Government of Bengal

Department of Agriculture

Annual Report of the Department of Agriculture Bengal

For the year

1941-42

PART II

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TABLE OF CONTENTS.

Part II.

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Errata.

In the headline of paragraph 6 on page 2 of the Annual Report of the Department of Agriculture, Bengal, for the year 1941-42, Part 1, *for* the second word "Education" *read* "Engineering".

Department of Agriculture, Bengal.

Annual Report of the Department of Agriculture, Bengal, for the year 1941-42.

PART II.

Annual Report of the Economic Botanist, Bengal, for the year 1941-42.

Receipts.—Total receipts from the sale-proceeds of the section including the Rice Research and the Horticultural stations were Rs. 4,713-6-9.

Research schemes financed by the Imperial Council of Agricultural Research, India.

The Rice Research Scheme, Bengal at Chinsura and Bankura was extended for a further period of two years, viz., 1942-43 and 1943-44.

The scheme for the Regional Survey of Sugarcane Borers, Bengal, and the Horticultural Scheme, Krishnagar, were discontinued with effect from the 30th November 1941 and the 28th February 1942, respectively.

Investigation.

Researches on the improvement of paddies, wheat, pulse, and fruits were conducted by the section, the first one being the most important item of work.

Researches on diseases and pests of some crop plants and their control are being continued. A brief report of the investigations carried by the section are given below under sub-headings—Botanical—Mycological—Entomological:—

Botanical investigations.—Paddies.—Research works on paddy were conducted at the following stations:—

1. Dacca Farm.
2. Barisal Farm.
3. Chinsura and Gosaba Farms.
4. Bankura and Suri Farms.
5. Other District Farms.

Dacca Farm.—Investigations on highland Aus, transplated Aman and broadcast Aman (medium deep-water paddy) varieties were continued.

Highland aus.

Nine hundred and thirty-one classified purelines, 20 selected strains and four fixed hybrids were grown. Two varietal tests were grown. Two varietal tests were conducted during the year. The experiment to study the performance of old seeds of Kataktara was repeated. The results were more or less the same as in the case of new seeds.

Transplanted aman.

The aman crop, in general, suffered very badly from the attack of stem borers during early stage of growth and almost all the experiments with very few exceptions were damaged.

Purelines.—The purelines, both classified and unclassified, were grown as usual.

Three varietal tests were undertaken of which two were badly damaged and given up.

A complex cultural experiment was carried out. Other experiments on weeding and double and treble transplantations were undertaken.

Genetical studies on the inheritance of size of plant and distribution of anthocyanin pigment in different parts of the plant body were continued.

Broadcast aman (deep-water paddy).

Fifteen varieties collected from Dacca and 11 from Faridpur were grown during the year. Nine varieties of deep-water aus paddy collected from Faridpur and Barisal were also grown. There were 379 old and 26 new pureline cultures. One varietal test and a uniformity trial were conducted this year.

Barisal Farm.—The work on the improvement of balam paddies was continued here.

All the purelines and selected strains were grown during the year under report for further studies. Only the yield trial was conducted with twelve treatments.

Chinsura (Rice Research Station) and Gosaba Farms:—

I. *Botanical study and isolation of purelines.*—Botanical study and isolation of purelines were continued. There were 1,919 cultures of which 1,903 were established purelines.

II. The following items of work were repeated during the year: Combined varietal and Nitrogen and Phosphate experiments; experiment to study the effect of green manure with Dhaincha; experiment to study the effect of age of seedling and date of planting on the yield of rice; experiment to study the effect of irrigation; experiment to study the effect of "Thanji" (charophyte weed), etc.

III. *Hybridization.*—Eight economic crosses of varying generations are being studied. Eight homozygous types of different crosses (including Latisail X Blue Rose) have been put to preliminary yield test during this season.

IV. *Selection.*—Two quasi-factorial experiments with partially balanced arrangements have been conducted during this season with 49 strains of Patnai and 81 aman strains other than Patnai varieties.

V. *Varietal tests.*—Six varietal tests at Chinsura Farm and two varietal tests at Gosaba Farm have been conducted during this season.

Bankura (Rice Research Station) and Suri Farms:—

I. *Botanical study and isolation of purelines.*—Botanical study and isolation of purelines were continued. The total number of cultures during the year was 1,240, of which, 1,206 were established purelines.

The following items of work were repeated during the year: Complex manurial experiment—to study the effect of Nitrogen and Phosphate; Complex cultural experiment to study the effect of dibbling and transplanting; Complex cultural experiment to study the effect of weeding and hoeing, etc.

II. *Hybridization work.*—There were as many as five races of hybrid progenies at Bankura and Suri under study.

The selection work is still in progress at both the stations, Bankura and Suri.

III. *Selection work (Suri).*—This year there were only two selection series.

IV. Four preliminary yield trials (Bankura) on four situations were undertaken.

V. Scented paddy test at Bankura was repeated.

VI. Seven Field scale varietal trials in cultivator's plots were started.

Other District Farms.—Aus and aman trials were carried on in the other district farms.

Wheat.—Experiments were conducted on wheat at the four district farms, namely Rajshahi, Pabna, Berhampore and Malda with 40 purelines.

The Pusa varieties of wheat gave better yields than the other varieties at Rajshahi and Pabna. At Berhampore Jamali 24 fared best of all.

Fruit Culture.

Fruit culture.—Besides the experimental work on fruit culture carried out as usual at the Horticultural Station, Krishnagar, similar works were also undertaken at the following farms:—

Dacca Farm.—The work in connection with the fruit culture was carried on as usual.

Tung oil (Aleurites Montana).—There are 48 plants in the plantation three years old. Two of these plants flowered on 31st March 1942. The growth of the plants is very promising. Arrangements have been made to raise 2,000 seedlings for distribution.

Bankura Farm.—More grafts and gooties are added to the orchard in addition to those of the last year.

The growth of the citrus plants has been very promising. Pomelo and seedless Kagzi produced good fruits. The size of the fruits of both of the varieties has been very satisfactory.

Suri Farm.—The third year of experiment.

Malda Farm.—During the year a small orchard on the tank bank had been planted.

Barisal Farm.—Gooties of seedless Kagzi have been planted on the tank bank.

Mycology.

Disease.—Fifteen diseases were dealt with on both Kharif and Rabi crops.

Selection of sugarcane setts.—About 3½ lakhs setts were selected.

Original Investigations:—

(*i*) *A new parasitic disease of sugarcane in Bengal.*—Experiments on control measures of *Æginetia Pedunculata* disease of sugarcane was being carried on.

(*ii*) *Bacterial wilt disease of tomato.*—Further work in the control of the wilt is being continued on the basis of results obtained last year.

(*iii*) *Helminthosporium disease of rice.*—Experiments on control measures were being continued.

Entomology.

I. **General observation of crop pest.**—Serious attacks of pests were reported from and observed in different districts of the province and necessary steps were taken to combat them as far as possible.

II. **Original Investigations:—**

1. Experiments on sugarcane pests:—

(*a*) Varietal tests for resistance to borers.

(*b*) Incidence of borers and their life-cycle.

(*c*) Economic value of the recommended borer control measures.

2. Study of the parasites of sugarcane borers.

3. Study of the life-history of ladybird beetles and the possibility of using them as predators on mustard aphids.

4. Study of the Agrotis sp. damaging flax crop.

5. Study on the Pea-stem fly (Agronyzidae).

S. HEDAYETULLAH,
Economic Botanist, Bengal.

Annual report of the Fibre Expert to the Government of Bengal for the year 1941-42.

Work.—The work on the improvement of fodder crops was transferred during the year to this section from that of the Second Economic Botanist, Bengal, and will be started from the next Kharif season.

Flax.—Three flax schemes were also in operation under the supervision of the section.

Hibiscus Sabdariffa var. Altissima.—This has a bright future but search for early types having failed among existing ones, breeding work has been resorted to, to get types having the desired characters.

Sunn Hemp.—Yield tests conducted at Dacca Farm between Cawnpore 12 and Madaripur type did not show any marked difference between the two. Plans have been drawn up for more intensive and systematic work with this important crop from the next year.

Sisal and other Agave fibres.—The demand for this has increased lately due to unavailability of Manilla hemp from the Phillipines. Suckers and bulbills were requisitioned from the section and were supplied.

Experiments have been started during the year to find the suitability of different Agave types under different climatic conditions. Improvements on the problem of extraction also received due attention.

Rhea.—Large quantities of seed have been collected from the Russian strains for supply to the intending cultivators. In Rangpur district there was some interest noticed provided the problem of marketing would be solved.

Bacteriological work.—The Bacteriological Assistant devoted mostly to the study of milk bacteria in milk samples and milk utensils from different sources. As he was fully engaged with the above work, problems relating to fibre crops could not be taken up during the year.

Scheme.—(A) About 49 maunds of fibre extracted from last year's crop have been sent to London for sale and 14 maunds have been supplied to the Government of India for experiments.

(B) The Government of India flax scheme was continued from the previous year, for processing the straw only. About 43 maunds of straight fibre have been extracted and handed to the Government of India with 14 maunds from Provincial stock as stated above. The scheme terminated with the completion of the work in December 1941.

(C) The Supply Department, Government of India, imported 15 tons of flax seed from New Zealand for growing in Bengal. The major part of the seed on arrival showed poor germination and the stipulated acreage of 280 acres could not be sown with this seed. About 190 acres were, however, sown under this scheme by adding the surplus seed from the Provincial stock. More than 75 per cent. of the crop sown has been successful and processing will be done in due course.

E. A. R. BANERJEE,
Assistant Fibre Expert, Bengal,
in charge of Fibre Section.

Annual Report of the Second Economic Botanist to the Government of Bengal for the year 1941-42.

The crops dealt with in my section are cotton, oil-seeds, pulses, millets and fodders.

(a) Cotton.

1. **Long staple cottons.**—Trial of cotton cultivation in six centres in the districts of Malda, Noakhali, Nadia, Jessore, Murshidabad and Rangpur was made. Dacca 289F and Dacca Parbhani were the varieties tried, of which Dacca 289F occupied the major area. The final area under Dacca 289F was about 100 bighas in all the centres and an outturn of about 200 maunds of seed-cotton of this variety was obtained, *i.e.*, about 2 maunds per bigha or six maunds per acre. The variety Dacca Parbhani behaved well in all the districts and gave an outturn varying from 10 to 12 maunds per acre.

Work on cotton in the Dacca Farm.—Besides experimental work fresh seeds of the following Egyptian (Sea Islands) types were got from Sind and tried to find out whether they resisted anthracnose attack, Ashmoni, Boss III, and Sea Island. Though these varieties were free from anthracnose attack in Sind, all were damaged by the disease due to the high humid condition in Bengal. Late sowing in August lessened the attack; but the plants were stunted in growth.

From one experiment, it is found that the yields of D.5, D.7, D.3 and D.8 are good, Dacca Parbhani (D.5) ranking as first with regard to yield. Dacca 289F did not give the expected yield as this variety suffered most due to the unfavourable weather conditions.

2. **Short staple cotton.**—The work on this cotton is done in Rangamati financed entirely by the Indian Central Cotton Committee and the full report about it has been sent to the Indian Central Cotton Committee, Bombay.

(b) Oil-seeds.

Among the oil-seeds, the crops that are investigated in detail at present are groundnut, mustard, linseed and castor.

Mustard—Mustard Multiplication Scheme.—About 500 bighas were put under the crop in 4 centres and an outturn of over 1,200 maunds was obtained from the area. Among the 4 centres Rangpur and Jessore were best.

Linseed—Results of multiplication of linseed at Berhampore Farm:—

Name of variety.	Date of sowing.	Date of harvest.	Area sown.	Total outturn.	Outturn per acre.
			N. K. C.	Mds. srs. ch.	Mds. srs. ch.
Linseed B 58 ..	26-10-1941	10-2-1942	1 0 0	2 0 0	6 0 0
Linseed PH 52 ..	26-10-1941	27-2-1942	1 0 0	1 37 8	5 32 0
Linseed PH 6 ..	26-10-1941	2-3-1942	1 0 0	0 38 8	2 35 8

(c) Pulses.

Among the pulses the crops that are investigated at present are Rahar, Soyabean, Lentil, Mung and Gram.

Lentil, Gram and Mung were tried in the following farms and their yield results with the variety tried are given below:—

	Name of farm.	Name of variety.	Yield per acre.
			Mds. srs. ch.
3. Lentil—			
	Dacca ..	Lentil No. 5	.. 9 0 0
	Pabna ..	Lentil HYb. I. P.	.. 5 16 0
4. Mung—			
	Dacca ..	Mung No. 18	.. 9 12 1
		Sona Mung ..	.. 4 3 5
		Mung I. P. 18	.. 3 7 0
		Jain Cuttack Mung	.. 3 7 0
5. Gram—			
	Pabna ..	Gram P. 58 ..	.. 9 0 0
		Gram S. 4 ..	.. 11 0 0
	Malda ..	Gram Sabbalpur	.. 10 7 8
		Gram S. 4 ..	.. 19 7 8

P. J. GREGORY,

Second Economic Botanist to the Government of Bengal.

Annual Report of the Agricultural Chemist, Bengal, for the year 1941-42.

In addition to the regular work the following temporary schemes were taken up:—

(*i*) More Irrigation Scheme Survey.

(*ii*) Survey of Red-rot of Sugarcane in Bengal.

(*iii*) Soil Survey.

The three schemes (*a*) Animal Nutrition Scheme, (*b*) Study of Soil problems in Bengal, (*c*) Sugarcane Seedling Testing Scheme, Dacca Farm, financed by the Imperial Council of Agricultural Research were continued as usual.

Sugarcane.

Supply of seeds.—A total supply of 14,38,550 cuttings was made from Departmental farms besides 2,20,200 cuttings of Co.421 from the Jahangirpur Co-operative Farm, Krishnagar, through Departmental supervision.

Field trials and experimental work were continued.

Red-rot survey of sugarcane in Bengal.—A survey was conducted in Birbhum (whole district), Murshidabad (Kandi subdivision), and Dinajpur (Thakurgaon subdivision). The results of the survey are briefly summarised below:—

(*i*) No less than 80 per cent. of the area under cane in Birbhum and Thakurgaon was found to be under the grip of red-rot or borer.

(*ii*) 15 to 20 per cent. of the sugarcane area was found heavily damaged (50 per cent. and above) which failed to give any yield.

(*iii*) In Sadar and Rampurhat subdivisions of the district of Birbhum the damage of canes was due almost solely to red-rot. Very similar was the case in the adjoining Kandi subdivision in the district of Murshidabad. But it was a bit different in the Thakurgaon subdivision in the district of Dinajpur. Here the borers also contributed a great share of the damage. In fact, it was almost half and half as against red-rot. Thus it may be said that borers and red-rot were equally responsible for the damage in the Thakurgaon subdivision. The areas have been classified in 3 classes, according to the nature of the damage, (*a*) red-rot primary, (*b*) red-rot secondary, and (*c*) borers.

Tobacco.

Supply of improved seeds.—A total supply of 2,830 tolas was made as against 2,020 tolas in the previous year.

Virginia tobacco.—Besides manurial experiments, a demonstration was made to grow Virginia tobacco in the cultivators fields in order to show the prospect of its cultivation in Bengal. The results showed the scheme to be an economic proposition.

Bidi tobacco.—To explore the possibilities of its cultivation in Bengal Babu Heramba Lal Roy Choudhury was sent on short deputation in Bombay.

Cigar-making.—About 43 maunds of tobacco leaves were made with hand-made cigars of various brands. The sale proceeds amounted to Rs. 1,783-2-3 as against Rs. 1,200-12-3 in the previous year.

Soil survey.

More irrgation scheme.—The work was continued with a view to ascertain whether there was any salt in the sub-soil in the area to be irrigated which might be brought to the surface by irrigation so as to cause deterioration of the crop bearing stratum.

Soil survey.—The object of the survey covers both agronomic and genetical aspects but for the present it has been confined only to the agronomic aspects.

Progress of work.—During the year under report 6 squares lying between 23°—45′ and 24°—0 N, and 90°—20′ and 90°—30′ E with an area of about 180 square miles had been surveyed and classification of lands shown in the Map. (Map enclosed.)

The decomposition of organic matter in Compost at different pH.—The work was continued with the Dacca Farm soil at different pH and at a uniform moisture content in the pot culture.

Khanya soil (Bankura).—It is a sticky clay soil found extensively in the Bankura district. From the preliminary examination the soil appears to be a kind of black alkali soil. The remedy for this type of soil is the application of Gypsum.

Influence of lime and bone on the liberation of potash.—In preceding years a study was made on the effect of lime and bone on the native potash of the Dacca red soil (acid). This year the work was continued with Rajshahi soil (alkaline). The results show that the application of lime along with bone to Rajshahi soil which is alkaline in reaction and contains 3.59 per cent. CaO has no effect on the liberation of potash.

Programme of work for the next year 1942-43.

1. Continuation of soil survey in the Dacca district.
2. Study of the decomposition of organic matter in the soil.
3. Study of the decomposition of agricultural wastes in the preparation of composts.
4. Influence of lime and bone in the presence of organic manures on the liberation of phosphates in the soil.
5. Nutrition of paddy.
6. Fixation of physico-chemical standards of ghee from cow's milk under the various methods.
7. Manurial experiments on field crops at Dacca Farm and elsewhere—to be continued.
8. *Sugarcane.*—Critical studies of the promising varieties and their culture technique—to be continued.
9. *Tobacco.*—To develop a suitable technique for the cultivation and curing of cigarette and Bidi tobacco in Bengal.

GOSTABEHARI PAL,
Agricultural Chemist, Bengal.

Schemes financed by the Imperial Council of Agricultural Research.

I. **Animal Nutrition Section (1941-42).**—The following work was conducted during the year:—

1. The feeding values of the rice straw of the saline tracts of Khepupara, Barisal.

Mineral balance.—There is negative balance for lime in the case of all. Til cake is fairly rich in lime, at the same time its oxalic acid content is also very high. This certainly accounts for its negative lime balance. In the case of others there is a definite lime deficiency. Regarding phosphates, except rice kura and mustard cake combinations, others show negative balance generally. Except soda and magnesia the tendency of negative balance is very great in all components. It is difficult to account for negative balance in the case of chlorine which was supplied in large quantity through common salt.

2. *The feeding value of rice straw from Diamond Harbour Saline tract.*—The feeding and metabolic tests were conducted during 1941-42. The analytical work is still in progress.

3. The feeding value of Napier grass of different fractions was carried out.

4. *Rice and rice bye-products.*—The estimation of phytine and its proportions with respect to total phosphorus has been done.

II. **Physical section for the studies of soil problems in Bengal.**—The work consists mainly of (1) classification of Bengal soils, and (2) dynamometric on soil resistance:—

(1) Classification of the Bengal soils on the basis of their physico-chemical properties shows that these soils fall under two groups. The laterite and the red soils fall under one head and the non-laterities fall under another. In this connection 14 typical soils from different parts of the province were examined.

(2) In connection with the dynamometric studies on soil resistance the variations due to the bullocks, the ploughmen, the plough, were found out. It has been found that variations due to these factors and their interactions are all significant except in the case of interactions between the dates and the ploughmen, and bullock and ploughmen.

III. **Sugarcane Seedling Testing Station (Dacca Farm):—**

(*a*) Total number of varieties under trial—27.

(*b*) *Selection from the Testing Station.*—Nine varieties have been selected for preliminary trial at the main Dacca Farm.

(*c*) *Pre-final trial at the Dacca Farm.*—Ten varieties have been tried out of which 3, viz., Co. 453, Co. 451, and Co. 546 have been selected for final trial.

(*d*) *New varieties received from Coimbatore.*—Thirteen varieties, viz., Co. 470 to Co. 476 and Co. 562 to Co. 566, and P.O.J. 2961 have been received during the year under report.

Annual Report of the Deputy Director of Agriculture, Eastern Circle, for the year 1941-42.

Season.—The rainfall was rather erratic during the year. Serious damage was caused by cyclone in the districts of Bakarganj and Noakhali.

District work.—The work of the district farms continued as in previous years.

Union Board Farms and Demonstration Centres.—During the year under report 76 Union Board Farms and 226 Demonstration Centres worked in the Eastern Circle. The average yield of aus and aman paddies in these farms and centres was 17 maunds 27 seers and 20 maunds 23 seers per acre, respectively. The quantity of compost and silage made was 38, 196 maunds and 551 maunds, respectively.

Free supply.—Two hundred and forty-nine maunds of mustard and 97½ maunds of groundnut seeds were supplied free to the cultivators during the year.

Exhibitions.—Three exhibitions were held in this circle in which an amount of Rs. 1,750 was spent on account of contributions and prizes.

Propaganda.—As many as 70 lectures were delivered by the staff which were attended by 36,240 men. A number of 1,278 cultivators visited the different farms of this circle during the year.

P. C. CHAUDHURI,
Deputy Director of Agriculture, Eastern Circle.

Annual Report of the Deputy Director of Agriculture, Western Circle, for the year 1941-42.

Demonstration of silo making, preparation of artificial farmyard manure and water hyacinth compost, and use of departmentally recommended improved implements were carried out. There were 61 Union Board Farms and 167 Demonstration Centres.

II. **Subsidy on seed.**—Total amount spent on premium is Rs. 877-7-3.

III. **Exhibitions.**—Twenty-two exhibitions were held in this circle. Rupees 825 was spent for the contribution to exhibitions and Rs. 2,200 for the distribution of prizes to the best exhibits.

IV. Forty-three thousand, three hundred and seventy maunds of artificial farmyard manure were prepared in the districts and 4,151 maunds of silage.

V. **Cultivation of Napier and other fodder crops.**—Demonstration was carried out as usual.

VI. **Miscellaneous demonstration.**—The demonstration under the expert officers with their special crops were carried out in the selected districts in the circle. Details will be found in their reports.

Private seed farms.—There were 81 private farms working in this circle.

A. M. AHMAD,
Deputy Director of Agriculture, Western Circle.

Annual Report of the Deputy Director of Agriculture, Northern Circle, for the year 1941-42.

Season.—The weather was on the whole favourable for Kharif crops and unfavourable for Rabi crops.

Insect pests and red-rot disease were responsible for damage to sugarcane. Damage was also caused to paddy in Rajshahi and jute in Pabna by some insects.

District Farms.—In all 1,628 maunds 23 seers of paddy were raised, 623 maunds 20 seers Napier grass cuttings produced of which 16 maunds 30 seers planted in the farms, 105 maunds 30 seers sold to interested parties and 504 maunds distributed free for demonstration. 9,792 maunds 20 seers of artificial farmyard manure and water hyacinth compost were manufactured in addition to 1,836 maunds 24 seers of fodder silaged.

Union Board Farms and Demonstration Centres.—There were altogether 56 (29 new+27 old) Union Board Farms and 170 Demonstration Centres in the rural areas in this circle during the year.

During the year 1,313·87 acres were put under departmental paddy and in all 27,084 maunds 32 seers paddy were raised. 95,009 maunds artificial farmyard manure and 11,937 maunds of water hyacinth compost were manufactured and 5,134 maunds 24 seers of silage made in the centres.

Private farms.—Number of private farms are increasing and rose to 81 during the year under report.

Premium system.—During the year a sum of Rs. 485-3 was paid as premium to the seed growers for storage and sale of pure and good seeds.

The experts also carried special demonstrations.

Exhibition and shows in which department participated.—Besides the flower show in Darjeeling held in May 1941, the department participated in six more exhibitions in the circle.

2,630 cultivators visited the Government farms in this circle during the year.

Organisation of Sugarcane Growers' Co-operative Societies.—Work in both the centres of Gopalpur and Setabganj continued during the year. The people were gradually adopting improved methods of cultivations, specially spacing.

F. I. WAHEED,
Deputy Director of Agriculture, Northern Circle.

Annual Report of the Live-Stock Expert, Bengal, for the year 1941-42.

1. **Progress of work of live-stock improvement.**—The Cattle Improvement Scheme was extended to the district of Jessore. This increased the number of the districts that are under the scheme to 23.

There were 2,498 Government bulls, approved private bulls and approved progeny of Government bulls at stud on 31st March, 1942.

A total of 1,19,053 services was recorded to have been given by the Government and other approved bulls. This figure is very much lower than the number actually given, as many services remained unrecorded.

The staff castrated 1,61,050 scrub bulls which is 62 per cent. higher than the record total of last year and more than three times the figure for 1939-40.

It has been estimated that 72,000 improved progeny were born during the year. Of these 57,180 were actually tattooed.

With the help of the staff of Civil Veterinary Department, Bengal, the district staff arranged the immunization of 17,889 improved progeny.

2. **Progress of work of improvement of poultry.**—In all 11,715 eggs and 293 cocks were distributed free to the cultivators and 2,585 eggs and 296 birds were sold for breeding.

The number of Poultry Demonstration Centre was 248 on 31st March 1942, when there were 2,453 improved Government cocks in use in the villages.

3. **Spread of fodder growing and silage making.**—A total of 525 maunds of Jowar, Maize and Cowpeas seeds and 756½ maunds of Napire grass cuttings were distributed free to the cultivators.

The staff were successful in increasing the number of silo pits made to 234 as against 159 last year and 83 during the year before last.

4. **Shows, exhibitions and propaganda.**—The district staff themselves organised 132 one-day bull and progeny shows and participated in 24 exhibitions organised by other bodies. The staff delivered a total of 1,214 ordinary lectures and 37 magic lantern or cinematograph lectures.

5. **Teaching.**—The Muslim Graduates and the Assistant Live-Stock Officer trainees of last year completed their training. Three students of B. K. Agricultural Institute, Rajshahi, joined for further courses of their practical instructions.

6. **Research—Animal Husbandry.**—A feeding experiment was begun. Work at the evolution of a new breed of poultry by the crossing of Chittagong and R.I.R. breeds was started afresh and is being continued.

The birth weight of the chicks as affected by the weight of the egg and breed was studied in R.I.R., W.L., Chittagong, Deshi, and F_1 R.I.R. ♂×Chittagong ♀.

L. C. SIKKA,

Live-Stock Expert, Bengal.

Annual Report of the Cattle Breeding Section, Dacca Farm, for the year 1941-42.

Stock.—The strength of the stock at the beginning and close of the year was as follows:—

	1st April 1941.	31st March 1942.
Harriana ...	97	87
Bengal Harrian cross ...	55	60
Murrah buffaloes ...	33	46
Total ...	185	193

Health.—Except for an outbreak of foot and mouth disease early in the year the stock enjoyed fairly satisfactory health.

Milk production.—A total of 138,285¾ lbs. milk was produced during the year. The average daily milk yield per cow for the three herds is given below:—

Herd.	Average number of milking days.	Average number of dry days.	Average yield per cow. per day for	
			Milking period.	Overall.
Harriana cows ...	258	202	7·5 lbs.	3·3
Deshi × Harriana cow ...	268	127	9·7 lbs.	6·1
Murrah buffaloes ...	274	99	13·5 lbs.	9·2

The milk yield is lower than normal because many cows dried off suddenly due to the attack of foot and mouth disease. The production of Harriana cows is the lowest because nearly all of them being purchased animals are unweaned and the above figures do not include the milk sucked by the calf.

Disposal of milk, butter, etc.—A total of 1,133⅝ lbs. butter and 297 15/16 lbs. ghee was produced and disposed of by sale.

Issue of bulls.—Ten bulls bred at the farm were issued free for stud in the district of Dacca.

About 12,000 maunds of farmyard manure and 1,100 maunds of artificial manure were supplied to the Dacca Farm.

L. C. SIKKA,
Live-Stock Expert, Bengal.

Annual Report of the Poultry Section, Dacca Farm, for the year 1941-42.

Flock.—The strength of the flock at the beginning and the close of the year was as follows:—

	1st April 1941.	31st March 1942.
Imported breeds (R.I.R., W.L., Black Minor, Light Sussex)	... 275	423
Crossbreeds	... 297	288
Chittagong	... 27	58
Deshi and game	... 20	72
Ducks	... 44	36
Others	... 30	35
Total	... 693	912

Health.—Except for a minor outbreak of fowlpox amongst the young stock which was quickly brought under control by segregation and prophylactic vaccination the flock remained practically free from all contagious or infectious diseases. An abnormally high rate of mortality amongst the newly hatched chicks was experienced. The exact cause of this remained undiagonised. In general, the mortality was negligible in the indigenous breeds—Chittagong, Deshi or game—but was equally high in the imported breeds—R.I.R. and W.L., or the Chittagong × R.I.R. crosses.

Egg production.—A total of 8,985 eggs were laid. The average annual *per capita* egg production by breeds is tabulated below:—

Breed—	Average number of eggs laid during the year.	Average weight of eggs laid during the year.
R.I.R.	... 114·9	2·05 oz.
White Leghorn	... 112·5	1·90 oz.
Chittagong	... 94·8	1·57 oz.
Deshi	... 40·3	1·45 oz.
R.I.R. × Chittagong cross	... 111·3	1·80 oz.

Issues of eggs and birds for breeding.—A total of 3,371 eggs (sold 1,202, distributed free 2,169) and 346 birds (sold 130, distributed free 216) of improved breeds were issued to the public for breeding.

L. C. SIKKA,
Live-Stock Expert, Bengal.

Annual Report of the Five Poultry Multiplication Centres for the year 1941-42.

Flock.—The strength of flock of each Poultry Multiplication Centre at the beginning and close of the year was as follows:—

Poultry Multiplication Centre.	1st April 1941.	31st March 1942.
Narayanganj	... 375	426
Jamalganj	... 65	428
Comilla	... 163	187
Ranaghat	... 111	327
Midnapore	... 68	123
Total	... 782	1,491

Health.—The flocks at Comilla and Midnapore remained free from all contagious and infectious diseases. However, disease broke out in epidemic form twice at each of the remaining three centres when the casualties were rather heavy.

Egg production and disposal.—The number of eggs laid and issued to public for breeding from each centre are shown below:—

Poultry Multiplication Centre.	Laid.	Sold for breeding.	Distributed free for breeding.
Narayanganj	5,615	380	2,906
Jamalganj ...	6,298	847	2,426
Comilla ...	2,124	...	692
Ranaghat ...	2,527	...	1,671
Midnapore ...	4,032	156	1,851
Total ...	20,596	1,383	9,546

Issue of breeding birds.—The following birds were issued to the public for breeding:—

Poultry Multiplication Centre.	Sold.	Distributed free.
Narayanganj ...	43	37
Jamalganj ...	123	11
Comilla ...	...	14
Midnapore ...	...	15
Total ...	166	77

L. C. SIKKA,
Live-Stock Expert, Bengal.

Annual Report of the Agricultural Engineer, Bengal, for the year 1941-42.

Important irrigation schemes prepared.—Lay-out plan of reservoir and distributory channels for the irrigation scheme of Jessore.

Surveys undertaken.—(*a*) Complete survey of the Chittagong Farm was made out for re-plotting of the existing cultivable lands.

(*b*) Levels taken and alignment made for irrigating the potato fields at Banerhat Tea Estate.

Departmental Types of Implements sold during the year.—

(*a*) Sobkam "A" plough	...	39
(*b*) Sobkam "2" plough	...	201
(*c*) Bengal No. 2 plough	...	30
(*d*) "Amir" plough	...	41
(*e*) "Farm Sobkam" plough	...	2
(*f*) Beam plough	...	1
(*g*) "Dacca" wooden plough	...	391
(*h*) "C" type light plough	...	99
(*i*) "D" type light plough	...	86
(*j*) "B" type Handhoes	...	54
(*k*) U. P. Ridgers	...	1
Total	...	945

Demonstration of improved ploughs.—Demonstration of ploughing was carried out at the Chinsura and Dacca Farms with improved departmental ploughs to show the demonstrators of the respective circle the correct method of ploughing and also explained to them the utility of these ploughs.

B. BANERJEE,
Agricultural Engineer, Bengal.

Annual Report of the Dacca Farm for the year. 1941-42.

Rainfall and character of the season.—The actual rainfall was 78·62 inches in 125 days against a normal of 70·93 inches. The weather was fairly favourable to all crops and the outturn was satisfactory in general.

Aus paddy.—Of five varieties grown, Dharial occupied the major portion of the aus area and gave an yield of 35 maunds per acre which is the maximum yield obtained up to now in this farm. Dular, Pusur, and Dharial were tried in a small area in Byde land followed by transplanted aman paddy. The result was quite satisfactory. Charnock did not fare well after sugarcane in rotation area.

Aman paddy.—Latisail, Bhasamanik, Dudsar and Tilakkachari, these four varieties were grown this year. The highest yield of Latisail obtained this year was 35 maunds 17 seers 6 ch. per acre. This was an average outturn from a plot of 5 acres in office Byde.

The average outturn of aus and aman of all non-experimental area was 21·85 and was 24·51 maunds per acre, respectively.

Fodder crops.—*Maize and Joar.*—An area of 28·07 acres were put under maize and Joar mixed with cowpea and an average outturn of 265·5 and 304·5 maunds per acre was obtained respectively.

Napier.—An area of 11·41 acres of Napier was uprooted.

Guinea grass.—The total area was 2:69 acres under this crop during the year.

Cattle.—General health of cattle was good all throughout the year and there was no casualty or outbreak of any disease in the herd. Eight new animals were purchased in the month of March. The total strength of the herd was 87 at the end of the year.

P. C. CHAUDHURI,
Deputy Director of Agriculture,
Eastern Circle.

Annual Report of the Kalimpong Demonstration Farm for the year 1941-42.

Rainfall and character of the season.—The actual rainfall was 85·32 inches in 132 days against a normal of 105·23 inches. Almost all crops suffered on account of deficient but continuous rainfall. Some good showers in March benefited the standing flax crop.

The experimental operations were as detailed below:—

(*a*) *Varietal test with maize.*—Outturn of white flat variety was the highest, next was that of white round and next yellow flat.

(*b*) *Cultural test with maize—terraced versus unterraced land.*—The outturn from unterraced area was definitely better than that of terraced area.

(*c*) *Varietal test with Soyabean with Barmali and green variety.*—The green variety yielded a far better outturn.

(*d*) *Second Economic Botanist, Bengal's marwa experiment.*—As seeds were received late transplantation of seedlings was not possible. Seeds obtained from seed-bed have been preserved for multiplation next year.

(*e*) Nine varieties of Soyabean were sown in the beginning of November under Second Economic Botanist, Bengal's instruction to see suitability of the varieties in the Rabi season. But germination was poor and crop failed for want of sufficient moisture.

(*f*) Berseem was introduced this year by the Agricultural Chemist, Bengal, in two different altitudes and the result obtained from the higher one was better than the lower.

(*g*) *Assistant Fibre Expert, Bengal's test with flax*—

(*i*) Monthly sowing experiment of flax.

(*ii*) Seed rate experiments.

(*iii*) Varietal test with 11 varieties of flax.

(*iv*) General seed mulitplication of flax. The crops are still standing and are doing very well.

1,539 maunds of farm yard manure were produced on the farm.

256 cultivators visited the farm.

F. I. WAHEED,
Deputy Director of Agriculture,
Northern Circle.

Annual Report of the Government Tobacco Farm, Rangpur, for 1941-42.

Rainfall.—Number of rainy days—110. Total rainfall—123·24 inches.

Crop.—*Kharif.*—Aus (two strains), maize, Raher and cotton were grown in the kharif.

Rabi.—Various rabi crops were put down such as lentil, linseed, potato,

The area and condition of tobacco is as follows:—

		Acres.	
Cigar tobacco	Sumatra ..	.. 3·66	Fair crop.
	Sumatra (Shade)	.. 0·33	do
	Manilla ..	.. 1·25	do
Deshi	Motihari for seeds	.. 0·40	do
	Bhengi ..	.. 0·40	Poor crop.
	Bidi ..	.. 0·20	Fair crop.
Cigarette tobacco	Harrison Special	.. 1·00	Manuring done on 1:4·5 : 2 NPK basis. Crop fair. No topping done.

Demonstration of Virginia tobacco.—A demonstration of the cultivation of Virginia tobacco in cultivators' plots was made with a view to demonstrate the prospect of its cultivation in Bengal. For details the report of the Agricultural Chemist, Bengal, may be seen.

G. B. PAUL,
Agricultural Chemist, Bengal.

Annual Report of Rangamati Farm for the year 1941-42.

Rainfall.—125 rainy days with a total rainfall 125·96 inches.

Jhum experiments with aus paddy varieties at Sapchari:—

		Yield per acre. Mds. srs. ch.
1.	Marichbaty	2 32 1
2.	D × L	1 23 1
3.	P × S(8)	2 25 0
4.	Gellong	4 16 0

Crops grown in Rangamati Farm:—

Aus paddy.

		Yield per acre. Mds. srs. ch.
1.	Kataktara	7 37 8
2.	Gellong (hill area)	6 21 0
3.	Kataktara (transplanted valley land) ..	17 6 0

Aman paddy.

4.	Badkalamkati	8 22 3
5.	Dadkhani	15 36 10
6.	D × I (13)	17 28 3
7.	Latisail	25 3 10
8.	Tilakachari	34 24 10
9.	Jute (C. Olitorius)	11 15 0
10.	Jute (C. Capsularis)	13 17 0
11.	Sugarcane (Co. 213)	20 11 0
12.	Sonamung	1 25 5
13.	Maskalai	2 8 7
14.	Napier grass	437 0 0

Seed supply from the farm:—

Aus paddy	58 27 8
Aman paddy	51 37 0

Double cropping of paddy Kataktars aus followed by Tilakkachari aman paddy (transplanted) gave a combined yield of 26 mds. 21 srs. 7 ch. per acre.

Six hill boys received one year's agricultural training in this farm.

P. C. CHAUDHURI,
Assistant Director of Agriculture, Bengal.

Annual Report of the work on tobacco during 1941-42.

Acreage and outturn.—The total area under tobacco has been estimated at 321,500 acres as against 321,800 acres last year with an average outturn of 82 per cent. normal (986 lbs.). The gross outturn has been estimated at 117,400 tons as against 108,300 tons last year.

Distribution of improved seeds.—The total supply of improved seeds under departmental supervision was as follows:—

	Motihari. Tolas.	Bhengi. Tolas.
Eastern Circle ...	899	6
Northern Circle ...	687	28
Western Circle ...	665	...
Government Tobacco Farm, Rangpur ...	420	128
	2,671	162

Total = 2,833 tolas.

Manuring of Virginia tobacco (Tabacco Farm, Rangpur).—In order to remove "the unpleasant tang" associated with Virginia tobacco grown with organic manures, the manuring and cultural technique were thoroughly overhauled. The organic manures were entirely eliminated and only inorganic fertilisers were used at 1 : 4·5 : 2 NPK basis.

Bidi tobacco.—Babu Herambalal Roy Chaudhuri, District Agricultural Officer, was sent on deputation for a short training in the art of curing and cultivation of bidi tobacco.

Demonstration of Virginia tobacco.—A demonstration was made to grow Viriginia tobacco in the cultivators' plots at Rangpur in order to demonstrate the prospect of its cultivation in Bengal. Altogether 7 charges were required to cure the leaves which weighed in all 13,362 lbs. of which 7,922 lbs. were from the demonstration plots. The total cured leaves including those of the farm were 2,147 lbs.

The cured tobacco was taken by Messrs. Imperial Leaf Tobacco Development Company Limited.

The scheme proved to be an economic proposition.

Cigar-making.—Four cigar rollers worked throughout the year at the Dacca Farm. About 43 maunds of leaves were turned into hand-made cigars of various brands.

GOSTABEHARI PAL,
Agricultural Chemist, Bengal.

Annual Report of the work on sugarcane during 1941-42.

The total area planted is estimated at 313,900 acres this year as against 331,100 acres last year. The average outturn has been worked out at 77 per cent. of the normal (540 maunds) as against 81 per cent. last year. The gross outturn of the province has been estimated at 4,795,000 tons as against 5,320,000 tons last year.

Supply of improved seeds.—The total supply amounted to 1,658,750 cuttings as detailed below:—

From departmental farms	...	1,438,550
Through departmental supervision	...	220,200

The variety most in demand was C. 421. A new variety Co. 527 was released this season for large scale distribution.

The Gopalpur and Setabganj mills arranged purchase this season of many thousand maunds of canes of the variety Co. 313 from Bihar for seed purposes.

Red-rot survey.—A survey was made of the badly affected sugarcane areas in the districts of Birbhum (whole district), Murshidabad (Kandi subdivision) and Dinajpur (Thakurgaon subdivision) as preliminary to taking steps for the control and eradication of the disease. For the results of the survey the report of the Agricultural Chemist, Bengal, may be seen.

The following points have emerged out of the work and observations on sugarcane.

(*a*) That Co. 213 has outlived its popularity. The cultivators are reluctant to continue its growing. It has been found to be specially susceptible to the fungus disease red-rot. It is being replaced by the variety Co. 421.

(*b*) That November and December have been found to be most suitable for planting canes.

(*c*) That 3 feet spacing between consecutive lines of canes gives more outturn than 4 feet spacing. This may be adopted as the standard spacing in all Government farms.

(*d*) That the fungus disease red-rot has taken a firm foothold in Bengal. It has been reported from almost every district in Bengal. Another menace to sugarcane cultivation is the alarming spread of the borers specially in the district in North Bengal.

GOSTABEHARI PAL,
Agricultural Chemist, Bengal.

Annual Report of the Propaganda Officer, Department of Agriculture, Bengal, for the year 1941-42.

Work done during the year:—

(1) *Publications.*—Six issues of Krishi-Katha covering 258 pages and 18,000 copies were printed.

Five kinds of slogan posters were published.

4,000 posters and 3,000 leaflets were supplied to rural welfare associations, exhibitions, etc.

Over a dozen slogan posters and four designs of coloured posters on "Grow More Food" campaign drawn up and submitted for approval of Government.

A poster on recommended paddies and one leaflet on red-rot of sugarcane were printed. Leaflets in sun-hemp, cigarette tobacco, pineapple were approved for printing.

(2) *Preparation of propaganda film.*—Six films of total length of 1,400 feet were taken.

(3) *Propaganda lectures and cinema shows.*—Fourteen delivered on special occasions and in exhibitions.

(4) *Agricultural notes and news.*—A good number of notes were prepared for various purposes. Two in "Indian Farming" and 20 in "Banglar Katha".

(5) *Revision of leaflets.*—Leaflet No. 1 of 1926 on Artificial Farm Yard Manure was revised. Eighty-three old leaflets were classified and forwarded to the Expert Officers for their scrutiny.

NIRMAL DEB,
Propaganda Officer,
Department of Agriculture, Bengal.

Nineteen students began the first course in April 1941, though the formal opening was not made till July 1942. The institute was then declared open by His Excellency the Governor of Bengal.

As no students applied for admission for the six seats reserved for G.B.V.Sc. candidates who were also Science graduates, this clause was omitted from the Prospectus.

Great difficulty was felt through the lack of books, many being unobtainable due to the war. Similar difficulty was felt in the workshop chiefly owing to the lack of motors.

Properly statistical manurial experiments in highland aus paddy and in lowland aman were started. Much valuable experience was also gained in the handling of the practical part of the course which is rightly stressed.

The students were given an opportunity of visiting the All-India Cattle Show at Delhi and were also given a preliminary insight into forestry. A valuable economic survey of a neighbouring village was also carried out.

W. M. CLARK,
Principal, Bengal Agricultural Institute.

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