique	Aug 21 – 25, 2008	23 (TVO)	-
	Disease diagnosis technique	Sep 01 – 05, 2008	09 (TVO)	-
Veterinary Epidemiology & Preventive Medicine	Recent advances in veterinary medicine	Feb 18 – 20, 2009	20(TVO)	-
Animal Reproduction Gynaecology & Obst.	Refresher course of Livestock Assistant / Supervisor in A.I.	10 days duration (Round the year)	20 (L.S.A. / L.S.S.)	
	Certificate course in A.I.	Six month	20	
Veterinary Clinical / Preventive Medicine	Infectious diseases in animals	April 04, 2008	150 (Farmers)	
	Important diseases of Ruminants	Dec 12, 2008	25	
COH, Nalanda	Vaigyanik Chale Gaon ki Ore	22.09.08	210	10
	Vaigyanik Chale Gaon ki Ore	26.09.08	114	0
	Vaigyanik Chale Gaon ki Ore	16.10.08	160	03
	Vaigyanik Chale Gaon ki Ore	17.10.08	143	26
	Vaigyanik Chale Gaon ki Ore	18.10.08	76	0
	Vaigyanik Chale Gaon ki Ore	30.11.08 to 01.12.08	19	01
	Farmer's Training	13.12.08	32	0
	Vermi composting	21.12.08	22	0
	Vermi composting	22.02.09	34	36
	Vermi composting	21.03.09	48	0

2.3.2 TRAININGS CONDUCTED BY THE KVKs

a. For Practicing Farmers

Sl No.	Name of the KVK	No of trainings	Beneficiaries		
			General	SC/ST	Total
1.	Darbhanga	82	1161	132	1293
2.	Saharsa	43	984	110	1084
3.	Vaishali	63	1288	285	1573
4.	Jahanabad	54	2293	58	2351
5.	Bhagalpur	15	415	60	475
6.	Muzaffarpur	126	2759	337	3096
7.	Munger	101	2306	626	2932
8.	East Champaran	79	1760	404	2164
9.	Saran	38	1029	176	1205
10.	Madhepura	39	1246	115	1361
11.	Arwal	23	954	47	1001
12.	Aurangabad	28	860	80	940
13.	Araria	37	670	6	676
14.	Banka	64	1776	173	1949
15.	Patna	76	1885	355	2220
16.	Kishanganj	52	1199	349	1548
17.	Begusarai	60	2067	365	2432
18.	Gopalganj	69	2293	473	2766
19.	Samastipur	55	1563	502	2070
20.	Gaya	77	2324	515	2839
21.	Purnea	26	567	118	685
22.	West Champaran	53	1648	1107	2755
23.	Supaul	57	1047	139	1186
24.	Siwan	20	534	401	935
25.	Shiekhpura	102	967	56	1053
26.	Katihar	451	2535	1206	3741
27.	Sheohar	67	1719	325	2044

b. For Rural Youth

Sl No.	Name of the KVK	No of trainings	Beneficiaries		
			General	SC/ST	Total
1.	Darbhanga	18	457	84	541
2.	Saharsa	8	153	13	166
3.	Vaishali	23	470	75	545
4.	Jahanabad	4	95	-	95
5.	Bhagalpur	1	16	15	31
6.	Muzaffarpur	31	727	69	796
7.	Munger	105	263	86	339

(Contd. to P.44)

(Contd. from P. 43)

Sl No	Name of the KVK	No of trainings	Beneficiaries		
			General	SC/ST	Total
8.	East champaran	7	133	30	163
9.	Saran	80	694	245	939
10.	Arwal	6	140	15	155
11.	Aurangabad	7	192	28	220
12.	Araria	1	20	-	20
13.	Banka	12	65	-	65
14.	Patna	26	803	342	1145
15.	Kishanganj	22	208	72	280
16.	Begusarai	18	522	50	572
17.	Gopalganj	29	665	67	722
18.	Samastipur	7	276	73	349
19.	Purnea	3	51	23	74
20.	West Champaran	65	434	927	1361
21.	Supaul	13	315	57	372
22.	Siwan	2	10	26	36
23.	Shiekhpura	106	362	119	481
24.	Katihar	42	277	122	399
25.	Sheohar	32	794	183	977

c. For Extension Functionaries

Sl No	Name of the KVK	No of trainings	Beneficiaries		
			General	SC/ST	Total
1.	Darbhanga	3	57	9	66
2.	Saharsa	1	26	5	31
3.	Vaishali	10	262	19	281
4.	Jahanabad	4	65	-	65
5.	Bhagalpur	1	26	5	31
6.	Muzaffarpur	13	292	32	324
7.	Munger	18	232	44	276
8.	East Champaran	5	150	14	164
9.	Saran	9	202	30	232
10.	Madhepura	2	15	4	19
11.	Aurangabad	5	115	11	126
12.	Banka	3	73	4	77
13.	Patna	15	570	14	584
14.	Begusarai	3	121	25	146
15.	Gopalganj	2	45	-	45
16.	Gaya	10	422	97	539
17.	West Champaran	38	274	218	492
18.	Supaul	2	43	-	43
19.	Siwan	5	34	24	58
20.	Shiekhpura	12	39	13	52
21.	Katihar	77	398	157	555
22.	Sheohar	16	545	116	661

2.3.3 FRONT LINE DEMONSTRATION CONDUCTED AT UNITS

Name of KVK/Institute	Technology demonstrated	No. of participants	Crop	Impact of demonstration
A R I (Rice), Patna	Rajendra Mahsuri-1	29	Rice	Yield advantage of 14.60 % (Rajendra Mahsuri-1) over popular check
SRI,Pusa	Ratoon management	1	Sugarcane	Good
SRI,Pusa	Varietal	1	Sugarcane	Good
SRI,Pusa	IPM	1	Sugarcane	Good
SRI,Pusa	Varietal	1	Sugarcane	Good
SRI,Pusa	Intercropping with lentil	1	Sugarcane	Good
SRI,Pusa	Management of sugarcane under water logged condition	1	Sugarcane	Good
CAE, Pusa	Self propelled vertical conveyor reaper (Walk behind type)	100	Wheat	Farmers were satisfied with the working of the machine and appreciated the technology
	PAU manual rice transplanter	02	Paddy	
	Self propelled riding type 8–row rice transplanter	06	Paddy	
	Maize dehusker-cum - sheller	05	Maize	
	Zero-till seed drill	13	Wheat	

2.3.4 FRONT LINE DEMONSTRATION CONDUCTED AT KVKs

Crop	Technology demonstrated	Variety	No. of farmers	Increase in yield (%)
1	2	3	4	5
1. KVK Darbhanga				
Mung	Integrated crop management	Pusa Vishal	43	42
Paddy	-do-	BPT-5204	31	33
Pigeonpea	-do-	P-9	53	36
Wheat	-do-	HD-2733	38	48
Gram	-do-	PG-114	48	40
Lentil	-do-	Arun	43	45
Mustard	-do-	Rajendra Suflam	42	53
Potato	-do-	K.Ashoka	46	29.2

(Contd. to P. 46)

(Contd. from P. 45)

Crop	Technology demonstrated	Variety	No. of farmers	Increase in yield (%)
2. KVK Saharsa				
Rai	New high yielding variety	Rajendra Suflam	10	73
Lentil	New high yielding variety	Narendra	10	46.82
3. KVK Vaishali				
Elephant foot yam	Improved variety	Gajendra	3	16.66
Wheat	Improved variety	K – 307	9	2.85
Wheat	Improved variety	HD - 2643	14	38
4. KVK Jahanabad				
Potato	HYV of Potato seed	K. Pukhraj	08	40.16
Paddy	Seed	R. Mansuri 1	15	33.33
Wheat	Seed	DBW-14	11	29.28
Gram	Seed	P-256	08	30.85
Mustard	Seed	Rajendra Suflam	08	71.10
Lentil	Seed	PL-406	08	4.45
5. KVK Bhagalpur				
Pigeonpea	Varietal and Protec.	NDA – 1	16	38.66
	Varietal	Malviya	08	42.26
Chickpea	Varietal	DCP–92 – 3	11	43.75
Lentil	Varietal	L – 9 – 12	16	30.32
Mustard	Varietal	Pusa Mahak	25	43.87
6. KVK Muzaffarpur				
Mustard	Performance of HYV	Rajendra Suflam	20	25
Green gram	-do-	SML 668	20	
Okra	-do-	Arka Anamika	4	37
Spongegourd	-do-	Pusa Supriya	4	21
Bottlegourd	-do-	Hajipur Spl.	4	28
Bittergourd	-do-	Jaunpuri	2	22.5
Cucumber	-do-	Long Spl.	10	17
Barseem	-do-	Mascavi	10	25
Paddy	Varietal performance for deep water	Vaidehi	30	20
Oat	Performance of HYV	JHO 810	10	35
7. KVK Munger				
Wheat	High yielding variety	K-307	13	51.748
Lentil	High yielding variety & seed treatment	L-9-12	21	40.48
Rai	High yielding variety	Rajendra Suflam	15	59.31

(Contd. to P. 47)

(Contd. from P. 47)

Crop	Technology demonstrated	Variety	No. of farmers	Increase in yield (%)
8. KVK East Champaran				
Rai	Adoption of HYV	Rajendra Suflam	27	45
Wheat	Production technology of late sown wheat	DBW-14	27	-
Paddy	Production technology of up land rice	Prabhat	10	42
Green gram	Improved seed with Rizobium culture	Pusa Vishal	12	50
9. KVK Saran				
Red gram	Suitability of high yielding varieties	Narendra-1	11	51.51
Red gram	Management of insect pests of red gram	Narendra-1	2	37.5
Red gram	Method of seed treatment with biofertilizers	Narendra-1	12	5.8
Lentil	Suitability of high yielding varieties	PL 406	96	40.44
Rapeseed and Mustard	Suitability of high yielding varieties	Rajendra Suflam	49	51.18
Green gram	Suitability of high yielding varieties	Pusa Vishal	56	35.61
Paddy	Suitability of high yielding varieties	Swarna Sub-1	78	32.01
Maize	Suitability of high yielding varieties	Shaktiman-3	20	27.27
Wheat	HYV	PBW 502	25	13.93
10. KVK Madhepura				
Rai	HYV	Rajendra Suflam	15	13.42
Lentil	Seed	Narendra-1	02	20.5
Green gram	Seed	SML-668	25	
11. KVK Arwal				
Wheat	Performance of high yielding variety	DBW 14	16	12
12. KVK Araria				
Wheat	Scientific cultivation of HYV of wheat	K - 9107	10	56.48
Wheat	Scientific cultivation of HYV of wheat	WH - 711	10	1.57
13. KVK Banka				
Red gram	Seed	NDA-1	10	55
Gram	Seed	BG 256	8	37

(Contd. to P. 48)

(Contd. from P. 47)

Crop	Technology demonstrated	Variety	No. of farmers	Increase in yield (%)
14. KVK Patna				
Rai	Package and practices of rai	Kranti	10	122.5
Linseed	Package and practices of linseed	Shubhra	10	174
Pigeonpea	Package and practices of pigeonpea	Narendra-1	10	127
Gram	Package and practices of gram	Pusa-256	10	91
Lentil	Package and practices of lentil	Narendra	10	110
Rice	Package and practices of rice (HYV), Hybrid	R. Mahsuri-1	25	43.75
		KRH-2	28	86.25
Wheat	Package and practices of wheat	PBW-373	20	19.33
Okra	Package and practices of okra	VRO-6	16	15.93
Cowpea	Package and practices of cowpea	CP-4	15	80.0
Marigold	Package and practices of marigold	African	25	72.75
Rose	Package and practices of rose	English Rose	10	86.0
Mentha	Package and practices of mentha	Khoshi	25	100
15. KVK Kishanganj				
Maize	Hybrid varieties		16	20.2
Bhindi	Hybrid varieties		16	33.20
16. KVK Begusarai				
Wheat	Var. K-307	K-307	6	58.0
Spongegourd	Varietal demons.	Rajendra Nenua-1	15	26.0
Bhindi	-do-	Parvani Kranti	21	
Pigeonpea	Varietal demons.	P-9	10	36.36
Moong	-do-	Pusa Vishal	19	
17. KVK Gopalganj				
Wheat	Seed	PBW-502	13	12.04
Wheat	Seed	DBW-14	10	14.65
Red gram	Seed	NDA-1	10	13.96
Pea	Seed	KPMR-400	12	22.37
Lentil	Seed / Zn/B	KLS-218	11	20.11
Gram	Seed	GNG-469	21	16.79
Mustard	Seed/S/Zn	R.Anukul	13	7.11
18. KVK Samastipur				
Moong	Rizobium + IPM kit	TM-99-37	51	95.23
Potato	Seed	K. Ashoka	06	110.6
19. KVK Gaya				
Paddy	Variety replacement of MTU-7029	R.Mahsuri-1	12	5.57

(Contd. to P. 49)

(Contd. from P. 48)

Crop	Technology demonstrated	Variety	No. of farmers	Increase in yield (%)
20. KVK West Champaran				
Paddy	Improved varieties	Raj Shree	12	30
		Rajendra Mahsuri-1	8	21.5
Wheat	Improved varieties	NW 2036	6	25
		PBW 373	4	22
Moong	Improved varieties	SML 668	5	42
		Meha	6	24
21. KVK Supaul				
Paddy	High yielding variety	R. Masuri	08	52.08
Paddy	High yielding variety	BPT 5204	03	41.30
Jute	High yielding varieity	JRO-66	6	33.34
Rai	New variety	R. Pichheti	58	32
Lentil	New variety	Narendra	06	24
Green gram	New variety	SML-668	18	54.00
Green gram	New variety	PDM-139	3	17.18
Green gram	New variety	Pant-4	3	15.2
22. KVK Shiekhpura				
Mustard	Seed	Swarna	15	21.0
Lentil	Seed	Arun	12	11.2
23. KVK Katihar				
Red gram *Kharif*	Variety	P-9	10	29.04
Lentil *Rabi*	Variety	PL-406	10	21.06
Green gram *(Summer)*	Variety	SML 668	10	
Sesamum *Kharif*	Variety	Krishna	10	39.12
Mustard *Rabi*	Variety	RAUTS 17	10	45.61
Jute	Variety	JRO 66	10	
24. KVK Sheohar				
Mustard	Seed + Plant protection 20	R. Anukool 05	20	48.8
Lentil	Seed + P.P. + R. Culture	Arun	20	80.0
Paddy	Seed + Plant protection	Raj Shree	20	67.2

2.3.5 ON -FARM TRIALS CONDUCTED

ON- FARM TRIALS CONDUCTED BY KVKs

KVK Darbhanga

- Title: Identification of suitable variety of wheat in late sown
- Problem identified: Low yield of wheat after paddy

Treatments	No. of tillers/plant	Length of earhead	No. of grains / earhead	Test weight (g)	Grain yield (Q/ha)
Farmer's practice (Lokman)	3.2	7.2	32.5	36.4	25.6
PBW-373	4.8	10.5	48.4	46.1	40.3
HD-2643	4.3	8.4	41.2	41.3	35.7
HP-1744	4.5	8.7	44.6	43.5	38.4
DBW-14	3.6	7.6	38.3	38.9	34.1

KVK Saharsa

- Title : Weed management in paddy
- Problem identified : Minimize weed problem through different type of weeders

Treatment	Avg. weed population before weeding (per sq m)	Avg. weed population after weeding (per sq m)	% age weed reduction	Cost of weeding (Rs/ha)
T1- Manual uprooting	530.25	40.34	92.39	3794.64
T2 – Weeding with Cono weeder	530.25	113.47	78.6	603.69
T3 – Weeding with Japanese weeder	530.25	163.31	69.2	643.93

KVK Vaishali

- Title – Efficiency of maize sheller in drudgery reduction in maize against local practices
- Problem identified – Time consume is more by hand shelling and is painful

Technology assessed	Parameters of assessment	Data on the parameter	Results	Feedback
Efficiency of maize sheller	Quantity Quality time* T1-By hand (Local practice) T2-By any sharp equipment T3-Maize sheller.	Quantity in kg Quantity in % (Breakage Seed)	Maize sheller is significantly better than local practices, men performed better than women	Accepted by women as shelling mostly done by them.

Women		Man	
Quant.	Quali.	Quant.	Quali.
2.0	0%	2.5	0%
3.6	5.5%	3.9	4.25%
4.8	2.91%	5.9	1.75%

KVK Jahanabad

- Title : Weed Management through a Mould Board Plough in paddy cultivation
- Problem diagnosed : Non-adoption of M.B. plough for weed control in Jahanabad district. Farmers of the district still use cultivations for tillage operation with tractors which results in weed growth in the field and hence the yield of the crop is affected. Use of a bullock drawn deshi plough is also a time consuming operation. A mould board plough will be better as a primary tillage implement in paddy cultivation for overturning of soil.

Title of OFT	Technology assessed	Parameters of assessment	Data on the parameter	Result		
			Parameter	TO-I	TO-II	TO-III
Weed management through a mould board plough in paddy cultivation	Application of mould board plough as a primary tillage implement for weed management.	* Weed population (per square meter)	(i) Weed population (per sq.m)	09	12	03
		* Number of tillers per hill	(ii) Number of tillers per hill	29	32	42
		* Panicle length (cm)	(iii) Panicle length (cm)	21	21	21
		* Number of grains per panicle	(iv) Number of grains per panicle	252	253	256
		* Weight of 1000 grains (gram)	(v) Weight of 1000 grains (gram)	24.1	23.9	24.5
		* Yield (q/ha)	(vi) Yield (q/ha)	45.35	45.20	48.50
		* B/C ratio	(vii) B/C Ratio	1.725	1.783	2.098

* Interculturing/weeding cost can be minimized by the application of an MB plough as a primary tillage implement.

** Nearly seven percent increase in yield is found where an MB plough is used as a primary tillage implement. This is because negligible competence of plants with grasses /weeds from the beginning of the transplanting.

KVK Bhagalpur

OFT – I : Assessment of weed control measures in paddy

Technology assessed / refined	Production (q/ha)	Cost of cultivation (Rs/ha)	Gross return (Rs/ha)	Net return (Rs/ha)	B:C ratio
Tech. option – I Farmer's practice	26.5	8680	19875	11195	2.8
Tech. option – II Butachlor (3 lt/ha) one days after transplanting (DAT)	32.5	9280	24375	15095	2.62
Tech. option – III Butachlor (3 lt/ha) 1 DAT + 1 Hand weeding at 30 DAT	34.7	10615	26025	15410	2.45

OFT – II : Refinement of insecticide in controlling rice stem borer

Technology assessed / refined	Production (q/ha)	Cost of cultivation (Rs/ha)	Gross return (Rs/ha)	Net return (Rs/ha)	B:C ratio
Tech. option – I					
Farmer's practice	19.8	8680	14850	6170	1.71
Tech. option – II					
Imidacloprid @ 1 ml/ 5 lt water spray at P.I. Stage	38.4	8960	28800	19840	3.21
Tech. option – III					
Endosulphan 35 EC @ 2 ml/water spray at P.I. Stage & 15 days after 1st spray.	35.5	9680	26625	16945	2.75
Tech. option – VI					
Azadirachtine @ 5 ml/ water spray at P.I. Stage & 15 days after 1st spray.	30.2	10080	22650	12570	2.24

OFT – III : Nutrient management through bio-fertilizer in chickpea

Technology assessed/refined	Yield (q/ha)	Yield increase over control (%)	Cost of cultivation (Rs/ha)	Gross cost (Rs/ha)	Net Return (Rs/ha)	B:C ratio
Tech. option – I						
Farmer's practice	11.22		6509	28100	21591	4.31
Tech. Option – II						
(Seed treatment with Rhizobium culture)	12.05	7.20	6559	30125	23566	4.59
Tech. Option – III						
(Seed treatment with Rhizobium culture + Recommended N & P as per soil test)	14.50	29.00	7481	36250	28769	4.84

OFT – IV : Assessment of insecticides in controlling pod borer in chickpea

Technology assessed / refined	Yield (q/ha)	Yield increase over control (%)	Cost of cultivation (Rs/ha)	Gross cost (Rs/ha)	Net Return (Rs/ha)	B:C ratio
Tech. option – I						
No control measures (FP)	11.3		7481	28250	20769	3.77
Tech. option – II						
Methyl Parathion (2% dust) @ 25 kg/ha	13.0	15.04	7981	32500	24519	4.07
Tech. option – III						
Imidacloprid @ 1 ml/5 lt. water at 25% flowering.	15.0	32.74	7761	37500	29739	4.83
Tech. option – VI						
Endosulphan 0.07% @ 2 lit/ha (2 spray 1st at 25% flowering & 2nd at 15 days after 1st spray	14.2	25.66	8481	35500	27019	4.18

OFT – V: Assessment of weed management technique in wheat

Technology assessed / refined	Yield (q/ha)	Yield increase over control (%)	Yield reduction (q/ha)	Cost of cultivation (Rs/ha)	Gross cost (Rs/ha)	Net return (Rs/ha)	B:C ratio
Tech. option – I							
Farmer's practice	29.50		6.0 (16.90)	15488	32445		2.09
Tech. option – II							
Sulphuron (30 g/ha) (Post emergence)	35.50	16.90	–	14560	39050	24490	2.68
Tech. option – III							
Hand weeding (@ 20 DAS + 2, 4 – D @ 30 DAS	32.13	8.91	2.69 (8.18)	17433	35343	17910	2.02

OFT – VI : Assessment of fertilizer and vermi compost on yield and quality and potato

Final recommendation for micro level situation	Yield (q/ha)	No. of tuber/ hill	Wt. of tuber/ hill (g)	Tuber size (%)		
				>50 g	25-50 g	<25 g
Tech. option – I						
Farmer's practice	172	7.6	282	28.4	46.2	25.4
Tech. option – II						
Recommended dose of chemical fertilizer	214	8.8	342	49.3	32.2	18.5
Tech. option – III						
100% vermi compost	190	8.2	306	36.0	41.2	22.8

Cooking quality		Keeping Quality						
Taste	Cooking time	Stability in taste	Wt. of tuber (Kg)	No. of tuber	28th Feb		28th March	
					Wt. of tuber (Kg)	No. of tuber	Wt. of tuber (Kg)	No. of tuber
Better	Less time & less fuel consumption	Stable	2	54	2	54	2	54
Fair	More time & fuel consumption	Less Stable	2	51	2	51	2	51
Best	Less time & less fuel consumption	Stable	2	52	2	52	2	52

KVK Muzaffarpur

OFT-1

- Title : Performance of different mustard varieties under late sown condition
- Problem diagnosed : Untimely sowing of traditional variety
- Final recommendation for micro level situation: Needs further investigation

Technology assessed / refined	Production per unit(q/ha)	Net return (Profit) (Rs / unit)	B:C ratio
T1 Farmer's practice local	8.5	1650.00	1:2.67
T2 R. Rai Pichheti	12.74	28563.00	1:5.21
T3 Rajendra Suflam	16.28	39935.00	1:7.49

The trial conducted on farmer's field to test the different variety of mustard for higher yield revealed that Rajendra Suflam gave higher yield (16.28q/ha) than other variety

OFT-2

- Title : Evaluation of late sown wheat varieties
- Problems diagnosed : sowing of traditional wheat variety.
- Final recommendation for micro level situation : Recommended

Technology assessed / refined	Production (q/ha) Grain yield	Net return (Profit) (Rs / ha)	B:C ratio
Farmer's practice			
T1 local	23.5	19975.00	1:3.81
Technology assessed			
T2 PBW 373	36.0	37800.00	1:5.87
T3 HD 2643	31.4	32970.00	1:4.99

The trial conducted on farmer's field to evaluate the late sown wheat variety under medium land situation revealed that PBW 373 gave significantly higher yield (37.80 q/ha) in comparison to other treatment.

OFT-3

- Title : Effect of weaning on nutritional status of 6-12 month children
- Problem diagnosed : Unbalance nutrition of 6-12 month children results in poor health status
- Final recommendation for micro level situation : Amount of weaning mix per day/child – 25 gm

Technology assessed / refined	% Enhancement		Average	
	Weight	Height	Weight gain(kg)	Height gain(cm)
Farmer's practice T1	4.35	3.39	0.30	2.25
Exclusively breast feeding				
Technology assessed				
T2 Breast feeding with ordinary home diet	5.22	3.48	0.38	2.33
T3 Breast feeding with ordinary home diet+ weaning mix	6.62	3.95	0.48	2.69

Home made weaning mix prepared from QPM and other cereals and pulses and oilseed (3:2:1) resulted in satisfactory enhancement in health status.

OFT- 4

- Title : Assessment of herbal insecticides to control ectoparasite infestation in cattle and buffalo
- Problem diagnosed : Ectoparasite infestation is a major problem in cattle/ buffalo which causes poor health and production
- Final recommendation for micro level situation : Recommended

Technology assessed / refined	Production (Lt/Year/Cattle)	Net return (Profit) (Rs / cattle)	Health status (skin texture)	B:C ratio
Farmer's practice				
T1 control	639.9		Echopractic (Rough)	
Technology assessed				
T2 Neem leaf extracts application	912.6	5454.00	Pliable, glossy	1:15.8
T3 Butox 12.5%	1061.10	8424.00	Do	1:16.5

The result revealed that there was very little difference between T2 and T3 treatment however T2 was the best because it is indigenous, non harmful and economical.

OFT- 5

- Title : Effect of anthelmentic along with mineral mixture +vitamin supplement to minimize anestrus condition in cows
- Problem diagnosed : Most of the farmers don't give dewarmer and mineral mixture to their animal which affect production and breeding cycle
- Final recommendation for micro level situation: Need further investigation

Technology assessed / refined	Production (Lt/year/animal)	% Estrus condition	Net return (Rs / unit)	B : C ratio
Farmer's practice T1 Control	850.5	30		
Technology assessed				
T2 Fentas 2 bolus at 14 days interval	1136.7	60	5724.00	1:11.44
T3 Fentas + chilated agrimine forte (MM) @ 65gm/day	1876.5	80	20520.00	1:2.67

- on the basis of milk yield parameters the B : C ratio of T2 treatment is higher in comparison to T3 and T1, but in long term effects like onset of heat and conception rate and milk yield T3 were good.

OFT-6

- Title : Chemical control of tomato leaf curl virus disease
- Problems diagnosed : Tomato leaf curl virus transmitted by white fly causes 50-60% loss in production
- Final recommendation for micro level situation : Needs further investigation

Technology assessed / refined	Production per unit(q/ha)	Incidence score(%)	Net return (Rs / unit)	B : C ratio
Farmer's practice T1 control	198.20	42.41	-	-
Technology assessed				
T2 Thiomethoxam 25WG @ 1gm/3 lit of water	285.52	26.10	67481.00	1:9.41
T3 Acetamiprid 20SP @ 0.5gm/ lit if water	270.84	30.12	55212.00	1:8.32
Technology refined				

- The experiment conducted on farmer field to test the effect of different insecticides against the leaf curl virus disease and crop yield revealed that Thiomethoxam25WG was found most effective (26.10% incidence) and produced and control higher yield (285.52 q/ha)in comparison to other treatment.

OFT-7

- Title : Effect of combination products of insecticides on Brinjal shoot and fruit borer
- Problems diagnosed : Lack of technical knowledge for utilizing effective insecticides
- Final recommendation for micro level situation : Needs further investigation

Technology assessed / refined	Production per unit (q/ha)	Incidence score(%)	Net return (Profit) (Rs /unit)	B : C ratio
Farmer's practice T1 control	95.27	36.40		
Technology assessed				
T2 Chlorpyrifos 50%EC+ Cypermethrin 5%EC @1 ml/lit water	192.28	21.62	46640.00	1:5.10
T3 Trizophos 35%EC + Deltramethrin 1% EC @ 0.75ml/lit water	205.06	14.51	53301.00	1:4.32

- Treatment T3 was found most effective and produced higher yield (205.06 q/ha), however treatment T2, showed higher B : C ratio (1:5.10) than T3.

KVK Munger

OFT-1

Effect of soil solarization on seed bed of brinjal against damping off

Technology assessed / refined	Production per unit	Net return Rs / unit	B : C ratio
Farmer's practice : T_1 = No polythene sheet covered	180	Rs. 32/m^2	3.5
T_2 – Polythene sheet covered on seed bed before 10 days of seed sowing	390	Rs. 64/m^2	5.7
T_3 – Polythene sheet covered on seed bed before 20 days of seed sowing	395	Rs. 65/m^2	5.7

OFT- 2

Effect of seed treatment and soil solarization of tomato seed bed against damping off

Technology assessed / refined	Production per unit	Net return (Rs / unit)	B : C ratio
Farmer's practice : T_1 = No seed treatment & no. Polythene sheet covered on seedbed before seed sowing	175	Rs. 32/m^2	3.5
T_2 – Seed treatment with Trichoderma followed by Carbendazim	370	Rs. 52/m^2	5.6
T_3 – Polythene sheet covered on seed bed 20 days before seed sowing	390	Rs. 55/m^2	5.9
T_4– T_2 +T_3	395	Rs. 59/m^2	6.2

OFT- 3

Effect of different method of furrow irrigation

Technology assessed / refined	Production per unit (q/ha)	Net return (Rs / unit)	B : C ratio
Farmers practice : T_1 = Alternate furrow irrigation	260	11700.00	9.0
T_2 – Furrow irrigation method (control)	250	11200.00	8.3
T_3 – Furrow irrigation 25% cut off time	245	10930.00	8.36
T_4 – Alternate furrow irrigation with 25% cut off time	240	10705.00	8.26

OFT- 4

Performance evaluation of second generation zero till cum fertilizer drill machine in comparison to traditional method of sowing of wheat

Technology assessed / refined	Production per unit	Net return (Rs / unit)	B : C Ratio
Farmers practice : T_1 = Sowing of wheat by second generation zero til seed cum fertilizer drill	46	40400.00	1.58
T_2 – Sowing of wheat by row method by desi plough	44	35200	1.21
T_3 – (Control) Sowing of wheat by seedbed preparation & broad casting and thereafter planking	40	18500	0.65

KVK Saran

OFT-1

- Title – Assessment of vermicomposting on quality management of cow dung and plant residue
- Problem diagnosed - Cow dung is the most common source of organic manure, even today, in the farming community but due to lack of care and improper storage, generally by heap method, most of its nutrients are either lost in the form of gases or converted to some other chemicals not useful for the crop. So there is very low efficiency of cow dung manure and plant residue as a source of plant nutrient.
- Performance of the technology with performance indicators:
- Technology option I : Farmers practice (Depositing cow dung and plant residue as heap without covering)
- Technology option II : Making vermicompost from cow dung and plant residue
- Technology option III : Making compost from cow dung and plant residue by pit method

Technology assessed / refined	Production per unit	Net return (Rs / unit)	B : C ratio
Farmer's practice	12.6c	21691a	6.39a
Technology assessed	10.50a	44961c	6.09a
Technology refined	11.90b	32073b	9.17b

OFT- 2

- Title – Assessment of efficiency of wheeled weeder on drudgery reduction of women engaged in weeding operation
- Problem diagnosed – Weeding operation is generally done by women labourers in the field and the most common instrument is Khurpi. The women labourers (might be in stress) have to sit and crawl hours together in the field and they generally feel certain pressure.

Technology assessed / refined	Area covered / hour/labour (m^2)	Cost involved (Rs /ha) at 20 DAS	B : C ratio
Farmer's practice	26.89	3162.90	0
Technology assessed – Long stick hand hoe	67.44	1260.40	1.509
Wheeled weeder	56.94	1493.03	1.118

OFT-3

- Title – Assessment of non-chemical methods for management of pod borer in chickpea
- Problem diagnosed – Chickpea is the most widely grown pulse crop of Saran district especially in the Diara areas but in the recent years, the acreage as well as productivity of this crop has gone down due to pod borer infestation. The infested fields are sprayed with huge amount of Endosulfan 35 EC causing economic burden to the farmers on one hand and environmental pollution on the other hand.

Technology assessed / refined	Production per unit	Net return (Rs / unit)	B : C ratio
Farmer's practice (spraying of Endosulfan 35 EC@ 1.5 l/ha)	15.60	43320	3.87
Bacillus thuringiensis @ 1Kg formulation/ha (Thuricide)	15.15	42480	4.05
Intercropping of chickpea with coriander (80kg/ha+2 kg/ha)	14.70	41351	4.25
Use of Pheromone traps @20/ha	13.09	34620	3.19
Release of NPV @ 500 LE/ha	14.72	40730	3.79

OFT-4

- Title – Assessment of vermicompost on quality and yield of potato product
- Problem diagnosed – Potato is the most common vegetable in India available throughout the year. It is true that there is no any substitute of potato but in the recent times, people generally claim that there is no such taste in potato as it was earlier.

Technology assessed / refined	Production per unit	Net return (Rs / unit)	B : C ratio
Farmer's practice	283.28	50649	0.57
Technology assessed	301.14	84881	0.89
Technology refined	276.57	49793	0.57

OFT- 5

- Title – Assessment of irrigation scheduling on the production, productivity and economics of rapeseed and mustard
- Problem diagnosed – Rapeseed and mustard is the most popular oilseed crop of Saran district. Farmers grow this crop in a wide area but the productivity of this crop is very low, the probable reason being irrigation apart from other reasons like soil and climatic factors.

Technology assessed / refined	Production per unit	Net return (Rs / unit)	B : C ratio
Farmer's practice	12.51	25870	2.27
Technology assessed	13.73	29730	2.61
Technology refined	15.89	35152	2.84

OFT- 6

- Title – Assessment of sulphur containing fertilizers on the production, productivity and economics of rapeseed and mustard
- Problem diagnosed – Rapeseed and mustard is the most popular oilseed crop of Saran district. Farmers grow this crop in a wide area but the productivity of this crop is very low, the probable reason being lack of sulphur in the soil. Farmers do not use sulphur in their farms for a long time. Due to non-availability of SSP and due to wide adaptability of DAP, the soil is becoming deficient in sulphur.

Technology assessed / refined	Production per unit	Net return (Rs / unit)	B : C ratio
Farmer's practice	13.4	28060	2.46
Technology assessed	14.5	31750	2.75
Technology refined	16.5	36660	3.13

OFT-7

- Title – Assessment of different tillage options on the yield and economics of wheat
- Problem diagnosed – Wheat is grown in a vast tract of land in Saran district but the productivity is low due to late sowing, the reasons being water logging till the month of December in some areas. The farmers also have to bear high cost of production due to deep and repeated ploughing and pulverization of soil for sowing of wheat.

Technology assessed / refined	Production per unit	Net return (Rs / unit)	B : C ratio
Farmers practice- 6 Ploughing by 9 tyne cultivator	32.60	18020	1.24
One ploughing by MB plough+ 2 ploughing by Disc harrow+ 1 ploughing by 9 tyne cultivator at sowing	33.90	19500	1.36
Sowing by Zero tillage	36.21	23650	1.90
One ploughing by MB plough+ 2 ploughing by Disc harrow+ sowing by Furrow irrigated Raised Bed planter	37.45	25340	2.10

OFT- 8

- Title – Assessment of zinc and zinc supplements on the production, productivity and economics of paddy
- Problem diagnosed – Paddy – wheat crop rotation is the most promising crop rotation of Saran district but due to continuous mining of the micronutrients, the soil is becoming sick and nutrient deficient.

Technology assessed / refined	Production per unit	Net return (Rs / unit)	B : C ratio
Farmer's practice	24..28	7928	0.53
Technology assessed	33.29	16126	1.08
Technology refined	41.14	23367	1.56

OFT- 9

- Title – Assessment of deworming drug and mineral mixture on the yield and economics of milk production of cow

Technology assessed / refined	Production per unit	Net return (Rs / unit)	B : C ratio
Farmer's practice of feeding (Feeding without mineral mixture and deworming)	136.66	96.66	2.41
Farmer's practice of feeding with deworming (Albendazol @1g/100kg body weight)	156.66	115.66	2.82
Farmer's practice of feeding with mineral mixture (@ 60g per day per animal in divided dose)	176.66	135.66	3.52
Farmer's practice of feeding with deworming drug @1g/100 kg body weight and mineral mixture (@ 60g per day per animal in divided dose)	203.33	161.33	3.84
CD	6.35	6.35	0.15
SE	2.10	2.0	0.52

KVK Arwal

OFT-1

- Title – Assessment of wheat cultivars under irrigated late sown condition
- Problem diagnosed – Productivity of wheat is decreased considerably due to sowing of poor yielding variety under late sown condition

Technology assessed / refined	Production (q/ha)		Net return (Rs / ha)	B:C ratio
	Grain yield	Straw yield		
Farmer's practice	25.4	33.0	18200	2.39
1 U.P. 262				
Technology assessed				
2 HD 2329	28.15	36.30	19780	2.64
3 HD2643	30.25	41.75	22425	2.86
4 PBW 373	34.30	44.60	26760	3.23

Technology refined

Technology options	Effective tillers/m^2	No. of filled grain/Spike	1000 Grain wt (g)	Yield (q/ha)	% increase in yield
Farmer's variety	105	32	35	25.4	-
HD 2329	145	35	42	28.15	10
HD 2643	162	37	43.5	30.25	19
PBW 373	198	44	43	34.30	35

OFT-2

- Title – Chemical control of important weeds of wheat
- Problem diagnosed – The incidence of narrow and broad leaf weeds in wheat causes about 25-30% reduction in yield

Technology assessed / refined	Production (q/ha)		Net return (Rs / ha)	B:C ratio
	Grain yield	Straw yield		
Farmer's practice				
1. 2,4-D @ 0.8 kg ai / ha	28.0	37.50	19750.00	2.76
Technology assessed				
2. Isoproturon (0.75 kg a.i./ha) +2, 4-D(0.5 kg a.i./ha)	32.00	43.20	24320.00	3.023.02
3. Sulphasulfuron@33g / ha	30.00	40.00	22000.00	2.83

KVK Araria

OFT-1

❑ Title – Performance of different varieties of Oletorius Jute

Technology assessed / refined	Production (q / ha)	Net return (Rs / ha)	B : C ratio
Farmer's practice			
Farmers use local variety of Jute + two hand weeding at 25 & 40 DAS	Fibre=21 Stalk = 19	2800	1.12
JRO – 524 + 3.5 lit / ha pendimethiline	Fibre=28 Stalk = 26	16400	1.82
120 JRO – 632 + 3.5 lit / ha pendimethaline kg / ha	Fibre=33 Stalk = 30	22800	2.15

OFT-2

❑ Title – Enhancing productivity of milch cow by deworming & feeding of mixture of urea, jaggery, salt and mineral mixture (1 kg urea +1.5 liter water+10 kg jaggery + 1 kg salt+ 1 kg mineral mixture)

❑ Problem diagnosed – Low production of miilch cow after calving due to worm load and poor quality feed

Technology Assessed / Refined	Av. milk (per cow/day)	Net return (Rs / cow)	B : C ratio
Farmer's Practice :			
No use of deworming after calving	798.3 ml	Rs.7 per cow / day	
Deworming to milch cow	883.6 ml	Rs.9 per cow / day	
Deworming + 400 g above mixture in 5kg straw mixed with 2 litre of water	1099.2 ml	Rs.16 per cow / day	1.05:1

OFT- 3

❑ Title – Effect of deworming & supplementary feed on the growth of kid

❑ Problem diagnosed – Low body weight gain in goat kid

Technology assessed / refined	Weight gain per goat	Net return (Rs / goat)	B : C ratio
Farmer's practice	6 kg	480	
Deworming and 40 g concentrate per day along with grazing	6.92 kg	540	
Above + neem leaf	7 kg	560	2.17

OFT- 4

❑ Title – Performance of different sowing methods for late sown wheat

❑ Problem diagnosed – Sowing of wheat delayed due to late recession of water in low-lying area

Technology assessed / refined	Water saving in 1st irrigation (%)	Production (q /ha)	Net Return (Rs/ha)	B : C ratio
Farmer's practice				
Conventional tillage		20.0	2418	1.12
Surface seeding	6.62	28.0	13530	1.81
Zero tillage	27.25	32.0	19825	2.30

2.3.6 FARMER'S CLUB ESTABLISHED : 48

2.3.7 RADIO TALKS / TV PROGRAMMES

University Scientist on Television on the following topics :

- Role of extension in A.H.
- Importance of Panchgavya
- Capsicum cultivation through poly house
- Animal fodder and importance
- Selection of improved buffalo
- Surra disease in animal & treatment
- Brucella disease and treatment
- Liver fluke disease in animals
- Mastitis disease and treatment
- Care of pregnant goat
- Disease control in goat in winter season
- Animal vaccination
- Management of milch animals in winter season
- Rabbit rearing – source of income
- Disease and treatment of animals in rainy season
- Animal problems in winter season
- Quail rearing – An enterprise
- Pre-Post management of orchards pertaining to mango, litchi, guava wilt, Bunchy top of banana
- Garma moong ki kheti
- Mrida
- Major pests of maize and their management
- Gehun ke khari fashal me dwitiyak awam sukshmatrik tantwa prabandhan
- Sharad kalin ikh ki kheti
- Sharad kalin ikh ke sath antarvarti kheti
- Basant kalin ikh ki kheti
- Sharad kalin ikh ki dekhbhal
- Ikh khuanti ki kheti
- जमीन के विभिन्न स्थितियों के लिए धान की किस्मों का चुनाव
- पिछात धान की खेती
- बाढ़ ग्रस्त क्षेत्र में धान की खेती
- गरमा धान की खेती में जल प्रबन्धन
- मक्का में धड़छेदक का प्रबन्धन
- मक्का में आरोहक कटवी का प्रबन्धन
- Garma dhan me rog prabandhan
- Phone in live programme
- Khari phasal me utpan rog aur nidan
- 62 Programmes in the field of plant protection and related aspect were telecast through Annadata.
- बाढ़ोपरान्त कृषि क्रियाएँ
- गेहूँ की खेती : अधिक उत्पादन कैसे लें

- गेहूँ की कटनी में सावधानियाँ
- गरमा मक्का में सस्य प्रबंधन
- धान के खेत में इस समय का कार्य
- गरमा धान की खेती
- Air layering in guava
- Importance of seed and seed treatment
- Importance of quality seed

University Scientists on Radio :

- Makka ki unnat kheti
- Rabi arhar ki kheti
- Garma sabji ki dekhrekh
- Rabi makka ki dekhrekh
- Kharif ikh ki dekhrekh
- Shardkalin ikh ki unnat kheti
- Sakkarkand ki dekhrekh
- Mishrikand mei poshak tatwa prabhandhan
- Alu mein samekit poshak tatwa prabhandhan
- गरमा फसलों की देखभाल
- Basantkalin phaslo me rog niantran
- Krishi Vikash me vittiya sansthaon ki bhumika
- Tikau Kheti
- Krishi utpad vipnan vyawastha
- Anubaddh kheti
- Garma sabbjiyon ke khari fasal me urwarak
- Jaiv urwark
- Dhan ke fasal me khad awam urwarak proyog
- Mrida jeewon ki sankhya ko prabhabit karne wale karak
- Baadhgrast mrida ka prabandhan
- Mrida Jeewon ko prabhawit karne wale karak
- Mrida urwarta lane ke upay
- Mrida parikshan kab kyon aur kaise.
- Preservation of seasonal fruits
- Scientific cultivation oguava
- Preservation methods for fruits & vegetables
- Disease of kharif pulses & their protection.
- Moong ki kheti
- Phoolon ki kheti
- Garma sabjion ki kheti
- Ikh mei samekit poshak tatwa prabhandhan
- Aam evam litchi ke manjar ki suraksha.
- Aam ke phalo ki suraksha.
- Role of poly house in nursery raising

2.3.8 OTHER EXTENSION ACTIVITIES ORGANIZED

Nature of Extn. activities	Activities	Male	Female	Total
Field day	131	5928	366	6294
Kisan Mela	80	25424	2047	28971
Kisan Gosthi	300	21878	1112	23797
Exhibition	18	9406	678	10114
News Paper Coverage	734			
Advisory Service		10542	2904	13446
Scientist Visit to Farmers Field	1619	7755	2265	9985
Farmer Visit to KVKs		10850	105	10955
Diagnostic Visit	652	4230	323	4553

2.4 SEED PRODUCTION

Total quantity of seed received and sold from Seed Processing Plant , Dholi (Kharif)

Crop	Total raw seed	Seed Sold (q)				Total
		B/S	F/S	C/S	T/L	
Paddy	2519.92	74.00	928.54	631.92	191.21	1825.67
Arhar	06.86	0.88	04.86	-	-	5.74
Urd	0.50	0.20	-	-	-	0.2
Moong	58.475	26.12	0.51	03.405	24.663	54.8
Til	0.25	-	0.19	—	-	0.19
Total	**2586.005**	**101.2**	**934.1**	**635.325**	**215.873**	**1886.60**

Total quantity of seed received and sold from Seed Processing Plant , Dholi (Rabi)

Crop	Total raw seed	Seed Sold (q)				Total
		B/S	F/S	C/S	T/L	
Wheat	3257.08	901.43	1342.743	323.36	22.86	2590.39
Lentil	115.05	04.82	35.57	048.505	15.04	103.94
Rape-Mustard	91.74	6.625	12.22	-	25.445	44.29
Gram	15.95	01.30	-	10.98	-	12.28
Pea	08.95	0.40	04.25	0.015	-	04.67
Rajmah	18.08	0.75	00.66	00.55	-	01.96
Linseed	17.51	0.42	04.61	-	-	05.03
Maize	87.56	-	46.20	-	-	46.20
Total	**3641.92**	**915.75**	**1446.25**	**383.41**	**63.35**	**2808.76**

Account of Seed & Non-seed sold from Krishi Seva Kendra, Dholi

Year	Breeder seed	F/S,C/S,& T/S	Sold on credit	Sold to ATIC Cell, RAU, Pusa	Total
01.04.2008 to 31.03.2009	2188864.00	9301466.00	1870058.00	252397.00	13612785.00

Seed Produced by KVKs

Name of Crop	Quantity (in quintals)
Paddy	2205.83
Wheat	1260.36
Lentil	123.67
Green gram	42.45
Pea	1.00
Rajamah	3.11
Mustard	31.88
Linseed	10.60
Seasem	2.12
Toria	22.81
Lobia	4.50
Potato	2137.50
Sugarcane	650.00

Seed Produced by Units

Name of unit	Crop	Quantity (in quintals)			
		Breeder(B/S)	Foundation (F/S)	Certified (C/S)	T/L
BSP, Dholi	Paddy	112.79			0.74
	Wheat	71.27			
	Pulses	06.72			
BAC, Sabour	Wheat	25.75	48.00		
	Paddy	29.80	210.35		
	Pulses		8.75		
Wheat	K9107	-	-	33.00	-
	HD2824	-	30.00	-	-
	HD2733	-	15.00	47.00	-
	HD2643	-	52.00	-	-
	PBW373	-	45.00	-	-
	PBW 14	-	7.00	-	-
	PBW1073	-	-	-	2.00
	DBW14	-	-	-	2.50
	NW1014	-	-	-	3.00
Gram	C 235	-	-	-	17.35
	P 256	-	-	23.00	-
	PG 114	-	-	6.00	-
	DCP92-3	-	-	6.09	-
Pea	HUDP-15	-	-	-	-
Linseed	T-193	-	-	-	1.50
Rai	Swarna	-	-	2.40	
	RAU.TS-17	-	-	0.90	
	Varuna	-	-	-	17.00
Lentil	L9-12	-	-		1.35
	Arun	-	-	3.50	-
	PL 406	-	-	0.40	-
Arhar	Narendra	-	12.49	-	-
	Bahar	-	-	7.60	-
	Malvya	-	-	0.50	-

Name of Unit	Crop	Quantity (in quintals)			
		Breeder	Foundation A	Certified B	T/L C
TCA, Dholi					
Pulses	Pigeon pea	Bahar	30	583	613
		Sharad	05	-	05
		NDA-1	10	48	58
		MAL-13	10	15	25
	Mung bean	Sona	15	-	15
		SML 668	20	30	50
		Meha	08	35	43
		HUM 16	40	200	240
	Urd bean	Naveen	10	50	60
	Lentil	HUL-57	20	70	90
	Chickpea	BG 256	25	78	103
		BG 372	08	35	43
Oilseeds	R & M				
	Tori	RAUTS-17	53.00	-	-
	YS	66-1973	53.00	-	-
		Swarna	05.00	-	-
		RS-1	05.00	-	-
	Mustard	Varuna	42.00	-	-
		Pusa Bold	11.00	-	-
		RRP	11.00	-	-
		RA	13.00	-	-
		RS	90.00	-	-
	Linseed Seed type	Shekhar	45.00	-	-
		Garima	66.00	-	-
		Shubhra	97.00	-	-
		T397	9.00	-	-
	D/L	Rashmi	10.00	-	-
	Parvati	23.00	-	-	
		Meera	25.00	-	-
		GT.	558.00	-	-
Department of Horticulture, T. C. A., Dholi	Pea – Azad P-1, P-3	-	-	-	0.12
	Tomato – DVRT	-	-	-	0.02
	Potato	-	-	-	5.26
Centrally sponsored scheme on Spices development	Turmeric	-	-	-	400
	Ginger	-	-	-	13
	Seed Spices	-	-	-	6.25
Dholi Kothi Farm					
	Moong (Summer)				
	Meha				
	Pant-4	0.20	0.65	0.69	
	PDM 139				
	Pusa Vishal				
	SML 668		4.20		

(Contd. to P. 67)

(Contd. from P. 66)

Name of Unit	Crop	Breeder	Foundation	Certified	T/L
Dholi Kothi Farm					
Kharif 2008-2009	Paddy				
	Prabhat		234.10		
	Santosh		100.50		
	R. Mahsuri		46.00	108.90	
	Saket-4			23.00	
	Saroj		59.80		
Rabi 2008-2009	Rajmash PDR-14		1.83		
	Rai				
	Rai Suflam		15.0		2.40
	Rai Anukool		5.40		
	Lentil PL 406		11.96		
	Wheat				
	Wheat HD 2733	46.00			
	K-307	36.50			
	HD 2643		13.00		
	DBW-14	34.30			
	K-9107	18.50			
	HD- 2824	43.0			
	Arhar Malviya		6.00		
	Arhar Bahar			5.50	

PLANTING MATERIAL PRODUCED (1.4.08 to 31.3.09)

Name of unit/KVK	Crop	Quantity produced	Value in Rs.
S.R.I., Pusa	Sugarcane	2485.77 quintals	3,35,579.00
KVKs	Mango	19590	
	Guava	1044	
	Papaya	285	
	Lemon	88	
	Litchi	1278	
	Banana	500	
	Citrus	22	
	Jackfruit	2	
	Vegetables	21075	
TCA, Dholi	Tuber Crops (Other than Potato)	1430.5 kg	4814.00
	Mango	2005 Nos.	80,200.00
	Litchi	1314 Nos.	32,805.00
	Guava	376 Nos.	9,400.00
	Citrus	175 Nos.	2,625.00

(Contd. to P. 68)

(Contd. from P. 67)

Name of unit/KVK	Crop	Quantity / No. produced	Value in Rs.
TCA, Dholi			
AICRP on Tuber Crops	Elephant Foot Yam (Var. Gajendra)	3268.00	488.00
(Other than Potato)	Yam bean seed (Var. RM-1)	173.00	153.00
	Arvi (Var. RM-1)	593.00	306.00
	Sweet potato vine (Var. Cross-4, RS-47 etc)	200.00	100.00
	Lesser Yam (Var. Sree Latha, Lotni)	580.00	383.50
	Cassava (Sree Jaya, Sri Vijaya)	—	500 cuttings
Department of	Mango	2005 No.	80,200.00
Horticulture	Litchi	1314 No.	32,805.00
	Guava	376 No.	9,400.00
	Citrus	175 No.	2,625.00
Agroforestry			
AICRP on Agroforestry	Mahogani	269	1345.00
	Kadam	55	110.00
	Poplar(cutting)	530	1060.00
	Poplar(ETPs)	119	595.00
	Green Semal	665	1330.00
	Sindur	23	46.00
	Sarmmi	3	45.00
	Sagwan	2342	4684.00
	Bamboo	24	480.00
	Shisham	358	716.00
	Chah	140	280.00
	Desi Semal	730	1460.00
	Arjun	577	1154.00
	Gamhar	737	1474.00
	Neem	21	42.00
	Kala shisham (Plant)	30	60.00
	Kala shisham (cutting)	185	370.00
	Jamun	247	494.00
	Kathal	27	54.00
	Goldmohar	10	20.00
	Tun	2	4.00
	Khair	2	4.00
	Karanj	2	4.00
	Palash	5	10.00
	Aonla fruit	7 kg	70.00

FISH SEED PRODUCED

Name of Unit	Species	Stage	Quantity (No.)	Value in Rs.
COF, Dholi	Catla	Spawn	10,00,000	12,195/-
		Fry	-	-
		Fingerling	-	-
	Common Carp	Spawn	10,75,000	6,585/-
		Fry	26,625	5,571/-
		Fingerling	1,400	365/-
	Aquarium Fish	—	46 Pair	570/-

HONEY PRODUCED

Name of Unit	Type	Quantity (Kg)	Value in Rs.
AICRP on Honey Bees & Pollinators	Mustard	292.00	37960.00
	Litchi	1034.50	134485.00
Total :		**1326.50**	**172445.00**

MILK PRODUCED

Name of Unit	Type	Quantity
Cattle Farm, Pusa	Bufallo	13613.50
	Cow	111119.00

3. STUDENTS' WELFARE ACTIVITY

3.1 GAMES AND SPORTS

The games and sports activities create keenness amongst the students to get themselves acquainted and familiar to each other. During the year , the sports activities in all colleges of the university were organized. The students have taken keen interest in sports activities and regular classes of games & sports for participation of students in the inter college & inter university games & sports.

3.1.1 RAU-Inter College Athletic Meet

The games and sports society of the university successfully organized an inter college athletic meet for boys and girls separately at sports complex, RAU Pusa from 13.02.2009 to 15.02.2009. The chief guest, Dr. M.L. Choudhary, Hon'ble VC in the presence of about 376 students representing 10 colleges, inaugurated the meet. Almost all Deans, Directors, Assoc. Deans of the colleges, Faculty members, Prof. I/C, and I/C University Games & Sports Society, advisors, games and sports society and staff members were present on this occasion. Altogether 37 gold, 37 silver and 24 bronze medals were distributed to winners and runners as well as 1st, 2nd & 3rd position holders in different events, viz; volleyball (men), chess (boys & girls), table tennis (boys & girls), 100 meter race(boys& girls), 200 meter race (boys & girls), 800 meter race (boys & girls), long jump, shot put (boys & girls), disc throw (boys & girls), javelin and 400 meter relay race(boys and girls)

Medal Tally of different Colleges in Athletic Meet

Name of College	Gold Medal	Silver Medal	Bronze Medal	Total
PG Faculty	-	08	01	09
TCA, Dholi	17	05	06	28
BAC, Sabour	05	11	03	19
SGIDT,Patna	04	06	01	11
CAE, Pusa	08	04	03	15
B.Tech	03	02	02	07
COHs,Pusa	-	-	06	06
COF, Dholi	-	01	01	02
COH, Nalanda	-	-	01	01
TOTAL	**37**	**37**	**24**	**98**

On the basis of overall performance in the above tournament , Mr. Nirnay Kumar of SGIDT, Patna from boys group & Miss Prema Singh, BAC, Sabour from girls group were declared best player of the meet and in volleyball , PG Team, RAU Pusa & TCA Dholi captured winner and runner shield, respectively.

3.1.2 Participation of RAU team in Bihar State Inter University " EKLAVYA MEET"

On the basis of individual performance in the inter college athletic and sports meet 2008-09, 38 players selected to constitute University volley ball, table tennis, chess & athletic team along with Prof. I/C, university games & sports, 2 team manager and 4 accompanist participated in "EKLAVYA MEET" held at Tilaka Manjhi University, Bhagalpur in various games viz; chess, table tennis, volleyball and athletic under the banner of 2nd Bihar State Inter University Tournament. The boys team of table tannis & chess(girls) team performed well and captured Bronze medals.

3.1.3 Participation of RAU Team in Bihar State College Cultural & Debating activities " TARANG MEET" 2008-09

On the basis of selection trials held in the Flax House from 16th –18th March, 2009, 35 students were selected and participated along with 2 team managers and 4 accompanists in various events viz; music, dance, drama, fine arts organized by Bhim Rao Ambedkar Bihar University, Muzaffarpur from 22nd – 25th March 09, under the banner of 2nd Bihar State Inter University Cultural Festival " TARANG–2009"where from girls team Miss Swati Kumari, B.Tech., Bio- tech student owned 2nd position in rangoli painting and from boys team Mr. Pramod Kumar Prabhakar and Rajnish Ranjan of CAE Pusa captured 2nd & 3rd position, respectively in English debate competition .

3.2 NATIONAL CADETS CORPS ACTIVITIES

The 6/12 boy NCC Unit of RAU Pusa is running with an authorized strength of 55 cadets and one NCC officer. This is the only youth organization of the University which develop character comradeship, the idea of service and capacity for leadership in youth and energetic students and provides opportunity for the cadets to participate in various activities and trainings instructed to them. Apart from regular classes and parades in which cadets were trained in the relevant course contents, they also took part in the Independence day celebration, Republic day celebrations, Kisan Mela and in various different functions of the Colleges and University.

a. Camp Participation : Nine cadets with NCC officer Lft.(Dr) U.S.Singh represented University in combined Annual Training Camp-XII,2008 held at Samastipur from 18th Nov., 2008 to 27th Nov., 08.

b. Certificate Examination : Sqt Ranjeet Kumar and Capt Ajay Kumar appeared for "B" certificate examination of NCC and were declared successful.

3.3 NATIONAL SERVICE SCHEME

Due to the efforts made by the University Level Programme Co- ordinator, a separate budgetary system has been evolved for NSS activities as per the provision of NSS guidelines. The efforts are also being made to constitute a University level advisory committee for finalization of forthcoming NSS activities and programmes.

3.4 DEVELOPMENTAL WORKS AT HOSTELS

The hostels along with accommodations, common rooms and mess facilities have been provided to all boys & girls students separately in all campus of RAU. During the reported year, water coolers with aqua guards, refrigerator, inverter with battery and godrej furniture's & one color TV with dish antenna have been provided in university boys & girls hostel, RAU, Pusa. The boys & girls hostels at TCA , Dholi have also been provided 5 water coolers with aqua guards, 4 colour TV with Dish connection and 5 Syntax with fittings.

3.5 STUDENT COUNSELING AND PLACEMENT

During the reported year, for appointment of graduates / post- graduate/ Ph.D students of the RAU, nine reputed companies turned up for campus selection of students on different dates. On the basis of interview, different agencies selected students as given below :

S.N	Session	Companies	Students Selected
1	2008-09	CAPART, New Delhi	05
2	2008-09	ICICI, Prudential Company, New Delhi	05
3	2008-09	Aga Khan Rural Support Programme, Delhi	03
4	2008-09	Jain Irrigation System Pvt. Ltd., Jalgaon, Maharashtra	07
5	2008-09	PNB, New Delhi	03
6	2008-09	Triveni Engineering & Industries Ltd., New Delhi	04
7	2008-09	Harrison Malyalam Ltd., Kerala	10
8	2008-09	BASF India Ltd., Kolkata	04
9	2008-09	Charoen Pokpananad Pvt. Ltd., Thailand	02

4. UNIVERSITY LIBRARY

University Library, Pusa has been catering to the need of scientists, teachers, extension specialists, students and staff of the main campus of the university as well as scientific staff of the Research stations, sub-stations and KVKs of the University.

Opening hours	9.00 am to 05.00pm	
Circulation hours	10 am to 05.00 pm	
Documents in the library	59689	
Additions during the year	Books on 31.03.2006	56910
	Books by purchase	497
	Documents on grants	1890
	Theses by students	22
	Total 2409	
Indian Journals subscribed	128	
Foreign Journals subscribed	36	
CD ROM Databases available	1. CAB Abstract (1984- Present)	
	2. CROP CD (1943-2003)	
	3. CABPEST CD (1973-2004)	
	4. AGRIS CD (1991-2003)	
	5. AGRICOLA (1984-2003)	
	6. CABSAC (1973-1997)	
	7. FOOD& HUMAN Nutr. CD (1975-2004)	
Circulation of books	Books issued :	4712
	Books returned :	4545
	Total	9157
No. of readers registered in the year	Teachers/Scientists	168
	PG Students	90
	UG Students	222
	Staff	087
	Total	567
No. of visitors during the year	Teachers/Scientists	3050
	Students and others	13568
	Total 16618	
Services provided	No. of photocopies produced	6941
	1. References & information services	
	2. Book Bank Textbook service	
	3. CD ROM Based Bibliographical services	
	4. Reprographic services	
	5. Users education	
No. of staff	1. Technical	01
	2. Ministerial staff	05
	3. Supporting staff	04

5. UNIVERSITY HOSPITAL

Number of patients treated in the University Hospital during the year :

Sl. No.	Particulars	Male	Female
1	No. of patients treated	4627	800
2	No. of patients treated per day	18	12
3	Blood grouping	152	40
4	No. of patients recommended for specialized treatment	14	12
5	Mass immunization	450	
6	Dressing	581	
7	Blood sugar	192	
8	Hb % of blood	25	
9	Total count of WBC	114	
10	Differencial count of WBC	114	
11	ESR	60	
12	BT(Bleding time)	04	
13	CT (Clotting time)	04	
14	Urine examination	42	
15	Stool examination	20	
16	X-ray	73	

6. DIRECTORATE OF ADMINISTRATION

6.1 NUMBER OF SANCTIONED AND FILLED POSTS (NON PLAN, PLAN , ICAR, KVKs SEPARATELY)

1.Non-Plan

Post	Sanctioned	Filled	Vacant
Deans/ Directors /Registrar/Comptroller	22	00	22
Univ. Prof.- cum-Chief Scientist/ Chief Scientist- cum- Univ. Prof.	77	03	74
Assoc. Prof.- cum-Senior Scientist/Senior Scientist-cum-Assoc.Prof.	220	49	171
Asst.Prof.cum- Jr.Scientist/ Jr.Scientist- cum- Asst.Prof.	645	329	316
Technical Staff	1752	860	891
Supporting Staff & Auxiliary Staff	1498	770	774

2. Plan

S. No.	Unit	Univ. Prof.			Assoc. Prof.			Asst.Prof.			Technical Staff			Supporting Staff		
		S	F	V	S	F	V	S	F	V	S	F	V	S	F	V
1	MBAC, Saharsa	06	00	06	11	00	11	25	00	25	48	00	48	175	00	175
2	COH, Nalanda	11	00	11	26	00	26	52	00	52	36	00	36	184	00	184
	Total	17	00	17	37	00	37	77	00	77	84	00	84	443	00	443

3. ICAR

S.No.	Post	Sanctioned	Filled	Vacant
1	Univ. Prof.	05	00	
2	Assoc. Prof.	44	31	13
3	Asst.Prof.	91	91	00

4. KVKs

S.No.	Post	Sanctioned	Filled	Vacant
1	Programme Co-ordinator	29	01	28
2	SMS	174	97	77
3	Technical Staff	87	26	61
4	Supporting staff	176	142	34

6.2 SUPERANNUATION

S.No.	Name	Designation	Date of Superannuation
1.	Dr. B.S. Gupta	Sr. Scientist-cum-Assoc. Prof.	30.06.2008
2.	Prof. Harendra Singh	Jr. Scientist-cum-Asstt. Professor	31.07.2008
3.	Dr. N.B. Dwivedi	Sr. Scientist-cum-Assoc. Proof.	31.08.2008
4.	Dr. R. K. P. Sinha	Chief Scientist	30.04.2008
5.	Dr. R. P. Sinha	Senior Scientist	30.06.2008
6.	Sri Arbind Pratap Singh	Junior Scientist	30.06.2008

(Contd to P. 75

(Contd. from P. 74)

S.N.	Name	Designation	Date of Superannuation
7.	Dr. S. K. Sinha	Senior Scientist	31.07.2008
8.	Dr. B. D. Singh	Junior Scientist	31.12.2008
9.	Dr. K.S.P. Singh	Senior Scientist	31.01.2009
10.	Dr.A.K. Roy	Senior Scientist	31.05.2008
11.	Dr.B.P.Singh	Senior Scientist	30.06.2008
12.	Dr.U.S.P.Singh	Junior Scientist	30.06.2008
13.	Sri Gobind Sah	Peon	30.06.2008
14.	Sri Babu Lal yadav	Peon	30.06.2008
15.	Dr.Rajiv Ranjan Singh	Assoc.Professor	31.07.2008
16.	Dr. Naresh Kumar	Senior Scientist	31.07.2008
17.	Dr.A.K.Singh	Assoc. Professor	31.07.2008
18.	Sri Yogendra Mandal	Labour	31.07.2008
19.	Md.Habib	Monthly Man	31.07.2008
20.	Sri Pran Rajak	Sample Collector	31.10.2008
21.	Dr.N.N.P.Singh	Junior Scientist, KVK, Ariary	31.12.2008
22.	Sri Mahindra Pandit	N.T.S., Munger	31.01.2009
23.	Sri Girish Chandra Paswan	Clerk	31.01.2009
24.	Sri Rajendra Mandal	Peon	31.01.2009
25.	Sri Birendra Prasad Singh	Administrative Officer	28.02.2009
26.	Prof.S.D.Lal	Junior Scientist	31.03.2009
27.	Dr.S.Zaman	Chief Scientist	30.4.2008
28.	Dr.U.P.Sinha	Chief Scientist	30.6.2008
29.	Sri J.B.Ojha	Technical Assistant	28.2.2009
30.	Dr. Ayodhya Prasad	Univ. Professor-cum-Chief Scientist	31.07.2008
31.	Dr. S. P. Verma	Univ. Professor-cum-Chief Scientist	31.07.2008
32.	Dr. M. H. Akhtar	Univ. Professor-cum-Chief Scientist	31.01.2009
33.	Dr. C. Singh	Univ. Professor-cum-Chief Scientist	28.02.2009
34.	Dr. Rajendra Prasad	Chief Scientist	31.01.2009

7. AWARD, DISTINCTION AND RECOGNITION

- Dr. Rajesh Kumar Sr. Scientist-cum-Associ Prof., Department of Horticulture was conferred "Award of Honour" by R.A.U.,Pusa on 26.01.2009.
- Dr.Krishna Mohan Kumar,Asstt.Prof. -cum-Jr.Scientist,Vety Physiology, B.V.C.,Patna was conferred YOUNG SCIENTIST AWARD, 2008 by Society of Animal Physiologist of India at NIANP, Bangalore.
- Dr. S. B. Verma, Univ. Prof.-cum-Chief Scientist & Dr.K.G.Mandal,Assoc.Prof.-cum-Sr.Scientist,Deptt. of Anim.Breed.&Genetics were awarded SHIKSHA RATAN PURASKAR, 2008 by India International Friendship Society, New Delhi.
- Dr. Pallav Shekhar was given ISVM APPRECIATION AWARD, 2009 at 27th ISVM International Conference of Veterinary Medicine at Madras Veterianry College,Chennai.
- Dr. M.N. Ansari, Asstt. Professor-cum-Junior Scientist was conferred Appreciation Award by Indian Society of Extension Education, IARI, New Delhi on 20.12.2008.

8. ANNUAL ACCOUNT OF THE UNIVERSITY

1. RECEIPT

S.No.	Particulars	Amount (in Rs.)
1.	State Non-Plan	529496307.00
2	State Plan	400355100.00
3.	ICAR	155967933.00
4	KVK	96021900.00
5	Misc. Scheme	34597101.00
6	Other scheme	31698397.00
7	Revolving Fund	48750612.00
8	GIS	1852860.00
9	University Receipt	37289771.04
10	Students Fund	1558574.00
	Total	**1337588555.99**
	Add Opening Balance	**1016554650.68**
	Grand Total	**2354143206.67**

2. EXPENDITURE

S.No.	Particulars	Amount (in Rs.)
1	Non- Plan	527522391.54
2	Plan	110703046.33
3	ICAR, Scheme	76352091.75
4	ICAR, Plan	52423984.77
5	KVK, A/C	63662095.00
6	Misc. Scheme	52106339.48
7	Other scheme	22377162.17
8	Revolving Fund	37862844.62
9	GIS	2699900.00
10	Remittances adjustable	248766292.17
11	University Receipt	2408177.00
12	Students Fund	1068175.00
	Total	**1197952499.93**
	Closing Balance	**1156190706.74**
	Grand Total	**2354143206.67**

9. SEMINAR / SYMPOSIUM / CONFERENCE / SHORT COURSE / TRAINING / WORKSHOP ORGANIZED

- National Biennial Group Meet, AICRP (HB&P) on Feb 19-20, 2009 at SRI, RAU, Pusa.
- Honey Bee Festival on Feb 20-21, 2009 at Flex House, RAU, Pusa.
- IPR Interactive Seminar on Jan 24, 2009 at Sanchar Kendra, RAU, Pusa.
- Training-cum-Awareness Programme on Protection of Plant Varieties and Farmer's Rights on 15th March, 2009 at Sanchar Kendra, RAU, Pusa.
- National Seminar on Amorphophallus: Innovative Technologies on July 19-21, 2008 at BVC, Patna.
- National Seminar on Recent Production Technology of Spices on Feb 9-11 , 2009 at KVK, Motihari .
- Management and Monitoring of Field Trial of Genetically Engineered Crops on 05th Feb, 2009 at Sanchar Kendra, R.A.U, Pusa .
- Training of Officers/Staff on Soil Testing on 26th Oct, 2008 at B.A.C., Sabour.
- Training on Role of Extension & its Approaches for Horticultural Development on Dec 12-18, 2008 at BAC, Sabour.
- Workshop on Overcoming Technological Gaps in Orchard Management on March 18-19, 2009 at BAC, Sabour.
- Training on Naye Bagoan ki Dekh Rekh, Urvrak tatha Poshak Tatwa Prabandhan evam Purane Bagoan se Adhik Phalotpadan Taknik on March 24-28, 2009 at BAC Sabour.
- Officers Training on Horticultural Management on Sept 18-13 , 2008 at COF, Noorsarai.
- National Seminar on Role of Agricultural Engineers in Ensuring Food Security and Safety on Dec 6-7, 2008 at CAE, Pusa.
- Training of Farmers on Scaling up of Water Productivity in Agriculture for Livelihoods through Teaching cum Demonstration from Aug 8-14, 2008 at Kisan Ghar, RAU,Pusa.
- Training of Farmers on Scaling up of Water Productivity in Agriculture for Livelihoods through Teaching cum Demonstration from Sept 22-28, 2008 at KVK, Sabour, RAU, Pusa.
- Training of Farmers on Scaling up of Water Productivity in Agriculture for Livelihoods through Teaching cum Demonstration from Sept 23-29, 2008 at KVK, Munger,RAU, Pusa.
- Training on Micro irrigation on April 2-3, 2008 at Pusa.
- Training on Drip irrigation & Protected Cultivation on Jan 2-3, 2009 at Kamargama, Munger.
- Training on Drip irrigation in Banana on 17th March 2009 at C.A. E., Pusa.
- Training on Drip irrigation in Banana on 20th March, 2009 at C.A. E., Pusa
- Workshop on Importance of Potassium in Bihar Agriculture on 11th Dec 2008 at RAU, Pusa
- Golden Jubilee & National Seminar on Innovative Extension Strategies for Agricultural Development and Rural Prosperity on Dec 18-20, 2008 at Pusa.
- Institutional seminar cum Interactive meeting on IPR Awareness on 24th Jan 2009 at RAU, Pusa
- State level workshop on Management and Monitoring of field trials of genetically Engineered crops on 05th Feb, 2009 at RAU, Pusa.
- Training-cum-Awareness Programme on Protection of Plant Varieties and Farmer's Right on 15th March, 2009 at RAU, Pusa.

10. PARTICIPATION OF SCIENTISTS IN NATIONAL / INTERNATIONAL SEMINAR / SYMPOSIUM / CONFERENCE

Dr. Neeraj Kumar participated in National Symposium on IPM Strategies to Combat Emerging Pests in the Current Scenario of Climate Change, organized by Entomological Society of India, New Delhi during Jan 28-30, 2009 at College of Horticulture & Forestry, CAU, Pasighat (Arunachal Pradesh).

Dr. R. Singh & Dr. Neeraj Kumar participated in National Biennial Group meet, AICRP (HB&P) and Honey Festival, organized by AICRP (HB&P) during Feb 19-21, 2009 at RAU, Pusa

Dr. Dibyanshu Shekhar & Dr. Satya Prakash participated in National Seminar on Innovative Extension Strategies for Agricultural Development and Rural Prosperity, jointly organized by Department of Extension, RAU, Pusa and Indian Society of Extension Education, New Delhi on Dec.18-20, 2008 at RAU, Pusa.

Dr. R. Singh, Dr. A.K. Mishra & Dr. Neeraj Kumar participated in National Seminar on Production, Processing, Marketing and Export of litchi for Economic Prosperity during June 8-11, 2008 at NRC for Litchi, Muzaffarpur.

Dr. Neeraj Kumar participated in State level workshop on and Management and Monitoring of Genetically Engineered Crops, organized by RAU, Pusa and Biotech consortium India Ltd. New Delhi Sponsored by DBT, Ministry of Environment & Forest, Govt. of India on 05th Feb, 2009 at Sanchar Kendra, RAU, Pusa.

Dr. M.N. Ansari attended National Seminar organised by B.A.U., Kanke, Ranchi on Nov 21-22, 2008.

Dr. A.K. Singh Dr. K. K. Sinha, Dr. A. K. Chaudhary, Dr. M.N. Ansari & A.K. Paswan participated in National Seminar on Innovative Extension Strategies for Agricultural Development and Rural Prosperity jointly organized by Department of Extension, RAU, Pusa and Indian Society of Extension Education, New Delhi on Dec.18-20, 2008 at RAU, Pusa

Meera Kumari participated in National Seminar organized by CAE Pusa on Dec 6-7, 2008 at Flax House, RAU, Pusa.

Dr. J. P. Upadhyay participated in International conference on Grain Legumes: Quality Improvement Value addition & Trade, organized by IIPR, Kanpur during Feb. 14-16, 2009 .

Dr. A.K. Mishra participated in National Seminar on Recent Trends in Research on Spices & Aromatics, organized by Department of Vegetable Science, CCS, Haryana Agricultural University, Hisar on Sept 10-12, 2008.

Dr. A.K. Mishra participated in National Seminar on Recent Production Technology of Spices Crops, organized by Programme Co-ordinator, KVK, Pipra Kothi, Motihari Bihar. on Feb 9-11, 2009.

Dr. Anil Pandey participated in State Level workshop on Management and Monitoring of Field Trials of Genetically Engineered Crops, organized by RAU, Pusa and Biotech Consortium India Ltd. New Delhi, sponsored by DBT, Ministry of Environment & Forest, Govt. of India on 05th Feb, 2009 at Sanchar Kendra, RAU, Pusa

Dr. S. B. Mishra and Dinesh Rai participated in State level workshop and Management and Monitoring of Genetically Engineered Crops, organized by RAU, Pusa and Biotech Consortium India Ltd. New Delhi, sponsored by DBT, Ministry of Environment & Forest, Govt. of India on 05th Feb, 2009 at Sanchar Kendra, RAU, Pusa.

Dr. Rajendra Prasad Participated in State level workshop on Management and Monitoring of Genetically Engineered Crops, organized by RAU, Pusa and Biotech Consortium India Ltd. New Delhi, sponsored by DBT, Ministry of Environment & Forest, Govt. of India on 05th Feb, 2009 at Sanchar Kendra, RAU, Pusa.

Madhuri Arya participated in State level workshop on Management and Monitoring of Genetically Engineered Crops, organized by RAU, Pusa and Biotech Consortium India Ltd. New Delhi, sponsored by DBT, Ministry of Environment & Forest Govt. of India on 05th Feb, 2009 at Sanchar Kendra, RAU, Pusa.

Anuj Kumar Choudhary participated in State level workshop on Management and Monitoring of Genetically Engineered Crops, organized by RAU, Pusa and Biotech Consortium India Ltd. New Delhi, sponsored by DBT, Ministry of Environment & Forest, Govt. of India on 05th Feb, 2009 at Sanchar Kendra, RAU, Pusa.

Dr. Ajay Kumar participated in State level workshop on Management and Monitoring of Genetically Engineered Crops, organized by RAU, Pusa and Biotech Consortium India Ltd. New Delhi, sponsored by DBT, Ministry of Environment & Forest Govt. of India on 05th Feb, 2009 at Sanchar Kendra, RAU, Pusa.

Dr. S.P. Singh participated in State level workshop on Management and Monitoring of Genetically Engineered Crops, organized by RAU, Pusa and Biotech Consortium India Ltd. New Delhi, sponsored by DBT, Ministry of Environment & Forest, Govt. of India on 05th Feb, 2009 at Sanchar Kendra, RAU, Pusa.

Udit Kumar participated in State level workshop on Management and Monitoring of Genetically Engineered Crops, organized by RAU, Pusa and Biotech Consortium India Ltd. New Delhi, sponsored by DBT, Ministry of Environment & Forest, Govt. of India on 05th Feb, 2009 at Sanchar Kendra, RAU, Pusa.

Dr. A.K. Mishra participated in State level workshop on Management and Monitoring of Genetically Engineered Crops, organized by RAU, Pusa and Biotech Consortium India Ltd. New Delhi, sponsored by DBT, Ministry of Environment & Forest, Govt. of India on 05th Feb, 2009 at Sanchar Kendra, RAU, Pusa.

Dr. Anil Pandey participated in XXXII Indian Social Science Congress organized by Indian Academy of Social Science Allahabad during Dec 18-22, 2008 at Jamia Millia Islamia, New Delhi.

Dr. Anil Pandey participated in Seminar on Diara Land Management, organized by Deptt. of Agriculture, Diara Land Development Project & Directorate of Extn. Edu. RAU, Bihar on 05th March, 2009 at RAU, Pusa.

Dr. R.K. Akhauri participated in National Seminar on Vegetable Oil Scenario, organized by Director DOR, Hyderabad on Jan 29-31, 2009 at DOR, Hyderabad.

S.S. Das participated in National Seminar on Vegetable Oil Scenario, organized by Director DOR, Hyderabad during Jan 29-31, 2009 at DOR, Hyderabad.

Anuj Kumar Choudhary participated in Training-cum-Awareness Programme on Protection of Plant Varieties & Farmers Rights Act, organized by IPR, Cell, RAU, Pusa, & PPV & FR-Authority, Ministry of Agriculture, Govt. of India, on 15th March, 2009.

Dr. S.B. Mishra participated in Training-cum-Awareness Programme on Protection of Plant Varieties & Farmers Rights Act, organized by IPR, Cell, RAU, Pusa, Bihar.& PPV & FR-Authority, Ministry of Agriculture, Govt. of India. on 15th March, 2009.

Dr. R.S. Rai participated in Training-cum-Awareness Programme on Protection of Plant Varieties & Farmers Rights Act, organized by IPR, Cell, RAU, Pusa, Bihar& PPV & FR-Authority, Ministry of Agriculture, Govt. of India on 15th March, 2009.

Madhuri Arya participated in Training-cum-Awareness Programme on Protection of Plant Varieties & Farmers Rights Act, organized by IPR, Cell, RAU, Pusa, Bihar & PPV & FR-Authority, Ministry of Agriculture, Govt. of India, on 15th March, 2009.

Dr. Ajay Kumar participated in Training-cum-Awareness Programme on Protection of Plant Varieties & Farmers Rights Act, organized by IPR, Cell, RAU, Pusa, Bihar & PPV & FR-Authority, Ministry of Agriculture, Govt. of India on 15th March, 2009.

Dr. P. P. Singh participated in National Seminar on Production, Processing, Marketing and Export of Litchi for Economic Prosperity, organized by NRC on Litchi during June 8-11, 2009 at Mushari (Muzaffarpur)

Dr. P.P. Singh participated in National Seminar on Amorphophallus: Innovative Technology, organized by AICRP on Tuber Crops, TCA Dholi, RAU, Bihar during July 19-21, 2009 at BVC, Patna.

Anuj Kumar Choudhary participated in National Seminar on Amorphophallus: Innovative Technology, organized by AICRP on Tuber Crops, TCA Dholi, RAU, Bihar during July 19-21, 2009 at BVC, Patna.

Dr. P. P. Singh participated in National Conference on Challenges and Opportunities of Agricultural Development in Bihar, organized by State Farmers Commission, Patna, Bihar during Dec 10-11, 2008 at Patna.

Dr.Vikram Bharati, Dr.Rama Shankar Singh,Dr. K.K. Sinha,Dr. I.B. Pandey& Dr. G. Jha participated in Biennial Conference on Weed Management in Modern Agriculture Emerging Challenges and Opportunities, organized by ISWS,NRCWS & RAU,Bihar during Feb 27-28, 2008 at BVC, Patna.

Dr. C.P. Singh, Sri Birendra Prasad & Vikram Bharati participated in Production ,Processing, Marketing and Export of Litchi for Economic Prosperity, organized by NRC on Litchi, Mushari, Muzaffarpur during June 8-11th,2008.

Dr. C.P. Singh and Birendra Prasad participated in National Seminar on Amorphophallus: Innovative Technologies, organized by R.A.U., Bihar during July 19-20 , 2008 at B.V.C., Patna.

Dr.Tikram Bharati participated in Human Resource Development for Agril. Extension, organized by Bameti, Patna, during Dec 21-23, 2008 at R.A.U., Bihar

A. Kumar R. S. Singh and K.Singh participated in Higher Education: Access, Equity and Relevance. Indian Higher Education and Tribals: Problems and Prospects, organized by A.S. College, Deoghar (Dumka), S.K.M. University, Jharkhand during March 29-31, 2008.

Dr. R. S. Singh participated in 11th Annual Conference organized by Economic Association of Bihar Marketing Crisis of Betel Vine Growers : Micro Study in Bihar during April 5-7, 2008 at College of Commerce, Patna.

Dr.Ravi Nandan partipated in International Conference organized by Indian Society of Pulses Research and Development, IIPR, Kanpur during Feb 14-16, 2009 at IIPR, Kanpur.

Dr. H.P. Mishra participated in National Seminar on Production, Processing, Marketing and Export of Litchi for Economic Prosperity, during June 8-11, 2008 at Mushari, Muzaffarpur .

Dr. R. Choudhary participated in National Seminar on Production, Processing, Marketing and Export of Litchi for Economic Prosperity, organised by Director NRC on Litchi, Muzaffarpur during June 8-11, 2008 at Mushari, Muzaffarpur.

Dr. L.M. Yadav participated in National Seminar on Production, Processing, Marketing and Export of Litchi for Economic Prosperity, organized by Director NRC on Litchi, Muzaffarpur during June 8-11, 2008 at Mushari, Muzaffarpur.

Dr. S.P. Singh participated in National Seminar on Production, Processing, Marketing and Export of Litchi for Economic Prosperity organized by Director NRC on Litchi, Muzaffarpur during June 8-11, 2008 at Mushari, Muzaffarpur.

Dr. R. Choudhary participated in Recent Production, Technology of Spices, organized by Programme Co-ordinator K.V.K., Pipra Kothi during Feb 9-11, 2009 at Muslim Library Motihari.

Dr. L.M. Yadav participated in Recent Production, Technology of Spices, orgaized by Programme Co-ordinator, K.V.K., Pipra Kothi during Feb 9-11, 2009 at Muslim Library, Motihari.

Dr. S.P. Singh participated in Recent Production Technology of Spices, orgaized by Programme Co-coordinator, K.V. K., Pipra Kothi during Feb 9-11, 2009 at Muslim Library, Motihari.

Dr. R. P. Yadav participated in International Conference on Grain Legumes, Quality Improvement, Value Addition & Trade, organized by Indian Society of Pulses Research & Development, Kanpur during Feb 14-16 , 2009 at IIPR, Kanpur.

Dr. R.P. Yadav participated in Seminar on Challenges & Opportunities of Agril. Development in Bihar, organized by State Farmers Commission, Bihar during Dec10-11, 2008 at Panta.

Dr. R.P. Yadav participated in National Symposium on Emerging Trends of Researches in Insect Pest Management & Environmental Safety during Sept 24-26, 2008 at Haridwar.

Dr. Ashok K.Singh participated in International Seminar on Strategies for Improving Livelihood Security of Rural poor, organized by Asian society of Extn. Edn, Maharashtra during Sept 24-27, 2008 at ICAR Reasearch Complex for Goa.

Dr. K.K. Sinha participated in National Seminar on Information Technology in Agriculture and Rural Development, organized by BAU, Ranchi, during Nov 21-22, 2008 at BAU, Ranchi.

Dr. Satya Prakash participated in National Seminar on Information Technology in Agriculture and Rural Development, organised by BAU, Ranchi during Nov 21-22,2008, at BAU, Ranchi.

Dr. B B P Sinha participated in 1st Bihar Science Conference, organized by Bihar Brains Development Society during May 7-9, 2008 at Science College, Patna (P. U.)

Dr.D.N.Choudhary participated in National Seminar organized by AICRP (Tuber crops), ICAR, New Delhi at B.V.C., Patna.

Dr. M. K. Wadhwani participated in National Seminar on Understanding the Growth & Prospect of Agro Processing Industries in Bihar, organized by Agro-Economic Research Centre, T.M. Bhagalpur University, Bhagalpur, during April

15-16, 2008 at Bhagalpur.

Dr. M. K. Wadhwani and Kamal Kant participated in National Seminar on Production, Processing, Marketing & Export of Litchi for Economic Prosperity, organized by National Research Centre for Litchi, Muzaffarpur during June 8-11, 2008 at Muzaffarpur.

Dr. D. N.Choudhary, Dr. I. D. Prasad, Dr. R. S. Choudhary and Dr. A. P. Bhagat participated in XXVI AICRP (VC) Group Meeting, organized by Director IIVR, ICAR, Varanasi during Feb 23-27, 2008 at O.U.A.T., Bhubeneshwar.

Dr.Y.K.Singh participated in National Seminar organized by Director Extension, BAU, Ranchi during Nov 21-22, 2008

Dr.Y.K.Singh participated in National Seminar organized by Director NRC for Litchi in 2008 at NRC, Muzaffarpur.

Dr. J. P. Singh participated in Madhu Mela & National Seminar organized by R.A.U., Bihar, Pusa, Samastipur April 13-14, 2008.

Dr. J. P. Singh participated in Development of Farmers through Hort. Value Addition Products, organized by IFCO Foundation, Maheshkhut (Khagaria) on 7th April, 2008 at Khagaria.

Dr. J. P. Singh participated in Production. Processing, Marketing and Export of Litchi for Economic Prosperity, organized by NRC for Litchi (ICAR), Mushari, Muzaffarpur during June 8-11, 2008.

Dr. J. P. Singh participated in Understanding of the Growth and Prospective of Agro-processing Industries in Bihar, organized by T.M.Bhagalpur University, Bhagalpur during April 15-16, 2008.

Dr. Rajesh Kumar participated in 3rd Indian Horticultural Congress, organized by IARI, New Delhi during Nov 6-9, 2008 at OUAT, Bhubaneshwar.

Dr. Sanjay Sahay participated in 3rd Indian Horticultural Congress organized by IARI, New Delhi during Nov 6-9, 2008 at OUAT, Bhubaneshwar.

Dr. M. Alam participated in a Conference organized by Sugar Technology Mission of India during July 25-27, 2008 at New Delhi.

Dr. C.K. Jha participated in a Conference organized by Sugar Technology Mission of India during July 25-27, 2008 at New Delhi.

Dr.C.Jayachandran and Dr. N.Kumar participated in National Symposium on Challenges,Scientific Validation and IPR Protection of Indigenous Medicinal Plants Based ITK and Emerging Risks to Wild Life Due to Drugs and Toxicants and Ameliorative Measures , organized by Pandit Deen Dayal Upadhyay, Pashu Chikitsa Vigyan Vishwavidyalaya and Gau-Anushandhan Sanshthan ,Mathura,U.P. during Nov 6-8, 2008.

Dr. P. Shekhar participated in 27th ISVM and International Conference of Veterinary Medicine, organized by Madras Veterinary College,Chennai during Feb 19-21, 2009.

Dr.S.K.Sinha and Dr.S.K.Rajak participated in National Seminar on Innovative Extension Strategies for Agricultural Development and Rural Prosperity, organized by RAU,Pusa during Dec 18-20, 2008.

Dr.Chandramani participated in World Conference on Animal Nutrition –Preparedness to Combat Challenges organized by Animal Nutrition Association at New Delhi during Feb 14-17, 2009.

Dr.S.B.Verma and Dr.K.G.Mandal participated in National Seminar on Role of Education in Modern India, organized by IIFS,New Delhi on 18th Nov, 2008.

Dr. P.K. Singh participated in National Seminar on Production, Processing, Marketing and Export of Litchi for Economic Prosperity, organized by NRC Litchi, Muzaffarpur during June 8-11, 2008.

Dr. S. K. Rai participated in National Seminar on Production, Processing, Marketing and Export of Litchi for Economic Prosperity, organized by NRC Litchi, Muzaffarpur during June 8-11, 2008.

Dr. M. K. Singh participated in National Seminar on Production, Processing, Marketing and Export of Litchi for Economic Prosperity, organized by NRC Litchi, Muzaffarpur during June 8-11, 2008.

Dr. Vinay Kumar participated in National Seminar on Production, Processing, Marketing and Export of Litchi for Economic Prosperity, organized by NRC Litchi, Muzaffarpur during June 8-11, 2008.

Dr. Mahesh Kumar participated in National Seminar on Production, Processing, Marketing and Export of Litchi for Economic Prosperity, organized by NRC Litchi, Muzaffarpur during June 8-11, 2008.

Manikant Prabhakar participated in National Seminar on Production, Processing, Marketing and Export of Litchi for Economic Prosperity, organized by NRC Litchi, Muzaffarpur during June 8-11, 2008.

Dr. P. K. Singh participated in National Seminar on Amorphaphallus : Innovative Technology, organized by RAU, Pusa at BVC Patna.

Dr. Mahesh Kumar participated in National Seminar on Amorphaphallus : Innovative technology, organized by RAU, Pusa at BVC Patna

Dr.R.K.Sahu participated in International Conference on Environment & Water Resources, organized by AIT, Bangkok (Thailand & EWRI-ASCE USA) during Jan 5-7, 2009 at AIT Bangkok .

Dr. Ruby Rani participated in National Seminar on Litchi, organized by NRCL, Muzaffarpur during June 8-11, 2008 at Muzaffarpur.

Dr. Ruby Rani participated in Seminar on Organic Cultivation Under Protected Cultivation, organized by IIT, Kharagpur during Nov 14-15, 2008 at IIT, Kharagpur.

Dr.Ruby Rani participated in National seminar on Protected Cultivation, organized by UHF, Solan during Feb 22-23, 2009 at UHF, Solan.

Er Vishal Kumar participated in National Seminar on Amorphophallus : Innovative Technology, organized by CTCRI, Tamil Nadu, ICAR, New Delhi & RAU, Pusa during July 19-20, 2008 at B.V.C., Patna.

Dr. A.P. Mishra participated in ISAE Annual Convention, organized by Indian Society of Agricultural Engineers (ISAE) during Feb 15-17 2009 at B.A.U., Ranchi.

Dr. S.K. Jain participated in ISAE Annual Convention, organized by Indian Society of Agricultural Engineers (ISAE) during Feb 15-17, 2009 at B.A.U., Ranchi.

Dr. M. S. Ali, Dr. D. K. Das, and Dr. R. K. Jha participated in National Symposium on Agroforestry Knowledge for Sustainability, Climate Moderation and Challenges Ahead, organized by ICAR, New Delhi and NABARD, Mumbai during Dec 15-17, 2008 at NRCAF, Jhansi.

Dr. M. S. Ali participated in National Seminar on Amorphophallus : Innovative Technologies, organized by ICAR, New Delhi & RAU, Pusa during July 19-20, 2008 at B. V. C., Patna.

Dr. M. S. Ali participated in National Seminar on Innovative Extension Strategies for Agricultural Development and Rural Prosperity, organized by ICAR, New Delhi & RAU, Pusa in Dec 18-20, 2008 at R.A. U. Pusa.

Dr. A. P. Singh participated in National Seminar on Nutrient Mining from Soils of Bihar, organized by FAI in Dec 2008 at Patna

Dr. A. P. Singh participated in National Seminar on Balanced Fertilization through Micronutrient Application, organized by NAII-YI on 30th May, 2008 at Chandigarh.

Dr. Vipin Kumar participated in Seminar on Importance of Potassium in Bihar Agriculture, organized by IPNI, Patna on 11th Dec., 2008 at RAU, Pusa

Dr. R. R. Singh participated in Importance of Potassium in Bihar Agriculture, organized by IPNI, Patna on11th Dec, 2008 at RAU, Pusa.

Dr. Vipin Kumar participated in National Seminar on Development in Soil Science, organized by IISS, New Delhi during Nov 27-30, 2008 at UAS, Bangalore.

Dr. S. P. Singh participated in National Seminar on Development in Soil Science, organized by IISS, New Delhi during Nov 27-30, 2008 at UAS, Bangalore

Dr. R. K. Pandey participated in State level Seminar on Diara Land Management, organized by R.A.U,Pusa, on 5th March, 2009.

Dr. S.K. Singh participated in State Level Seminar on Challenges and Opportunities of Agricultural Development in organized by State Farmers Commission, Bihar.

Dr. P.K. Jha participated in National Seminar on Information Technology in Agriculture and Rural Development, or by Department of Science and Technology, Govt. of India & Department of Extension Education, BAU, Ranchi duri 21-22, 2008 at Ranchi.

Dr. D.K. Dwivedi participated in National Seminar on New Paradigm in Agronomic Research, organized by IS IARI, New Delhi during Nov 15-17, 2008 at New Delhi.

Dr.Vibha participated in4th World Congress on Conservation Agriculture:Innovation for Improving Efficiency, Equ Environment, organized by NAAS and IARI, New Delhi during Feb 4-7, 2009 at New Delhi.

Dr. Birendra Kumar participated in30th Annual Conference and Symposium on Advances in Bio-technology fo Protection, organized by ISMPP and University of Mysore during Nov17-19, 2008 at Mysore.

Dr. Vinod Kumar participated in National Symposium on New Paradigms in Agronomic Research, organized by Society of Agronomy & NAU, Navsari, Gujarat during Nov 19-21, 2008 at NAU, Navsari.

Dr. D. K. Roy participated in National symposium on New paradigm in Agronomic Research, organized by Indian S of Agronomy, New Delhi & Navsari Agril. Univ., Navsari during Nov 19-21, 2008 at NAU, Nausari.

Dr. U. Mukherjee participated in National Seminar on Production, Processing, Marketing and Export of Lit Economic Prosperity, organized by ICAR, New Delhi during June 8-11, 2008 at NRCL, Mushari, Muzaffarpur, Biha

Dr. B.Singh participated in National Seminar on Production, Processing, Marketing and Export of Litchi for Eco Prosperity, organized by ICAR, New Delhi, during June 8-11, 2008 at NRCL, Mushari, Muzaffarpur, Bihar.

Dr. Neeraj Kumar, Dr A.K. Mishra and Dr B. Singh participated in National Symposium, organized by C Agricultural University, Imphal during Jan 28-30, 2009 at College of Horticulture and Forestry, Arunachal Pradesh

Dr. U. Mukherjee participated in Biennial Group Discussion of AICRP(Tropical Fruits), organized by ICAR, New during May 9-12, 2008 at TNAU, Coimbatore.

Dr. M.L. Agarwal participated in Biennial Workshop of AICRP on Honey Bees & Pollinators, organized by RAU during Feb19-20, 2009 at RAU, Pusa.

Tatheer Fatma participated in National Conference on Traditional and Contemporary Tranings in Family and Comm Studies, organized by BBA, University, Lucknow during Nov 24- 25, 2009 at Lucknow.

Dr.S.N. Kashyap participated in All India Seminar for Ergonomics for Improved Productivity, organized by the Inst of Enginners, India, Aligarh local center, during Dec 21-22, 2008 at Aligarh.

Dr. Meera Singh participated in Golden Jublee Celebration and National Seminar on Innovative Extn. Strategies fo Development and Rural Prosperity, organized by Indian Association of Extn. Edn. New Delhi during Dec 18-20, 2 RAU, Pusa.

Dr. L.R.Saha participated in Golden Jublee Celebration and National Seminar on Innovative Extn. Strategies for Development and Rural Prosperity, organized by Indian Association of Extn. Edn. New Delhi during Dec 18-20, 2 RAU, Pusa.

Dr. Arunima Kumari participated in Golden Jublee Celebration and National Seminar on Innovative Extn. Strateg Agril. Development and Rural Prosperity, organized by Indian Association of Extn. Edn. New Delhi during Dec 18-20 at RAU, Pusa.

Dr. Usha Singh participated in National Symposium on QPM for Human Nutrition Security and Development of P Sector in India, organized by TAS & DAR on 3rd May, 2008 at NAAS Auditorium, New Delhi.

11. PARTICIPATION OF SCIENTISTS IN SHORT COURSE / TRAINING / SUMMER SCHOOL / WINTER SCHOOL / REFRESHER COURSE

Dr. Dibyanshu Shekhar participated in Winter School on Gender Issues and Empowerment in Agriculture organized by Division of Agricultural Extension, IARI, New Delhi during Aug 28 – Sept 17, 2008 at IARI, New Delhi

Dr. P.P. Singh participated as a resource person and delivered a Lecture on IPM on Tuber Crops, organized by Course Director, Winter School RC of CTCRI, Bhubaneshwar (Orissa) on 29th Feb 2008, Bhubaneshwar.

Ram Kumar Choudhary participated in CAS Training Programme organized by IASRI, Pusa, New Delhi during Feb 10-March 2, 2009 at IASRI, New Delhi

Dr. Rama Shankar Singh, Dr. Vikram Bharati and Birendra Prasad participated in Winter school on Integrated Farming System for Sustainable Production organized by Department of Agronomy, B.A.U., Ranchi during Nov10-30, 2008.

Dr. L.M. Yadav participated in Drip & Sprinkler Irrigation, organized by NHM & D.H.O. Samastipur during April 28 – May 1, 2008 at Jain Irrigation, Jalgaon, Maharastra .

Udit Kumar participated in Summer School, organized by Deptt. Of Horticulture, MPAUT, Udaipur during Oct 1-21, 2008 at MPAUT, Udaipur .

Madhuri Arya participated in Winter School, organized by Deptt. of Plant Physiology, IAS, BHU, Varanasi during Feb 2-23, 2009, at BHU, Varanasi.

Dr. Rabindra Prasad participated in Training on Recent Approaches in Storage and Household Entomology, organized by Centre of Advanced Studies, Deptt. of Entomology, CCS, HAU, Hisar during Nov 14 – Dec 4, Dec. 2008.

A.K. Paswan participated in a Training organized by Deptt. of Extension Education during Dec 21-23, 2008.

Dr. M.N. Ansari participated in a Training organized by Deptt. of Extension Education during Dec 21-23, 2008.

Dr. Sangita Sahni participated in a Training organized by CAS, G.B. Pant University of Agri. & Technology, Pant Nagar. during 2009.

Dr. Sanjay Kumar Singh participated in Winter School, organized by Project Directorate for Cropping System Research, (PDCSR), ICAR, Modipuram, Meerut. during Dec 8-28, 2008 at PDCSR, Modipuram.

Vinay Kumar Choudhary participated in Management and Monitoring of Field Trial of Genetically Engineered Crops, organized by RAU, Pusa on 5th Feb, 2009 at Sanchar Kendra, RAU, Pusa.

Dr. Satish Kumar Singh participated in Refresher Course in Agril. Science, organized by UGC Academic Staff College, Varanasi during Feb 17 - March 6, 2009.

Shanti Bhushan participated in Marker Assisted Selection (MAS) in Rice; Theory, Practice and Application, organized by IRRI, Philippines during Nov 24 - Dec 5, 2008 at IRRI, Philippines.

Prof. Ranbir Kumar participated in Training Programme on Sustainable Agriculture Developmental for Food Security, organized by Centre of Advance Studies in Agricultural Economics, Div. of Agril. Economics, IARI, New Delhi during Jan 8-28, 2009.

Manoj Kumar participated in Foundation Training Programme for II P-A-N, Delhi, organized by Deptt. of Science & Tech., GOI, Scientists & Technologist during Nov 3, 2008 - Jan 23, 2009.

Sanjay Kr. Mandal participated in Winter School on Integrated Farming System for Sustainable Production, organized by Dept. of Agronomy, BAU, Kanke, Ranchi during Nov10-30, 2008 at Ranchi.

Dr.J.P.Singh participated in Training on Lemon squash, Mango Jam to Ladies organized by KVK, Sabour on 19th July, 2008.

Dr.J.P.Singh participated in Training on Value Added Products Prepared from Guava, organized by KVK,Sabour during July 30-31, 2008.

Dr. J. P.Singh participated in Training on Preparation of Pineapple Jam, organized by KVK,Sabour during Aug 12-13, 2008.

Dr. J.P.Singh participated in Training on Post Harvest Management of Vegetables, organized by Deptt. of Hort.(Vegetable), BAC, Sabour during Sep 16-18, 2008.

Dr.J.P.Singh participated in Training on Food Processing & Preservation, organized by ATMA, Banka, Sponsored by BAMETI, Patna on 27th Nov, 2008.

Dr. J. P. Singh participated in Training on Preservation and Value Addition of Fruit & Vegetables, organized by Deptt.of Fruit & Fruit Tech. on 17th Dec, 2008.

D. P. Saha participated in National Training Programme on Organic Farming in Horticultural Crops, organized by Centre for Advance Studies in Hortculture (Fruit), Deptt. of Hort.(Fruit), MPKV, Rahuri from Feb 28 - March 19, 2008.

Ravindra Kumar participated in Integrated Farming System for Sustainable Production organized by Course Director, Agronomy, B.A.U. Ranchi during Nov 10-30, 2008.

Dr. Sanjay Sahay participated in Hi- Tech Horticulture in Relation to Fruit Production, organized by Centre for Advance studies in Horticulture (Fruit), Deptt.of Hort. MPKV Rahuri during Sept 16 - Oct 6, 2008.

Dr. Navnit Kumar participated in Summer School, organized by CAS, Deptt. of Agronomy GBPUA & T, Pantnagar, Uttarakhand during March 28 - April 17, 2008 at GBPUA&T, Pantnagar, Uttarakhand.

Dr.S.K.Sinha participated in Winter School, organized by Director Research, B.A.U.Kanke Ranchi during Nov 10-30, 2008 at B.A.U. Kanke, Ranchi.

Geeta Kumari participated in Winter School, organized by Director Research B.A.U.Kanke, Ranchi during Nov 10-30, 2008 at B.A.U. Kanke, Ranchi.

Dr. Suresh Pd. Singh participated in Winter School, organized by Directorate of Research, GBPUA&T, Pantnagar, Uttarakhand during Feb 3-23, 2009 at GBPUA&T, Pantnagar, Uttarakhand.

Dr.Krishna Mohan participated in I.C.A.R.sponsored Winter School on Current Concepts on Immunoassay for Diagnosis in Animal Diseases, organized by Centre of Advance Studies.Deptt.of Vety.Microbiology, CCSHAU, Hisar during Jan 16 - Feb 5, 2009.

Dr.Krishna Mohan participated in ICAR sponsored Winter School on Recent Development in Animal Productiion and Reproduction, organized by I.V.R.I.,Izatnagar, Bareilly,U.P.during Dec 3 -23, 2008.

Dr.Nirbhay Kumar participated in DBT sponsored Short Course on Advanced Molecular Biology Tools used in Animal Diseases Research & Diagnosis, organized by Division of Animal Biotechnology, IVRI, Izatnagar, Bareilly, U.P. during Dec, 10-30, 2008

Dr.Pankaj Kumar participated in Winter school on Emerging Technology for Communication & Management of Leaarning, organized by GBPUA & T, Pantnagar, Uttarakhand during 18 Mar - 09 Apr., 2009.

Dr.Pallav Shekhar participated in Summer School on Updates in Veterinary International Medicine, organized by Madras Veterinary College, Chennai during Nov 5-11, 2008.

Er. Sanjay Kumar Nirala participated in Technological Advances in Conservation of Natural Resources in Rain fed Agriculture organized by CRIDA Hyderabad during Nov 26 - Dec 16, 2008 at CRIDA Hyderabad.

Er. Sudarshan Prasad participated in Technological Advances in Conservation of Natural Resources in Rain Fed Agriculture organized by CRIDA Hyderabad during Nov 26 - Dec 16 2008 at CRIDA Hyderabad .

Dr.Ruby Rani participated in Winter school on Hi-tech Cultivation of Sub Tropical Fruits, organized by CISH, Lucknow during Dec 4-24, 2008 at CISH, Lucknow.

Er. Sudarshan Prasad participated in Water Management Under Limited Supplies for Efficient Crop Production, organized by ICAR, RCER, ICAR Parisar,Patna during March 10-15, 2008.

Er Vishal Kumar participated in Application of Quality Assurance in Food Safety Systems in Supply Chain and Agri-business Development, organized by Department of Post Harvest Engineering, IARI, New Delhi during Sept 30 - Oct 20, 2008.

Er Dinesh Rajak participated in Application of Quality Assurance in Food Safety Systems in Supply Chain and Agri-business Development, organized by Department of Post Harvest Engineering, IARI, New Delhi during Sept 30 - Oct 20, 2008.

Er. Sanjay Kumar participated in Winter School, organized by Department of Farm Power during Nov 1-21, 2008.

Er. Manoranjan Kumar participated in Winter School, organized by ICAR, CIAE, Nabinagar, Bhopal during Nov 1-21, 2008.

Dr. R.K. Jha participated in Management and Monitoring of Genetically Engineered Crops, organized by Bio-tech Consortium India Limited & RAU, Pusa on 05th Jan, 2009 at Sanchar Kendra, RAU, Pusa.

Dr. R.K. Jha participated in Protection of Plant Varieties and Farmers Rights, organized by I.P.R. Cell, RAU, Pusa on 15th March, 2009 at Sanchar Kendra, RAU, Pusa.

Dr. Vipin Kumar participated in Efficient Management of Soil, Water and Nutrients for Sustainable Productivity and Environment Quality, organized by Director, Centre of Advanced Studies (CAS), Deptt. Of Soils, PAU, Ludhiana during Jan 7-27, 2009 at PAU, Ludhiana.

Shiv Nath Suman participated in Modern Techniques for Analysis of Soil, Plant, Fertilizer and Irrigation Water, organized by Centre of Advanced Studies (CAS), Deptt. of Soils, PAU, Ludhiana during Sept 23 - Oct 13, 2008 at PAU, Ludhiana.

Dr. S. P. Singh participated in Techniques of Soil and Water Analysis, organized by NBSS&LUP, Nagpur during June 24 - July 14, 2008 at NBSS&LUP, Nagpur.

Dr. Pankaj Singh participated in Farmers' Resource based Site – Specific Nutrient Management and Online Fertilizer Recommendation using GPS and GIS Tools, organized by IISS, Bhopal during Jan 3-23 , 2009 at IISS, Bhopal.

P.K.Chaudhary participated in Winter School on Recent Advances in Plant Disease Management, organized by Center of Advanced Studies in Plant Pathology, Deptt. of Plant Pathology, College of Agriculture, G. B. Pant University of Agriculture & Technology, Pantnagar (Uttrakhand) during Dec 13, 2008 - Jan 2, 2009 at Pantnagar.

R.K. Ranjan participated in Short course training on Seed Borne Pathogens, their Detection, Implication and Management, organized by Department of Plant Pathology, B. A. College of Agriculture, Anand Agricultural University, Anand (Gujarat) during Feb 18-27, 2009.

Dr. Y. Singh participated in Refresher Course on Integrated Farming System Options for Vindhyan Region of Eastern Uttar Pradesh, organized by Deptt. of Agronomy, BHU Varanasi (UP) during Dec 2-22, 2008 at BHU Varanasi (UP).

Kumari Sapna participated in Training on Strategies for Profitable Agriculture, organized by CASA, Deptt. of Agronomy, TNAU, Coimbatore during Jan 21 - Feb 10, 2009 at Deptt. of Agronomy, TNAU, Coimbatore.

Dr. Balwant Kumar participated in Breeding for Quality-conventional and Genomic Approaches, organized by PAU, Ludhiana, Punjab during Jan 7-27,2009.

Dr. S.P. Singh participated in Winter School, organized by Director research, GBPUAT, Pantnagar during Feb 3-23, 2009 at Pantnagar.

Dr. Nilanjaya participated in Training in Advanced Breeding Methods in Rice, organized by IRRI, Philipines during July 30 - Aug 14, 2008 at IRRI, Philipines

Dr. Rajesh Kumar participated in MAS in Rice: Theory, Practice and Application, organized by IRRI, Philipines during Nov 24 – Dec 5, 2008 at IRRI, Philipines.

12. PARTICIPATION OF SCIENTISTS IN WORKSHOP / GROUP MEETING

Dr. R.P. Yadav participated in Annual Group Meet of Pigeonpea and MULLaRP, organized by UAS, Dharwad during May 25-27, 2009 at Dharwad.

Dr. J.P. Upadhyay participated in Annual Group Meet of Pigeonpea and MULLaRP, organized by UAS, Dharwad during May 25-27, 2009 at Dharwad.

Dr. A.K. Misra participated in XIX Workshop of AICRP on Spices, organized by O.U.A & T, Bhubaneshwar, Orissa during Nov 23-25, 2007 at Bhubaneshwar.

Dr. Sangita Sahni participated in Annual Group Meeting of AICRP on MULLaRP (Kharif), organized by S.D. Agri. Univ., S.K. Nagar during May 2-4, 2008 at S.K. Nagar.

Dr. Sangita Sahni participated in Annual Group Meeting of AICRP on MULLaRP (Rabi) organized by MPUA & T, Udaipur, Rajasthan during Sept 7-9, 2008 at Udaipur.

Dr. Dinesh Rai participated in XVth Annual Group Meeting of Rapeseed and Mustard organized by AICRP (RM) at OUAT, Bhubaneshwar during Aug 7-9, 2008.

Dr. Anil Pandey participated in Annual Group Meeting of Safflower & Linseed,.organized by DOR, Hyderabad & AICRP (Linseed) at BAU, Kanke Ranchi during Aug 28-30, 2008 at Ranchi.

Dr. Phoolchand participated in Annual Group Meeting of Sunflower & Castor, organized by PAU, Ludhiana, Punjab during May 15-17, 2008.

Dr. Umesh Kumar Singh participated in Annual Group Meeting of Sunflower & Caster, organized by PAU, Ludhiana, Punjab during May 15-17, 2008.

Harendra Singh participated in Annual Group Meeting of Sunflower & Castor, organized by PAU, Ludhiana, Punjab during May 15-17, 2008.

Dr. Rajendra Prasad participated in 51st Annual Maize Workshop, organized by Directorate of Maize Research, New Delhi and H.P. Agric. Univ. Palampur (H.P.) during April 4-6, 2008 at Palampur.

Dr. M. Kumar participated in 51st Annual Maize Workshop, organized by Directorate of Maize Research, New Delhi and H.P. Agric. Univ. Palampur (H.P.) during April 4-6, 2008 at Palampur.

Dr. Ajay Kumar participated in 51st Annual Maize Workshop, organized by Directorate of Maize Research, New Delhi and H.P. Agric. Univ. Palampur (H.P.) during April 4-6, 2008 at Palampur.

Dinesh Rai participated in 51st Annual Maize Workshop, organized by Directorate of Maize Research, New Delhi and H.P. Agric. Univ. Palampur (H.P.) during April 4-6, 2008 at Palampur.

Tanweer Alam participated in 51st Annual Maize Workshop, organized by Directorate of Maize Research, New Delhi and H.P. Agric. Univ. Palampur (H.P.) during April 4-6, 2008 at Palampur.

Dr. R.S. Singh participated in XV Annual Group Meeting of All India Coordinated Research Project on Rapeseed Mustard (ICAR), organized by Orissa University of Agriculture & Technology, Bhubaneshwar during Aug 7-9, 2008, at Bhubaneshwar.

Dr.Ravi Nandan participated in Rabi Pulses Group Meet, organized by IIPR, Kanpur during Sept 7-9, 2008 at MPUAT, Udaipur.

Dr. R.P. Yadav participated in Rabi Pulses Group Meet, organized by IIPR, Kanpur during Sept 7-9, 2008 at MPUAT, Udaipur.

Dr. A.K. Singh participated in Rabi Pulses Group Meet, organized by IIPR, Kanpur during Sept 7-9, 2008 at MPUAT, Udaipur.

Madhuri Arya participated in Rabi Pulses Group Meet, organized by IIPR, Kanpur during Sept 7-9, 2008 at MPUAT, Udaipur.

Dr. K.K Sinha participated in Rabi Pulses Group Meet, organized by IIPR, Kanpur during Sept 7-9, 2008 at MPUAT, Udaipur.

Dr. R.S. Singh participated in Annual Group Meeting of All India Coordinated Research Project on Sunflower/Castor, organized by Junagarh Agricultural University, Junagarh, Gujarat during May 21-23, 2009 at Junagarh.

Dr. K.K Sinha participated in Kharif pulses Group Meet on MULLARP& Pigeonpea, organized by IIPR, Kanpur and S.D.A.U, Sardar Kushi Nagar during May 2-4, 2008.

Dr. R.P. Yadav participated in Kharif Pulses Group Meet on MULLARP& Pigeonpea, organized by IIPR, Kanpur and S.D.A.U, Sardar Kushi Nagar during May 2-4, 2008.

Udit Kumar participated in Spices (NHM) Group Meeting, organized by Director, DASD, Calicut on 7th Aug., 2008 at TNAU, Coimbatore.

Udit Kumar participated in AICRP (Veg.) Group Meeting, organized by Director, IIVR, Varanasi during Feb 12-15, 2009 at TNAU, Coimbatore .

Vinay Kumar Choudhary participated in Technical Programme Formulation on Different Aspects of Seed Technology, organized by Directorate of Seed Research, Mau (UP) during April 30 - May 2, 2008 at IIVR, Varanasi.

Dr. S. K. Singh participated in Technical Programme Formulation on Different Aspects of Seed Technology, organized by Directorate of Seed Research, Mau (UP) during April 30 - May 2, 2008 at IIVR, Varanasi.

Dr. S.K. Singh participated in Resources of Finger Millet & Foxtail Millet, organized by ICRISAT, Hyderabad during April 07-08, 2008.

Dr. S.K. Varshney participated in Seed Production Activity of R.A.U, Pusa, Bihar organized by Directorate of Seed Research, ICAR, New Delhi during Jan 05-06, 2009.

Vinay Kumar Choudhary participated in Technical Programme Formulation on Different Aspects of Seed Technology, organized by Directorate of Seed Research, Mau (UP) during April 2 – 4, 2009 at Tamil Nadu Agricultural University, Coimbatore.

Dr. V. N. Sahai participated in Annual Workshop, organized by ICAR-IRRI Collaborative Programme (EIRLSBN) during March 16-18, 2009 at NAC Complex, New Delhi.

Dr. R. K. P. Sinha participated in 43rd Annual Rice Group Meeting, organized by Directorate of Rice Research, Hyderabad & ICAR, New Delhi during April 8-11, 2008 at IGKV, Raipur.

Dr. R. B. P. Sinha participated in 43rd Annual Rice Group Meeting, organized by Directorate of Rice Research, Hyderabad & ICAR, New Delhi during April 8-11, 2008 at IGKV, Raipur.

Dr. Ajay Kumar participated in 43rd Annual Rice Group Meeting, organized by Directorate of Rice Research, Hyderabad & ICAR, New Delhi during April 8-11, 2008 at IGKV, Raipur.

Shanti Bhushan participated in 43rd Annual Rice Group Meeting, organized by Directorate of Rice Research, Hyderabad & ICAR, New Delhi during April 8-11, 2008 at IGKV, Raipur.

Dr. V. N. Sahai participated in Shuttle Breeding Network, organized by ICAR – IRRI Collaborative programme, New Delhi during Nov 18-19, 2008 at CRRI, Cuttack.

Dr. B.B.P.Sinha and Sri V. Mohan participated in 22nd Group Meeting, organized by I C A R, New Delhi and B C K V, Kalayni, Nadia (W.B.) during Dec 13-15, 2008.

Dr. M. K. Wadhwani participated in one day Workshop on Prospects of Horticultural Crops in Bihar, organized by IFFCO Foundation, New Delhi on 7th April, 2008, at Mahesh Khunt, Bhagalpur.

Dr. Nitish De participated in Annual Workshop on Wheat, organized by AICRP (Wheat) DWR, Karnal during Aug 17-20 2008.

Dr. S. N. Prasad participated in Farmers Training on Agril. Equipments, organized by B.A.C., Sabour in May, 2008 at Deptt. of Agril. Engg., B.A.C., Sabour.

Dr. S. N. Prasad participated in Farmers Training on Agril. Equipments, organized by B.A.C., Sabour in July, 2008 at Deptt. of Agril. Engg., B.A.C., Sabour.

Dr. S. N. Prasad participated in Farmers Training on Agril. Equipments, organized by B.A.C., Sabour in August 2008 at Deptt. of Agril. Engg., B.A.C., Sabour.

Dr. S. N. Prasad participated in Agromet Advisory Committee, organized by B.A.C., Sabour in Dec, 2008 at BAC, Sabour.

Dr. S. N. Prasad, participated in Opening Ceremony of two days training on Seasonal Vegetable Preservation, organized by KVK, Sabour during Feb, 2009 at BAC., Sabour.

Sri Anjali Chandra and Dr.S.K.Chandra participated in Understanding the Growth & Prospects of Agro-processing Industries in Bihar, organized by T.M.C University.

Dr. Harendra Singh participated in Workshop, organized by Project Coordinator, Sugarcane, IISR, Lucknow during Oct. 17-19, 2008 at Vishakhapatnam.

Dr.Md. Minatullah participated in Workshop, organized by Project Coordinator, Sugarcane IISR, Lucknow during Oct 17-19, 2008 at Vishakhapatnam.

Dr.S.K.Thakur participated in Workshop, organized by Project Coordinator, Sugarcane IISR, Lucknow during Oct 17-19, 2008 at Vishakhapatnam.

Dr. G.P. Dwivedi participated in Workshop, organized by Project Coordinator, Sugarcane IISR, Lucknow during Oct 17-19, 2008 at Vishakhapatnam.

Dr. A.K.P. Singh participated in Scientist Meet, organized by WTCER, Bhubneshwar, Orissa during June 09-13, 2008 at TNAU, Madurai, Kerala.

Dr. S.K. Jain participated in Scientist Meet organized by WTCER, Bhubneshwar, Orissa during May, 2008 at GBPAU&T, Pantnagar.

Dr. A.K. Singh participated in Scientist Meet organized by WTCER, Bhubneshwar, Orissa during May, 2008 at GBPAU&T, Pantnagar.

Er. Ravish Chandra participated in Scientist Meet organized by WTCER, Bhubneshwar Orissa during May, 2008 at GBPAU&T, Pantnagar .

Dr.R.Suresh participated in Annual Review Meeting organized by CIAE, Bhopal during Aug 29-30, 2008 at CIAE, Bhopal.

Dr Ruby Rani participated in Annual Review Meeting organized by CIAE, Bhopal during Aug 29-30, 2008 at CIAE, Bhopal

Er. Himanshu Kr. Singh participated in Workshop on Fertigation on 6th Oct, 2008 at WTC, New Delhi.

Dr. R. Suresh participated in Half yearly Review Meeting on16th Dec, 2008 at New Delhi.

Dr. Mukesh Shrivastava participated in Annual Workshop, organized by AICRP on PHT during Dec 19 -20, 2008 at University of Agricultural Sciences, GKVK, Bangalore.

Er Dinesh Rajak participated in Annual Workshop, organized by AICRP on PHT during Dec 19 -20, 2008 at University of Agricultural Sciences, GKVK, Bangalore.

Dr. B. K. Yadav participated in 27th Workshop of AICRP on FIM, organized by Department of Farm Machinery, IIT Kharagpur & PC, CIAE, Bhopal during Dec 18 -21, 2008 at IIT, Kharagpur.

Dr. D. K. Das participated in Annual Workshop of AICRP on Agroforestry, organized by NRC for Agroforestry, Jhansi during April 26-28, 2008 at B.A.U., Kanke, Ranchi (Jharkhand).

Dr. Shankar Jha participated in Kisan Gosthi under Programme Vaigyanik Chalo Goan Ki Aur, organized by Govt. of Bihar and KVK Birauli on 8th Nov, 2008.

Dr. Shankar Jha participated in Kisan Gosthi, organized by NFL on 19th Nov, 2008, at Harur Kundi, Samastipur.

Dr. Shankar Jha participated in Soil Sampling in flood affected districts namely Purnia, Araria and Katihar, organized by RAU, Pusa during 29 Nov - 5 Dec, 2009 at districts Purnia, Araria and Katihar.

Dr. Shankar Jha participated in Evaluation of RAU initiative in flood affected districts, organized by RAU, Pusa during Feb 3- 4, 2009 at districts Saharsha, Madhepura and Supaul.

Dr. Shankar Jha participated in Evaluation of RAU initiative in flood affected districts organized by RAU, Pusa during 7-9 Jan, 2009 at districts Saharsha, Madhepura and Supaul.

Dr. Shankar Jha participated in Kisan Gosthi under Programme Vaigyanik Chalo Goan Ki Aur, organized by Govt. of Bihar and KVK Birauli on 7th March, 2009.

Dr. Shankar Jha participated in Evaluation of RAU initiative in flood affected districts, organized by RAU, Pusa during March 14- 18, 2009.

Dr. Janardan Prasad participated in Software Training Programme for Development of Targetted Yield Equations for Cropping Sequences, organized by P. C. Cell, AICRP on Soil Test Crop Response Correlation, IISS, Bhopal during June 6- 7, 2008 at IISS, Bhopal.

Dr. Shankar Jha participated in Software Training Programme for Development of Targetted Yield Equations for Cropping Sequences, organized by P. C. Cell ,AICRP on Soil Test Crop Response Correlation, IISS, Bhopal during June 6- 7, 2008 at IISS, Bhopal.

Dr. Janardan Prasad participated in Importance of Potassium in Bihar Agriculture, organized, by Indian Potash Limited & International Plant Nutrition Institute " IPNI- CANPOTEX " on 11th Dec, 2008 at Sanchar Kendra, RAU, Pusa.

Dr. Shankar Jha participated in Importance of Potassium in Bihar Agriculture, organized by Indian Potash Limited & International Plant Nutrition Institute " IPNI- CANPOTEX on 11th Dec, 2008 at Sanchar Kendra, RAU, Pusa

Dr. Shankar Jha participated in State level Workshop on Management and Monitoring of Field Trials of Genetically Engineered Crops, organized by Biotech Consortium India Limited and Department of Biotechnology, FBS & H, RAU, Pusa on 2nd Feb, 2009 at Sanchar Kendra, RAU, Pusa.

Dr. S. P. Singh participated in State level Workshop on Management and Monitoring of Field Trails of Genetically Engineered Crops, organized by Biotech Consortium India Limited and Department of Biotechnology, FBS & H, RAU, Pusa during Pusa on 2nd Feb, 2009 at Sanchar Kendra, RAU, Pusa.

Dr. R. K. Pandey participated in Importance of Potassium in Bihar Agriculture, organized by Indian Potash Limited & International Plant Nutrition Institute IPNI- CANPOTEX on 11th Dec 2008 at Sanchar Kendra, RAU, Pusa.

Dr. D.K. Dwivedi participated in Group Meeting of AICRP on MAP, organized by NRCMAP, Anand and KAU, Kerala during Nov 15-17, 2008 at KAU, Kerala.

Dr. D.K. Dwivedi participated in Group Meeting of AINP on Betelvine NRCMAP, Anand and BCKV, Kalyani during 13-15 Dec, 2008 at Kalyani.

Dr. S.K.Singh participated in Group Discussion of AICRP (TF), organized by TNAU, Coimbatore during May 9-12, 2008 at Coimbatore.

Dr. P.K. Jha participated in Workshop on Conservation Agriculture for Northern Indo - Gangatic Plane, organized by CIMMYT India, Begusarsi during May 21-22, 2008 at Begusarai, Bihar.

Dr. P.K. Jha participated in Group Meeting of AINP on Betelvine, organized by NRCMAP Anand and BCKV, Kalyani during Dec 13-15, 2008 at Kalyani.

R.K.Ranjan participated in Group Meeting of AICRP – NSP (Crops), organized by Directorate of Seed Research (Indian Council of Agricultural Research), Kushmaur, Mau (U.P) during May 30 - June 1, 2008 at IIVR, Varasani.

R.K. Ranjan participated in State level Workshop on Management and Monitoring of Field Trials of Genetically Engineered crops, organized by Rajendra Agricultural University, Pusa, Bihar on 5th Feb, 2009 at Pusa, Bihar.

P.K. Chaudhary participated in State Level Workshop on Management and Monitoring of Field Trials of Genetically Engineered crops, organized by Rajendra Agricultural University, Pusa, Bihar on 5th Feb 2009 at Pusa, Bihar.

Dr. N. K. Choudhary participated in 28th Workshop of AICRP on Cropping System, organized by TNAU, Coimbatore during Oct 3-5, 2008 at Kanyakumari.

Dr V. Kumar participated in AICRP on Water Management, organized by Water Management Centre, TNAU, Madurai Centre during June 10-13, 2008 at Madurai.

Dr. S.K. Chaudhary participated in Rice Annual Group Meeting, organized by IGKVV, Raipur during April, 2008 at IGKVV, Raipur.

Dr. S. K. Chaudhary participated in Rabi Forage Group Meeting, organized by ANGRAU, Hyderabad in Sept 2008 at ANGRAU, Hyderabad.

Dr. D. K. Roy participated in State level Workshop on Management and Monitoring of Field trials of Genetically Engineered Crops, organized by RAU, Bihar, Pusa on 5th Feb, 2009 at RAU, Pusa.

Dr. D. K. Roy participated in Annual Group Meeting of AICRIP on Weed Control, organized by Directorate of Weed Science Research, Jabalpur (MP) during Feb 27-28, 2009 at RAU, Bikaner (Raj.).

Dr. Y. Singh participated in Group Meeting Kharif 2008 of AICRP on Forage Crops, organized by MPKV, Rahuri during April 18-20, 2008 at MPKY, Rahuri.

Dr. Y. Singh participated in28th Workshop of AICRP on Cropping System, organized by TNAU, Coimbatore during Oct 3-5, 2008 at Kanyakumari.

A. Sattar participated in 2nd Annual Review Meeting of Integrated Agromet Advisory Services, organized by GAU, Anand during Nov10-13, 2008 at Anand (Guj).

A. Sattar participated in Biennial Workshop on AICRP on Agrometeorology, organized by BCKV, Mohanpur during Dec 3-5, 2008 at Mohanpur (WB).

Dr. R. N. Sharma, Dr. Nilanjaya, Dr. Ashish Narayan, Dr. Balwant Kumar and Dr. Rajesh Kumar participated in State level Workshop on Management and Monitoring of Field Trials of Genetically Engineered Crops, organized by RAU, Pusa on 5th Feb, 2009.

Dr. R. N. Sharma, Dr. Nilanjaya, Dr. Balwant Kumar and Dr. S.B. Singh participated in Training cum Awareness Meet on PPV & FR, organized by IPR cell, RAU, Bihar on 15th March, 2009.

Dr.S.S. Pandey participated in Workshop, organized by IISR, Lucknow during Oct 17-19, 2008 at Vishakhapattam.

Dr. D.K.Sinha participated in National Workshop on Impact Assessment of New Agril. Technologies, organized by National Centre for Agril. Economics and Policy Research (NCAP), New Delhi during Jan 30-31, 2008 at NCAP.

Dr. D.K.Sinha participated in Meeting on Public Private Partnership, organized by Agril. Management Centre (AMC), IIM, Lucknow during March 3-8,2008.

Dr. Satyaprakash participated in Workshop on Over Technological Gap in Oilseed and Pulses, organized by BAMETI, Patna during Sept 8-10, 2008 at Sanchar Kendra, RAU, Pusa.

Dr. Satyaprakash participated in Workshop on Over Technological Gap in Oilseed and Pulses, organized by BAMETI, Patna during Nov 29 - Dec 1, 2008 at Sanchar Kendra, RAU, Pusa.

Dr. Satyaprakash participated in Workshop on Over Technological Gap in Oilseed and Pulses, organized by BAMETI, Patna during Dec 21-23, 2008 at Sanchar Kendra, RAU, Pusa.

Dr. Satyaprakash participated in Workshop on Over Technological Gap in Oilseed and Pulses, organized by BAMETI, Patna during Feb17-19, 2009 at Sanchar Kendra, RAU, Pusa.

Dr. V. K. Chaudhary participated in State level workshop on Management and Monitoring of Field Trials of Genetically Engineered Crops, organized by RAU, Pusa, Bihar on 5th Feb, 2009 at RAU, Pusa.

Dr. V. K. Chaudhary participated in Health and Family Welfare, Govt. of India sponsored stakeholders meet on Production, Processing and Marketing of Medicinal and Aromatic Plants, organized by RAU, Pusa, Bihar on 26th Feb, 2009.

Dr. V. K. Sharma participated in Health and Family Welfare, Govt. of India sponsored stakeholders meet on Production, Processing and Marketing of Medicinal and Aromatic Plants, organized by RAU, Pusa, Bihar on 26th Feb, 2009.

Dr. V. K. Sharma participated in Council for Advancement of People's Action Workshop on Impact and Consequence of Genetically Modified Seeds, organized by Vaishali Area Small Farmers Association during March 4-5, 2009.

Dr. V. K. Sharma participated in Seminar-cum-Interactive Meeting on IPR Awareness, organized by IPR cell, RAU, Pusa, Bihar on 24th Jan 2009.

Dr. V. K. Sharma participated in Training-cum-Awareness Programme on Protection of Plant Varieties and Farmer's Right, organized by IPR cell, RAU, Pusa, Bihar on 15th March, 2009.

Dr. Rajeev Kumar participated in Short term course on Bioinformatics in Genomics and Proteomics, organized by Indian Institute of Technology, Kharagpur during Oct 27-28, 2008.

Dr. Rajeev Kumar participated in National workshop on Bioinformatics, organized by L.N.M.U., Darbhanga, Bihar during Nov 16-17, 2008

Dr. Rajeev Kumar participated in State level Workshop on Management and Monitoring of Field Trails of Genetically Engineered Crops, organized by RAU, Pusa, Bihar on 5th Feb, 2009 at RAU, Pusa.

Dr. Rajeev Kumar participated in Training-cum-Awareness Programme on Protection of Plant Varieties and Farmer's Right, organized by IPR cell, RAU, Pusa, Bihar on 15th March, 2009.

Dr. V. K. Sharma participated and delivered a lecture on Biosafety Regulation and Monitoring of field Trails of Genetically Engineered Crops, organized by RAU, Pusa, Bihar on 5th Feb, 2009.

Dr. V. K. Sharma, participated and delivered a lecture on Development and Biosafety Regulation of Genetically Modified Seeds in Workshop on Impact and Consequence of Genetically Modified Seeds, organized by Vaishali Area Small Farmers Association, Vaishali during March 04-05, 2009.

Dr. S.K. Varshney participated in National Seminar on Seed & Crop Technologies for Doubling Agricultural Production, organized by ICAR at New Delhi during Aug 8-9, 2008 at New Delhi.

Dr. S.K. Varshney participated in Launching Meeting on Sustainable Conservation & Utilization of Genetic Resources of Finger Millet, organized by ICRISAT, Hyderabad during April 7-8, 2008 at Hyderabad.

13. PUBLICATIONS

RESEARCH PAPERS PUBLISHED

Kumar, Neeraj, Singh, R and Ray, P.K. (2008) . Litchi boon for beekeeping. In: Proc. National Seminar on Production, processing, marketing and export of litchi for economic prosperity, June 8-11, 2008, NRC for Litchi, Muzaffarpur: p.48-53.

Kumar, Neeraj and Singh, R. (2008) . Foraging rate and foraging speed of Apis spp on *Litchi chinensis*. In: Proc. National Seminar on Production, processing, marketing and export of litchi for economic prosperity, June 8-11, 2008, NRC for Litchi, Muzaffarpur: p.59- 60.

Kumar, Neeraj and Singh, R. (2008) . Effect of bee pollination in *Litchi chinensis* (cv. Shahi). In: Proc. National Seminar on Production, processing, marketing and export of litchi for economic prosperity, June 8-11, 2008, NRC for Litchi, Muzaffarpur: p. 61-62.

Kumar, Neeraj and Singh, R. (2008) . Effect of distance from the placement of *Apis mellifera* colonies on litchi bloom. In: Proc. National Seminar on Production, processing, marketing and export of litchi for economic prosperity, June 8-11, 2008, NRC for Litchi, Muzaffarpur: p. 63-65.

Wadhwani, M. K., Singh , S. B and Sahoo, R.N. (2008) . Constraint characterization for sustainable crop production under diara ecosystem - microanalysis. *Journal of Rural Development*, 27 (03) : 411-425.

Wadhwani, M. K., Singh, R.R and Kumar, Rajesh (2008).Production and post harvest management of litchi in South Bihar Alluvial plain zone: Present status, scope & strategies. *Indian Journal of Agril. Marketing*, **22(03)**.

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Singh, R.P., Pandey, A.K. and Sinha, S.K. (2009). Correlates of adoption of improved goat practices in Jharkhand. *Progressive Research Journal,* **3(2)** : 207.

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Prasad, R. K., Kumar, Vipin and Choudhary, S. N. (2008). Effect of pyrite and organic manures on iron nutrition of sorghum in calcareous soil. *Environment and Ecology,* **26** (46) : 2268-2272.

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Pandey, I. B., Sinha, N.K and Pandey, R.K. (2008). Response of late sown wheat (*Triticum aestivum*) varieties to nitrogen levels. *Indian Journal of Agril.Sciences,* 78(6): 537-539

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Choudhary, D. N and Wadhwani, M. K. (2008). Problems and prospects of vegetable production and processing in Bihar- Present status and future directions. In : Proc. National Seminar on Understanding the growth & prospect of agro

processing industries in Bihar, organized by UGC & Ministry of Agril., GOI at AERC, TMBU, Bhagalpur on April 15-16, 2008.

Wadhwani, M. K and Kumar, Rajesh (2008). Economics of production and post harvest management of litchi in Bhagalpur district. In : Proc. National Seminar on Production, processing, marketing & export of litchi for economic prosperity, organized by the ICAR, New Delhi at National Research Centre for Litchi, Muzaffarpur from June 08 -11, 2008.

Wadhwani, M. K., Singh, R.R. and Kumar, Rajesh (2008).SWOT analysis of the status and potentials of processing industries in Bihar with reference to fruits and vegetables.3rd Indian Horticulture Congress- 2008 organized from during Nov 6-9, 2008 at OUA & T, Bhubneshwar.

Singh, R.R., Kumari, Sarita, Kumar, Rajesh, Singh, J.P. and Wadhwani, M.K. (2008). Performance of different Litchi cultivars in Eastern Bihar. In : Proc.National Seminar on Production, processing, marketing and export of Litchi for economic prosperity at NRC for Litchi, Muzaffarpue from June 8-11, 2008.

Chandra, R., Sharma, B. R., Bhatt, V.K., Singh, Shailendra and Kapadia, Vivek (2008). Variation in ground water use, water productivity and profitability across a canal common in the Indo-Gangetic Basin.2nd International forum on water and food, held at Addis Abbaba during Nov 10-14, 2008.

Sharma, B., Mukherjee, A., Chandra, R. Islam, A., Das, B., and Ahmad,M. R.(2008). Ground water governance in the Indo-Gangetic Basin, an interplay of hydrology and socio-ecology.2nd International forum on water and food, held at Addis Abbaba during Nov 10-14, 2008.

Chandra, R. and Tyagi, N.K (2008). Development of irrigation water quality and crop yield relationship in Bhakra canal command of North-West India.43rd ISAE convention at BAU, Ranchi (Jharkhand).

Jain, S.K., Chandra, R. and Singh A.K.(2008). Ground Water Utilization in Bihar. National Seminar on Role of Agricultural Engineers in ensuring food security and safety, Dec 6-7, 2008.

Rahul and Bhagat, I.B. (2008). Development of a mathematical model for temperature prediction inside the green house.43rd ISAE convention at BAU, Ranchi (Jharkhand).

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Sahu, R.K., Mishra, S.K. and Eldho, T.I. (2009). Comparative performance of SCS-CN-based parameter. International conference at AIT Bangkok during Jan 5-7, 2009.

Suresh R. and Kumari, Meera (2008). Effect of drip irrigation & mulching on litchi crop in calcareous soil of North Bihar. National Seminar at CAE, RAU Pusa during Dec 6-7, 2008.

Kumari, Meera and Suresh, R.(2008). Effect of drip irrigation methods on phonological characteristics of litchi plant under inter cropping system.National Seminar at CAE,RAU Pusa during Dec 6-7, 2008.

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Kumar, Mantu, Sahu R.K and Suresh R. (2008). Analysis of one day maximum rainfall at Pusa farm. National Seminar at CAE, RAU Pusa during Dec 6-7, 2008.

Kumar, Vishal., Kumar, Pankaj and Agrawal, U.S.(2008). Studies on centrifugal clarification of sugarcane juice: Possibilities and Limitation.National Seminar on Role of Agricultural Engineers in ensuring food security and safety, Dec 6-7, 2008.

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Kumar, Manish, Sharma, P.D.and Kumar, Suresh (2008). Physical properties of Jatropha seeds. National Seminar on Role of Agricultural Engineers in ensuring food security and safety, Dec 6-7, 2008.

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Ansari, M.N., Singh, A. K. and Singh, Madan (2008). Constraints for non-viewing of T.V. Agricultural Programme.Golden Jubilee Celebration & National Seminar on Innovative Extension Strategies for Agril. Development and Rural Prosperity.

Ansari, M.N.,. Sinha, K.K. and. Singh, A. K (2008). Assessment of gain in and retention of Knowledge of rice production technology. Golden Jubilee Celebration & National Seminar on Innovative Extension Strategies for Agril. Development and Rural Prosperity.

Prakash, S., Tigga, A.S,. Paswan, A.K and Kumar, Alok (2008). Role of Information and communication technology in agriculture extension. Golden Jubilee Celebration & National Seminar on Innovative Extension Strategies for Agril. Development and Rural Prosperity.

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Dash, S.S. and Pandey, Anil (2009). Genetic variability and association of yield components in Toria *(B. rapa var ys)* germplasm.National Seminar on veg. oil. Scenario, DOR, Hyderabad. Jan 29-31, 2009.

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- Krishi Prashichak
- RAU Newsletter
- Annual Report

14. APPENDIX

14.1 ALL INDIA COORDINATED RESEARCH PROJECTS IN OPERATION

S. No.	Title of Project	Principal Investigator
Faculty of Agriculture , Pusa		
1.	AICRP on Honey Bee Research and Training	Dr. R. Singh
2.	All India Networking Project on Betelvine	Dr. B. P. Yadav
3.	AICRP on Soil Test Correlation Response	Dr. J. Prasad
4.	AICRP on Micronutrients in Soils and Plants	Dr. A.P. Singh
5.	AICRP on Rice	Dr. N.K. Singh
6.	AICRP on Agro forestry	Dr. D.K. Das
7.	AICRP on Agro meteorology	Dr. I. B. Pandey
8.	AICRP on Water Management	Dr. A. K. P. Singh
9.	AICRP on Experiments on Cultivators Field	Dr. N. K. Choudhary
10.	AICRP on Tropical Fruits	Dr. P.K. Ray
College of Agricultural Engineering, Pusa		
11.	AICRP on Post Harvest Technology (P.H.T.)	Dr. M. Shrivastava
12.	AICRP on Farm Implements & Machinery (FIM)	Dr. A. P. Mishra
13.	AICRP on Ground Water Utilization	Dr. S. K. Jain
Sugarcane Research Institute, Pusa		
14.	AICRP on Sugarcane	Dr. K. D. N. Singh
Directorate of Research, Pusa		
15.	AICRP on Weed Control	Dr. S. J. Singh
Tirhut College of Agriculture, Dholi		
16.	AICRP on Seed Technology	Dr. S. K. Varshney
17.	AICRP on Maize	Dr. M. M. Jha
18.	AICRP on MULLARP	Dr. R. P. Yadav
19.	AICRP on Pigeonpea	Dr. R. P. Yadav
20.	AICRP on Chickpea	Dr. R. P. Yadav
21.	AICRP on Small Millet	Dr. R. S. Rai
22.	AICRP on Tuber Crop	Dr. C. P. Singh
23.	AICRP on Potato	Dr. L. M. Yadav
24.	AICRP on Spices	Dr. S.P.Singh
25.	AICRP on Rapeseed & Mustard	Dr. R. K. Akhauri
26.	AICRP on Sunflower	Dr. R. K. Akhauri

(Contd. to P. 109)

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S. No.	Title of Project	Principal Investigator
Directorate of Seeds & Farms, Dholi		
27.	AICRP on Seed	Dr. S.K. Varshney
Bihar Agriculture College, Sabour		
28.	AICRP on Wheat	Dr. R. N. Sharma
29.	AICRP on Rice	Dr. R. N. Sharma
30.	AICRP on Cropping System Research	Dr. R. P. Sharma
31.	AICRP on Sub-Tropical Fruits	Dr. Jayant Singh
32.	AICRP on Vegetable	Dr. D. N. Choudhary
Agricultural Research Institute, Patna		
33.	AICRP on Rice	Dr. V. N. Sahay
34.	AICRP on Chickpea, PRC, Mokama	Dr. Pawan Kumar
35.	AICRP on Castor, Mokama	Dr. Pawan Kumar
Bihar Veterinary College, Patna		
36.	AICRP on FMD	Dr. S.P. Verma
37.	AICRP on Improvement of Feed Resources and Nutrient Utilization in Raising Animal Production.	Dr. C. Singh
Regional Research Station, Agwanpur		
38.	All India Networking Project on Jute & Allied Fibers	Dr. M. Rahman

14.2 CENTRALLY SPONSORED PROJECTS

S. No.	Title of The Project	Principal Investigator
1.	Agromet Advisory Service	Dr. I. B. Pandey
2.	Precision Farming Development Centre	Dr. R. Suresh
3.	Development of Medicinal and Aromatic Plants	Dr. J. K. Handoo
4.	Development of Spices	Dr. S. P. Singh