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REPORT ON ALL INDIA CO-ORDINATED RESEARCH
PROJECT ON POULTRY FOR EGGS, MANNUTHY
KERALA AGRICULTURAL UNIVERSITY
(TRICHUR CENTRE)

ANNUAL PROGRESS REPORT
FOR THE YEAR
1978 - 1979



ALL INDIA CO-ORDINATED RESEARCH PROJECT
ON POULTRY FOR EGGS,
MANNUTHY - 680651
TRICHUR - KERALA



800731

18 COVAS/APR 1978-79

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I N D E X

	<u>Page</u>
1. Introduction ..	1
2. Objective ..	1
3. Technical Programme ..	1 - 2
4. Work already done during 1977-1978 ..	2 - 3
5. Work done during the year 1978-'79 ..	3 - 4
6. Staff position ..	5
7. Income & Expenditure ..	6
8. Performance Report of N, P and F strains - Table I. ..	7
9. Flock Health ..	8
10. Mortality particulars - Tables II to VII. ..	9 -13
11. Nutrition Section - Tables VIII to XIII ..	14 -18

INTRODUCTION:

The Centre was started on 1.11.1976. Financial sanction to start the centre was accorded by the I.C.A.R. during 2/77. It is financed by the I.C.A.R. to the extent of 75%. Rest 25% is met by the Kerala Agricultural University. Two strains P and N available at Hyderabad centre of the project and F strain of the Kerala Agricultural University Poultry Farm which were identified for the breeding programme of the centre were brought to this centre as one day old pullets and cockerels.

OBJECTIVE:

To evolve a strain/strain cross of poultry with high egg production potential - not less than 200 eggs - from the best available germ plasm.

TECHNICAL PROGRAMME:

1. A total of 14 strains are under test at different centres. At individual centres 4 to 7 strains are maintained. Each centre except Hyderabad, should maintain a minimum of 4 strains. The Hyderabad Centre may maintain minimum 5 strains. In other centres, additional strains might, however, be maintained only if adequate facilities are available within the allocated budget for the centre. It should be ensured that each strain is tested simultaneously at a minimum of two locations.

2. Each strain will be reproduced from 40 selected sires mated to 240 selected dams viz. one sire to 6 dams. At the rate of 6 daughters per dam, about 1500 pullets of each strain will be raised. This will require hatching 15 chicks per dam.

3. All the strains will continue to be selected on the basis of 280 days of age egg production. Combined selection, taking into account the individual record in case of pullets and average performance of full and half-sisters, will be followed.

4. In order to ensure high fertility, egg production of 2 days collected about a week after setting up the mating pens will be tested for fertility. The males showing poor fertility will be discarded and will be substituted by other selected males.

5. The following data will be recorded:

i) Body weight of each pullet of 20 and 40 weeks age and of the pullets maintained for annual egg production at 500 days age production.

ii) Egg production on hen-day and hen-housed basis from the age of 20 weeks onwards.

iii) Age at sexual maturity based on: (a) first egg of the flock (b) average age of the flock at first egg, and (c) 50 per cent egg production.

iv) Egg weight of each pullet based on 4 consecutive eggs at 38-40 weeks of age.

v) Shell thickness, albumen height, haugh-unit and incidence of blood and meat spots based on 200 eggs of each strain at 38-40 weeks of age.

vi) Mortality data from 0-1, 1-8, 8-20 and 20-40 weeks age.

vii) Fertility (on 18th day of incubation) and hatchability of each pullets.

6. From each strain, 100 pullets randomly taken at 16 weeks of age will be maintained in replicated trials to record egg production upto 500 days of age.

7. To ensure adequate sampling, strain crosses should be made utilising 20 males and 100 females to produce and test a minimum of 150 pullets in each cross. The pullets should be tested in replicated trials.

WORK ALREADY DONE DURING 1977-78:

Besides the three structures (one hatchery building, one brooder house and one layer house) transferred from the University for the project, three more buildings, viz., one brooder house and two grower houses were completed during 77-78. At the end of the year, the project had a brooding capacity for 6,600 chicks and facility for growing 3,300 birds. Preliminary formalities for the construction of two breeding houses and 2 cage houses were finalised towards the end of the year. The hatchery building, one brooder house and the layer house were electrified during the year. The project was allotted sufficient godown facilities in the central feed store of the University.

A metador mini bus was purchased during the year at a cost of Rs. 52,343.12.

Equipments worth Rs. 1,39,242.38 were purchased for the project during the year. These included laboratory equipments, glass-wares, chemicals and farm equipments like feeders, waterers etc., besides a Dayal Incubator of 27,000 eggs setting and 9,000 eggs hatching capacity. The nutrition laboratory was fairly well set for the routine feed analytical work during the year.

WORK DONE DURING THE YEAR 1978-79:

Two strains viz., N and P were received from Hyderabad centre on 20.6.1978 and 21-6-78 respectively. As physical facilities were limited only 800 pullets and 204 cockerels of each strain were brought. 859 pullets and 220 cockerels of F strain were received in two consignments on 29.7.1978 and 5.8.1978.

N and P strains started production in the month of October. Age at first egg of N strain was 122 and that of P was 121. For F strain for the two batches the ages were 134 and 126 days. At 10% production and 50% production the ages of birds of N strain were 153, 186 and of P strain were 149 and 183 days respectively. For the first batch of F strain these were 151, 182 and for the second hatch 149, 179 days respectively.

Average age at first egg could not be estimated as individual recording could not be done due to want of cage facilities. As soon as the cage house was ready the birds were caged on 15th December, 1978. The N and P birds were 180 and 179 days old on this date. Individual egg recording of these birds commenced on 16.12.1978. F strain of birds both batches were housed on 5.3.79 when the second cage house got ready.

N and P strains attained 280 days of age on 25.3.1978 and 26.3.1978 respectively.

Body weight

Body weight of N and P strains at 20 and 40 weeks of age and that of F strain at 20 weeks of age were recorded during the year. At 20 weeks P strain had the highest body weight (1.41), F strain the lowest (1.2) and N strain

remained intermediate (1.32 kg). At 40 weeks also P strain had higher body weight (1.89 kg) while the N strain weighed (1.62 kg). The F strain was yet to attain 40 weeks of age at the end of the year under report.

Egg weight

Egg weight of each pullet based on four consecutive eggs at 38-40 weeks of age was recorded for N and P strains. Average egg weights of these strains were found to be almost similar (52.3 and 52.8 gms respectively).

Egg quality

Egg weight, albumen height, albumen index, yolk index, haugh unit score, shell thickness and incidence of blood and meat spots based on 200 eggs from P and N strains at 38-40 weeks of age were studied.

Average egg quality of N and P strains

Strain	Egg weight (g)	Alb. ht. (mm)	Alb. index	Yolk index	Haugh unit	Shell thickness (mm)	Meat spot (%)	Incidence of Blood spot (%)
N	53.1	7.4	0.09	0.41	86.0	0.35	0.5	1.5
P	54.4	7.6	0.09	0.40	87.9	0.33	7.00	4.0

Mortality data from 0-1, 2-8, 9-20 and 21-40 weeks for N and P strains and upto 20 weeks in the case of F strain has been recorded. In F strain percentage mortality was a little high during 2-8 weeks of age. This was mainly due to unfavourable climatic conditions. The chicks were received and reared in July-August, which is the peak monsoon time in this part of the country. Thereafter the mortality in F strain remained lower. During 20-40 weeks of age the N and P strains had higher mortality mainly due to incidence of Marek's disease and leukosis, incidence being more severe in N strain.

As required in the programme 100 birds randomly taken from each strain have been maintained seperately for watching egg production, upto 500 days of age.

STAFF POSITION

Sl. no.	Designation	No. of post	Name of person
1.	Senior Scientist (Professor)	One	Dr. C.K. Venugopalan
2.	Associate Professor (Poultry Nutritionist)	One	Dr. (Mrs) Maggie D. Menacherry
3.	Assistant Professor (Junior Poultry Geneticist)	One	Dr. (Mrs) Sosamma Iype
4.	Assistant Professor (Farm Manager)	One	Dr. Renchi P. George
5.	Assistant Professor (Junior Poultry Pathologist)	One	Vacant
6.	Assistant Professor (Statistician)	One	Vacant
7.	Junior Assistant Professors (Senior Research Assistants)	Three	1. Dr. O.J. George 2. Dr. C.V. Andrews 3. Vacant
8.	Chick Sexer	One	Sri. T.K. Gopalan
9.	Computer	One	Smt. M.C. Annie
10.	Stenographer Grade II	One	Sri. V.M. Sulaiman
11.	Asst. Grade I (Store Keeper)	One	Sri. M. Abdul Salam
12.	Asst. Grade II (L.D. Clerk)	One	Sri. M.R. Ramachandran Nair.
13.	Egg Grader	One	Sri. V.S. Bhaskaran
14.	Lab: Assistants	Three	Vacant
15.	Driver	One	Sri. C.T. Louis
16.	Electrician	One	Sri. E.T. Paul
17.	Weighman	One	Vacant
18.	Chowkidar	Two	Vacant
19.	Poultry Attendants	Six	1. Sri. A. Johnson 2. Sri. C.R. Chandran 3. ∅ 4. ∅ Vacant ** 5. ∅ 6. ∅
20.	Peon	One	Vacant
21.	Sweeper	One	Smt. P.D. Annamma

** In the place of Poultry Attendants casual labourers are posted at-present.

STATEMENT OF RECEIPTS AND EXPENDITURE DURING THE YEAR 78-79

Expenditure :

Item of expenditure	Budget allotment	Actual expenditure
1. Pay of Establishment	Rs. 1,35,936-00	Rs. 1,08,071.95
2. T.A.	7,500-00	4,183-74
3. D.A. + C & O.A.	1,08,509-00	42,261-75
TOTAL	2,51,945-00	1,54,517-44

Recurring:

1. Feed	4,07,000-00	1,35,869-05
2. Chemicals & Glasswares	50,000-00	43,512-00
3. Maintenance of vehicle	7,000-00	6,365-99
4. Miscellaneous	30,000-00	39,033-51
TOTAL	4,94,000-00	2,24,780-55

Non-recurring:

1. Equipments	50,000-00	85,083-07
2. Buildings	1,50,000-00	5,98,453-23
3. Vehicle	---	---
4. Purchase of birds	10,000-00	23,821-79
TOTAL	2,10,000-00	7,07,358-09
GRAND TOTAL	9,55,945-00	10,86,656-08

Receipts:

<u>Anticipated</u>	<u>Actual</u>
Nil	Rs. 30,674-36

TABLE NO. I

PERFORMANCE REPORT FOR THE N, P AND F STRAINS DURING 1978-79

Strain code	No. of day old chicks received		No. of pullets at 20 weeks	20 weeks	40 weeks	Age at 1st egg	Age at 10% product-ion	Age at 50% product-ion	Average production upto 280 days age		Egg weight 38-40 weeks (g)	Mortality percentage			
	M	F		(kg)	(kg)	(Days)	(Days)	(Days)	hen housed	hen day		(Percent)	1st week	2-8 week	9-20 week
N	204	800	742	1.32	1.62	122	153	186	69.78	72.59	52.3	2.49	2.25	2.61	11.4
P	204	800	745	1.41	1.89	121	149	183	73.72	75.53	52.8	2.59	1.53	1.66	5.99
F															
Hatch I	459	120	403	1.20	..	134	151	182	40 weeks not completed			2.94	8.01	1.55	40 weeks not completed
Hatch II	400	100	335	combined for both the hatches		126	149	179				2.40	9.63	3.17	

FLOCK HEALTH:

General health of the birds has been satisfactory during the year under report. Preventive vaccination programme has been carried out as per schedule prescribed in the technical programme. Deworming and spraying of poultry houses and equipments against ectoparasites were done periodically.

All the dead birds were subjected to autopsy in the Pathology laboratory of the Veterinary College. The project has been free from infectious diseases of epidemic nature barring a few deaths due to coccidiosis. Comparatively higher mortality in the 'F' strain of birds during their 2nd to 8th weeks of age was due to unfavourable weather conditions prevailed in the area during July and August.

Mortality rate among birds between 20 and 40 weeks of age was highest in the IWN strain and lowest in the 'F' strain, the IWP strain remaining intermediate. The high percentage of mortality in the N strain was due mostly to 'Marek's' disease and 'Leukosis'.

Age-wise, strain-wise and sex-wise mortality and categorised disease-wise statements are presented in tables. A summary statement of major causes of death in the different strains between 20 and 40 weeks of age is also presented.

TABLE NO. II

Categorised diseasewar statement of chicks for 78-79 at 0-1 week of age

Sl. no.	Cause of death	IWN	IWP	F strain
1.	Omphalitis	2	-	18
2.	Sinusitis	7	-	-
3.	Pulmonary congestion & Oedema	4	10	4
4.	Intestinal haemorrhage	1	3	-
5.	Pulmonary congestion, Oedema and Omphalitis	7	9	4
6.	Pulmonary congestion, Oedema and Sinusitis	2	4	-
7.	Pulmonary congestion	2	-	-
8.	Aspergillosis	-	-	1
9.	Peritonitis	-	-	1
10.	Catarrhal enteritis	-	-	1
	Total mortality	25	26	29
	Total population	1004	1004	1079
	Mortality % per strain	2.49	2.59	2.69

TABLE NO. III

Categorised Diseasewar statement of IWN, IWP & F strains for
78-79 at 2-8 weeks of age

Sl. no.	Cause of death	IWN	IWP	F
1.	Oedema and Pulmonary congestion	6	4	7
2.	Sinusitis	2	-	13
3.	Pulmonary congestion and sinusitis	2	-	-
4.	Enteritis	2	3	10
5.	Volvulus	1	-	-
6.	Coccidiosis	2	3	6
7.	Sinusitis, hepatic degeneration and enteritis	2	-	-
8.	Intestinal haemorrhage	1	-	-
9.	Cat. enteritis	-	-	5
10.	Omphalitis	3	4	5
11.	Air sacculitis	-	1	2
12.	Pulmonary congestion	-	-	3
13.	Aspergillosis	-	-	9
14.	Sinusitis and enteritis	-	-	14
15.	Pericarditis	-	-	2
16.	Sinusitis and pericarditis	-	-	2
17.	Gout	-	-	4
18.	Pulmonary congestion	-	-	3
19.	Enteritis, sinusitis and aspergillosis.	-	-	3
20.	Catarrhal enteritis and sinusitis	-	-	3
21.	Haemorrhagic enteritis	1	-	-
22.	Others	-	-	1
Total mortality		22	15	92
Total population		979	978	1050
Mortality percentage strainwise		2.25	1.53	8.76

TABLE NO. IV

Categorised disease-wise statement of chicks for 78-79 at 9-20 weeks

Sl. no.	Cause of death	IWN	IWP	F
1.	Sinusitis	-	-	1
2.	Enteritis	3	1	2
3.	Ascaridiasis	1	-	-
4.	Coccidiosis	2	1	2
5.	Haemorrhagic enteritis and Coccidiosis	2	-	-
6.	Cat. Enteritis	2	-	3
7.	Hepatitis and enteritis	1	4	-
8.	Marek's disease	7	7	8
9.	Intestinal Haemorrhage	1	1	3
10.	Ulcerative enteritis Peritonitis	-	1	-
11.	Leukosis	1	-	-
12.	Hepatitis	1	-	-
13.	Gout	-	-	2
14.	Volvulus	1	-	-
15.	Aspergillosis	1	-	-
16.	Marek's, Enteritis and Sinusitis	2	-	1
17.	Verminous enteritis	-	1	-
Total mortality		25	16	22
Total population		957	963	958
Mortality percentage strainwise		2.61	1.66	2.30

TABLE NO. V

Categorised disease-war statement of IWN, IWP and F strain for 78-79 at 20-40 weeks of age.

Sl. no.	Cause of death	IWN	IWP	F
1.	Marek's disease	36	20	7
2.	Leukosis	30	4	3
3.	Oophoritis and salphingitis	7	9	11
4.	Fatty liver syndrome	16	11	1
5.	Enteritis	3	2	6
6.	Peritonitis	2	1	2
7.	Hepatitis	1	-	1
8.	Gout	1	1	3
9.	Pneumonia and pulmonary oedema	2	-	1
10.	Bangkok disease	1	2	-
11.	Pericarditis	1	-	-
12.	Haemorrhagic enteritis	-	1	-
13.	Coccidiosis	-	2	-
14.	Volvulus	1	-	-
15.	Others	-	1	1
	Total mortality	101	54	36
	Total population	886	902	920
	Mortality percentage strainwise	11.4	5.99	3.91

TABLE NO. VI

Percentage deaths due to important diseases from 9-40 weeks of age

Sl.no.	Disease	IWN	IWP	F
1.	Marek's disease	4.70	2.80	1.67
2.	Leukosis	3.24	0.42	0.31
3.	Fatty Liver syndrome	1.67	1.14	0.10
4.	Oophoritis and salphingitis	0.73	0.93	1.15

TABLE NO. VII

Strainwise, sex-wise and age-wise mortality percentage

Strain	Ist week			2-8 weeks			9-20 weeks			21-40 weeks			0-40 weeks		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
IWN	1.96	2.63	2.49	2.00	2.31	2.25	4.08	2.23	2.61	4.23	12.77	11.40	10.78	18.88	17.23
IWP	3.43	2.38	2.59	0.51	1.79	1.53	1.02	1.83	1.66	1.34	6.91	5.99	5.88	12.38	11.06
F (29-7-78 hatch) up to 35 weeks	2.50	3.05	2.94	5.13	8.76	8.01	4.50	0.74	1.55	0	4.47	3.65	11.67	16.12	15.20
F (5-8-78 hatch) Up to 34 Weeks	1.00	2.75	2.40	5.05	10.80	9.63	2.13	3.10	3.17	3.26	4.00	4.20	11.00	^{20.00} 2.00	18.20

Nutrition Section

Feed ingredients required for the project were procured locally on competitive rates from the contractors with whom rate contracts had been fixed by the Dean, College of Veterinary and Animal Sciences, Mannuthy. Those items for which rate contracts were not fixed viz. mineral mixture, vitamin coccidiostats and shell grit were obtained either from the local stockists or purchased at competitive prices from local agents.

The feeds for different classes of birds were formulated with locally available feed ingredients to meet ISI requirements for compounded poultry feeds (1977). Consequent on the prevalence of fatty liver syndrome in IWN and IWP strains of birds the layer ration in use was modified and diluted a little during the last month of the financial year under report.

Each consignment of feed ingredient and random samples of compounded feeds were analysed in the nutrition laboratory of the project for chemical composition. The crude protein content of each lot of compounded feed was estimated in the laboratory (Table IX). A total of 55 samples were analysed for complete composition and 26 samples for one or more of proximate principles. Further analysis of 22 samples is in progress (table X). This also includes 18 samples of gingelly oil cake and groundnut cake collected from local market in order to assess the quality of locally available feed ingredients. The strain-wise feed efficiency for egg production is set out in table XI.

The quantity of feed ingredients procured and quantity of feed compounded for each class of birds are set out in table XII and table XIII respectively. The feed compounding for the project birds was carried out with the grinder and mixer belonging to University Poultry Farm. Action is being taken for the purchase of a feed grinder and mixer for the project.

Most of the equipments and glasswares required for setting up the laboratory and also the chemicals were purchased during the year under report.

TABLE VIII

Ingredient composition of the ration (Per cent)

Feed ingredients	Chick starter	Grower 9-20 weeks	Layer after	Cost of ingredients	
	0-8 weeks	and male birds after 20 weeks	20 weeks	per quintal	
				77-78	78-79
Groundnut cake (expellar)	30	20	25	214.29	196.19
Yellow maize	30	20	37	143.31	140.00
Wheat bran	20	-	-	145.00	--
Dried tapioca chips (skinned)	-	20	10	--	98.40
Unsalted dried fish	10	12	10	251.36	179.90
Shell grit	-	-	5	--	23.80
Mineral mixture	2	2	3	--	178.16
TOTAL *	100	100	100		

*To every 100 kg of the feed add the following:					
Vitablend AB ₂ D ₃ g	20	20	30		
Bifuran g	50 ⁺	50 ⁺	-		
Sodium chloride g	500	500	500		

Calculated composition:					
Crude protein %	22.4	17.1	18.4		
ME. K cal/kg of feed	2780	2700	2720		

Cost per quintal	185.96	134.35	148.07		

+ Coccidiostat (Bifuran) added in the ration upto 3 months of age

TABLE NO. IX

Chemical composition of compounded feeds and feed ingredients - D.M. basis

Nutritional moiety	Compounded feeds			Feed ingredients						
	Chick starter	Grower/ cocks	Layer	Ground nut cake	Yellow maize	Unsalted dried fish	Rice bran	Alfalfa meal	Tapioca	Gingelly oil cake
Drymatter	90.2	89.8	92.7	92.8	89.9	86.9	90.0	94.5	89.8	92.2
Crude protein	22.0	16.7	18.2	45.2	9.0	34.7	7.8	12.5	0.7	27.6
Ether extract	5.2	5.4	6.9	8.0	4.7	14.2	10.5	3.4	1.9	5.3
Crude fibre	5.8	6.2	5.0	4.4	1.5	ref:	22.9	21.5	2.1	5.1
Nitrogen free extract	54.7	55.8	52.8	36.2	84.1	15.6	40.1	45.6	92.7	46.1
Total	12.3	15.9	17.1	6.2	0.7	34.6	18.7	17.0	2.6	15.9
Acid insoluble ash	5.4	7.7	7.1	1.3	ref:	15.5	11.8	5.4	ref:	6.0
Calcium	1.27	1.26	3.48	0.48	0.33	4.40	0.85	1.87	0.35	2.68
Phosphorus	0.84	0.99	1.05	1.08	0.45	2.58	1.39	0.71	0.26	1.20
No. of samples analysed	5	14	24	10	2	7	5	1	2	10

TABLE X

Report of analysis work of Nutrition laboratory 1978-79

Complete analysis	No. of samples		Analysis in progress	Total
	One or more of proximate principles			
55	26		22	103

TABLE XI

Feed efficiency for egg production

	IWN			IWP			F		
	Total feed consumed (kg)	Total No. of egg produced	Feed efficiency kg.feed/doz. eggs	Total feed consumed (kg)	Total No. of egg produced	Feed efficiency kg.feed/doz. eggs	Total feed consumed (kg)	Total No. of egg produced	Feed efficiency kg. feed/doz. eggs
December, 78	2,750	9,855	3.35	2,700	10,296	3.15	-	-	-
January, 79	2,700	15,707	2.06	2,700	15,136	2.14	-	-	-
February, 79	2,050	13,763	1.79	2,150	14,267	1.81	2,500	12,762	2.35
March, 79	2,150	13,313	1.94	2,300	14,336	1.93	2,250	15,225	1.77
Cumulative total	9,650	52,638	2.20	9,850	54,035	2.19	4,750	27,987	2.04

TABLE NO. XII

Quantity of feed ingredients purchased during the year 1978-79

Feed ingredient	Quantity (tonnes)
Groundnut cake	24.500
Yellow maize	27.750
Rice bran	18.000
Wheat Bran	0.985
Tapioca chips dried & skinned	10.745
Unsalted dried fish	14.000
Mineral mixture (Poultry min)	4.075

TABLE NO. XIII

Quantity of feed compounded during the year 1978-79.

Chick starter (kg)	Grower/ration for males (kg)	Layer (kg)	Total (kg)
6,000	28,000	33,000	67,000

