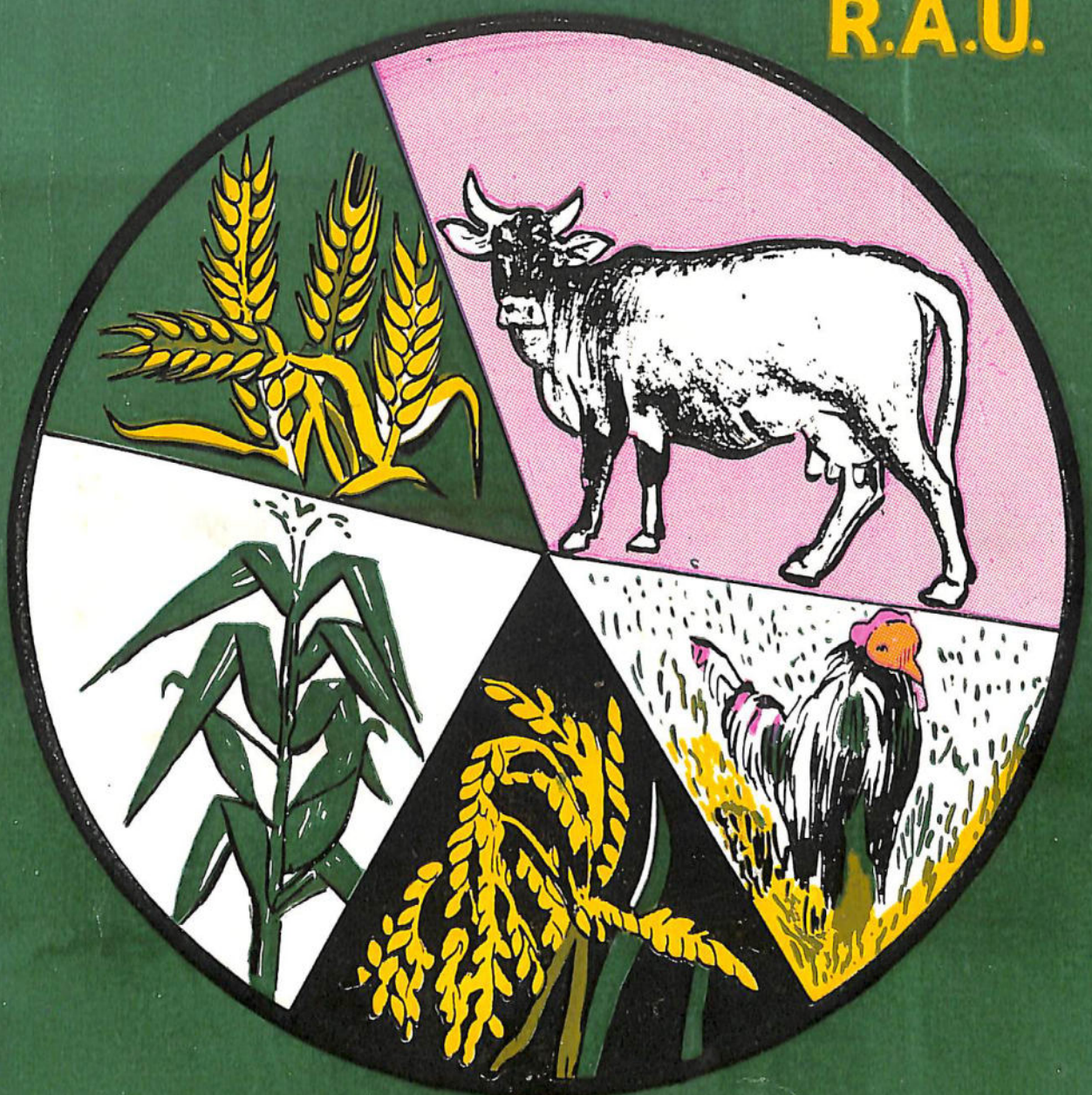
ANNUAL REPORT 1984-85

R.A.U.



RAJENDRA AGRICULTURAL UNIVERSITY, BIHAR

ANNUAL REPORT

1984-85

RAJENDRA AGRICULTURAL UNIVERSITY, BIHAR

PUSA, SAMASTIPUR

AUTHORITIES OF THE UNIVERSITY AND THEIR IMPORTANT DECISIONS

1.1. Authorities of the University and their constitution :

(a) **Senate :** The Senate constituted under Section 10 (1) of the R.A.U. Act, 1971 consists of the following :

Ex-Office Members :

1. Chancellor
2. Vice Chancellor
3. Agricultural Development Commissioner
4. Finance Commissioner
5. Secretary, Depertment of Agriculture, Animal Husbandry and Co-operation (Agriculture)
6. Secretary, Department of Agriculture, Animal Husbandry and Co-operation (Animal Husbandry)
7. Chief Conservator of Forests, Bihar, Ranchi
8. Director of Agriculture
9. Director of Animal Husbandry
10. Director, Agriculture Education, Agriculture, Department
11. Director, Research, Rajendra Agricultural University, Bihar
12. Director, Extension Education, Rajendra Agricultural University, Bihar
13. Director, Fisheries, Agriculture Department

14-17. Deans of Faculties (Agriculture, Animal Husbandry, Basic Science and Home Science)

18-24. Principals of the constituent colleges and Directors of Research Institutes of the Rajendra Agricultural University, Bihar

Representative Members :

25-31. Seven persons to be elected by and from the members of Bihar Legislative Assembly in such manner as may be prescribed by the Speaker of the Assembly;

32 33. Two persons to be elected by and from members of Bihar Legislative Council in such manner as may be prescribed by the Chairman of the Council;

34-39. Six teachers, other than Principals and Deans of Faculties, having at least five years teaching experience, to be nominated in the manner prescribed by Statutes so as to give representation to all the constituents colleges of the University;

40-42. Three persons, one member each to be nominated by the Bihar State Agro-Industries Development Corporation, Bihar State Agricultural Marketing Board and Bihar State Seeds Corporation;

43. One representative of the Employees Union of the Rajendra Agricultural University;

44-45. Two Farmers to be nominated by the Chancellor;

46-47. Two eminent Agricultural Scientists to be nominated by the Chancellor;

48-49. Two eminent Scientists (Other than Agricultural Scientists) to be nominated by the Chancellor;

50. One meritorious student to be nominated by the Vice-Chacellor in the manner prescribed by the Statutes;

51. One student who has distinguished himself in sports and extra-curricular activities to be nominated by the Vice-Chancellor in the manner prescribed by the Statutes.

(b) **Syndicate :** The Syndicate constituted under Section 11 (1) of the R.A.U. Act, 1971 continued to function with the following members :

1. Vice-Chancellor — Chairman;
2. Agriculture Production Commissioner or in his absence the Secretary, Agriculture;
3. Director, Agriculture;
4. Director, Animal Husbandry;

5-7. Three members other than students or the employees of the University or the colleges to be elected in accordance with system of the proportional representation by means of single transferable votes from and by the members other than of the "Senate";

8. One Dean of the Faculty or one Director of the University to be selected by rotation in the manner prescribed in the Statutes;
9. One head of University Department by rotation as prescribed in the Statutes;
10. A representative of the Indian Council of Agricultural Research;
11. Registrar — Non-Member Secretary

(c) **Academic Council :** The Academic Council constituted under Section 13 (2) of the R.A.U. Act, 1971 continued to function with the following :

1. Vice-Chancellor — Chairman
2. The Deans
3. The Directors
4. Principals/Associate Deans of the constituent colleges;
5. All Chairmen of Post-graduate Departments;

6. Three teachers of constituent colleges nominated by the Vice-Chancellor for 2 years;
7. Five teachers of the different traditional Universities of Bihar to be nominated by the respective Vice-Chancellors for 2 years;
8. Registrar, Rajendra Agricultural University, Bihar; Sectretary.
9. Such other members as may be prescribed by the Syndicate.

1.2. Important decisions of the authorities :

(a) Senate : Due to certain un-avoidable circumstances meeting of the Senate could not be held during the year under report.

(b) Syndicate :

Four meetings or the Syndicate were held during the period under report. The following important decisions were taken in these meetings.

(i) Provision for grant of incentive allowance or Rs. 50/- to Hostal Clerks was made.

(ii) Personal promotion scheme was introduced in the University for promotion of Asstt. Prof-cum Jr. Scientist to the post of Assoc. Prof.-cum-Sr. Scientist.

(iii) Period for acquiring requisite qualification for the grant of increments was extended from 5 years to 8 years.

(iv) Faculty of Agricultural Engineering with the following departments was created.

1. Department of Farm Machinary
2. Department of Farm Power and Renewable Energy
3. Department of Irrigation and Drainage Engineering
4. Department of Soil Conservation
5. Department of Post-harvest Engineering and Agricultural Structure

(v) Provisions were made for grant of incentive to the staff working at Stations, Sub-Stations, Centres, Sub-Centres, Kendras, Zonal Centres of Sugarcane located at off the way places.

(vi) Title of Agricultural Engineering degree from B. Sc. in Agricultural Engineering was changed to B. Tech. Agricultural Engineering.

(vii) Provisions were made for payment of Bonus to the employees of the University on the line of Bonus paid by the State Government to Government Employees.

(viii) A scheme for grant of incentive to teachers and Scientist for out standing work w .s introduced in the University.

(ix) A scheme was also introduced for grant of fellowship to the two top ranking students in each subject after completing B. Sc. Home Science degree of this University for under going Masters degree programme in different subjects of Home Science in selected Institution of repute @ Rs. 400/- P. M.

(x) The Syndicate approved apbointments to different cadre of posts as detailed below :

Sl. No.	Name ot post	Number of posts
1.	Comptroller	1
2.	University Professor's level posts in the Faculty of Agriculture	3
3.	University Professor's level Posts in the Faculty of Animal Husbandry (Dairy Technology).	1
4.	Associate Professor's Level posts in the Faculty of Agriculture.	4
5.	Associate Professor's Level posts in the Faculty of Animal Husbandry (Dairy Technology).	2
6.	Assistant Profesor's level posts in the Faculty of Home Science.	1

(c) Academic Council :

Two meetings of the Academic Council were held during the period under report. Following important decisions were taken in these meetings.

(i) An Accreditation Committee was constituted under the chairmanship of Dean (Agriculture) to examine the probability of starting Post-graduate/ Ph. D. teaching in different departments of different faculties.

(ii) The Council took a decision to admit inservice student to M. Sc. Ag. classes on the basis of service seniority subject to the availablity of the seats in the subjects concerned provided they have satisfactory service records.

(iii) Curriculum for 4 years B. Sc. Dairy Technology and B. Tech. Agricultural Engineering courses were approved.

(iv) Provision were made for temporary employment of students passing M. Sc. or Ph D. degree from this University against the post of Research fellows, Research Assaciates etc. provided in adhoc I.C.A.R. schemes.

(v) Decision was taken to give weightag of 5 % in marks in admissions to Master's and Ph. D. programmes of this University to those students who have obtained their Bachelor's and Master's degree from any of the Agricultural Universities of India.

(vi) Provisions were made for grant of study leave to such employees who got themselves admitted in some other Universities of repute for their Ph. D. programmes which will be to the extent of 5 % of the total working strenghth and will be in addition to 10 % available for admission in this University but at a time only one candidate for any particular subject can be provided this facility.

RESIDENT INSTRUCTION

The University imparts instructions in the faculties through the Departments/Colleges detailed as below :

1. Faculty of Post-graduate studies :

(a) Agricultural Sciences :

(i) Agronomy
(ii) Plant Breeding & Genetics
(iii) Soil Science
(iv) Plant Pathology
(v) Entomology and Agril. Zoology
(vi) Agricultural Economics
(vii) Horticulture
(viii) Extension Education

(b) Basic Sciences :

(i) Statistics & Mathematics
(ii) Botany & Plant Physiology

(c) Veterinary Sciences :

(i) Veterinary Anatomy
(ii) Veterinary Physiology
(iii) Veterinary Pathology
(iv) Veterinary Medicine
(v) Veterinary Microbiology
(vi) Veterinary Pharmacology
(vii) Veterinary Parasitology
(viii) Animal Nutrition
(ix) Animal Breeding

2. Faculty of Agriculture :

(i) Bihar Agricultural College, Sabour, (Bhagalpur).
(ii) Tirhut College of Agriculture, Dholi, (Muzaffarpur).

3. Faculty of Animal Husbandry :

(i) Bihar Veterinary College, Patna.
(ii) Sanjay Gandhi Institute of Dairy Technology, Pusa, Samastipur.

4. Faculty of Home Science :

(i) College of Home Science, Pusa, Samastipur.

5. **Faculty of Basic Science & Humanities :**

(i) College of Basic Science and Humanities, pusa, Samastipur.

6. **Faculty of Agricultural Engineering :**

(i) College of Agricultural Engineering, Pusa, Samastipur.

I.B. Faculty member :

There were 34 University Professors, 99 Associate Professors & 329 Assistant Professors, in addition to other supporting staff who were engaged in teaching, research and Extension Education work of the University.

I.C. The University imparts intruction leeding to the following degrees :

(a) Degree level programm :

(i) B. Sc. Agril.
(ii) B. V. Sc. & A. H.
(iii) B. Sc. Home Science
(iv) B. Sc. Dairy Technology
(v) B. Tec. Agril. Engineering

(b) Post-graduate level programme :

1. **M. Sc. Agril. degree :**

(i) Agronomy
(ii) Soil Science
(iii) Plant Breeding & Genetics
(iv) Plant Pathology
(v) Entomology
(vi) Horticulture
(vii) Agricultural Economics
(viii) Extension Education

2. **M. V. Sc. degree :**

(i) Veterinary Anatomy
(ii) Veterinary Physiology
(iii) Veterinary Pathology
(iv) Veterinary Medicine
(v) Veterinary Pharmacology
(vi) Veterinary Parasitology
(vii) Animal Nutrition
(viii) Animal Breeding
(ix) Veterinary Microbiology
(x) Extension Education

3. **M. Sc./M. Sc. Ag. degree :**

(i) Agricultural Statistics
(ii) Botany and Plant Physiology

(c) Ph. D. degree level programme :

(i) Agronomy
(ii) Plant Breeding
(iii) Plant Pathology
(iv) Soil Science
(v) Entomology
(vi) Agricultural Economics
(vii) Horticulture
(viii) Extension Education

I. D. System of Education :

(i) The University has adopted trimester system of education in order to bring parity in the system of education followed at different Agricultural Universities in the county. The system is working well but in recent times, on the recommendation of the Deans Committee of I.C.A.R. the University is thinking to adopt semester system of education, which has been found to be superior as compared to trimester system.

(ii) Courses :

During the year under report course curriculum for different degree programmes were revised and some specialised courses like social forestry, population education etc. were introduced at Post-graduate as well as Under-graduate level to meet the needs of changing situation in the country. Introduction of M. Sc. teaching in subjects like Genetics in the Basic Science and Animal Production in the faculty of Veterinary Science as well as introduction of Ph. D. degree programme in Botany and Plant Physiology, Genetics and some of the subject of Veterinary Sciences are also under active consideration of the University.

(iii) Regulations :

Detailed regulation of the Resident Instruction has alseady been prepared which are reviewed from time to time to remove short commings observed or detected during the course of implementation of the system and necessary amendments are effected whenever necessary.

(iv) Admissions :

(a) Under-graduate programme :

(i) For selection of students for admission to different Under-graduate progamme of this University, the University conducts a Combined Competitive Entrance Test Examination every year. For appearing in this examination a candidate must have passed I. Sc. examination with Physics, Chemistry and

Mathematics or Biology for admission in B. Sc. Agril. and B. Sc. Home Science programme, with Physics, Chemistry and Mathematics for admission in B. Tech. Agril. Engineering and B. Sc. Dairy Technology programme and Physics, Chemistry and Biology for admission in B. V. Sc. and A. H. programme. During the year under report a total of 12, 131 students submitted their applications for appearing in this examination out of which 10,306 students actually appeared in the examination. On the basis of marks obtained by the students in this Examination, 61 students were selected for admission in B. Sc. Agril. course at Tirhut College of Agriculture, Dholi (Muzaffarpur) and 65 students at Bihar Agricultural College, Sabour, Bhagalpur, 50 students were selected for admission is B. V. Sc. and A. H. course, 33 students in B Tec. Agricultural Engineering course, 33 students in B. Sc. Dairy Technology course and 34 students in B. Sc. Home Science course.

(ii) A four years B. Sc. Agril. dkgree programme is also running specially for the VLW's of the Department of Agriculture, Govt. of Bihar and inservice candidates of this University. For admission under this programme also a Competitive Test was conducted during the year under report in which 105 VLW's and 4 inservice condidates of this University appeared. Out of them, 21 VLW's and 2 inservice candidates of this University were admitted to 4 years B.Sc. Agril. course.

(b) Post-graduate programme :

Total intake capacity to the Masters degree of Post-graduate faculty is 88 in various subjects of Agriculture, 48 in various subjects of Veterinary and Amimal Husbandry and 8 in various subjects of Bsaic Science. Two seats in each subjects of Agriculture are reserved for the students sponsored by the ICAR and Department of Agriculture, Govt. of Bihar. Admission in Master's degree programme are taken on merit prepared on the basis of marks obtained by the students in Under-graduate examination.

During the year under report, 9 students were admitted in the M. V. Sc. course in different subjects of Veterinary Science and 93 students were admitted in the M. Sc. Ag./M. Sc. courses of Agriculture and Basic Science subjects out of which 84 were general students, 5 were in service candidates of Rajendra Agricultural University and 4 were nominees of the ICAR.

(c) Ph. D. programme :

II. Enrolment in different faculties:

(i) Under-graduate programme :

The number of students on rolls in different programmes of the faculties is given in table-I

Table I : No. of Under graduate students on rolls in different faculties during the year 1984-85.

Name of faculty/ College		I Year	II Year	III Year	IV Year	Total
A. Faculty of Agriculture :						
(i) Bihar Agricultural College, Sabour	1. Gen.—	45	47	42	—	134
	2. VLW's—	—	—	—	—	—
(ii) Tirhut College of Agriculture, Dholi	1. Gen.—	60	47	36	—	142
	2. VLW's—	23	29	29	—	71
B. Faculty of Animal Husbandry :						
(i) Bihar Vety. College, Patna		47	47	32	57	183
(ii) Sanjay Gandhi Institute of Dairy Technology, Pusa, Samastipur.		19	14	14	—	47
C. Faculty of Home Science :						
(i) College of Home Science, Pusa.		27	18	15	—	60
D. Faculty of Agricultural Engineering :						
(i) College of Agricultural Engineering, Pusa.		17	9	—	—	26
						663

(ii) Post-Graduate programme :

The number of students on roll in different subjects for M. Sc. Ag./M. Sc / M. V. Sc. programme of the faculty of Post-graduate studies is given in table-II.

Table II : Number of students on roll in M. Sc. Ag./M. Sc./M. V. Sc. programme during the year 1984-85.

Title of the degree programme	Subject	Students admitted in 1984-85	Students on roll from previous year	Total
(a) M.Sc.Ag.	Agronomy	17	43	60
	Plant Breeding	8	18	26
	Soil Science	10	27	37
	Plant Pathology	9	28	37
	Entomology	8	22	30
	Horticulture	11	23	34
	Extension Education	11	22	33
	Agril. Economics	11	23	34
(b) M.Sc.	1. Botany and Plant Physiology	5	8	13
	2. Agril. Statistics and Mathematics	3	7	10

(c) M.V.Sc.	Veterinary Anatomy	—	3	3
	Veterinary Pathology	1	2	3
	Veterinary Medicine	3	5	8
	Veterinary Microbiology	1	3	4
	Veterinary Pharmacology	—	—	—
	Animal Nutrition	—	1	1
	Animal Breeding	—	1	1
	Veterinary Phisiology	1	—	1
				335

(iii) **Ph. D. programme :**

Regular Ph. D. programme with course work in all the subject of Agriculture is available in this University. Table-III shows the number of seats available in different subjects and number of students on roll during the year 1984-85. Due to certain unavoidable circumstances admission in Ph. D. programme could not be taken during the year under report.

Table III : Number of students on roll in Ph. D. programme during the year 1984-85.

Subjects	Seat available	Students admitted in 1984-85	Students roll from previous yr.	Total
Agronomy	4	—	16	16
Plant Breeding	5	—	11	11
Soil Science	5	—	16	16
Plant Pathology	3	—	13	13
Entomology	2	—	5	5
Agril. Economics	2	—	2	2
Extension Eucation	2	—	3	3
Horticulture	2	—	6	6
				72

(iv) **Under-graduate students who completed degree programme :**

Number of students who qualified for various Under-graduate programmes of the University is given in Table-IV.

Table IV : Statement showing number of students who qualified for various under-graduate programmes.

Title of degree programme	Number of students qualified in 1984-85
B. Sc. Agril.	120
B. V. Sc. and A. H.	48

(v) Post-graduate students who completed degree programme :

Details of students who qualified for the M. Sc. Agril., M. V. Sc. and Ph. D. degree programme of this University is given in Table-V.

Table V : Details of students who qualified for the award of M. Sc. Ag /M.V.Sc. and Ph. D. degree.

(a) List of students qualified for M. Sc. Ag. degree :

Sl. No.	Name of students	Major subject and Title of Thesis
1	2	3
		SOIL SCIENCE
1.	Ramji Pandey	"Genetics of the Foot Hill soils of Adhaura as influenced by topography".
2.	Dinesh Jha	"Efficacy of leaching with or without amendments for reclamation of salt affected calcareous soil as influenced by method of water application".
3.	Mukesh Kumar	"Effect of mulch induced hydrothermal environment of calcareous soil on zinc-uptake and irrigation management in winter maize".
4.	Satyendra Kumar Choudhary	"Studies on competitiveness of streptomycin resistant mutant strains of *Rhizobium*, Symbiotic Nitrogen fixation and Grain yield of green gram (Vigna radita L.) in calcareous soil".
5.	Ramashraya Singh	"A comparative study of soils developed on different parent rocks in Singhbhum District".
6.	Miss Indira Sarangthem	"Zinc availability parameters & effect of organic amendments on zinc nutrition of Winter Maize in Calcareous soils".
7.	Kapileshwar Choudhary	"Studies on the transformations and availability of Phosphorus under waterlogged rice conditions".
8.	Binod Kumar Jha	"Studies on potassium availability and its effect on yield and juice quality of sugarcane in calcareous soils".
		ENTOMOLOGY
1.	M. Saifur Rahman	"Evaluation of some insecticides against the pest complex of Okra *(Abelmoschus esculentus* Linn.) Monch".

1	2	3
2.	Baleshwar Singh	"Population dynamics of sweet potato Weevil *(Cylas formicarius* Feb.*)* in relation to different levels of fertilizer application".
3.	Shiv Kumar Chaturvedi	"Assessment of losses due to insect pest complex in Brinjal *(Solamum melongena*, Linn.*)* Crop".
4.	Amiya Kumar Asthana	"Effect of certain pesticides on root knot Nematode of *KRA*".
5.	Braj Bhusan Sharma	"Studies on varietal reaction, effect of fertilizers, seeding dates and chemical control of gram pod borer *(Heliothis armigera* Hbn.*)* on gram *(Cicer orietinum* Linn.*)*".
6.	Sahja Nand Singh	"Studies on verietal resistance of paddy and insecticidal efficacy of granular and spray formulations against paddy stem-borer, *Tryporyza incertulas* Wlk".
7.	Arbind Kumar Rai	"Bionomics and looses due to stem borers in deep-water Rice".
8.	Madan Gopal Gupta	"Population dynamics in relation to abiotic factors and efficacy of some insecticides on green leafhopper".
9.	Bijay Shanker Jha	"Studies on the pest complex of pea *(Pisum sativum* Linn.*)* with special reference to varietal, insecticidal and agronomical manipulations".
9.	Saroj Kumar Choudhary	*Studies on the host preference and effectiveness of some selected insecticides against cabbage butter Fly (*Piers brassidae* L.)".

PLANT PATHOLOGY

1.	Binod Bihari Prasad Sinha	"Comparative studies of five *isolates* of *Corticium sasakii* on paddy (Oryza sativa L)".
2.	Manoj Kumar	"Investigations on blight of chikpea incited by *Alternaria alternata*".
3.	Sapam Nimaichand Singh	"Investigations on fungal diseases of ginger (Zingiber officioale Rescoe) occuring in North Bihar".
4.	Ashok Kumar Singh	"Studies on *Fusarium Solani* (Mort) Saco and Rhizoctonia Solani causing rot of chick pea *(Cicer arietinum)*".
5.	Nrip Nandan Prasad Singh	"Investigations on seed mycoflora of spices".

1	2	3
6.	Darbeshwar Singh	"Studies on narrow brown leaf spot of rice caused by *Cercospota Oryzae* Miyake",
7.	Bimla Rai	"Investigations on banana wilt caused by *Fusarium Oxysporum* Schl. F. sp. *Cubense* (E. F. Smith) sryder and Hansen".
		AGRICULTURAL ECONOMICS
1.	Pramod Kumar	"A study on impact of Bihar Sharif small and marginal farmer's service Co-oparative Society Ltd. on farm economy (District–Nalanda)".
2.	Uday Prekash	"A study on production credit up-take & factors influencing on Family Farms, Sabour Block (Bhagalpur)".
3.	Pradeep Kumar	"A study on Economics of rabi maize with and without intercrops (Muraul Block, Muzaffarpur District").
		HORTICULTURE
1.	Sunil Kumar Tiwary	"Studies on the effect of chemical & cultural weed control on growth yield and quality of summer okra (*Abelmoschns esculentus* (L) Moonch)".
2.	Pradyumna Ram Das	"Variability studies in chilli (*Capsicum annum* Linn) genotypes in North Bihar".
3.	Kamilesh Narayan Verma	"Studies on important morphological characteristics of eight varieties of guava (*Psidium guavae* Linn)".
4.	Navin Kumar Sinha	"Genetic variability in watermelon (*Citrullus lanatus* (Thumb) Matsumura and Nakai)".
5.	Gita Prasad Sahni	"Genetic variability in ridge gourd (*Luffa acutanulla* Roxb)".
6.	Mahendra Roy	"Studies on the effect of G. A. and M. H. on papaya (*Carica papaya* L)".
7.	Shyam Kishore Pandey	"Studies on floral biology of poly embryonic mango (*Mangifera indica* Linn) C. V. S. Goa, Peach and Kurukkan".
8.	Surendra Prasad Choudhary	"Studies on increasing the storage life of mango (*Mangifera indica* Linn) cultivar-Langra".
9.	Ramawatar Choudhary	"Studie on the selective combinations of N P & K on growth, yield and quality of sweet orange (*Citurus Sinensis*, Osbeck CV Mosambi").

1	2	
10.	Upendra Lal Choudhary	"Vegetative propagation of three hybrids (Mahmoodbehar, Prabhashankar & Mallika) of mango (*Mangifera indica* L)".
11.	Prasant Kumar Sinha	"Fruit development studies in litchi (Litchi Chinensis Sonn.)".
12.	Bhupendra Pd. Singh	"Studies on yield and quality components of bhindi (*Abelmoschus esculentus* (L) Moench) As affected by different levels of irrigation and Nitrogen".
13.	Rewti Raman Sinha	"Studies on the effects of growth substances on rotting of K Lime (Purbi) & Mosambi cuttings".

EXTENSION EDUCATION

1.	Abdur Rauf	"A study on the impact of T & V extension system in changing communication behaviour of farmers in Nepal".
2.	Ram Bilas Prasad	"Differential attitude of farmers towards KVIC model of bio-gas technology in South Bihar Block".
3.	Devendra Ranjay Das	"A study on entrepreneurial characteristics in relation to entrepreneurial role performence of commercial and subsistence potato growers in Nalanda district of Bihar.
4.	Umesh Pandit	"Impact of lab to land programme on the adoption behaviour of farmers in Munger district of Bihar".
5.	Harischandra Thakur	"A study of content, readability and effectiveness of 'Adhunik Kisan'. A Farm Magazine of Bihar".
6.	L. Sarat Chandra Singh	'A study on the profile characteristics of farmers in relation to adoption of scientific rice production practices in vally & hilly regions of Manipur State".

AGRONOMY

1.	Krishna Kishore Prasad	"Studies on inter cropping in sweet potato".
2.	Sitya Narayan Singh	"Integrated weed management in rice (Oryza *sativa* L)".
3.	Arbind Kumar Mandal	"To find out the efficacy of different methods of herbicide application for the economic production of rabi maize".

1	2	3
4.	Shashi Shekhar Pandey	"Effect of different levels of Nitrogen and irrigation on the growth, yield and quality of winter maize (*Zea mays* L.)".
5.	Dinesh Prasad Singh	"Effect of irrigation and Nitrogen levels on growth, yield and quality of mustard (*Brassica Juncea* L.)".
6.	Surendra Mohan Prasad	"Response of graded nitrogen in relation to variabe planting time of wheat under rainfed conditions".
7.	Tribhuwan Prasad Singh	"Effect of different dates of sowing and levels of nitrogen on growth, yield & quality of wheat (Triticum aestivum L.)".
8.	Ramashray Roy	"Effect of sowing dates on some promising varieties of cheena (Panicum millaceum L.)".
9.	Mani Kant Prasad	"Performance of Potato (*Solanum tubersosum* L) cultivars to fertility levels".
10.	Kedar Nath Thakur	"Effects of herbicides on the transformation of nutrients and their uptake by upland transplanted rice in calcareous soils".
11.	Jagannath Jha	"Effect of different levels of NPK combination on growth, yield, quality and economics of five yillow sarson varieties ".
12.	Dadan Singh	"Response of winter maize to soil moisture and Nitrogen levels".
13.	Ram Lagan Singh	"Effect of planting pattern and Nitrogen on growth yield & quality of sweet potato (*Ipomaea batata* Lam)".
		PLANT BREEDING
1.	S. M. Masood Azhar Rizvi	"Genetical studies in semi dwarf indica rices *(Oryza Sativa* L.) under different environments".
2.	Ashutosh Kumar	"Stability analysis and other genetical studies in semi dwarf indica rice *(Oryza Sativa* L.)"
3.	Brahmdeo Singh	"Study of yield components and their inter relationship in kabuligram".
4.	Ashok Kumar Singh	"Study on Variability and association among quantitative traits of some promising strains of wheat *(Triticum aestivum* L.) under rainfed condition".

1	2	3
5.	Mahedra Prasad Singh	"Combining ability studies on pea (*Pisum sativum* L.)".

(b) List of students quilified for M. V. Sc. degree :

VETERINARY PARASITOLOGY

1.	Ajoy Kumar Saha	"Experimental studies *sarcocysti Levinei Dissanaike* and Kan (1978)".
2.	Kumari Kanak Lata	"Studies on immunization against the common cattle ticks *Boophilus microplies*".

EXTENSION EDUCATION

1.	Shiv Kumar Sharma	"A study of the factors affecting adoption of animal husbandry practices and programmes with reference to Mandar Tribal C.D. Block, Ranchi".

ANIMAL NUTRITION

1.	Chandramoni	"Studies on the Calcium and Phosporus requirement in cared buffaloes (W.L.H.)".

(c) List of students quilified for Ph. D. Degree :

AGRONOMY

1.	B mendra Choudhary	"Agronomic studies on high intensity maize based rotations including fodder crops".
2.	Krishna Shukla	"Effects of ammendments and rice culture on the amelioration of saline sodic soils and their influence on wheat".
3.	Shambhu Saran Thakur	"Productivity of late transplanted paddy as influenced by age of seedlings, fertilizer doses and dates of transplanting".
4.	Subodh Kumar	"Integrated weed management in vegetable multiple cropping ladies finger, radish, potato, onion".

PLANT BREEDING

1.	Binoy Nandan Sahai	"Studies in developing hybrid rice".
2.	Shiva Kumar Prasad	"Study of heterosis in relation to genetic divergence in maize (*Zea mays* L.)".

HORTICULTURE

1.	Deo Nath Choudhary	"Improvement in brinjal (*Solanum melongena* L.) by intervarietal and inter specific hybridization".

1	2	3
	SOIL SCIENCE	
1.	Satyabrat Pandeya	"Equilibria natural chelates in relation to iron nutrition of plants in calcareous soil".
	PLANT PATHOLOGY	
1.	Ram Kumar Pd. Sinha	"Investigations on *Alternaria* affecting rapeseed and mustard".

Faculty Development :

(i) Under Faculty Development Programme of the University two teachers were deputed to other Institutions for higher studies, two staff members were granted study leave for completing their B. Sc. Ag programme and three staff members were granted study leave for completing M. Sc. Ag. programme. The Faculty Development Council of the University selected eleven scientists/teachers from Agriculture subjeccts, one from Agricultural Engineering, three from Basic Science subjects and five from Veternary subjects for admission in Rajendra Agricultural University on deputation to some other University for completing their Ph. D. programme.

During the same period one scientist of the University was awarded post-doctoral Fellowship of IRRI and another was awarded Yogoslav Fellowship and both were relieved to join their respective assignments.

The University also decided to depute two top ranking students from each subject of Home Science who complete, B. Sc. Home Science course of this University for completing M. Sc. Home Science course in selected Institution/ University of the country.

(ii) The University provides scholarships at under-graduate level, Junior Felloships at Mastars degree level and Ph.D. level to the students based on merit. In adition I.C.A.R. and H.R.D.P. fellowships are also available. During the year under report following number of scholarships and fellowships at different levels from different Heads were provided :

Sl. No.	Name of the Programme & Scheme.	Number of students benefitted					
		Ag.	Vet.	H. Sc.	DT.	Ag. Engg.	Total
1.	**Under-graduate programme :**						
(i)	Merit Scholarship	30	20	9	9	6	76
(ii)	Merit cum-Means U.R.	30	14	7	3	2	56
(iii)	Merit cum-Means Reserved	30	14	6	12	—	62
(iv)	**Other ICAR Scholarship :**						
	(a) ICAR Merit-cum-Means	8	—	—	—	—	8
	(b) ICAR H.R.D.P.	1	3	1	2	—	7
(v)	Any other						
2.	**Masters Degree Programme :**						
(i)	University Fellowship	152	40	—	—	—	192
(ii)	ICAR Fellowship	1	—	—	—	—	1
(iii)	ICAR H.R.D.P.	7	—	—	—	—	7
(iv)	Any other	—	—	—	—	—	—
3.	**Ph. D. Programme :**						
(i)	University Fellowship	1	1	—	—	—	2
(ii)	ICAR Fellowship	4	—	—	—	—	4
(iii)	ICAR H.R.D.P.	1	—	—	—	—	1
(iv)	Any other	3	—	—	—	—	3

1 Agriculture Science

1. RICE

(i) Breeding

Inentification of some desirable mutants, from Janki, Pusa-23, Pusa-2-21, Rasi and Boro, and four best restorers, viz., IET 5656, IRS 36, 50 and 54 has been the significant achievement of rice breeding programme. Besides this some promising season-cum.situation specific rice varieties were also identified, such as for :

(ii) Irrigated Summer season : IETS 4106, 7617 and MW 10.

(i) Irrigated Kharif season :

(a) Early maturing (75-80 days) : IETS 7425, 7278 and 6148 (30-40 q/ha) for normal growing areas and ES 1-2-3, ES 29-3-3- for post flood planting.

(b) Medium duration : (13 i-135 days)-IR 13540-56-32-1, IET-6263 and UPR-254-85-1-RAU (40-50 q/ha).

(c) Late duration : (145-150 days) IETS 7041 and 7592 (50-60 q/ha.).

(d) Quality rice : RAU-SES-80-644-1-1-1 and and RAU SES 80-642-6 (30-35 q/ha) are fine grained aromatic rice.

(iii) Rainfed lowland :

(a) Shallow deep (up to 50 cm) rainfed : TCAAs 48, 227 and IR 4570-44-2-2-3-3 (30-35 q/ha).

(b) Semi deep Water : TCA 269, Barogar 62 10 and Barogar-6.

(c) Deep water : TCAs 214 and 4, with good elongation ability and tolerance to submergence. Breeder seeds of important established rice varieties were also produced.

(ii) Agronomy :

Urea supergranules increased the relative nitrogen efficiency in rainfed lowland and irrigated rice as well and so was with gypsum coated urea. Summer rice seeds when sown on 1st March proved to be cold tolerent effectively and recorded satisfactory germination. BGA and *Azolla* inoculation proved to be a substitute for 30-40 kg chemical N/ha. 2,4-DEE @ 0 8 kg a.i /ha applied in one-day transplanted paddy controlled most of rice weeds.

Pathology & Entomology :

Bacterial blight in rice was observed to get enhanced if nitrogen is applied as basal dose and at panicle initiatioo stage. Double spryings of Bavistin (0.1%) and Foltaf (0.12%) controlled the Sheetrot disease most effictively. Foliar or granular insecticides were equally effective against rice stem borer in deep watter direct sown condition.

2. MAIZE

(i) Breeding :

Composite M 13 continued to be a superior rabi maize, giving 20 % and 16.1 % higher yield over Hi-Starch and Lakhshmi respectively. MCU-501 (67 65-q/ha) an early rabi composite recorded an yield 17 6% and 24.2% higher over checks, G 25 and Diara MFS 4 respectively.

In Kharif maize, some new composites : early maturing (78 days) MCU 508 (25.39 q/ha), medium maturing (86 days) J 2014 (42.40 q/ha), and late maturing (96 days) Manjiri (30.06 q/ha) were identified superior to their respective checks, Diara Composite, Tarun and Suwan. AB (W) MCU 3 (33.61 q/ha) and AB (W) MCU 22 (33.60 q/ha) yielding 65% higher over composite Suwan (20-33-q/ha) are another late maturing promising varieties.

(ii) Agronomy :

In agronomical trail, Protap, J 54, (B 73 × B 79) × J 54 and J 54 CTC 4 were identified for late sowan condition. G 25 (54.91 q/ha) and MUC 501 (50.31-q/ha) gave highest yield at 90 kg N/ha. Atrazine @ 0 5 kg a.i./ha applied as pre-emergent treatment controlled 90% maize weeds.

(iii) Pathology & Entomology :

Bavistine and Bayleton significantly reduced the rust and turcicum leaf blight disease intensity in maize, while Klorocial (25-27 kg/ha) used as soil drench after 35, 42 and 49 days of seed sowing effectively reduced the bacterial stalk rot disease. The climbing cutworm in Rabi maize could be controlled by single application of either Carbofuran 3 G, Quinolphos 58 or Phorate 10 G or two applications of Carbaryl 4 G.

3. WHEAT & BARLEY :

(i) Breeding :

Wheat breeding continued to be in progress for evolving varieties suitable for rainfed, irrigated timely sown and irrigated late sown conditions K 8027 for rainfed; BR 326 (42 40 q/ha) for the North Estern region, BR 2074 (35 3 q/ha) and BR 356 (44 70 q/ha) for Far Eastern Zone for the irrigated timely sown; and BR 3177 (25.4 q/ha, BR 354 24.5 q/ha and BR 24 3 q/ha for the irrigated late sown conditions are some new promising varieties developed at the University.

(ii) Agronomy :

In agronomical trials, HUW 221 (64.02 q/ha) for normal sowing; HUW 233 (37.95 q/ha) for late sowing; HP 1518 (54.17 q/ha) and BR 326 (53.14 q/ha) under adequate 4 irrigation; and K 0027 (20.4 q/ha) for rainfed conditions were observed to be significantly superior varieties. Nitrogen efficiency in wheat is higher when applied at later plant growth stage.

(iii) Pathology :

Seed treatment with Bavistin @ 1 g/kg seed followed by its two sprayings (0.05%) reduced the foliar blight considerably.

4. SUGARCANE:

(i) Breeding :

Of the 227 varieties in C_2 evolved last year, 38 *early*, 5 *mid early* and 2 *main season* varieties were identified. Out of 25097 seedlings developed from various crosses, a total of 1946 were selected and planted in the first clonal generation on the basis of juice quality, agronomic performance and disease resistance.

Cox 40466 main season, Cox 40321 and Cox 40517 mid early are now promoted to co-ordinated testing, as they were found promising in agronomical trials. In late planted cane, after wheat, higher seed rates 1.5 and 2 times the normal rate alongwith higher nitrogen 150 kg/ha increased the cane yield by 47 and 112 q/ha respectively.

(ii) Agronomy :

Planting two rows of potato (K. Sindhuri) between cane rows, at 100 kg N+30 kg K_2O per hectare fertilizer level gave an extra net return of Rs. 19672/ha.

(iii) Pathology & Entomology :

In crop protection studies, screening of varieties against smut resulted in indentifying BO 108, Co P 8101, WK-1841, X 41323 and Co X 44766 as immune to smut, and 12 other varieties as showing no wilt infection. Sugarcane garlic mixed cropping showed minimum incidence of shoot and top borer both at second and third generations.

(iv) Physiology :

17.93% of polysaccharides was obtained in BO 91 74.33 t/ha at 50 kg N_2O/ha level. Zn SO_4 applied at earthing up, mixed with compost in 1:8 ratio gave 74.45 t/ha yield as against zero zinc application (3552 t/ha). Z+Fe+B increased cane yield by 59.7% without affecting juice quality.

PULSES

(i) BREEDING

1. Mung and Urd :

* Out of 22 advance lines of mung evaluated, five viz; DM-3, 4, 5, 8 and 12 performed better than the checks and showed resistance against YMV, *Cercospora* leaf spot and powdery mildew diseases.
* With a view to improving the seed characteristics of other wise very promising mung lines viz; 11/395 and 12/333 mutation breeding has been resorted to. Promising fixed M 3 families and single plants were selected.
* Out of 11 mung varieties tried in the late kharif season RAU entry 11/395 (9.79/ha) recorded highest yield. During summer season too three RAU entries viz; 11/395, 12/333 and DM-1 were the top yielders.

2. Arhar :

* Among the advance lines tested, 14 showed promise for June-July sowing and 6 for pre-rabi sowing. One line DA-188 proved to be the best for both sowings recording 26.6 and 19.6 q/ha grain yield respectively.
* Among the elite late lines evaluated in coordinated varietal trial, DA-13 (Dholi) and MA-135 (Varanasi) yielded higher than the best check Bahar.
* Under September-sown situation DA-2 and DA-11 gave highest yield.

3. Gram :

* Eight new crosses involving wilt and Botrytis-resistant, high yielding and locally adapted parents were made.
* Out of 640 F4 families derived from 3 crosses 150 desirable plants were isolated.
* Among the advance lines screened DG 85-2, DG 85-7 and DG 85-11 (WR 315 × Pant G 114), DG 84-25 (G 130 × ICC 29) and DG 84-28 (BG 209 × DG 77-29) were outstanding with 25 to 29 q/ha grain yield.
* In the coordinated varietal tritals the GNG 186 (Ganganagar), GPF 7035 (Faridkot), BG 304 (IARI), one of our entries DG 82-12, GM 425 (IARI), BG 256 (IAKI) and Phule G 5 (Akola) were found most promising.
* For late sowings (December 1st fortnight) RSG 44 (Rajasthan) GL 1002 (Ludhiana) and BGM 417 (IARI) proved to be most suitable.

4. Lentil :

* With a view to developing bold seeded, diseases resistant and high yielding varieties M 2 populations of 3 varieties viz; LL 78, Sehore 74-7 and Pant-L 639 were screened and desirable plants were selected.
* In the Coordinated varietal trials, among the small-seeded varieties, Pant L 82-2 produced maximum (21.6 q/ha) closely followed by RAU entry Dh. L. 315 (21.5 q/ha) and among the bold-seeded lines L-4076 (27.7 q/ha) proved to be the best.

5. Lathyrus :

* Among the *Lathyrus* varieties tried in Coordinated Varietal trial, RAU, entry DG.K-118 (18.4 q/ha) continued to be the top-yielding for the second successive year. Last year this line ranked first in the country-level.

6. Pea :

* 27 promising lines were selected from 45 F4 (27 crosses), 55 F5 (13 crosses) and 28 F6 (7 crosses) families screended for yield and powdery mildew resistance.

* One advance line DP 82-1 (21 2 q/ha) showed consistant best performance for the second successive year.

* In the coordinated varietal trial P 81-10 (Pantnagar), P 81-21 (Pantnagar), NDP-1 (Faizabad) and Dh. P. 64 (Dholi) were the best performers (22 to 23.6 q/ha).

7. Rajmash :

* Out of 10 elite lines tested in coordinated varietal trial to screen suitable varieties for rabi planting under Dholi-conditions 2 lines viz; HUR-67 and HUR-137 (Varanasi) gave better yields.

8. Vicia (Bakla) :

* A collection of 215 land races from the different parts of the state were grown and purified on the basis of morphological characters.

9. Seed Production :

Breeder Seeds of the following varieties were grown :

Crop	Variety	Quantity (kg)
Arhar	Bahar	500
Gram	Pant G-114	200
	BR-77	60
	BG-256	30
Lentil	BR-25	80
	PL 77-2	80
Mung	12/333	80
	11/395	80
Pea	T 163	30
	Rachna	30
	BR-12	30
	Total :	1200 kg

(ii) AGRONOMY

1. Summer Mung :

1 Sowing of mung in regular rows spaced at 45 cm row width and 6 cm inter-plant distance with 100% recommended dose of fertilizer (20+60 kg

P_2O_5 ha) followed by sowing three rows skipping 4th row with 75% of the recommended dose of the fertilizer were found promising.

2 Incoculation of seed with Rhizobium culture along with 40 kg P_2O_5/ha with or without N-fertilizers were found very effective in increasing the yield of summer mung. The response of P was found to be 15 kg grain/ kg of P_2O_5.

3 Two irrigations either at 25 days of seeding with second at 15 days interval or at 30 days with second 15 days interval were found most promising in case summer rain fails.

2. Summer Urd :

4 Urd (Variety T9) has been found as a promising summer crop to fit in the rotation wheat-urd-paddy. Sowing between 15th March and 10th April was found to be the optimum time for sowing earlier than 15th March or later than 10th April has been found to depress the yield drastically.

3. Kherif Mung :

5 Full package of practices (line sowing, improved variety, fertilizer and weed control) was found to increase the yield of urd by 136 per cent over traditional method of sowing, (local seed, broadcast sowing, no fertilizer and no plant protection). Each individual crop production component was found to increase the yield of the crop substantially.

4. Pigeon Pea :

6 Full package of practices (fertilizer + wood control + plant protection against pod borer and sowing in line) produced significantly higher yield (21.7 q/ha) than traditional method of sowing (15.2 q/ha), the increase being to the ture of 42.3%. Individual inputs viz; fertilizer (20 v and 50 P_2O_5 kg/ha), weed control (one hard weeding) and plant protection (one spray against pod borer) increased the yield by 24.5, 17.4 and 15.3% respectively.

7 As *rabi* crop, varieties DA-6 and ICPL 87-2 in the early group and varieties DA-11 and 20 105 in the late group, were found promising at 3.3 lakh plants/ha. In another trial, application of 20 kg N and 60 kg P_2O_5/ha was found optimum for pigeonpea.

IV. Lentil :

8. Variety RAU 101, a recently evolved verietiey was found most promising. Variety RAU 101, when sown on 30th October with 60 kg seed rate/ha recorded the maximum yield of 20.8 q/ha followed by variety L9-12 (17.9 q/ha). Delay in sowing beyond 14th November caused drastic reduction in yield of lentil.

V. Gram :

9. Among the new genotypes, variety D 82-12 was found most promising for normal sown condition and excelled the check C 235.

10. Foliar spray of either 2 % TSP or DAP was significantly superior to both 2% urea and 2% KCL, which in turn were superior to control on late sown gram. In another trial in late sown condition (5th Dec.) variety Radhey performed significantly better (14.1 q/ha) than rest of the varieties (BG 261, BC 270, DG 82-7, H-208 and C. 235). Variety Radhey sown on 5th Dec. with 75 kg DAP/ha at 5 0 lakh plants/ha proved to the best with maximum yield of 1o.4 q/ha.

VI. Peas :

11. In a trial on dwarf peas, variety KPSD-1 was significantly better (21.1 q/ha) than variety HFP-1 (19.6 q ha), Rachna (15.3 q/ha) & the standard check T. 163 (14 9 q/ha). Variety-KPSD-1 recorded the highest yield (20 9 q/ha) when sown on 5th November at the closest row spacing of 20 cm followed by variety HFP-1 (26.9 q/ha) sown on 20th October at the closest row spacing of 20 cm. In late sown condition (20th Nov.) also variety KP- D-1 was found to be the best.

VII. Sequential Experiment :

12. Full dose of fertilizer to paddy and urd extended significant residnal effect on the yield of succeeding crop of gram grown in sequence.

(iii) ENTOMOLOGY

Foliar spray of endosulfan (0.07 %), dimethoate (0.03 %), monocrotophos (0 04 %) and phosphamidon (0.03 %) and soil application of aldicarb & phorate @ 1 kg a. i./ha proved equally efficacious against ped borer on summer mung.

Mung varieties 12/333, SML 77, PUSA 104, 11/99 and 11/395 and urd varieties DH 80-7, 19, DU-3 and SAPDHO MASH were found significantly less susceptible to pod borer during summer.

Late arhar varieties DA-2, MA 2, ICPL 310, ICPL 311 and Bahar recorded lower damage of pod borers. All the varieties sown during September showed high level of pod borer damage.

Alternate row spraying of endosulfam (0.07 %) was found as good as full plot spraying in respect of controlling arhar pod borers as well as producing higher grain yield. Thus, the quantity of insecticide can be reduced to half.

Plant pronucts like neem seed extract (5 %) and karanja oil (2 %) were found as effective as the recommended insecticide endosu fan (0.07 %) against

pod borers of arhar, but from yield point of view karanja oil and endosulfan were at par.

Grem varieties BG 234 of Coordinated trial and ICCC-42, ICCC-46, GG-549, ICCC-43, GG-2 and PDG-28 of initial evaluation trial recorded significantly lower damage of pod borer.

Dusting with quinalphos 1.5 % dust and BHC 10 % proved as effective as spraying of endosulfan (0.07 %) in preventing pod borer damage on gram and also giving increased grain yield.

Pea varieties DMR-7, Dh-P-64, DMR-4, DMR-9, Dh-P-64 and Rachna were found less susceptible to pod borer.

Demonstrations of pest control technologies on various pulses crops showed an increase in yield of pea over control to the tune of 61.5 % by seed treatment with carbofuran (2 %), 2 % extra yield of arhar by foliar spray of endosulfan (0 07 %); 47.7 % aditional yield of gram with endosulfan (0.07 %) spray and 47 2 % and 50.3 % increase in yield of pea under the soil application of phorate 1 kg a.i /ha and foliar spray of endosulfan (0.07 %) respectively.

(iv) PATHOLOGY

Arhar cultivars ICP 12726 and ICPL-155 were found resistant to wilt disease.

Arhar varieties ICP 7035, 10976, 10977, 11049, ICPL 8304, 8306, AL-15 and H-81-1 were free from sterility mosaic.

Arhar varieties ICP 857, 7378, 7906, 7875 and DA 9 got no infection, while DA-11, 16 and 20 (105) showed resistance to Alternaria leaf blight.

Dithane M-45 @ 2 kg/ha/1000 litre of water was most effective in reducing the incidence of Alternaria leaf blight from 92 5 % to 16.25 %.

Mung varieties MG 143, 296, 325, Pusa 101, 11/395 and 12/333 and Urd va ieties UG 151 and 14/5 were free from yellow mosaic.

Only one variety of mung S-8 was resistant to cercospora leaf spot;

Seed treatment with Bavistin cum taso sprayings were significantly effective against Cercospara leaf spot of mung and urd.

ICRISAT lines of chickpea ICC 22, 2862, 6815, 2127, 12252, and 81002 were free from wilt. Lines HAU-27-19, DG-77-32, A-1 and H-79-73 got no infection of grey mold.

Mixed cropping gram + jowar and gram + linseed got less infection (12.69 & 13.12 %) than gram alone (17.73 %).

Pea variety PD-1 was free from powdery mildew.

(v) MICROBIOLOGY

Poor to moderate nodulation of urd, moong, arhar, gram and lentil was recorded in farmers fields of Patna, Arrah and Gaya districts of Bihar.

1. Arhar—Most promising strains viz; Nif TAL 560 and Nif TAL 1127 were screened for variety Bahar (1258).

2. Mung—*Rhizobium* strains M_5 and M_1 were most efficient in inducing higher grain yield (8 1 g/ha) over uninoculated control (5.8 q/ha). Interaction between *Rhizobium* strains and genotypes was significant. The most suitable combination of *Rhizobium* strains and genotypes such as Ps 16 × M_{10}, S8 × GMBS1 and S8 × KM_1 were noted.

3. Urd—*Rhizobium* strains U_3 and U_2 gave maximum grain yield with variety T_9 in screening trial.

   Rhisobium strains and genotypes interactions were found to be significant for grain yield. Strains BDN-F and KU 1 gave maximum grain yield (8.0 and 7.8 q/ha) with variety T_9.

4. Gram—*The Rhizobium* strains IC 94, G 10-80, KG 31, C 181 and F 6 were found to be must suitable for genotypes C 235, H 208, Pant G 114.

5. Lentil—*The Rhizobium* strains LC 4, LC 1 and IL 3 were found most promising and were recommended for inoculation of lentil.

6. Lathyrus—*The Rhizobium* strains K 5 and K 3 were noted as good strains and were recommended for inoculation of Lathyrus is field conditions.

6. OIL SEEDS

(i) Breeding :

In *toria*, 3 dwarf, high yielding bold seeded composites have been developed as natural mutants. 37 matants of groundnut in its M_7 generation were evaluated for their higher yield and early maturity against M-13 and AK-12-24 established varieties. Collection and maintenance of germplasms of other oilseeds continued to be in progress.

7. FRUITS

(i) Breeding :

Mango—The fruit characters and quality of Mango hybrid 101 (Gulabkhas × Mahmood Banar) were found promising. The study of performance of plants

propagated by different vegetative means with *'Langra'* as scion indicated that plan s graf ed on Latra and Kalapady rootstocks were dwarfer than that grafted on other rootstocks.

Guava—In guava, 285 hybirds from ten parental combinations were further screened to locate better types.

Pineapple—KEW appeared to be promising (48.28 q/ha) under semi-shady conditions as compared to Queen and Singapuri.

Coconut—The king dwarf, Laccadive dwarf and Bengal tall proved better than Sangramon, Borneo,St. Vincent, Jamaica and Ceylon tall among the *Coconut* collections.

(ii) Pathology & Entomology :

Fusarium species of fungus was isolated from four samples of mango which are being studied pathogenically. Spraying monocrotophos (0.04%) or phosphamid on (0.05%) effectively controlled the mango hoppers, while methyl dimeton (0.0%) was effective against mango shootgalls.

(iv) Fruit Preservation :

In fruit preservation studies Zardalu mango can be economically stored up to 11 days at room temperature by simly wrapping them with newspaper, costing only 75 paise/100 fruits. For litchi, dipping peeled and destoned flesh of fruits in 1% alum solution for 30 minutes before canning, prevents browning in canned litchi for a year, at an extra cost of only 5 paise per canned tin. For economic storage life of harvested litchi upto 9 days, its treatment with waxol emulsion 8% and wrapping them with polythene was found effective, costing extra 50 paise per 100 fruits, against a normal storage life of only 5 days. Squash and Jam, both, have been successfully prepared of Ber. Two recipes of custard apple squash, one containing 30% juice with 45% sugar and other with 40% juice and 40% sugar, have been developed with equal test quality.

8. VEGETABLES

(i) Breeding :

New Bhindi S-2 bas been identified consistently superior and suitable for on-farm test. In cabbage, two earliest (62 days) maturing varieties, Pride of India and ARU Glory, have been identified. Two lines in Tomato : 4-2-4 and 3-1-15 have been found superior compared to Punjab Keshri and Roma. In brinjal, PBR-91-2, a round variety, was found at par with Muktakeshi, the prevailing standard check. Collection 82-2 in ridge gourd outyielded (80-85 q/ha) the standard check, Pusa (54.0 q/ha). In common bean, JDL-77 (62.12 q/ha) and JDL-37 (59.95 q/ha) were observed to be superior lines for fresh pods.

(ii) Agronomy :

Planting of cauliflower on June 25 gave maximum yield (43.21 q/ha) against June 15 planting (38.60 q/ha). Dipping onion seedlings in 3% ZnO suspension for 12 hours and soil application of Boron @ 10 kg/ha have been found consistently effective in increasing onion bulb yield. For onion seed production, the optimal bulb size was 2.5 to 3.5 cm diameter, which when planted on Sept: 15 or Oct. 15, produced 60.56 and 56.46 q/ha seeds respectively, responding economically up to 120 kg N/ha at 45×30 cm spacing. For chillies, the fertilizer response estimated at 120kgN + 60kg P_2O_5 per hectare was found to be most remunerative.

9. SPICES

(i) Breeding :

Evolution of superior strains in Corriander, Fenugreek, Fennel, Omum, Black cumin, Turmeric, Ginger and Dill continued to be the main breeding work on spices. Corriander RD-46 (15.66 q/ha), Fenugreek UM-31 (17.16 q/ha), Fennel UF-35 (16.75 q/ha), and Turmeric RH 10-(393.51 q/ha) were observed to be some notable promising spices.

(ii) Aronomy :

In agronomical trials, application of 40 kg N + 40 kg P_2O_5 per hectare resulted in maximum yield of Fenugreek RM-16 (11.80 q/ha), Black Cumin RN-17 12.57 q/ha and Omum RA-11 10.80 q/ha. Potash response was found in Coriander RD-44 15.56 q/ha upto 20 kg/ha along-with 40 kg N + 40 P_2O_5 per hectare. Kharif turmeric and ginger gave high monetary value per unit area, for which an optimal seed rhizome size was found to be of 21-25 gm weight. Response to high fertilizer doses was obseved in turmeric 343.03 q/ha at 150 kg N + 50 kg P_2O_5 + 100 kg K_2O per hectare and also in ginger 111.45 q/ha at 60 kg N + 60 kg P_2O_5 + 120 kg K_2O per hectare. Compost or shisham leaves as mulches proved to be hepful in seetting higher yield in ginger 315.4 q or 301.20 q/ha and turmeric 142.65 q/ha or 138.10 q/ha 15 kg Fe SO + 20 kg Zn SO_4 per hectare had significant yield increasing effect on turmeric 155.10 q/ha,

10. MILLETS

Sorghum SPH-305 (31.11 q/ha), Bajra hybrid MBH-110 (27.10 q/ha), Ragi (RAU-3, RAU-8 and BR-317), Cheena 5013, Setaria SIC-23 (15.23 q/ha) and SIA-2574 (14.24 q/ha), Barnyard millet ECC-11 (13.21 q/ha) and ECC-22 (16.60 q/ha) were some significant promising varieties in millets identified during the year.

Cheena BR 7 for summer, and MS 4872 for September sown crop were identified as promising. Fertilizer response of Cheena was observed upto 60 kg

N + 20 20 kg P_2O_5. Cheena + Arhar proved to be a remunerative mixed crop (net income Rs. 2565/ha).

Eleven entries in Cheena and 15 genotypes in ragi were screened as resistant to Helminthosporium disease. Seed treatment of Cheena @ 0.2 gm/kg seed along with one spraying of Bavistin 0.05 % later, considerably reduced the leaf blight diseases.

11. TUBER CROPS

Sweet Potato X-25 (287.42 q/ha), X-5 (162 35 q/ha), R. S. 5 (285.50 q/ha). Kalmegh (293.21 q/ha), X-92 (239.26 q/ha), X-47 (196 75 q ha) and X-38 (185.0 q/ha) were some notable high yielding varieties identified during the year.

Sweet Patato Kalmegh in Staggered harvesting trial yielded maximum (291.55 q/ha) after 120 days of planting with identical yield after 90 and 150 days of planting. Planting autumn Yam Bean (Mishrikand) on January 15 outyielded (331.27 q/ha) December 15 planting (277.17 q/ha). Colocasia, Sahashramukhi for February planting 186 66 q/ha) and Kakakachu for rainy season (June) planting (66.66 q/ha) were identified as superior varieties. Onion and wheat were found ideal companion crop to Colocasia, giving higher net income as against pure crop of Colocasia. Amorphophallus responded optimally upto 120 kg N and 80 kg K_2O per hectare.

Dipping seed corms of Amorphophallus in agrimycin 100 proved to be effective against becterial leaf blight disease. Sweet Potato weevil (*C. formicarius*) infestation was reduced by 21 % by applying *Penthion* EC (0.05 %) 4 times : starting at one month planting and repeating it at 3-week intervals. 17 new germplasms of sweet potato were screened showing resistance to Cercospora leaf spot disease.

12. JUTE

Hybrid capsularis jute : $ms_2 \times$ JRC 321, $ms_2 \times$ JRC 7447 and $ms_2 \times$ JCI 2 produced bolder and heavier seeds over their pollen parents, to the extent of 36.36, 23.95 and 25.55 % respectively.

Sowing in first week of June, the olitorius jute seed yield was maximum (2 61 q/ha). Jute seed crop responded upto 40 kg N + 30 kg P_2O_5 + 30 kg K_2O for maximum seed yield (8.42 q/ha).

Jute semilooper under caged condition caused a mean fibre loss of 35.24 %. Seed treatment with Bavistin @ 2 g/kg seed followed by its two foliar sprays (0.1 %) considerably reduced the stem rot disease in olitorius jute.

13. SOIL SCIENCE AND AGRICULTURAL CHEMISTRY

The order of variation of uptake of Fe by maize plants from different source of iron was found as Fe SO_4, Fe-DTPA, Fe-FA, Fe-FA (ppm), Fe-FA (S).

Presence of calcium carbonate in solution decreases the uptake of iron, very intensely in case of $FeSO_4$ and moderately in case of Fe-DTPA and Fe-FA. Chelated iron helps in efficient translocation of Fe from root to shoot in comparison to inorganic sources. Tracer studies involving the use of 59 Fe on the uptake of Fe by plants indicated that chelated iron complex are superior sources of Fe to plants in calcareous soils, in comparison to inorganic iron.

Organic waste improves the infiltration rate (from 0.9 o 1.4 cm/hour) of soil in mustard field. besides increasing the availability of N, P and K to the plants resulting in increased yield.

The critical limits of available Zn in recent Alluvial soils of Saharsa and Purnia, using different extractants have been estimated. The critical concentration of Zn in chickpea top was estimated to be 32 ppm. Soils of Patna contains available S with its range of 2.8 to 160 (Av. 31.83) ppm. The critical limit of available Boron of Kosi and Mahananda command soils was estimated as 0.52 ppm. Soil available Boron is positively correlated with organic carbon. boron-concentration in plant tissues and boron uptake by plants, in case of blackgram with critical boron-concentration of 23.5 ppm.

It has been estimated that to produce one quintal of wheat, the N, P and K requirement is 2.35, 0.3 and 1.76 kg respectively. Applying 5 kg/ha of mono and hepta zinc sulphate increased maize (Lakshmi) yield by 9.3 to 10.5 g/ha.

Fertilizer N loss (20 to 30 %) due to volatilization in waterlogged rice soil can be prevented upto 9 % by using urea as N-source along with greenmanuring

Massuri rock phosphate combined with pyrite in 1:3 or 1:2 ratio can be usefully utilised as cheap source of P for calcareous soils.

14. SOIL WATER MANAGEMENT

Irrigation water can be saved upto 30 % in maize by alternate furrow irrigation as against irrigating each furrow.

Wheat responded optimally upto 100 kg N/ha under 3-4 irrigations of 6 cm each at IW/CPF=1.00, in Pusa soils and upto 120 kg N/ha under 2 irrigation at IW/CPE=0.60 at Madhepura, while maize responded upto 150 kg N/ha optimally under 5 irrigations of 6 cm each at IW/CPF=1.00, in Pusa soils.

Under assured irrigation supply, rice (Pankaj Sita)—wheat was found most remunerative crop sequence followed by rice (Sita)—Rai sequence in Sone command areas; while under limited water supply zone, rice (Saket)—gram sequence was considered as optimal.

Irrigation scheduled either at weekly interval or at IW/CPF=1.40 with 4 cm depth, has been found as optimum for yield, quality and water use efficiency

in onion in Pusa soils, resulting in 200 q/ha bulb yield as against 50 q/ha under conventional irrigation practice.

For summer cheena, one irrigation at tillering stage produced as much grain yield as three irrigations, applied at tillering, jointing and flowering in Pusa soils.

15. SEED TECHNOLOGY

Lentil varieties (BR 25, No. 26, PL 639, DL 221) have 52 % to 66 % dormant seed. Scarcification technique was very effective for breaking seed domancy in lentil without causing any damange to seeds. Murg (PS 16, SR 83 and Pusa Baisakhi) has 18 % to 33 % dormant seeds which could be broken by scarcification or soaking seeds in warm water (40°C) for 15 to 60 minutes. Polythene bag was best suited to maintain germination percent of wheat up to 85% for 13 months under ambient condition of Dholi, while for maize, polythene, cloth bag or polycoated jute bag were equally good container for 7 months under ambient condition of Dholi. Harvesting maize-seed crop 40 days after silking produced highest seed yield.

Potato yield was high when potato seed tuber of 59 g in size were planted at 40 × 20 cm spacing, Kufri sinduri being the top yielder (297.45 q/ha). In carrot seed crop maximum response was found at 100 kg N/ha at 30 × 30 cm spacing. Cauliflower seed yield was a direct function of plant density (33335 plants/ha) under 75 × 40 cm spacing for which the seed yield was found as 339.4 kg/ha. As regards nitrogen response of cauliflower seed yield, it was estimated maximum (239.5 kg/ha) at 150 kg N/ha. Radish seed yield was responsive to managenese (Mn SO 4, 0.5 % @ 20 kg/ha) along with Tracell 1%. Borax 15 kg/ha or Zn SO4 5 kg/ha had also yield increasing effect on radish seed yield next to Mn. Maintaining male and female lines of maize plants in 2:6 ratio produced highest seed yield.

II. Basic Science and Humanities

1. Botany and Plant Pathology :

Soaking wheat seeds (UP 262 and C 306) in Sodium benzoate solution (0.5%) for 12 hours, induced resistance in wheat plants against drought in field condition, more in UP 262 than in C 306, by prolonging sensesecence of the crop in maintaining its membrane integrity.

Sone allelochemicals, X2, X7, X8 and X13 were found potent for inducing inhibition of seed germination at 0.03% concentration.

Growth inhibition of *Helminthosporium oryzae* was observed in allelochemicals AL and AL at their respective concentration of 0.95% and 0.37% and of *Alternaria solanii* at 0.045% and 0.033% concentration respectively.

2. Genetics:

Bio chemical traits (Peroxidase activity, carotinoides, chlorophyll 'a' and 'b', protein content and carbohydrate content were found to have no significant association in any of the 13 test thermo-insensitive bread wheat varieties including C 306. However, in respect of quantitative traits, height, number of tillers, spike length, yield per plant, yield per plot and 100 grain weight, varietal differences were found significant.

3. Biochemistry :

Wilt resistant chickpea Variety WR 315 was found to contain highest peroxidase and phenol content, followed by wilt tolerant (Pant G-114) & susceptible(JG-62) chickpea Varieties all grown in field condition, as revealed from detailed studies of seed, seedlings (10-days old) and pooled leaves obtained each at nodule, flowering and pod initiation stage.

COLLEGE OF HOME SCIENCE

Research :

Under MNICEF funded EFNAG Project a research work on "Infant Feeding Practices" was carried out in rural areas of Samastipur district.

The objective of this study was to know the prevalance of breast feeding practices in rural areas, the duration of breast feeding among the different socio-economic groups, mother's knowledge regarding advantages of breast feeding, current weaning practices and the nature and mode of use of weaning foods and existing cultural beliefs, norms relating to colostrum feeding.

This study has shown that most of the mothers have less knowledge about the importance of colostrum which in most important for the infants to protect against dangerous neonatal infection.

III. Animal Science

I. ANIMAL PRODUCTION

The average field of milk of the herds was recorded to be 5.485 litre. It was highest (6.758 litre) in Friesion x Sahiwal cross-breds followed by the cows having 5 % (6.629 litre) exotic blood in combination with Jersy x Hariana. The weight average was least in Hariana cows (3.459 litre).

The highest lactation yield was 4806.8 litre (50 % J × H) followed by 2400.5 litres (HF × S) and 2106.3 litre (Hariana).

The total milk yield during the year 1984-85 was 1,75,005.5 litres.

2. BREEDING AND GENETICS

It was found possible to cross albino mice with house mice. Cross bred mice were found fertile, docile and got adapted to normal fluctuation of temperature and humidity. Cross-bred mice were quite comparable to albino mice in respect of litter size, litter weight, fertility and dam's body weight at littering

3. ANIMAL NUTRITION

Poultry :

Results of feeding four levels of protein i.e. 20, 18, 16 and 14 % to different groups of layers for 100 days during second helf of laying period indicated that 16 % protein is sufficient for optimum egg production, feed consumption. feed efficiency, egg qualities and meat composition.

From the results obtained by feeding trial with layers for 100 days, it was observed that mustard oil cake can be used as a substitute to groundnut cake. It may replace 100% groundnut cake from the layer ration without affecting egg production, feed efficiency, body weight gain, egg qualities for meat qualities.

Results of quality testing (during first trial) of silages of *Cassia tora* prepared with or without additives like molasses 5 %, sodium metabisulphite 1 % and calcium carbonate 5 % to layers indicated that all the silages contained good quality such as colour, aroma, texture, pH and palatability. Based on overall quality, *Cassia tora* + 5% molasses and *Cassiatora* + water hycinth + paddy straw (1:1:0.5) with or without molasses were found to be the best.

The chemical quality of silages of *Cassia tora* of second trial,with or without additives such as molasses (1 % and 2.5), wheat bran (2.5 %, 5 % and 10 %) wheat bhusa (4:1 and 5:1) have been estimated.

4. GYNAECOLOGY

The visual examination of cervical mucus of normal and repeat breeding cows did not show any remarkable differences.

Differences were observed in the level of Na, K, Cl, Mg total protein, Ca, P and pH of oestrual mucus in normal and repeat breeder cows.

The mortality of sprem at 'O' hr, 12 hrs and 24 hrs were higher in the cervical mucus of normal cows than the repeat breeder.

5. BIOCHEMISTRY

The concentration of serum globulin, TLC and PCV were found to be higher, whereas, serum albumin, A:G ratio, and Hb were lower in tuerculin positive cows as compared to normal.

The values of serum globulin, TLC and PCV were found to be higher in tuberculous animals as compared to normal.

The concentration of albumin, A:G ratio and Hb were lower in T. B. positive cows as compared to normal. No differences were observed in regard to sodium, potassium, calcium, inorganic phosphate, total cholesterol and total proteins.

6. VETERINARY MICROBIOLOGY

FMD surveillance was made throughout Bihar through 39 strategic areas and 320 contact points which resulted in detection of 18 FMD outbreak under rural condition and one FMD outbreak under farm condition.

Prophylactic measures including ring vaccination with monovalent vaccine were advised involving in the outbreak around the focus of infections.

Epidemiological studies : *Incidence*—18 outbreaks under rural condition and one outbreak under farm condition were recorded. The overall incidence rate in susceptible animals (9678/724) was 7.48% with maximum incidence of (3839/637-16) 59% in cattle followed by buffaloes (2070/64-3.087%), pig (774/10—291%), sheep (487/4-0.681%) and goat (2405/8-0.374%). A total of 12 calves died with a mortality rate of 12%.

Study on seasonal occurrence : It showed maximum outbreak (5) during November followed by December (4) and January, February, August and September (2 each). Heavy rains and flood accelerated the outbreaks while drought lowered in incidence rate.

Virological Studies : Out of 50 samples, only 47 proved to be viable. Among the four serotypes, the maximum of 17 was 'O' followed by Asia-1 (15), 'C' (10) and 'A-22' (5).

Out of 19 outbreaks, the maximum of 9 were caused by serotype 'O', followed by 'Asia-1' (5), 'C' (3) and 'A-22' (2). Passage of seven MCFT negative samples through mice yielded positive results.

Serological studies : Assay of serum neutralizing antibody titres in experimentally vaccinated animals did not detect appreciable difference in the antibody titre in their sera between monovalent and polyvalent vaccinated animals. Prevaccination antibody titres was 1.78 which protected the animals from outbreak and this titre was achieved on 14 days after vaccination.

In animals recovered from natural infection the serum neutralizing antibody appeared on 7th days and were detected upto appreciable level at 180 days after infection.

Altogether 22 species of Mycoplasma and Acholeplasma were isolated and characterized from cases of genital mycoplasmosis in cattle and buffaloes. Of these, 4 mycoplasma species and 6 Acholeplasma species were identified.

Mycoplasma sp. included *M. bovigenitalium-4* strains : Acholeplasma sp. included *A. xanthum-2* and *A. granular-2* strains.

All mycoplasma and acholeplasma species were sensitive to tetracycline, chloramphenicol and kanamycin, while all these species were resistant to neomycin. Acholeplasma species were sensitive to erythromycin while mycoplasma sp. were resistant to it.

Various species of fungi namely *Aspergillus*, *Fusariummucor*, *Alternaria* and *Dermatophytes* were isolated from straw and feed samples causing dennala like disease and from poultry feeds samples causing aflatoxicosis.

Toxigenic strains producing aflatoxin in-vitro were identified from 6 strains of *A. slavus*. Three of the poultry feed samples screened by thin layer chromatography were found to be positive for aflatoxin B.

7. PHARMACOLOGY

In the pharmacokinetic study of antimicrobial agents after intrauterine administration in she-buffaloes it was revealed that for effective treatment of the drug sensitive organism which produces uterine infection, the drug should be repeated by intrauterine route as per the recommended dose schedule given below :

Drug	Dose	Dosage interval
1. Sulfadimidine	5 mg/kg	12 hr.
2. Penicillin G	1,000 I U./kg	6 hr.
3. Ampicillin	6 mg/kg	8 hr.
4. Streptomycin	10 mg/kg	24 hr.
5. Oxytetracyclin	5 mg/kg	36 hr.

Standardisation of estimation of oxytetracyclin has been completed.

8. ANATOMY

The histological and histochemical studies on the organs of digestive and respiratory system of Indian buffaloes were studied.

The glands of the vestibulum nasi were seromucous in type.

The excretory ducts were lined with stratified cuboidal epithelium.

The ciliary zone of pseudostratified columnar ciliated epithelium of Pars respiratoria was pink with weigert and van-giesons's stain.

The muscle sphincter was lacking in the venous sinuses.

9. PATHOLOGY

Lung pieces f om 114 goats were collected from different slaughter housed and were processed for histopathological studies.

From preliminary survey it appears that the incidence of pneumonia and other lung affections in goats is on increase.

Wilms tumor-hiatopathologically, the tumor consisted of tubles and a few somooth muscles cells resembling adeno-carcinoma.

10. PARASITOLOGY

(i) Studies based on the examination of 47 meat sample from goats slaughtered at local abattoirs of Patna revealed modrate (++) to heavy (+++) infection in cardiac and oesophageal muscualature. Organwise, sarcocysts of *S. capracanis* were observed in 12 of 27 heart samples (44.4 %) and five of 12 tissue samples (41.6 %) of oesophageal muscles. Sarcocysts isolated from cardiac muscles were predominatly maggot-like to spindle-shaped & c ntained spherical to banana shaped merozoites with rounded tips at both the ends of their cystic cavity.

(ii) Data recorded from experimental infection in pups revealed that sporocysts excreted from days 9 to 25 post infection (p.i.) exhibited a gradual reduction in the quanntum. Maximum intensity of infection sporocysts was recorded between days 9 to 16 p.i. which progressively declined to 50 per cent after the 16 days, 20-30 per cent after the 21st day & became completely absent after the 36th day p.i. The peak period of infection varied depending upon the number of exposures to pups with the infected *S. levinei* tissues from buffaloes.

(iii) The developmental cycle of *B microplus* were recorded. A large number of larva were fed on rabbits and cattle for comparative study of the behaviour of this species on these hosts. The results indicated that rabbits could be used as a suitable laboratory host for rearing of various development stage of *B. microplus* for experimental work.

(iv) Data in respect of the resistance of sensitized & non sensitized calves to larval *B. microplus* infection revealed that the larval attachment rate was lower (mean 62 25 %) in calves previously immunized with ticktissure extract than that observed in the non-immunized group of calves (85 75 % with corresponding decrease in the number of ticks recovered at different stages of feeding and development of tick, e.g. dead nymphs, partially fed females, etc.

(v) Data in respect of the expriment conducted for the immunization of rabbits through repeated application of larval *B. microplus* ticks were collected. Reaction observed during the initial application of larval ticks on rabbits was an acute allergic reaction manifested by generalized swelling of the ear-pinnae on which ticks were applied.

(vi) Out of 193 blood and lymph smears of cattle suspected to be suffering from haemoprotozan diseases including theileriasis, 88 (45.59%) were found positive for *Theileria* and were advised to be treated with combinations to Terramycin Herenil and/or Doxycyclin-Berenil.

(vii) Data in respect of the prevalence of the theileriasis in different breeds (indigenous, cross-bred and exotic) of cattle in and around Patna are summarized. It is evident from the data collected in this study that out of a total of 932 cattle (622 indigenous, 160 cross-bred and exotic) showed the presence of infection by smear examination.

(viii) Comparative therapeutic trials were conducted with three known and promising anthelmintic, i.e piperazine, hexahydrate, tetramisole and fenbendazole for the removal of the round worms *Neoascaris vitulorum* from naturally infected buffalo and calvus. Out of these three drugs single oral therapy with Fenbendazone proved comparatively mors effacacious, safer and well tolerated by the affected animals without adversaly affecting their appetite.

EXTENSION EDUCATION

Extension Education is an important function of the University alongwith the Teaching & Research through with organised programme of transfer of technologies are undertaken with a view to modernise agriculture in the State at a faster & wider scale. In order to achieve it the University has a Directorate of Extension Education to look over & provide necessary supervision, guidance & control over the various programmes. It has three important activities (a) training, (b) Information and Communication and (c) farm advisory services. The Department of Extension Education at each campus further supports the extension education programme at their places besides teaching and research.

In spite of the availability of abandant useful farm technologies as a result of continued researches in various fields, the productivity in the state is low and only 30-40% of technologies have percolated down to the farmers fields. In order to improve the situation, the transfer of technology system has been given top priority in the University and various activities under it centre around imparting training in improved and proven agricultural technologies for adoption in the field, laying out demonstrations on farmers field publishing extension literature, holding seminar, Kisan gosthi both in the begining as well as in the end of the crop seasons, organising field days & Kisan Melas providing support to various agricultural production programme organised by the State Department of Agriculture and Other agencies. A brief account of the extension education activities carried out during the year 1984-85 is given below :

(a) TRAINING PROGRAMMES

A number of Training Programmes for field functionaries of the Department of Agriculture, Field Officers of Input manufacturing firms like IFFCO, Indo-British Fertiliser Educational Project, Officers of the Commercial Banks and farmers were organised during the period under report. Training programmes were organised at Pusa-Dholi, Patna and Sabour compuses as well as research stations/centre and Krishi Vigyan Kendras. A regular monthly workshop-cum-Training programme for the subject Matter Specialists working in the Reorganised Extension Project (T & V) under World Bank Assistance in different parts of the state was organised at Pusa, Patna and Sabour campuses. While planning various programmes emphasis was given on specialised programmes like training programme on water management, fertilizer Management, Dryland farming, training for Command Areas, Workshop on Communication and extension teaching methods etc. The highlights of some of the important training programmes are as follows.

1. Training on Wheat Production Technology : A State level Training-cum-discussion Seminar on Wheat Production Technology sponsored by Government of India. Ministry of Agriculture was organised at Pusa campus from 26th November, 1984 in which 45 extension officers of Department of Agriculture participated. At the outset, field problems related to wheat cultivation under different conditions were discussed. Scientists of the University imparted training on recently generated technologies for increasing wheat production. Apart from training, discussion and field visits were also organised on wheat experimental plots.

2. Kharif Maize Training Programme : A training programme on Kharif Maize production Technology for the field officers of the Department of Agril. of Tirhut and Darbhanga divisions was organised at Pusa from 9.5.85 to 12.5.85 in which 20 extensinon officers participated. Problems and possibilities of increasing Kharif maize area/Productivity were discussed and technologies were communicated to them. Field demonstration was organised by the concerned Scientists & trainees were provided with printed lecture notes about innovations.

A four days training programme on Kharif Maize Production technology was also organised at Sabour campus from 4.6.84 to 7.6.84 in which 15 field officers belonging to Department of Agril of Bhagalpur and Kosi Division participated.

3. Rice Production Technology Training Programmes :

(A) A Kharif Rice Training Programmes for extension Officers of Agriculture Department sponsored by Ministry of Agriculture, Directorate of Rice Development were organised at Mithapur farm, Patna and Sabour campus from 5.5.84 to 8.5.84 and 4.6.84 to 7.6.84 respectively. Possibilities for increasing rice production in Kharif season in different part of the State were disucssed the Rice Scientists imparted training on rice production technology. Field trips and visits of experimental plots were also organised for the trainees. Out of 30 officers deputed in these programmes 16 officers at Sabour and 30 officers at Patna campus participated.

(B) Two special trainings for Kiul Badua Chandan (CADA) and Sone Command Area were organised at Sabour and Patna campuses from 6.8.84 to 9.8.84 and 5.5.84 to 8.5.84, respectively Specific problems related to Kharif rice production in Command Areas were discussed and recommendations for increasing Kharif rice production were communicated to the participants.

A special four days training-cum-discussion seminar on water management, fertilizer management, plant protection measures etc. for increasing rice production in Gandak Command Area was organised at Pusa campus from

17.8.84 to 20.8.84. Constraints related to Kharif rice Production were discussed and recommeodations were given for higher production. Field visits and practical demonstration were also conducted.

D. Under the auspices of Directorate of Rice Development (Govt. of India) a four days training-cum-discussion Seminar on Summer Boro and deep water rice was organised at Patna and Sabour Campuses from 12.3.85 to 15.3.85. Technology for higher production of Summer/does water rice were discussed in the light of local problems. Practical demonstration and field visit programme were also organised. 30 extension officicers were deputed but only 12 and 26 persons participated at Sabour and Patna campus respectively.

4. Specialised Training Programme for Command Area :

A. Gandak Command Area : Two days intensive training for the field officers working in Gandak Command Area was organised at Tirhut College of Agriculture, Dholi campus in November, 1984. Problems and possibilities of increasing agricultural production with emphasis on Oilseeds/Pulses were discussed in detail and technologies for higher production of rabi crops in Gandak Command Area were communicated by the concerned scientists of the University Field trip was organised and lecture notes were distributed.

B. Kiul Badua Command Area : Two days training-cum-discussion Seminar for the Extension Officers of Kiul Badua Chandan (CADA) was organised at Sabour campus from 12.11.84 to 13.11.84 in which technologies for increasing the production of rabi crops (Wheat, Pulses, Oilseeds etc.) in Kiul Badua Chandan Command area were communicated

C. Sone Command Area : Two days training-cum-discussion Seminar was organised at Mithapur farm, Patna for the Extension Officers working in Sone Command Area. 51 Officers participated. Concerned Scientists imparted training for boosting the production of rabi crops in Sone Command Area. Field trip was also organised.

5. Training Programme on Water Management : Scientists of irrigation Research Station, Bikramganj organised a training programme on water Management for the field officers of Sone Command Area on 22 10.84. 33 Agricultural Officers and 11 Progressive farmers of Sone Command Area were imparted training on sufficient water management practices in different major crops of the area.

6. Training Programme on Dryland Farming : A 5 days training-cum-discussion seminar for the field officers of Nationalised Banks was organised at Sabour campus in the month of June '84 with the collaboration of NABARD. Field Officers of Bank were exposed with recent advancement in dryland farming with emphasis on agricultural financing.

7. Training-cum-Discussion Seminar on Plant Protection : Scientists of Entomology and Pathology D.partments imparted training on "use of different insecticides/fungicides" and "handling of plant protection equipments" on 2.12.84 at Muzaffarpur in which large number of plant protection personnel, progressive farmers and representative of plant protection sales and service agencies participated.

8. Workshop for Rural Development : A Workshop on Integrated Rural Development Programme and 20-point programme was organised at Sabour campus with the collaboration of United Commercial Banka, Bhagalpur from 2.12.84 and 15.12.84. 64 officers of United Commercial Bank and Scientists of Bihar Agricultural College, Sabour campus participated in discussion for Socio-economic development of rural people with emphasis on increasing agricultural production and 20-point programme.

9. Training on Extension Methods—Extension methods training schedule for the Cartographer of Kiul Badua Chandan Command Area (CADA) was organised at Sabour campus from 23.7.84 to 31.7.84. Practical details of "use of different Extension Teaching Methods under varying situation" were discussed. Participants were involved in practical classes/demonstrations.

10. Training for Input Manufacturers/Credit Institutions : (A) A State-level training programme for the Agronomists working in Indo-British Fertilizer Educational Project of Bihar was organised at Pusa from 23.11.84 to 24.11.84. At the outset, field problems experienced by 20 participating Agronomists were discussed and major crop production technologies with emphasis on fertilizer management and use efficiency were communication by the experts.

(B) Crop specialists of University headquarters imparted training for increasing Kharif production with emphasis on low cost technology and fertilizer management, organised by IFFCO on 19.3.85. Field problems of farmers of different Zones of the State were discussed and in the light of these discussions recommendations were made by the concerned crop specialists.

(C) A six day training-cum-discussion Seminar on Agricultural Financing was organised at Pusa campus from 25.4.85 to 29.4.85 by the Banka of India. Recent advancement in farm mechanisation, dryland farming, fruits/vegetables Production, minor irrigation, Piseiculture etc. were discussed in detail. Advance of loand and their repayment were also planned/discussed. Visit of experimental plots was organised and 25 participants were also provided printed lecture notes.

11. Training on Jute Production Technology : Scientists of Jute Research Station, Katihar organised two-days training programme on Jute crop for the Agricultural Officers and progressive farmers of the area from 25.3.85 to 26.3.85.

Recent advancement in jute production technology were communicated to 45 participants Field trips and visit of experimental plots of JRS were also organised by the scientists. Trainees were provided with printed literatures.

12. Farmers Training Programme : Training of farmers adopted under lab to land programme were organised at Pusa-Dholi. Sabour, Munger, Katihar, Madhepura, Araria, Adhura, Patna, Banka and Bikramganj Centres and also in adopted villages on crop production Technology Critical operations, low lost technology etc. as per programme prepared by the respective Officer-in-charge. About 2700 farmers were benefitted through different training programmes Non-adopted farmers of adopted villages also participated in these trainings.

A district level Kharif training for progressive farmers of Madhubani district was organised by Indo-British Fertilizer Education Project on 12 11 84 Scientists of the University imparted training to 125 farmers.

[illegible] tists of vegetables, fruits and fruit preservation imparted [illegible] ction & preservation at the processing plant site, Indu- [illegible] 4.4.85. Training programme was organised Bihar Fruit [illegible] ment Corporation and was at ended by about 200 farmers.

[illegible] rmers from Moradabad (U. P.) visited Pusa on 29.3.85 [illegible] san Sansthan Programme and were imparted training on Pulse/ [illegible] rabi maize cultivation by the concerned Scientists of the University. [illegible] ield visits on experimental plots were also organised.

Crop Scientists of Sabour campus imparted training on local problems of Diara Areas organised by K.V.K. & O.R.P., Binda Diara, Munger under the Chairmanship of Dr. C. Prasad, Dy. Director-General (ICAR) on 3 6.84 in which 205 farmers participated.

Pulse, Animal Husbandry, Vegetables and Plant Protection Scientists of the University imparted training on Crop Husbandry and Animal Husbandry in the light of local problems of Vaishali area on 2 4.85. About 115 farmers of the area were benefited by the training.

Crop Scientists of Agricultural Research Institute, Patna imparted training on major Kharif crops of Nawadah area organised by Union Bank of India on 15-6-85 at Patna in which 45 progressive farmers of Nawadah district participated. A training programme on Pump sets repair and maintenance, Tractor maintenance and driving under TRYSEM Programme was organised by Professor I/c, College of Agril. Engineering, Pusa.

Six Kisan Gosthies were organised in the month of May, 1984 in the three adopted villages of Agricultural Research Institute, Patna in which farmers were

imparted practical training on collection of Soil Samples for soil-testing. 70 cultivators participated in these trainings.

68 group leaders from Hajipur, Deopar and Mithapur adopted villages under Lab to Land Programme of Pusa Cetre were selected and an Orientation training programme was organised at Pusa by the crop Specialists for effective implementation of Lab-to-Land Programme. This was done in consultation with the adopted families.

13. **World Bank Extension Project :**

Monthly workshop : The University has been organising a two days workshop in every month for imparting training to the field functionaries at different levels in the districts covered under the T & V System right from the introduction in the State. The monthly workshop is held regularly in each month for two days at the main centres of the University at Pusa, Sabour and Patna in which Subject Matter Specialists, Subdivisional Agriculture Officers, Asstt. Agronomist and District Agril. Officers of the Department of Agriculture participate. The schedule of workshop for the year was prepared and circulated well in advance. On the first day master trainers bring their plans/recommendations for formulation and discussion of recommended practices of the month. Field problems are discussed throughly and on concluding day formulation of message is made in the form of handout in Hindi and distributed among the participating Extension Officers.

The list of participants in monthly workshop organised at different centres during 1984-85

Month	Pusa	Patna	Sabour	Total
April '84	26	54	16	96
May	27	45	3	75
June	37	46	19	102
July	37	36	14	87
August	28	28	20	76
September	19	31	7	57
October	24	26	9	59
November	12	38	6	56
December	19	29	7	55
January 85	57	36	7	70
February 85	12	—	—	12
March 85	22	22	2	46
Total	290	391	110	791

Workshop on Orientation, Communication and Extension Teaching methods :

A special workshop on Orientation Communication & Extension Teaching methods for the Subject Matter Specialists, Subdivisional Agricultural Officers (Extension) and Senior AEOs of Katihar, Purnea and Saharsa districts was organised at Sabour campus from 14.11 84 to 21.11.84 by training experts of Extension Education Institute, Nilokheri (Haryana). 21 Officers from the T & V area were imparted practical training on handling of audiovisual aids, posters and charts preparations, photography, extension talks, handling group and individual situations. conducting field demonstrations etc. This workshop was very useful for field functionaries.

KRISHI VIGYAN KENDRA, MUNGER

The Krishi Vigyan Kendra in an innovative institution. It has been organising training programme for farmers. Farm women and farm youth. In order to formulate need based courses, village and family surveys were conducted in the adopted village. Emphasis has been given right from the begining on organisation of skill oriented training programmes.

Training Programme :

During the year 1984-85 a number of off and on campus training programmes were organised for farmers, farm youth and farm woemen under three specific situations.

(i) Diara area (ii) Plateau area (iii) Plains.

For Diara area Ekashi, Kalyan tola, Binda, Amarpur villages were selected and training programmes were organised in these areas according to the training needs of farmers of that locality. As regards plateau area training programmes were organised at the K. V. K. Farm itself as per recommendations of the Extension Education Council in its meeting held on 18th May, 1984. For plains, off campus training programmes were organised at Haridabad, Keshopur, Caron, Godda, Jankinagar and Shankarpur villages.

Training programmes were conducted in the disciplines of Agronomy, Horticulture, Agril. Engineering, Home Science and Animal Science.

(a) **Agronomy :** Training programmes were organised on package of practices of summer paddy cultivation, oilseed & pulse crops, Maize, wheat with special emphasis on critical operations like seed treatment, Rhizobium culture, fertilizer placement, weed control and plant protection.

(b) **Horticulture :** Training programmes were organised on package of practices of different fruit crops i. e. Mango Guava and Papaya and vegetable crops like Tomato, Brinjal, Cauliflower, Bhindi and Parwal, cucurbits (especially

for diara areas) Skilled oriented training courses on vineer grafting of Mango and budding of Rose were also conducted.

(c) Agril. Engineering : Training on repair and maintenance of diesel and electrical pumps, Repair of plant pratection equipments and wheat threshe were organised.

(d) Home Science : Home Scale preservation of fruits and vegetables mother craft, Nutrition and child care, knitting and tailoring.

(e) Animal Science : Poultry and Goat keeping common diseases in cat and poultry their symptoms and remedies.

The disciplinewise number of training programmes organised (a) a numbrr of trainees trained (b) from April 84 to March '85 are given in following table.

Duration	Agronomy		Horti-culture		Animal Science		Agril. Engg.		Home Science		T
	a	b	a	b	a	b	a	b	a	b	a
1 day on campus	10	64	13	78	2	36	9	56	12	108	46
off campus	—	—	7	61	3	40	9	108	9	189	28
2-6 day on campus	7	34	7	34	1	28	4	86	3	27	1
off campus	—	—	5	24	—	—	1	15	2	30	10
2 weeks on campus	4	40	4	40	—	—	3	40	—	—	—
off campus	—	—	—	—	—	—	—	—	—	—	—
									Grand Total :		112
											(a)

(a) No. of courses conducted.
(b) No. of trainees participated.

KRISHI VIGYAN KENDRA, BANKA

The main objectives of the centre are to organise oriented training of cultivation of different crops with modern agricultural techniques to the farmers. The programmes are concentiated mainly on critical operations at different stage of crop like treatment of seeds with fungicides, sowing and transplanting crops, application of fertilizer, pesticides, top dressing of fertilizers, plant pro tection measures, preservation of fruits and vegetable, poultry training, food nutrition, child care, During the year under request the following trainin infrastructure has been developed.

Training Programme Organised :

In Agronomy, training programmed were organised on cultivation different crops with emphasis on practical operations like seed treatment, se

bed preparation, nursery preparation, sowing and transplanting, application of fertilizer and plant protection measures. In animal Science, Training programmes were organised on Dairy, poultry goat and swine management, simple therapeutic and preventive measures for common diseases of different seasons and of different organs.

Training Programme Organised during 1984-85

Month	Name of village	No. of farmers trained	Crop observed
1	2	3	4
(A) On campus			
July '84	at K.V.K.	111	Crop husbandry
August '84	at K.V.K.	16	Animal Husbandry
September '84	at K.V.K.	60	Crop and Animal Husbandry
October '84	at K.V.K.	50	Fruit preservation
January '85	at K.V.K.	41	Horticulture
March '85	at K.V.K.	40	Fruit preservation
(B) Off-campus :			
April '84	Jagai and Maishadih	34	Crop and Animal Husbandry
May '84	Jamua, Majlishpur, Manik Chak	32	Crop and Animal Husbandry
June '84	Meharpur, Jhirua	38	Crop and Animal Husbandry
July '84	Dharabari, Joe-Jadih, Downa and Umri	73	Crop and Animal Husbandry
August '84	Downa, Umri, Prabbalinagar, Jhirwa	64	Crop and Animal Husbandry
September '84	Bhavards Kola, Darbabari Baisarampur, Jhirwa, Meharpur, Dara	161	Crop and Animal Husbandry
October '84	Darbabari, Jhirwa & Rampur	59	Crop and Animal Husbandry
November '84	Meharpur, Manikchak and Jhirwa	41	Crop and Animal Husbandry
December '84	Dara, Meharpur, Bijaynagar, Jagaipur	242	Crop and Animal Husbandry
January '85	Meharpur, Manikchak, Prabhawatinagar, Dauna, Umari, Jhirwa, and Rampur	165	Crop and Animal Husbandry

1	2	3	4
February '85	Dara, Meharpur, Jhirwa Jharabari, Jogadih, Dauna and Umari	192	Crop and Animal Husbandry
March '85	Manikchak, Prabhawatinagar, Dara, Umari and Meharpur	151	Crop and Animal Husbandry
		1570	

Lab to Land Programme has also been taken up with a view to raising the Socio-economic conditions of small and marginal farmers and agriculture labourers through adoption of improved technologies in farms and homes. The adopted farm families have been provided training and technical guidance through regular visits of scientists to the villages and inputs in the farm of subsidies for adopting improved farm technologies, under Lab-to-Land programme, eleven villages, namely Downa, Umari, Bhavandkola, Jogadih, Dharebari, Jhirwa, Meharpur, Baisarampur, Dara, Manikchak, Prabhawatinagar have been adopted.

Demonstration :

A number of demonstrations on different crops were conducted in the adopted.

Villages :

Cropwise demonstrations were as follows : Maize Maize (25) Arhar (21) and groundnut (17) Berseem (6).

Social Forestry:

Plantation of fruit, ornamental and timber plants was done under social forestry programme. About 200 ornamental and timber plants were arranged from the Divisional Forest Officer, Banka.

REGIONAL BIOGAS TRAINING CENTRE, PUSA

The Government of India, Ministery of Energy, Department of non-conventional energy sources sanctioned for the establishment of a Regional Centre for Biogas Development under the Central Sector scheme "National Project of Biogas Development" at a total cost of Rs. 5.75 lakhs for 1983-84 and 1984-85 on the cent percent grant bassis.

This centre caters presently to the States of Bihar, West Bengal, Orissa, Assam and other eastern states like Meghalaya, Mizorum, Nagaland, Arunachal Pradesh, Manipur and Andman Nicobar islands for providing mainly technical

and training support for effective implementation of the 'National Project on Biogas Development' in the region.

During 1984-85 five inter-state biogas training, each of 16 days duration, were organised in which both theoretical as well as practical knowledge were imparted to the trainees. Seven demonstrations on slurry were also conducted. The details are given in Table 1.

Sl. No.	Training period			State partici-pation	Categcry of Trainees			No. of Biogas plant
	From	To			Super	Mason	Total	
1.	14.5.84	29.5 84	16	Bihar	8	6	14	1
				Orissa	6	—	6	
2.	4.6.84	19.6 84	16	Assam	2	—	2	
				W. Bengal	2	—	2	1
				Bihar	3	10	13	
3	27.11.84	7.12.84	16	Bihar	4	7	11	1
4.	4.1.85	19.1.85	16	Bihar	5	8	13	1
5.	28.1.85	12.2 85	16	W. Bengal	3	3	6	
				Bihar	—	4	6	
					33	38	71	

During 1984-85 five inter-state biogas training each of 16 days duration were organised in which a total of 71 persons, including 33 supervisory and 38 mesons from Assam, West Bengal, Bihar and Orissa were trained in construction operation and maintenance of Janata biogas plant. Four biogas plants were constructed and two plants in their different stages of construction were completed by the trainees during the training period.

Demonstration on Slurry :

The biogas slurry manure contains more than two times nutrients as compared to cowdung manure. But the farmers in general have get wrong notion that nutrient content of sulrry manure is reduced. Therefore to superiority of the slurry manure over cowdung manure, seven demonstrations of wh at on slurry manure were conducted in farmers field, the details of which are given below :

Table 2

Sl. No.	District	Block	Village	No. of demonstration
1.	Muzaffarpur	Muraul	Tepri	2
2.	Samastipur	Kalyanpur	Saidpur	2
3.	Samastipur	Pusa	Deopar	2
4.	Samastipur	Pusa	Birauli	2
			Total—	8

Lab to Land Programme :

The Lab to Land programme entered in phase III from June, 1984, 2000 farm families were alloted to 15 units in three regions viz. Dholi-Pusa, Patna and Sabour. During the current phase 43 villages were adopted in 10 districts of Bihar.

The centre-wise allotment of farm families is given below in Table 1.

Table 1

	No. of families adopted :
1. Dholi/Pusa Campus :	
(i) T.C.A., Dholi–	650
(ii) S.R.I., Pusa–	50
2. Patna Campus :	
(i) B.V.C., Patna–	150
(ii) A.R.I., Patna–	150
(iii) O.R.P., Adhaura–	50
(iv) I.R.S., Bikramgunj–	50
3. Sabour Campus : (i) B. A. C., Sabour :	
(a) Spl. Extn. Block, Sabour–	200
(b) N.D., Sabour–	50
(c) N.S.S., Sabour–	100
(ii) O.R.P., Munger–	200
(iii) K.V K., Munger–	150
(iv) K.V.K., Banka–	50
(v) J.R.S., Katihar–	70
(vi) I.R.S., Madhpura–	50
(vii) I.R.S., Araria–	20
Total–	2,000

Crop demonstrations during 1984-85

CROPS	CENTRES							
	TCA Dholi	SRI Pusa	SEB Saub	NSS Saub.	KVK Mun.	JRS Kati.	IRS Ara.	IRS Madh.
Paddy	246	11	15	—	8	—	30	20
Wheat	227	—	30	12	—	7	—	15
Maize	125	1	—	—	3	—	—	—
Rye	53	3	—	3	2	10	15	—
Til	5	—	—	—	—	—	—	—
Arhar	15	—	—	—	—	—	—	—
Gram	—	—	—	3	51	—	—	—

Sugarcane	—	1	—	—	—	—	—	—
Potato	—	—	—	—	11	10	—	—
Lentil	—	—	—	—	27	—	—	...
Pea	—	—	—	—	41	—	—	—
Guava	—	—	—	—	2	17	—	—
Kalai	—	—	—	—	—	—	10	—
Jute	—	—	—	—	—	—	—	10
Total—	671	16	45	18	185	44	55	45

(A) TIRHUT COLLEGE OF AGRICULTURE, DHOLI

The yield date of paddy demonstration were obtained from all the 198 demonstration in farmer's field.

Village-wise yield date of Rice demonstration : (q/ha)

Yield q/ha Varieties :	Harpur			Deopar			Mirapur		
	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
R-201	40	34	37	—	—	—	47.5	37.5	38.0
Pankaj	—	—	—	50	41	44	—	—	—
Radha	55	40.5	43.5	50	43	42.5	47.0	37.0	39 5
Varuna Rai	30	15.4	19.78	23 65	20.9	22.14	—	—	—

Maximum yield was obtained in case of Radha at the rate of 55 qt/ha.. Sri Bishwanath Thakur, obtained maximum (55.0 qt/ha.) followed by Sri Mauje Rai, of Deopar (50 qt/ha.).

Pre-season training camps were organised in the fields of the farmers and 112 farmers were trained. Besides 50 Key farmers were trained under specially organised orientation training programme for the Key farmers.

(2) Field days :

A field day was organised on Summer rice on 4.8.84. 76 farmers and 15 Scientists attended the field visit and participated in technical discussion. The venue of the field day was rice plot (vr. Pusa-33) of T C.A., Dholi farm.

In order to encourage widespread adoption of improved varieties of papaya, a papaya day was organised on 28.12.84 in which 40 farmers and 10 scientists participated in the day long programme.

(3) Plant protection Service :

In order to provide intensive guidance to the farmers, plant protection service centre has been initiated in Mirapur village where a sprayer has been kept

under the leadership of progessive farmer and a total of 5.5 acres of farmers field have been covered under service so far.

(4) Village visits of the Scientists :

Village visits provided opportunities far close interaction between scientists and farmers. In all 27 visits were made during the last 6 months.

(5) Crop competition for Varuna Rai :

86 farmers of villages adjecent to university H. Q. took part in this programme. A team consisting of the scientists of oilseeds research & statitics visited fields of the farmers. The heighest yield (36.5 qt/ha.) was recorded in the field of one of our adopted farmers under lob-to-land programme of Harpur village. Others ranged between 16 to 30 qt/ha. Average yield was observed 19.5 qt/ha. against 4 8 qt/ha. as observed at State level.

(B) KRISHI VIGYAN KENDRA, BANKA (BHAGALPUR)

A total no. of 200 farm families were adopted under lab-to-land programme. 12 village namely Dauna, Umari, Pratihati Nagar, Bhawenda Kola, Dharahari, Jodadihem, Thirwa, Rampur, Data Manikchouk and Meharpur were selected.

Training : 1100 farmers, 50 farm women and 300 farm youth were trained in Kharif season.

Extension activities : 4 field days were organised in the farmers field. 225 extension literatures were distributed amongest adopted farmers.

Demonstration : The following demonstration were conducted.

Crop :	No. of demonstrations :
Maize (Suwan)	17
Arhar	20
Maize + Arhar	7
G. Nut + Arhar	5
G. Nut + Arhar	12
	Total : 61

Impect on Productivity/Production :

Crop	Before the Programme :	After the Programme :
G. Nut.	—	3.5 Q/ha.
Arhar	2.0 Q/ha.	6.0 Q/ha.
Maize	5.0 Q/ha.	20.0 Q/ha.

Additional Employment generated :

Activity :	Employment potential.	(mandays) actual
1. Improved methods of crop progduction.	380	220
2. Improved methods of vegetable crop, cultivation and fruit preservation.	350	112
3. Animal Science activities.	480	301

(C) NATIONAL DEMONSTRATION, SABOUR (BHAGALPUR)

A total no. of 50 farmers were adopted under lab-to-land programme by this centre. Dhankar village was selected.

Yields of Demonstration

Sl. No	Name of the crop	Variety	No. of demons.	Yield in q/ha: Highest	Lowest	Mean
1.	Masoor	L—9-2	1	17.00	13.50	15 30
2.	Gram	C—235	1	15.50	15.50	15.50
3.	Rai	Varuna	1	16.80	16.80	16 80

Distribution of literatures :

20 farmers were given 'Adhunik Kisan Dairy' and 'Adhunik Kisan Patrika' of Jan. 1985. They were made subscriber of this monthly magazine.

(D) KRISHI VIGYAN KENDRA, MUNGER

A total of 200 farmers were adopted under lab-to-land programme by this centre, Four new villages namely Hardiabad Keshopur, Ekashi (Bariarpur) and Amarpur were selected.

Name of Technology/improved practices transferred :

(i) Improved methods of cultivated paddy, wheat maize & vegetable crops;
(ii) Plant Protection methods in different crops.
(iii) Use of maize cob sheller.
(iv) Improved methods of cultivation of pulses & oilseeds crops.

(v) Repair and maintenance of pumps plant protection instruments and seeding devices.

(vi) Preservation of fruits & vegetables.

(vii) Child-care nutrition, knitting and tailoring.

Extension Activities :

Training : 182 farmers, 20 farm youth and 32 farm women were trained.

Field days : 5 field days were organised in the adopted village.

Demonstrations conducted :

Kharif	Rabi
Paddy—8	Gram—51
Maize—3	Pea— 41
Guava—2	Rai— 42
	Potato—11
	Total—145

Impact on Productivity :

Before the Programme	After the programme
Paddy—10/q/ha.	40 q/ha.
Vegetable—70-80 q/ha.	100-115 q/ha.

Additional employment generated :

Activity	Employment Potential man day	Actual
Improved method of cross production	450	225
Improved methods of vegetable cultivation	400	250
Repair & maintenance of diesel & electric pumpsets	200	115
Knitting	100	30
Fruit preservation	100	60

NATIONAL DEMONSTRATION

(i) Samastipur, Pusa Campus :

During the year 1984-85 altogather 22 domonstrations were conducted out of which three were on three crop sequence, fifteen on two crop sequence including one as a special demonstration and four on single crop. The blockwise distribution is given below :

Table 1

Sl. No.	Name of the Block	No. of Demonstration alloted	No. of demonstration conducted				
			3 crops	2 crops	1 crop	Special	Total
1.	Pusa	25	1	5	2	1	9
2.	Kalyanpur		2	5	—	—	7
3.	Ujiyarpur		—	2	—	—	2
4.	Sarairanjan		—	2	—	—	2
5.	Samastipur		—	—	2	—	2
		Total	2	14	4	1	22

(ii) Multiple crop demonstration :

(a) Three crop rotation :

All together three demonstration were conducted with three crop rotation. The district-wise mean, nighest/lowest, yields, frequency distribution of yields and return over operating cost in Rs./ha. of these rotation are presented in Table 2.

(b) Two crop rotation :

15 demonstrations were conducted with two crop rotation. The district-wise mean, nighest/lowest yields, frequency distribution of yields and return over operating cost in Rs./ha. of these rotation are presented in Table 2.

(c) Single crop :

Four demonstration were conducted with single crop. The district-wise mean, highest/lowest yield, frequency distribution of yield of return over operating cost in Rs./ha. of these crops are presented in Table 2.

(iii) Variety wise performance of National Demonstration :

The variety-wise number of demonstration conducted during kharif and rabi season as well as highest, lowest, mean yield obtained from these crops are presented in Table 3.

Table 2

State and district-wise mean, highest/lowest yields, frequency distribution of yields and return over operating cost in Rs./ha.

Rotation	District/ State	No. of Demonstration	Yield in q/ha.			Average return (Rs./ha)			Average nutrients kg/ha		
			Mean	Highest	Lowest	Cross	Cost of Prod	Return over operating cost	N	P_2O_5	K_2O
Three Crop Rotation											
Paddy-Rye-Moong.	Samastipur	1	42.00 20.50 10 00	42.00 20.50 10 00	42.00 20.50 10 00	18,250	8,720	9,530	60	50	25
Paddy-Wheat-Moong.	Samastipur	1	28.00 25.50 9.25	—	—	15,537.50	10075	5,262 50	75	50	30
Maize-Maize-Moong.	Samastipur	1	100.00 8.00	—	—	18,550	8,990	9,560	85	60	30
Two Crop Rotation											
Paddy-Wheat	Samastipur	6	71.50	77.50	62.00	14,117	8,635	5,482	150	120	65
Maize-Maize	Samastipur	1	82.00	—	—	13.100	7,550	5,550	128	60	40
Paddy-Maize	Samastipur	6	105.92	120.00	100.00	16,028	7,885	8 143	880	50	30
Paddy-Rye	Samastipur	2	59.62	60.00	59.25	14,017	7,030	6,927	70	40	30
Single Crop											
Wheat	Samastipur	4	38.75	40.50	36.00	8.750	4,525	4,225	100	60	40

Table 3 : KHARIF 1984

Sl. No.	Crop	Variety	No of demonstrations	Yield q/ha			Remarks
				Mean	Highest	Lowest	
1.	Paddy	P-2-21	9	39.90	42 00	35 00	
		Sita	4	35.50	40.00	30 00	
		Jaishree	2	35.00	38.00	32.00	
		Jaya	1	50.00	50 00	50.00	
2.	Maize	Suwan	1	20.00	—	—	Yield poor due to continuous rain.
		M-9	1	10.00	—	—	
			RABI 84-85				
3.	Wheat	HP-1102	4	38.40	44.00	33.50	
		HP-1209	4	37 00	40.00	30.00	
		RR-21	2	37.25	38.50	36 00	
		C-306	1	25.50	25 50	25.50	
4	Maize	Laxmi	4	68.50	90.00	60.00	
		Hemant	4	65.50	70.00	63.00	
5.	Rai	Varuna	3	19.41	20.50	18.00	

(ii) Bhagalpur, Sabour Campus :

During the year 1984-85, altogether 25 no. of demonstrations were carried out in 9 C.D. Blocks, Out of which 7 were on two crop sequences, 7 on three crop sequences including 5 on Entire Farming System' and 10 on 'Dry Land Agriculture' in saline soils. The blockwise break-up of demonstrations is given below :

Table 3. Distribution of N. D. Blockwise

Sl. No.	Name of Block	No. of two demons.	No. of there crop demons.	No. of dryland agril.	No. of spel. demons.	Remarks
1	2	3	4	5	6	7
1.	Sabour	2	1	×	×	
2.	Kahalgoan	×	1	×	×	
3.	Shahkund	×	1	×	×	
4.	Shambhuganj	1	×	×	×	
5.	Amarpur	1	×	4	×	
6.	Banka	2	3	4	×	
7.	Katoriya	×	×	×	×	
8.	Rajour	1	1	×	×	
9.	Bansi	×	×	2	×	
		7	7	10	×	

Varietal Performance in N. D.

Crop and variety wise demonstrations conducted during the year under report and highest, lowest and mean yields obtained there of are given below :

Table 4 showing varietal performance in different demonstrations.

KHARIF

Sl. No.	Name of crop	Variety	No of demons.	Yield in q/ha			Remarks
				Highest	Lowest	Mean	
1.	Rice	Sita	9	53.00	39 00	47 43	
2.	Rice	Pusa-33	1	34.50	34 50	34.5o	
3.	Rice	Mahsuri	1	49.50	49 50	49.50	
			RABI				
1.	Wheat	Sonalika	8	52 50	52.50	52 50	
2.	Rai	Varuna	1	14.50	14.50	14.50	
3.	Potato	Chandramuki	1	217.00	217.00	217.00	
4.	Gram	C-235	2	18.50	14.40	16.45	
1.	Maize	Suwan	8	11.50	2.30	5.78	
2.	G. Nut	AK-12-24	1	5.70	5.70	5.70	
3.	Rice	ES 29-3-3	2	5.80	2.00	3 90	
4.	Arhar	BR-65	1	8.20	8.20	8 20	

Field days organised

8 Field Days were organised at demonstration sites on various aspects viz- sowing of seed, transplanting rice, application of algaeculture, application of machette in rice for controlling weeds and use of micronutrients like Zinc sulphate in which 145 cultivators participated.

OPERATIONAL RESEARCH PROJECT TAUFIR DIARA AREA, MUNGER

The Operational Research Project in Taufir Diara came into function in the year 1975 with a view to (i) introduce suitable crop rotation and high yielding improved variety to get higher yield (ii) to maximise the utilisation of land with growing atleast two crops in a year instead of one and (iii) to develop better agronomic practices for Diara Area with the use of fertilizers, irrigation and adopting plant protection measures.

The achievements of the project have made a great impact on the Diara cultivators and they have adopted the cultivation of high yielding varieties of different cros and methods and practices in respect of scientific cultivation advocated by the Project and this is increaseing gradually. Location of the Project :

(i) Taufir

(ii) Laxmipur Taufir and

(iii) Takarmpur' & 11 P anchayats of Munger district.

(a) Operational trials.

AGRONOMICAL

1. Irrigation Requirement trial on Maize

This trial was conducted with Laxmi variety of maize at three locations Details of average yields obtained are as follows :

Treatments	Dose of fertilizers	Av. yield (q/ha)
1. Irrigation (T_1)	90N+60P+40K kg/ha	39.33
2. Irrigation (T_2)	90N+60P+4 K kg/ha	48.38
3. Irrigation (T_3)	90N+60P+40K kg/ha	56 33

T_3 i.e. four irrigations gave the highest average yield of 56.33 q/ha.

2. Irrigation requirement trail on wheat (HP-1102) :

The trail was conducted at three locations. Average yield data of the experiments are as follows :

Treatments	Dose of fertilizer	Av. Yield (q/ha)
No. Irrigation (T_1)	90N+60P+40K kg/ha	30.66
One Irrigation (T_2)	90N+60P+40K kg/ha	35.66
Two Irrigation (T_3)	90N+60P+40K kg/ha	39.66
Three Irrigation (T_4)	90N+60P+40K kg/ha	45.00
Four Irrigation (T_5)	90N+60P+40K kg/ha	48.33

T_5 (four irrigations) gave the highest average yield of 48.33 q/ha followed by T_4 (three irrigations) yielding 45 00 q/ha.

3. Irrigation requirement trial on potato (Kufri-Chandramukhi) :

The average yield data of the trials conducted on potato in different locations are as follows :

Treatments	Dose of fertilizers	Average yield
No. Irrigation (T_1)	100N+80P+50 kg/ha	76.00 q/ha
One irrigation (T_2)	-do-	133.00 ,,
Two irrigation (T_3)	-do-	156 00 ,,
Three irrigation (T_4)	-do-	171.00 ,,
Four irrigation (T_5)	-do-	182 00 ,,

Treatment T_5 (four irrigations) gave the highest average yield of 182.00 q/ha followed by T_4 (Three irrigation) yielding 176.66) q/ha.

4. Varietal demonstration on long duration maize :

This demonstration was conducted with two varieties at three locations. Details of average yields are given below :

Varieties	Dose of fertilizer	Av. Yield (q/ha)
Laxmi	90N+60P+40K kg/ha	54.66
Histarch	-do-	50 66

Both varieties were found suitable for Diara areas, giving an average yields of 54.66 and 50.66 q/ha respectively.

5. Demonstration on irrigated wheat :

The demostration was conducted at three different locations with three varieties. The details of average yield are as follows :

Varieties	Dose of fertilizer	Av. Yield (q/ha)
HP 1102	90N+60P+40K kg/ha	49.66
HD 1553	-do-	47.77
VF 262	-do-	51.77

6. Demonstration on unirrigated wheat :

Three domonstrations were conducted on Unirrigated wheat (C_{306}). The average yield data are given below :

Dose of fertilizer	Average yield (q/ha)
40N—20P—20K kg/ha	25.33

7. Composite Demonstration on Rai (Mustard) :

The trial was conducted at three locations with two varieties viz. (i) Varuna (ii) local. The variety Varuna was grown and its average yield was 14.79 q/ha. against local yielding 10.67 q/ha.

8. Croping pattern Experiment based on Summer Maize :

The trial was conducted at one location with 8 treatments. Details of average yields are given below :

Crop Rotation with average yield (q/ha.)

Early Kabi		Rabi	Summer
T_1	Urd Fodder (Navin) 280.00	Wheat (HP-1102) 52.00	—
T_2	Urd Fodder 265.00	Barley 30 00	—
T_3	Urd Fodder 265.00	Potato 120.00	—
T_4	Fallow —	Wheat (HP-1102) 52.50	—
T_5	Fallow —	Barley 33.00	—
T_6	Fallow —	Potato 126.00	—
T_7	Fallow —	Gram (C 235) 16.00	—
T_8	Fallow —	Pea 15.00	—
			—

9. Cropping pattern Experiment based on Summer Paddy :

The average yield data of the experiments conducted in 3 locations with 5 treatments are as follows :

Crop roration with average (Q/ha.)

	Early Rabi	Rabi
T_1	Urd fodder 253, 33	Wheat (HP-1102) 50.83
T_2	Urd fodder 253.33	Barley (Local) 34.50
T_3	Fallow —	Pea (Local)
T_4	Fallow —	Mustard (Varuna) 12.00
T_5	Fallow —	Lentil (BR-25) 11.66

Plant Protection

10. Plant Protection trial on wheat (HP-1102)

Soil treatment with Aldrin 5 % dust @ 25 kg per hectare, seed dressing with ceresan dry @ 2.5 g/kg of seeds before sowing & spraying with Endosulfan 35 EC 1.5 lit/ha. + Dithane M-45 2 kg/ha. after 45 days of sowing were found effective in controlling pest and diseases of wheat and increaseing yield. The average yield of the protected seed was recorded to be 47.58 q/ha. as against 40.00 q/ha. from unprotected seed

11. Plant protecting trial on Gram (C-235)

Seed dressing with Bavistin @ 1 gm/kg of seeds 24 hours before sowing, drenching with Dithane M-45 @ 2 kg/ha. after 15 and 30 days of sowing and spraying with Malathion 50 EC @ 2.5 lit/ha. Ist spraying at flowering stage and 2nd at podding stage were found to be most effective in controlling pest and diseases of gram. The average yields of protected and unprotected crops were recorded to be 14.79 and 10.67 q/ha. respectively.

12. Plant Breeding trial on wheat (Unirrigated)

A new trial was conducted on two varieties of wheat viz., HP-1452 & HP-1493 under rainfed condition at a fertility level of 40 kg N+20 kg P 205+20 kg K 20/ha.

Operational trials during summer 1984

13. Specing trial on short duration maize

The trial was conducted at three locations with maize variety Diara Composite and the average yield was recorded to be as follows :

Treatment :	Av. Field in Q/ha. :
60×60 Cm (T_1)	14 33
60×20 Cm (T_2)	15.50
40×20 Cm (T_3)	13.50

The yield of grain was low due to heavy and continuous rain during the growth period of the crops though treatment T_2 gave more yield than T_1&T_3.

14. Demonstration on short duration maize :

Three demonstrations were conducted with two of short duration varieties maize and the average yield data are given below :

Varieties	Average Yield (Q/ha)
Diara Composite	15.33
Suwan	19.00

The yield of grain was low due to heavy and continuous rain during the growth period of crop

(B) OPERATIONAL RESEARCH PROJECT, ADHAURA, ROHTAS PROGRESS OF WORK DONE

1. Improved farming technology-Farmers of the four adopted villages were persuaded to adopt improved farming technology with emphasis on adoption of improved high yielding variety of various crops (Rice, Wheat, Gram and vegetable). Farmers of the adopted villages who were hesitant to use chemical fertilizers and insecticides in the past now came forward for adopting new technology, without hesitation. Minimum expenditure and maximum profit in tomato cultivation with variety Pusa, attracted farmers of project area very much.

2. Distribution of fruit plants vegetable seedlings :

Under this programme 500 papaya plants of Ranchi variety, 25 of Guava graft of Varanasi Variety and 90 mango grafts of Langara Variety were distributed free with the help of Vanbasi Sewa Kendra, Adhaura to the farmers of Ranta, Babhani, Kone Babhani and Chainpura. Nearly 50% of plants survived and were doing well.

3. Rat eradication :

Under this programme 32 Celphos tubes were used for the purpose of rat control in the four adopted villages with the help of farmers.

4. Distribution of vegetable seeds of improved variety :

One hundred & twenty packets of Bhindi Pusa Sawani, of 50 grams & 185

packets of tomato Pusa Rubi of 50 grams were distributed to the farmers of project area on 50% subsidy.

5. Demonstration of high yielding variety of Paddy :

Thirty one demonstrations in four adopted village were conducted with paddy variety Sita and Saket-4. Demonstrations were adversely affected due to drought. But demonstrations on midnland gave good yield [Sita (42.75 q/ha) and Saket-4 (24 q/ha)] despite drought.

6. Demonstration on Maize :

Eight demonstrations were conducted on maize in four adopted villages. Due to heavy and continuous rain in the early stage and drought at flowering stage affected the crop. Despite the adverses some farmers harvested 20.21 q/ha.

7. Demonstration on Kharif vegetables :

Seven demonstration with bhindi kharif *Pusa Sawni*, 11 On tomato *Pusa Rubi*, 6 One Brinjal (PPR) and 5. on chillies (Jwala) were conducted in kharif season in four adopted villages, namely Chainpura, Rauta, Babhani and Kone-Babhani The maximum yield recorded of Bhindi Pusa Sawani was 135 q/ha, tomato-Pusa Rubi 100 q/ha, Brinjal PPR 121 q/ha and chillies 11 q/ha.

8. Training of farmers :

Farmers of the four adopted villages were trained in imporved technology of farming before Kharif and Rabi sowing at their villages in the month of June and October, 1984. A Kisan Mela and fruit show was organised by the Vanbasi Seva Kendra. The Farmers of the project participated and secured maximum number of prize in the fruit show.

9. Demonstration on Rabi Crops :

Two demonstration of wheat-HP-1209, in irrigated condition, 8 of wheat Sonalika in unirrigated condition, 9 of gram R.A.U. 52, 4 of Lentil L-9-12 & 13 of potato Kufri Sinduri were conducted in Rabi season at Chainpura, Rauta, babhani and Kone Babhani, the maximum yield obtained 28 5 q/ha of wheat in irrigated condition, 16.5 q/ha of gram, 11.5 q/ha of Lentil naud 340 q/ha of potato respectively.

10. Demonstration of vegetable in Rabi season :

Four demonstration of Cauliflower-Snow ball 16 & two of tomato-marglobe variety were conducted at Chainpur total area covered 0.12 hectare and each demonstration of 0.02 hectare maximum yield of Cauliflower 58-16 and Tomato Marblobe recorded 171 q/ha and 265 q/ha respectively.

PROJECT ON SCHEDULED CASTE AND OTHER BACKWARD COMMUNITIES

The Rajendra Agricultural University, Bihar, Pusa in an effort to bring economic transformation in the State, has takenup this project with 476 families of Samastipur district. The progress made during 1984-85 is as follows :

The beneficiaries under the project consists of all the 476 scheduled cast families of Mahmuda, Dhobgama, Shekhopur & Deopar villages under Pusa block & Jitwaria & Rampura villages under Kalyanpur block. Most of these villages under the project are located around Pusa, the University Head-quarter, Pusa.

THE STRATEGY FOLLOWED IN THE PROJECT :

Demonstrations followed by training and field days and field visits were some of the important methodology followed in motivating the groups for their economic development.

In Non-Agricultural aspect cooperation and coordination were taken from local development departments and agencies like DRDA, AEO, DIC, BDO, DDC., to generate maximum days employment to the members of adopted families.

ACHIEVEMENTS :

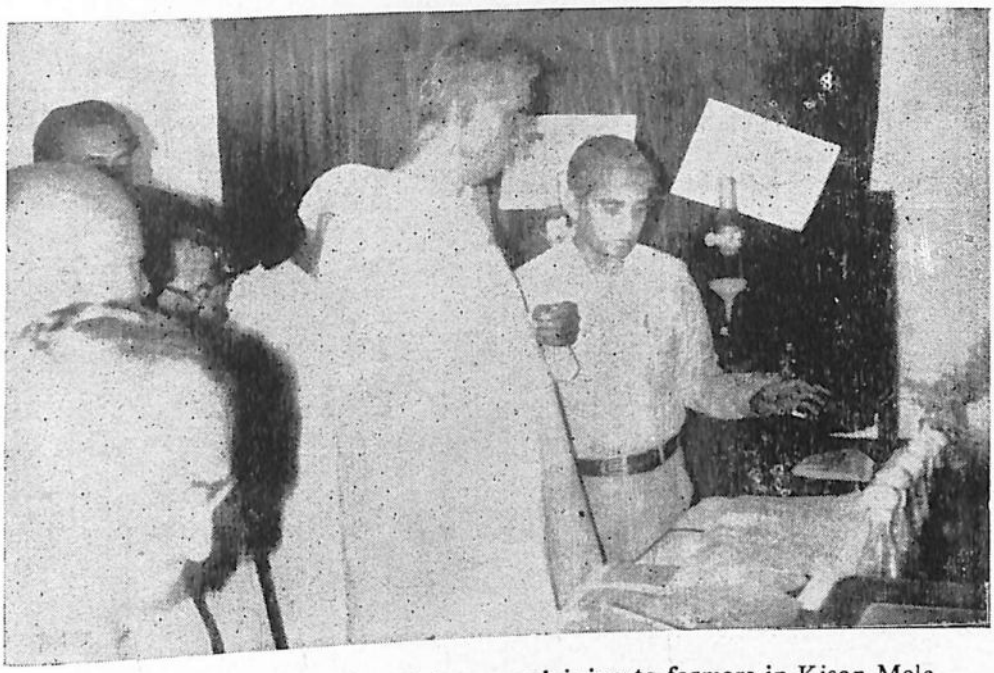
(i) Agriculture : Nearly 200 families were possessing half acre land to 5 acres of land. But they were not adopting the improved agricultural technologies like improved varieties, mixed fertilizer and plant protaction measures. To eleminate these drawbacks it was decided to lay out demonstrations and organise field days and field visits to convince the farmers. Following are the details of demonstrations.

DEMONSTRATION :

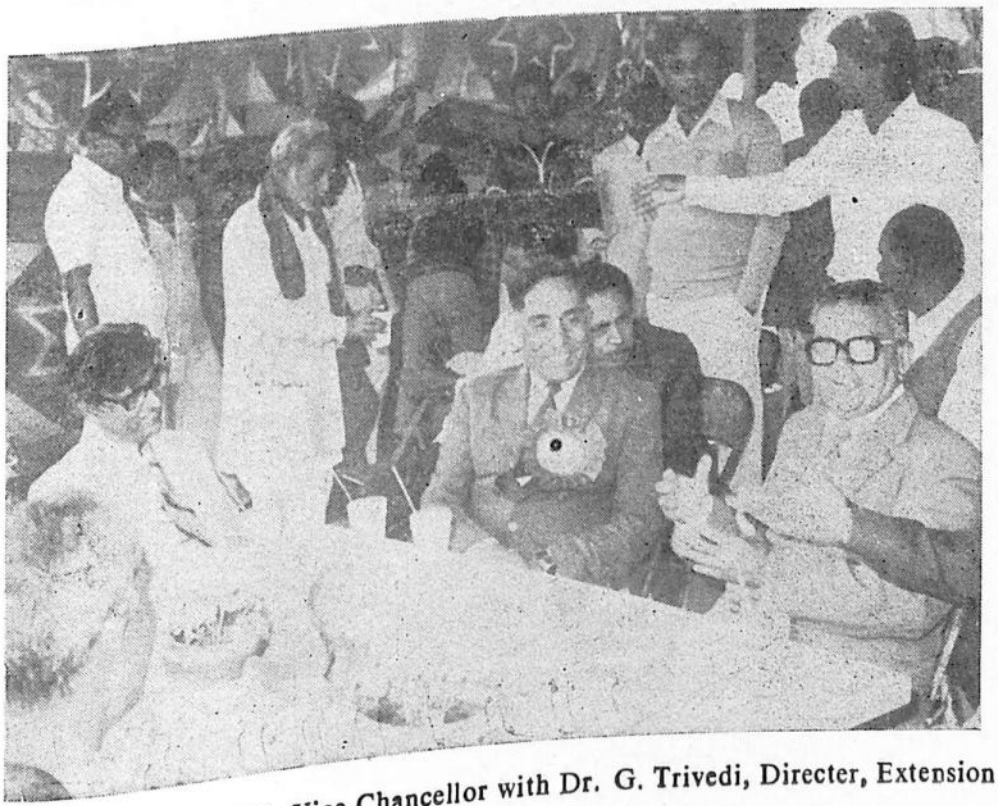
Sl. No.	Crop	Variety	No. Demons.	Qy. Seed	Field q/ha.		
					Max.	Avr.	Min.
1.	Moong	NP 28, NP 18 K 851, Pusa Baisakhi	50	134	18	15	10
2.	Urd	T_9	20	50	15	12	10
3.	G. Nut	M_{13}	15	30	20	15	10
4.	Wheat	HP-1209	8	80	40	30	15

His excellency Dr. A. R. Kidwai inagurating Kisan Mela.

Dr. J. C. Bakhshi, Vice-Chancellor with farmers.

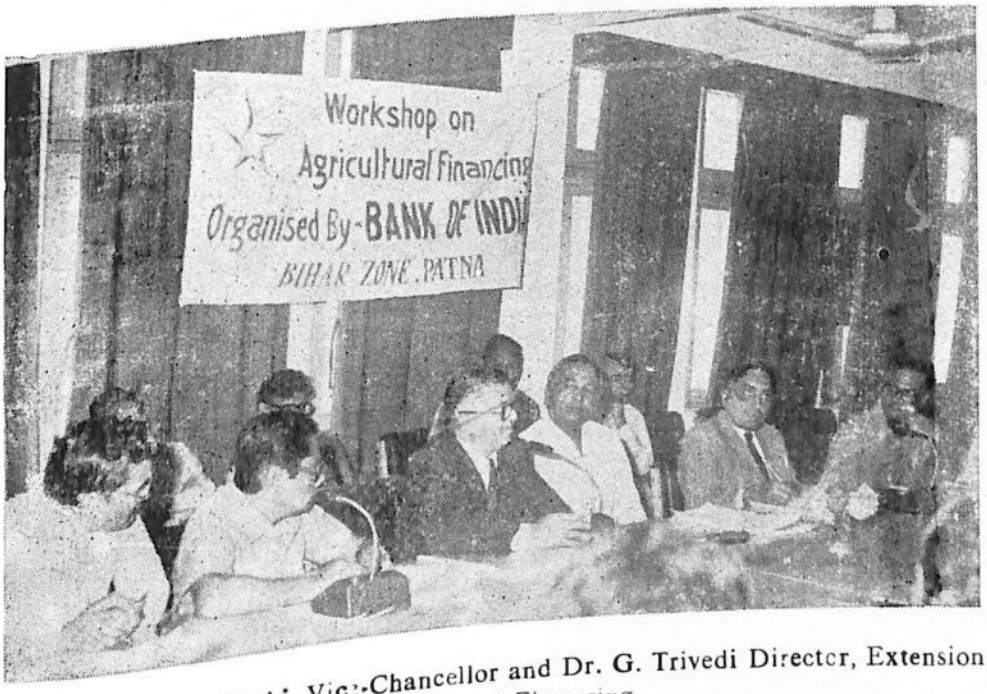


Dr. M. K. Sinha, Head Soil Science explaining to farmers in Kisan Mela.



Dr. J. C. Bakhshi, Vice-Chancellor with Dr. G. Trivedi, Directer, Extension Education in Kisan Mela.

Dr. J. C Bakhshi, Vice-Chancellor distributing prizes at Kisan Mela.



Dr. J. C. Bakhshi, Vice-Chancellor and Dr. G. Trivedi Director, Extension Education in Work Shop on Agricultural Financing.

FIELD DAYS :

Sl. No.	Crop	No. Field Days	Farmers Atteneded
1.	Moong	2	30
2.	Urd	1	15
3.	G. Nut.	2	53
4.	Wheat	5	100

Animal Production/fisheries :

16 improved breed of buffaloes and 2 of goats were purchased and 100 buffaloes and 20 cows breeds were improved by artificial insemination. 20 ponds of the adopted villages were supplied with improved breed of Zira for better fish production.

Home Science :

100 adopted families of Scheduled Castes were demonstrated the way of keeping a new baby in scientific & hygeinic way. They were also educated about the nutritive diet for both the child and the mother. The vaccination of triple antingent were educated to them for the prevention of plio, diptheria and kukur kanshi.

Kitchen Gardening :

Families were not using green vegetables and fruits in their diet. Their children were suffering from mal nutrition. Hence one hundred families were suggested the model for kitchen gardening in their home stead land. In kitchen garden they were educated to take intensive vegetable crop with some fruits like papaya, banana, guava etc.

PUBLICATION

The Directorate of Extension Education continued to publish a large number of literature for the benefit of farming community and Extension Worker of Bihar State.

(a) Adhunik Kisan (Monthly Magazine) :

One thousand and five hundred copies of "Adhunik Kisan" a popular monthly magazine are published regularly by the University. At present there are 1424 subscribers to this magazine.

During the year 84-85 some special issues of "Adhunik Kisan" were brough out. These were :

1. Fal Visheshank — October, 84.
2. Potato Visheshank — November, 84.
3. Grih Vigyan Visheshank — February, 85.

(b) Adhunik Kisan Diary :

During 84-85, 15 thousand copies of A. K. Diaries were published & sold among the farmers & Extension Workers. Rupees 20,600.00 was collected from the printing of advertisement in this Diaries. Rs 68,309 received from sale of diaries & Rs. 27,000 credited to different University sale centres & govt. agencies.

(c) Publication of Pamplets, Leaflets & Bulletins :

Following pamplets, Leaflets and Bulletins were published during 84-85 for distribution among the farmers and trainees, during Kisan Mela, Kisan Gosthi & field programme organised by the University.

1. Kharif Telhani Fasalon ki Kheti.
2. Kharif Dalhani Faslon ki Kheti.
3. Kandmul Faslon ki Samunat Krishi Pranali.
4. Kandmul Fasalon ki Utpadakata vidhi ka Naya Tarika.
5. Mangaralla ki Kheti.
6. Madhumakhi Palan Kaise Karen.
7. Shit Kalin Mekka ki Kheti.
8. Bihar Rajaya me dhan ki Adhik Paidwar ke liya Kuchh Takniki Sujhow.
9. Kharif Fasalon ki Jal Nikas.
10. Rabi Fasalon ki Jal Nikas.
11. Kharif Makka ki Unnat Kheti.

(d) Rajendra Agricultural University Research Journal.

(e) Rajendra Agricultnral University News Letter.

(f) Package and practices of Kharif, Rabi, Sag Sabajee, Falotpadan, Paudha Rog abam Sangrakhan, Bihar me Ikh ki vaigyanik Kheti, Bihar me Patsan ki Kheti etc.

KISAN MELA

The Kisan Mela at Rajendra Agricultural University Pusa was organised from 24th to 26th February 85 while at Bihar Agricultural College, Sabour (Bhagalpur) from 9th to 11th Feb. '85. The Kisan Mela at Pusa was inaugurated by the Hon'ble Governor and Chancellor of Bihar, Dr. A. K. Kidwai/accompanied with Mrs. Kidwai, District Magistrate, Samastipur Senior Officers and extension personnel of Agriculture Department, Dr. J. C. Bakshi, Vice-Chancellor, Presided over the function. Dr. G. Trivedi, Director. Extension Education, gave necessary instruction to the farmers and field functionaries. The Kisan Mela at Bihar Agricultural College, Sabour (Bhagalpur) was inaugurated by a progressive farmer of Katihar district accompanied with Dr. G. Trivedi, Director, Extension Education, Principal Bihar Agricultural College, Sabour (Bhagalpur), Joint

Director of Agriculture and District Magistrate, Bhagalpur and senior officers of Agril. Department. About 7000 farmers participated at Pusa Mela while at Sabour Mela the no. of participating farmers were 5000. About 501 farmers got registered at Pusa and 824 at Sabour Mela. The no. of participated stalls at both the Mela were 43 and 39 respectively. The University seeds at both the places were sold worth Rs. 8100/-. University publication and diary '85 were sold worth Rs 1795.25 at both the Mela. About 19 soil samples and 33 disease affected plants were analysed and control measures were suggested to the farmers. More than 680 questions were asked by the farmers and answers were given by the Scientists of the University. Over 8000 leaflets on various aspect of crop and animal production of were distributed among the farmers and visitors during Mela period at both the places.

At both the places agril. exhibition. Kisan Gosthi, horticultural and cattle show were organised. The Kisan gosthi was very useful for the farmers. In addition to seeds, grafts and gooties of fruit trees, products of fruits were also sold during Mela period.

Exhibitions :

The University participated in the agril. exhibition at different places on various occasions-at Pratap Tar from 9th to 11th April, '84 on the eve of Ramnawmi, at Vaishali from 12th to 14th April, '84 on the eve of Vaishali Mahotsav, at Patna from 27th to 29th April, '84 on the eve of All India Farmers Convention, at Litchi show, Muzaffarpur on 3rd June 84, at Patna on the eve of Congress Century Celebration from 15th October to 9th Nov. 84, at Sonepur on the eve of Kartik Purnima from 7th to 21st November 84 and at Pratap Tar from 29th to 31st March 85. Besides putting exhibition, publication selling counter was also kept and leaflets on various aspects were also distributed among the farmers and visitors.

Field days/Kisan gosthi/mobile exhibition :

The University celebrated field days on various occasion at different institutions centres:- 4 field days and one mobile exhibition at Krishi Vigyan Kendra, Munger, 12 field days at Pusa and 8 at Sabour. Under National Demonstration Programme during Kharif and Rabi season, Several Kisan gosthies at A.R.I., Patna, 10 field days under SC/ST scheme adjoining to University, one field day and 2 extension fortnight at Jute Research Station Katihar celebration of National Nutrition week at Etaha & Pusa villages and one exhibition for village ladies & children under Educational cultural programme adjoining the University by Home Science College were organised.

Correspondence :

The farmers are being constantly informed about the latest agril. development through mass media. The querries of farmers were replied after consultation with the Scientists of respective field.

Scientists field visits :

Scientists field visits were organised with a view to provide 'on the spot' technical guidance to the farmers on all aspects of crop production. The Scientists of the University also visited the farmers field wherever they were informed about the occurance of pests and diseases and other problems with regard to crop production. The team of specialists identified some diseases of various crops in farmers fields of Muraul Block, Kalyanpur Block, Samastipur, Muzaffarpur, adjoining areas of R.A.U., Pusa, East Champaran, Sitamarhi, Siwan, Biharsharif, Motipur and other places. They suggested suitable control measures for different crops.

Farmers visit to the campus :

Farmers of different parts of the state and also from other states visited the main campus as well as other campuses of the University. Three batches of farmers one batch of 16 farmers of Moradabad (U.P) and 2 batches consisting of 14 farmers each from Jalaun and other parts of U. P. visited the University. They were explained about the research & extension activities of the University.

COMMUNICATION THROUGH MASS MEDIA

(a) Radio :

To make the farming community up-to-date about the latest development in the field of Agriculture. Animal Husbandry & Veterinary, fisheries, Home Science,Forestry, etc. radio talks were broadcast by the Specialists of the concerned discipline of the University.

Various programme through Farm and Home Section of All India Radio like Bhagalpur, Darbhanga and Patna are being covered by Bihar Agricultural College, Sabour, Tirhut College of Agriculture, Dholi, Agricultural University, Pusa, Bihar Veterinary College and Agricultural Research Institute, Patna respectively. 13 numberof radio talks were broadcast by the Scientists of A.R.I., Patna.

Farm school on All India Radio introduced by All India Radio, Patna on Rice Farming is continuing with the cooperation of Rice Scientist of the University.

It is proposed that like Patna Radio Station, Darbhanga and Bhagalpur should also introduce, farm School on All India Radio on the topics suitable for the concerned regions. The Director, Extension Education is the member of the farmer and Home Advisory Committee of Radio Station, Patna and Darbhanga where programme for every quarter is finalised.

(b) Television :

In collaboration with the Upgrah doordarshan Kendra, Delhi-Muzaffarpur,

36 Scientists of the University presented latest technical know-how inAgriculture and allied fields.

It is proposed that the number of recording at Dholi-Pusa by Muzaffarpur Doordarshan Kendra & at the T.V. Headquarter, New Delhi should be increased, so that the research findings of thisUn versity may be communicated to the largest no. of farmers. A quarterly programme is prepared & followed. The Director, Extension Education is state Coordinator for this purpose. As far participanion of University is concerned, it is satisfactory but participation from Govt. agencies needs to be improved.

(A) NATIONAL SERVICE SCHEME
TIRHUT COLLEGE OF AGRICULTURE, DHOLI UNIT

During the period under report, the regular activities of the Unit was limited owing to lack of fund. However, the spirit and momentum were maintained and the achievemente remained significant due to highly dedicated work of vlounteers The salient achievements are listed below :

1. Farmers were motivated for undertaking the improved cultivation of papaya and seedlings of improved, high yielding varieties of papaya were made available to 11 farmers in about 1.5 ha. They were helped in the plantation and post plantation cultural operations too. The Unit assisted in organisation of papaya Day at Village Itaha and marketing of papaya fruits.

2. 109 farmers of village Itaha, Leotan, Malpur, Dwarikapur. Bakhri, Raini, Nemopur, Balua, and Muraul were contacted, given necessary know-how and do-how for improved cultivation of mustard, groundnut, summer mung and arhar cultivation. They were helped in procurement of quality seeds of high yielding varieties, fungicides for seed treatment and were shown the correct method of fertilizer application and seed placement. Post sowing cultural operations were also followed in farmers field during the regular visits by volunteers and teachs/scientist involvement in NSS programme. As a result of this constant follow up programme the crops in these farmers field are in better shape.

3. With proper motivation, constant guidance and Socio-economic cooperation, one Sri Umesh Thakur of NSS adopted village Raini, agreed to undertake fishing (Zerra) culture. For this purpose village youths wers mobilised to contribute labour at the minimum assistance and with their efforts a tank was dug under the technical supervision. The fishlings of common carp were obtained and rered for breeding purpose. The breeding work will be undertaken under the technical supervision of Scientists working on fisheries. This work has attracted other farmers too and two others are initiating the work in this summer season at Raini.

4. In collaboration with Gramin Vipanan Kendra a 3—month training-cum-production programme for garment marketing was organised for members of NSS organised Mahila Mandals of village Itaha, Raini, Lotan and Bakhri. Altogether 55 members successfully completed the trainings and arrangements were made to get them involved in commercial tailoring of garments. 10 sewing machines have been purchased through Bank loans.

5. Students participated in general and skill training orientation for 5 days at the College level. The orientation lecture series was inaugurated by the Principal, Dr. N. P. Sinha and under skill-learning, Social and agro-forestry, Scientific cultivation of mustard and summer groundnut were covered by Dr. J.K. Handoo, Sri K. M. Prasad, Sri S. Srivastava, Dr. S. K Varshney and others.

6. Students continued their weekly advisory service to farmers in NSS adopted villages and altogether 21 visits were conducted and about 370 farmers in 3 villages were benefitted.

7. Post plantation care were taken in planted sapling of economic values under social and agro-forestry, both in the campus and in villages and altogether 118 thallas were planted and irrigated twice during hot season of the year.

8. Students actively participated in Kisan Mela, organisation of farmers training at village levels in adopted villages, clearing of public places like schools and wells and have enlisted all physically disabled and helpless people of village Itaha for rendering required assistance through other voluntary agencies having physical resources to help them.

9. On the eve of International youth day, an essay competion on 'Role of Youth in rural development' was organised on 16th January '85 in which under-graduate students participated with great enthusiasm. Three competitors have been selected for awards on the 2nd October '85.

10. The T. C. A. Unit has actively collaborated for the organisation of NSS activities in College of Home Science and College of Agricultural Engineering at Pusa.

11. The NSS Unit extended the required help in organisation of Oilseed Day on 30th January '85 in adopted and other adjacent villages. Hon'ble Vice-Chancellor was the Chief Guest, Director, Extention, Principal, TCA Chief Scientist Oilseeds, University Professor, Extension Education and a good number of scientists and field Extension-Officers participated along with farmers. Trophies and prizes were awarded to top growers of mustard on the occasion of Kisan Mela at Pusa.

(a) BIHAR AGRICULTURE COLLEGE, SABOUR UNIT

Under phase II of Lab-to-Land programme, Bahadurpur village was selected by NSS-Unit where one hundred families were adopted. A fortnightly visits were made by the NSS Volunteers to Bahadurpur village. The guidance was given to farmers by the volunteers. This field visit converted into group discussion where experiences of individuals were shared. All the field demonstrations (Maize-15, Paddy-5, Potato-1) for which the inputs like seeds, fertilizer, pesticides and insecticides were provided to the farming families, were harvested and yield data was recorded. The average yield potentialities of crops before and after implementation of the programme are given below :

Sl. No.	Name of the crop	Post av. yield	Yield of the demonstration		
			min.	max.	av.
1.	Paddy	20.000 q/ha	24 00 q/ha	40.80 q/ha	35.00 q/ha
2.	Maize	30.00 q/ha	33.50 q/ha	43.50 q/ha	38.50 q/ha
3.	Potato	300.00 q/ha	—	290.00 q/ha	290 00 q/ha

The training to the NSS Volunteers as well as farmers were given on all important operations on the crops. Besides this, 25 poultry birds were provided to each of the three landless and marginal families with some housing facilities for keeping the birds.

The NSS Volunteers actively participatad in the three days Kisan Mela organised at the campus during the Mela besides helping in setting up of the stalls, they also helped the organisers in lodging and fooding of the farmers staying in the nights during the Kisan Mela. They also assisted farmers in the field and laboratory visit.

The NSS Unit adopted village Bahadurpur was changed to Mamalkha in Phase-III of Lab-to-Land programme starting from June '84. The seventy nos. of small, marginal and landless agril., labourers were selected under Phase-III of Mamalkha village for NSS Unit. The 30 per cent of selected farmers were landless agril., labourers and the remaining 70 percent was small and marginal farm families, During Rabi 1984. 20 nos. of field crop demonstrations (Rai-3, Maize-3, Gram-3, and Wheat-12) were conducted out of the fund of Lab-to-Land programme made available to this unit. All the inputs like seeds, fertilizers pesticides and insecticides were provided to the farming families and the new technological training to the NSS volunteers as well as farmers were given on all important operations of the crop. The Rai, Gram and Maize crop demonstration, were harvested and threshing was completed. The 12 nos. of wheat demonstration is being harvested soon. The average yield potentialities of crops before and after implementation of the programme and given below :

Sl. No.	Name of the crop	Past av. yield (q/ha)	Yield of demonstration and Min. (q/ha)	Max. (q/ha)	Av. (q/ha)
1.	Rai (Varuna)	5.00	7.40	8 35	7.35
2.	Gram (C-235)	18 00	23.40	28.90	26.30
3.	Maize-35	35.00	48 50	56.20	52.35
	Hi-starch	,,	—	55.30	—

Apart from working with adopted farm families the NSS volunteers participated in the following activities.

1. The NSS Volunteers were given training in rat control in the college farm area. The NSS Volunteers also demonstrated the methods in the Bahadurpur village about the rat control.

2. Under 'Van Mahotasav' Programme 162 saplings of wood and fruit trees and 10ps. of coconut and mango saplings were transplanted in adopted Mamalkha village.

3. Cleaning of college campus including hostels was done by the NSS Volunteers.

4. The NSS Volunteers actively took part in Kisan Mela organised at the campus in February, 1984.

5. The NSS Volunteers were given short training to the farmers of adopted village on Rabi cultivation, Animal Husbandry and beekneeping etc. during their visit to the villages.

INTEGRATED RURAL DEVELOPMENT PROGRAMME

The Integrated Rural Development Programme has been implemented in 9 villages around Tirhut College of Agriculture, Dholi Campus since 1978-79. The adopted villages are, namely, Itahh, Malpur, Dwarikapur, Lautan, Bakhri, Raini, Nemopur, Balua, and Muraul. The main thrust under I.R.D.P. has been on education and training of farmers so that farmers may adopt new practices and increase their crop yields and income thereby accomplishing the cherished goal of doubling the production.

A number of extension approaches and methods such as conducting crop demonstration in farmers fields, organising field days at the demonstration plots, training Programme for farmers, scientists visits to the adopted villages for giving on-the-spot technical guidance to the farmers and strengthening of supply and services by opening Input Sale Centres followed in the adopted villages to educate and train the farmers in latest crop production technologies.

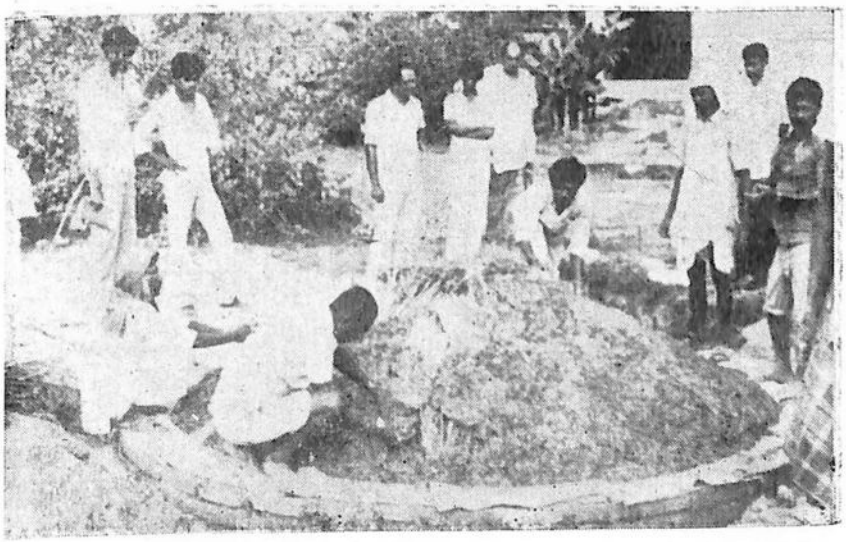
Seminar on Sugarcane.

Meeting of the Extension Education Council.

Dr. J. C. Bakhshi, Vice-Chancellor with Dr. G. Trivedi, Director Extension Education in experimental plots.

Dr. G. Trivedi, Director, Extension Education inagurating Inter-State Trainins in Bio-gas.

Demonstration in Bio-gas.



Demonstration in Bio-gas training.

Based on evaluation study conducted by the Department of Agricultural Economics, the achievements of the Programme are as under.

(i) **Fertilizer use** : Per hectars fertilizer consumption on an average showed an increase of about 54% over the base year. The maximum increase was observed on small size group of farmers (70.5%) followed by marginal (57%).

(ii) **Insecticides use** : Use of insecticide which on an average was nearly 5kg per hectare in the base year rose to 7 kg per hectare, thus showing an increase of roughly 40 %. The maximum increase again was observed in marginal size group (66.6%).

(iii) **Per hectare investment on variable inputs** : On an average investment per hectare increase was nearly 50 3%.

(iv) **Average yield of important crops** : On an average the per hectare yield of almost all the major crops of the project area showed an increase though the increare widely varied for different crops. Among the various important crops highest percentage (46.6%) was observed in case of Rabi maize followed by wheat (43.2%). Paddy (35.2%) and Kharif maize (9 5%).

(v) **Per hectare Gross Income** : Per hectare increase in the gross income ofthe farmers of the project area was about 49% over the gross income obtained in the base year.

(vi) **Per hectare net income** : Net income per hectare on an average was observed to be 50.7% higher as compared to the base year.

(vii) **Employment situation** : The empoloyment situation as emerged is a consequence of increased use of improved technologies. On an average man days employment increase was 24.7%, highest (36%) in case of marginal farmers.

It may be concluded that adoption of modern technologies as advocated by the scientists of the University led to increased use of fertilizers, insecticides and adoption ot high-yielding varieties which ultimately resulted in increase of income and employment of the farmers of she adopted villages.

PULSES PRODUCTION PROGRAMMES

A. Summer 1984.

I Mung : *On Farm Test of Promi* arieties

Varieties : T-44, 12/333, 11/395, Local
Sites : 4 (Two upland & Two lowland)
Plot size : 50 q M.
Dates of sowing : 1-15 March, 1984.
Yield (q/ha)

Variety	Main Yield (q/ha)	
	Upland	Lowland
T-44 (C)	7.6	4 5
12/333	8.4	6.3
11/395	9.7	6.8
Farmer's Local	4.9	4.2

Low yields were due to rain during flowering and fruiting stages.

II Urd : Demonstration on T-9

Sites : 4
Plot size : 100 SqM

Mean yield obtained=6.8 q/ha
This is being adopted by the farmers in Wheat-Paddy rotation.

B. Kharif 1984-85.

Demonstration of inter-cropping maize (G.S.-2) and Arhar (Babar) :

Sites : 3
Plot size : 100 SqM
Sowing time : 15-20 June, 1984
Yield (q/ha)

Crop	Mean yield q/ha
Maize (GS 2)	19.2
Arhar (Bahar)	26.4
Arhar equivalence	34.0 q/ha

C. Autumn 1984-85

I Mung & Urd : Varietal performances with full package

Varieties : Mung (11/395, Amrit)
Urd (Navin, T-9).

Sites : 3
Plot size : 50 SqM
Date of sowing : 20 August-10 September '84.
Yield (Q/ha)

Crop	Varieties	Mean yield (q/ha)
Mung	11/395	7.8
	Amrit	7.2
Urd	Navin	8.4

Mung 11/395 matured a fortninght sarlier (65 days) than Amrit and yielded higher. Urd Navin proved much better than T-9.

II Arhar : Varietal Demonstration

Varieties : 5+1 (C)
Sites : 4
Plot size : 50 SQM
Date of Sowing : 1-5 September 1984.

Yield (Q/ha.)

Varieties	Days to maturity	Mean yield (q/ha)
DA-6	130	13.2
DA-11	200	24.0
DA-16	200	16.5
20/105	200	22.2
ICPL-87	200	18.4
Bahar (C)	210	25.3

DA-6 as an early variety may prove suitable for triple cropping (Maize-Arhar-Mung).

Among the full season varieties DA-11 proved to the best.

Bihar through a high yielding variety being susceptible to Alternaria is not suitable for rabi planting.

SOCIAL FORESTRY PROGRAMME

The social forestry work was started with the idea of plantation of trees in the community centres as per specification in the villages. Bakhari and Raini villages were adopted for the purpose and plantations were done. Trees planted in the Bakhari village on the farm houses have successfully grown and the farmers are taking advantage of these but those trees planted in the community centres were uprooted by the villagers themselves and planted some where else as no one was made responsible to look after the plantations in such community area.

Recently *Populus* was introduced in this area from H.P. University, Solan and now we are multiplying their population to introduce them as tree of marginal area in villages. This tree beside adding to the beauty of land scape and being fast growing is of greater economic importance. The wood is an excellent material for preparing packing boxes for fruit and vegetables, the

branches and dried leaves are of good fuel values and green leaves are used as fodder for cattle.

Another tree subabul *(Leaucassa laucocephala* (Lam). to wit) is also planted in the field along with field crops as a component of intercropping and trials are being made to see the feasibility of growing subabul with fodder, cereals and pulses at the first hand and the attempt is also being made to develop a cultural technique for taking up such intercropping scheme. This year the seeds of one variety of Subabul (K-8) has been obtained form Chandigarh and will be planted as an introduction in the crop field. This tree is also very fast growing having the greatest food value, fuel value and fodder value. Detopping and debranching the tree can regularly and conveniently be done in subabul and the harvested material be utilized as food, fodder and fuel. The time sequence of detopping of the tree can be worked out uniformly and a schedule will have to be prepared for different crops to be grown in the intercropping system.

STUDENTS' WELFARE

The Directorate of Students' Welfare caters to the needs of the students vis-a-vis the policies of the University. The major function of this Directorate is to inculcate discipline, sportmanship and team-spirit among the students so as to make them ideal citizens. This Directorate also assists the students in their placement in the job market at State and National level.

The Directorate also co-ordinates and looks after the hostel, cafeteria and/or canteen facilities for the students, since each student is required to stay in the hostel. Following is a brief report on the activities, achievements and future plans of the various wings of the Directorate of Students' Welfare.

1. HOSTEL :

The University maintains twelve hostels with two at the Headquarters (Pusa), two at Tirhut College of Agriculture, Dholi four at Bihar Agril. College, Sabour and four at Bihar Vety College, Patna. Two hostels for girl students are maintained, one each at the Headquarters and at Bihar Vety. College, Patna respectively. The University proposes to establish two more hundred-bed Boys' Hostels at Pusa for which plans have already been drawn.

The hostels are provided with facilities of extra-curricular activities, like reading rooms, indoor and outdoor games etc. All the hostels maintain Television sets, at least one each. Some of the hostels are provided with generators so that students are not affected by load-shedding. Efforts are being made to provide each hostel with electricity from generators.

Most of the activities of the hostels are managed by Committees of Boarders under the direction and supervision of the hostel administration. The clerical and minial staff are University servants.

The Messes, Cafeteria and Canteen are managed either independently or under the supervision of the hostel administration by the students themselves. Consistent efforts are being made continually to improve the living conditions of the students.

2. HEALTH CARE:

There are consultant physicians for each institution of the University on the main campus, however, a full fledged hospital with diagonistic facilities exists. This hospital is managed by the Chief Medical Officer and male and female Medical Officers to look after the health of the students and general hygiene of the hostels and the campus. Sick rooms are available in the two

hostels at Pusa. Additional and more useful facilities, including equipments, medicines & personnel in the existing hospitals and sick rooms are contemplated. Similar facilities for all the campuses of the University are envisaged.

SPORTS AND GAMES :

(a) Organisational set-up.

For developing the varions games and sports activities there is a two tier systems of functioning in the University.

(i) The central body operates at the University level and is headed by Prof. I/C, University Games and sports. The central body is responsible for holding various Inter-College Tournaments, the selection of the University teams and participation of the University teams in the various All India Inter-University Tournaments, besides formulation of policies & plans for development of games and sports activities in the University.

(ii) Each College has a Games and Sports Society headed by the president from among staff members and associated by student Secretary.

(b) Functions and Achievements :

(i) College Tournaments :

Each college conducts every year Inter-Class competitions for both indoor and outdoor games.

(ii) Inter-College Tournaments :

(a) The Inter-College Cricket Tournament was held at BAC, Sabour from 11th to 16th June, 1984.

(b) The Inter-College Volley-ball Tournament, 1984 was held at Pusa on 21st October, 1984. The highlight of this tournament was that teams from college of Agril. Engineering, Pusa and Sanjay Gandhi Instt. of Dairy Technology, Pusa, participated for the first time in the tournament

(c) Inter-College Table-Tennis Tournaments (men and women) were held at TCA, Dholi on 9th and 10th of June, 1985.

4. MUSIC AND DRAMA :

A Fancy Dress Competition was organised by the Society in a "Fete" organised on the eve of Republic Day, i.e. 26-1-85.

A Variety entertainment programme was organised on the 16th May, 1985 by Post-graduate and under-graduate students of all faculties.

5. FILM SHOWS

The University Film Society at Pusa screened nine feature films from May,

1984 to February, 1985 for the entertainment of students of Pusa campus. Three hundred wooden armed chairs were fixed in the Flax House (Vidyapati Kala Kendra) which is now used as a Community hall also.

The film society at Bihar Agril. College, Sabour and Tirhut College of Agriculture, Dholi (Muzaffarpur) are also running at their respective campuses successfully with an aim to impart healthy, educational and cultural entertainment to the students.

6. NATIONAL SERVICE SCHEME

In order to develop a sense of responsibility towards the Nation among the students, three units of National Service Scheme (NSS), one each at TCA, Dholi BAC, Sabour and BVC, Patna are functioning. In all 466 students are enrolled as NSS volunteers. It is proposed to establish two more N.S.S. units with one exclusively for the girls of College of Home Science at Pusa.

7. NATIONAL CADET CORPS (NCC)

Each campus operates an NCC unit in order to develop character, comradeship the ideal Service and capacity for leadership with discipline and nationality in young and energetic students. Apart from regular parades, in which cadets were trained in the relevant course contents, they also took active part in Independence and Republic day celebrations, Kisan, Melas, Official functions of the Institution etc. Certificate 'B' and 'C' examina tions have been conducted.

The Officer and Cadets of of TCA, Dholi planted 101 seedlings of differents plants on the boundry of play grounds and hostels during August, 1984.

UNIVERSITY LIBRARY

The Library system of the Rajendra Agricultural University, Bihar, consists of the following :

1. University Library, RAU, Pusa, Samastipur.
2. Campus Library, BAC, Sabour, Bhagalpur.
3. Campus Library, BVC, Patna.
4. 4esearch Station Library, ARI, Patna.

To keep our teachers, researchers and students well informed, the following three important Current Awareness Services have been provided regularly since 1979.

(a) Book Received This Month.
(b) Periodical Received This Month.
(c) Contents of the Month.

Library Regulation 1979 was approved by the Syndicate.

Modern Circulation System was adopted in 1979 to provide the better services to our staff and students.

Subsidised Book Purchase Scheme was introduced by the University in the year 1979 for the b nefit of staff and students.

University Livrary has been operating Book Bank Scheme and Social welfare Book Scheme. Social Welf. re Scheme operated on behalf of Social Welfare Department of the Bihar State. In this schem books are available to the members of the scheduled castes etc. free of charge.

A small film library was established in the year 1979 with a view to preserve important films, slides etc.

Since 1980, University Library has been subscribing for the purchase of various daily News Papers and Magazines of national importance for its reading room.

Reprographic Unit has continued to provide photocopying services to the staff and students since 1980. It has one Electrostatic machine and one Gestetner duplicator.

University Library is housed in a new library building which is degnified and magnificient from outside, as well as perfectly functional from within. The building provides various activities of a modern University library to all.

Drinking water cooler had been purchased in the year 1984 to provide the readers cool drinking water during reading hours.

British Council has provided the University Library a gift of books worth Rs. 65,000 approx. under ODA Book Presentation Programme in the year 1984.

Yearwise growth of collection (Book & Bound Periodicals) is given below :

1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
26 225	29.859	32,865	35,329	36,179*	36,790*

* Less growth due to non-availability of fund.

Yearwise strength of the Current Periodicals is given below.

Perodicals	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
Indian	187	222	237	246	198*	196*
Foreign	175	212	231	242	40*	15*

* Less subscriptions due to non-availability of fund.

Yearwise registered membership of the Library users is given below :

1979-80	1980-81	1981-82	1982 83	1983-84	1984-85
567	718	669	695	732	708

Yearwise extent of the use of the Library.

	1983-84	1984-85
Readers visited the Univ. Library	30210	32311
Books consulted	74390	76481
Books issued	9575	8743

Strenthening of technical staff during 1979-84 in the Univ.Lib.

Positions	1979	1980	1981	1982	1983	1994
Univ. Librarian	1	1	1	1	1	1
Asstt. Librarian	—	—	1	1	1	1
Sr. Library Asstt.	1	2	2	2	2	2
Library Asstt.	1	—	—	—	—	—

FINANCIAL STATEMENT

1. Agril. Non-plan :

The Rajendra Agricultural University and its constituent units are incurring expenditure on Education, Research and Extension every year out of the grants received from the State Government under Agril. Non-Plan scheme. The University has to spend large sums over seed, fertilizer, pesticides and casual labourers. Besides this, the University has to provive laboratory equipment, glass-ware, furniture, machine etc. for the educational sectors and the extension programmes are also executed on priority basis hence heavy expenditure is incurred on vehicles fuel and maintenance.

Accoring to the Annual Accounts for 1983 84 the expenditure for the year was Rs. 322.78 lakhs. The expenditure as per annual accounts under preparation for the year 1984-85 is expected to be Rs. 417 54 lakhs as per Revised Estimates for the R.A.U. The State Government released grant of Rs. 372.22 lakhs only during 1984-85 including Rs. 190.00 lakhs as additional grant for the excess expenditure already incurred during the previous years. The excess expenditure was incurred during the previous years due to revision of pay scales, bonus, additional C.L.A. etc. sanctioned by the State Government.

The State Government released less grants during the previous years against actual expenditure. The University was put to a deficit of Rs. 220.00 lakhs upto 1983-84 on Agril. Non-plan only A High Power Committee was constituted by the Government to look in to the matter. According to the recommendation of the above committee, the State Government was to release a sum of Rs. 305.00 lakhs for Agril. Non-Plan for 1984-85 and Rs. 220 lakhs for payment of arrears. Out of the aforesaid total amount of Rs. 525 lakhs, only a sum of Rs. 372.22 lakhs was released by the State Government in the year 1984-85. The balance amount of Rs. 152.78 lakes is expected to be received in the year 1985-86.

2. Animal Husbandry Non-Plan :

As per Budget estimate of Rs.69.76 lakhs under A.H. Non-Plan for 1914-85 of the R.A.U. the State Govt. released Rs. 32.10 lakhs only. Release of funds by the State Govt. fell short of provisions and actual expenditure during previous years. Thus a sum of Rs 83.12 lakhs is due from the State Govt. because of short fall in release of grants. The High Power Committee recomended to provide Rs. 49.10 lakhs during 1984-85 which was not made available to the University.

3. Agril. Plan :

The University is receiving grants from the State Government for the deve-

lopment of the University and allied activities. The University was able to construct different types of buildings for office and residential accommodation. Besides this, the colleges of Basic Science, Home Science and Agril. Engineering were also established form the grants received under the heads.

The State Government directed the University to submit a plan proposal for Rs. 90 00 lakhs during 1984 85. Accordingly the University prepared a plan Budget for Rs 90.00 lakhs during 1984-85 in which the State Govt. made some modifications, the total amount remaining the same, and instructed the University to incur expenditure according y; but the State Govt. did not include in the budget the item in respect of State Govt. share of I.C.A.R. Research schemes. Later on the State Govt released an additional amount of Rs. 20 00 lakhs. Thus the University received Rs. 110.00 lakhs in all during 1984-85 under the Aril. Plan Head.

4. I.C.A.R. Research Scheame. :

Besides the Non-Plan and Plan schemes, 55 research schemes of the I.C.A.R are in the University. These schemes of I.C A.R. also icclude the extension schemes like Krishi Vigyan Kendras, Lab to Land Programmes, National Demonstrations etc. These schemes are directly related to the farmers. Whatever experiments are made in the laboratory, these are placed in the field of the farmers for practical experience. The farmers get the technique from the scientists through K.V.K.

Researches on Crops is conducted on different lands in different climates. Necessary recommendations are made for farmers when the research is completed successfully.

Most of the I.C A R. schemes are financed by the I C.A R. in full. In case of Coordinated schemes 25 % share of contribution is borne by the State Govt. from the Agril. Plan grants. It is expected that the total expenditure over I.C.A R. schemes will be Rs. 109.00 lakhs during 84-85.

5. Miscellaneous schemes.

There are a few miscellaneous schemes which are financed from different agencies. Such types of schemes include Cymmit grants, Ford Foundation, PL-480 financed by the American Govt,. Biogas Project financed by the Govt of India and other schemes like N.S.S. It is expected that Rs. 10.24 lakhs will be incurred on miscellaenous schemes during 1984-85.

The details of expenditure and receipts for all the Non-Plan, Plan, ICAR Misc. schemes are given here under for ready reference :

ABSTRACT
PART-I—NON-PLAN
A AGRICULTURE

Sl. No.	Name of the Units.	Accounts, 1983-84	Budget Estimate, 1984-85	Revised Estimates, 1984-85	Budget Estimates, 1985-86
1.	R.A.U. Headquarters Unit	66,32,777	90,45,450	1,01,71,915	1,52,97,050
2.	Sugarcane Resh, Institute, Pusa.	42,84,758 25,677 43,10,435	52,85,200	54,00,820	52,88,660
3.	B.A.C., Sabour	1,14,28,064	1 28,73,730	1,27,06,620	1,37,98,070
4.	A.R.I , Patna	47,31,907	58,43,790	60,61,645	60,07,310
5.	T.C.A., Dholi	35,72,348	48,43,820	45,03,520	44,33,930
6.	B.V.C. Patna PIU & V.C. Cell	2,46,237	3,60,300	3,78,680	3,74,580
7.	Executive Engg. Pusa & Dholi	2,36,398	22,00,000	7,50,000	12,00,000
8.	Executive Engg (a) Patna (b) Sabour	1,87,660	10,00,000	5,95,000	6,95,000
9.	College of Home Science	89,352	2,15,000	1,89,660	4,82,630
10.	College of Basic Science	8,42583	10,25,000	9,96.100	14,77,880
	Total—Agril. Non-Plan	3,22,77,761	4,26,92,290	4,17,54,030	4,90,55 110

ABSTRACT PART-I NON-PLAN
B. ANIMAL HUSBANDRY

1.	B.V.C. Patna	36,70,074	48,89,300	45,95,570	49,01,570
2.	Livestock Unit, Pusa	15,23,573 13,730 15,37,303	19,58,700	18,00,600	17,85,760
3.	Executive Engg. Pusa & Patna	1,55,996	6,65,000	4,30,000	4,30,000
4.	Lump provision for Bonus	—	—	1,50.000	1,50,000
	Total—B-A.H. Non-Plan	53,64.273	74,93,000	69,76,170	72,67,830
	Total—A+B-Non-Plan	3,76,42,033	5,01,85,290	4,87,30,200	5,63,22,440

ABSTRACT

Estimates of Expenditure Part-II (A) Agriculture-Plan

Budget Estimates—1985-86

Sl. No.	Name of Schemes	Actuals 1983-84	Budget Estimates 1984-85	Revised Estimates 1984-85	Budget Estimates 1985-86
		Rs.	Rs.	Rs.	Rs.
1.	Strengthening of RAU Headquarters	75,740	2,95,000	3,11,110	54,40,000
2.	Strengthening of S.R.I., Pusa	—	—	—	12,79,640
3.	Strengthening of A.R.I., Patna	—	—	—	3,97,680
4.	Strengthening of T.C.A., Dholi	—	—	—	5,00,000
5.	Strengthening of B.A.C., Sabour	—	—	—	7,97,830
6.	Strengthening of B.V.C., Patna	—	1,70,000	1,78,740	62,83,540
7.	A.P.R.I./Cattle Farm, Pusa	—	—	—	3,60,000
8.	College of Home Science, Pusa	1,42,027	2,75,000	2,95,240	7,40,240
9.	College of Agril. Engineering	—	1,12,000	12,11,790	46,04,980
10.	N.A E.P.	—	—	—	5,00,000
11.	College of Basic Science and Humanities, Pusa	2,23,523	4,16,980	4,29,040	7,59,960
12.	Home Science Hostel, Pusa	—	56.000	61,230	4,09,940
13.	Department of Nematology	—	39.340	42,610	Merged with Non-Plan
14.	Department of Vegetable and Floriculture	1,04,183	1,25,740	1,35,400	–do–
15.	Department of P.B.G.	—	46,180	49,540	–do–
16.	Department of Soil Sc. (Radition)	29,178	34,600	37,440	–do–
17.	Department of Soil Survey BAC, Sabour	1,91,715	2,10,000	2,15,250	–do–
18.	Department of Agronomy RAU, Headquarter	—	35,000	37,000	–do–
19.	Department of Plant Pathology RAU, Headquarters	—	38,100	40,790	–do–

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A AGRICULTURE

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	Total—B-A.H. Non-Plan	53,64.273	74,93,000	69,76,170	72,67,830
	Total—A+B-Non-Plan	3,76,42,033	5,01,85,290	4,87,30,200	5,63,22,440

		Rs.	Rs.	Rs.	Rs.
20.	Department of Agro-economics, ARI, Patna	—	35,000	37,990	-do-
21.	Directorate of Extension Edn. RAU, Headquarters	1,14,138	1,74,570	1,81,040	-do-
22.	Strengthening of University Library	1,53,080	7,61,790	7 73,390	-do-
23.	Development of Central work-shop, RAU, Headquartes	759	1,23,050	1,28,360	-do-
24.	Engineering Cell RAU, Hqrs.	5,40,408	4,50,500	4,42,750	-do-
25.	Development of Agril & Vety. farms	22,149	29,370	32,540	-do-
26.	Security Wing, RAU, Hqrs.	3,82,785	3,76,500	3,91,560	-do-
27.	Health Centre, RAU, Hqrs.	1,08,923	4,01,500	4,12,900	-do-
28.	Campus Develop.	94,678	1,30,000	1,41,000	-do-
29.	Students welfare Pusa, Hqrs.	5,39,328	4,60,000	5,06,000	-do-
30.	Students welfare Pusa/Patna	60,581	1 52,000	1,66,570	-do-
31.	Students welfare B.V.C., Patna.	81,478	1,20,400	1,41,000	-do-
32.	Students welfare, T.C.A., Dholi.	9,909	10,000	10,000	-do-
33.	Students welfare, B A.C., Sabour.	6,242	54,400	54,400	-do-
34.	Students welfeare CBS & H. Pusa	—	28,000	28,000	-do-
35.	Students welfare, Home Sc. College.	—	15,600	15,600	-do-
36.	V.C. Cell, BVC, Patna (morged with Engg. Cell H Qrs.).	—	1,45,160	1,50,000	-do-
	Bank Loan.	—	5,00,000	5,00,000	-do-
37.	Executive Engg Pusa/Patna.	16,13,457	5,09,020	6,47,920	-do-
	Total :—	44,94,281	75,00,000	78,06,810	2,20,73,810
	Add : State share of ICAR Scheme	12,42,815	15,00,000	15,00,000	—
	Grand Total :—	57,37,096	90,00,000	93,06,810	2,20,73,810

ABSTRACT

ESTIMATES OF EXPENDITURE

Part-11 (B) Agriculture/Veterinary-Planbud Est-85-86

Sl. No.	Name of the Scheme & Primary Units of expenditure	Accounts 1983-84	Budget Estimate 1984-85	Revised Estimate 1985-84	Budget Estimate 1985-86
1.	New Faculty National Institute of Horticulture, B.A.C., Sabour	—	—	—	32,87,740
2.	Sanjay Gandhi Institute of Dairy Science & Technology, Pusa	1,93,065	1,60,00,000	2,60,400	90,96,320
3.	College of Fisheries	25,671	19.00,000	10,00,000	25,97,700
	Grand Total :—	2,18.736	1,70,00,000	3.60,400	1,49,81.820

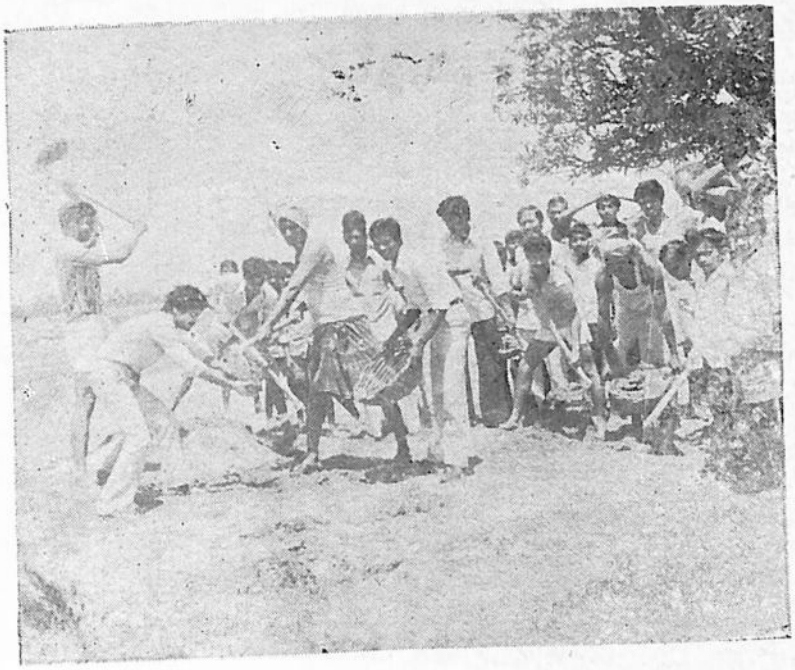
ABSTRACT

Part-111—I.C.A.R.

Sl. No.	Name of the Units.	Accounts 1983-84	Budget Estimates 1984-85	Revised Estimates 1984-85	Budget Estimates 1985-86
	(A) RESEACH SCHEMES :—				
1.	R.A.U. Headquarters	8,94,9?8 41,868	45,99,300	17,95,320	19,03,050
		9,36,856			
2.	S.R.I , Pusa	1,66.227 374	2,65,630	2,85,230	2,78,110
		1,66,601			
3.	T.C.A., Dholi	22,81,641	24,70,890	26,49.070	26,17,020
4.	A.R.I., Patna	8,38,953	11,69,200	18,15,160	17,10,800
5.	B.A.C , Sabour	27,58,097	37,58,360	56.60,950	60.78,800
6.	B.V.C., Patna	1,10,066	2,71,380	1,97,380	2,05,400
7.	Executive Engg. Patna	34.131	—	—	—
	Total : Research Scheme	71,26,347	1,25,34,760	1,24,03,110	1,27,93,270
	Less : University share of the expenditure transferred to Agril. Plan (—)	12.42,815	15,00,000	15,00,000	20,00,000
	Net : I.C.A.R.	58,83,532	1,10,34,760	1,09,03,110	1,07,93,270
	share of Expd. (B)IDA Education Programme Credit No. 342-IN (—)	12,470	21,90,000	—	—
	Total : I.C A.R.	58,71,062	1,32,24,760	1,09,03,110	1,07 93,270

MISCELLANEOUS SCHEME

Sl. No.	Name of the Schemes	Accounts. 1983-84	Budget Estimatas, 1984-85	Revised Estimates, 1984-85	Budget Estimates, 1985-86
1.	Cymmit Grants ¾ 100 %	4,859	30,000	35,000	9,410
2.	P. L. 480	73,251	36,600	38,520	5,000
3.	Ford Foundation-I	3,75,605	1,00,000	—	—
4.	Ford Foundation-II	—	1,00,000	1,05,900	30,000
5.	N.S.S.	8,952	20,000	20,000	50,000
6.	Stipend for V.L.Ws	2,67,779	2,25,000	2,26,650	2,25,000
7.	National Project for Biogas Development, Govarnment of India.	—	—	5,25,400	2,95,000
8.	Scheme for Development of Sports & games for Govt. of Bihar Education Department.	—	10,000	10,000	15,000
9.	Research Fellowship from Directorate of Potash.	6,994	8,400	8,300	6,000
10.	Farmacokenitics science & Technological Research.	39,129	Included in abstract of the ICAR of BVC, Patna	53,930	53,480
	Total : Misc. Scheme	7,76,569	5,30,000	10,24,000	6,80,890



Students at N. S. S. Camp.

Leg horn in Poultry farm.