R. P. F. III

(110)

FINAL REPORT

1. Institute Code No: **P1-78/12-ICI-L00/6100**

2. I. C. A. R. Code No: P1-78/12-ICI-L00/6100

3. Name and Address of Research Institute/Centre:

ICAR Research Complex for Goa, Ela, Old Goa

4. Project Title:

Evaluation of the available breeds/strains, their crosses and reciprocal crosses and HH 260 hybrids for production performance.

5. Name and Designation of Project Leader **N.S.Nair, Sci.Sl.(Poultry Science)**

6. Name (s) and Designation(s) of Project Associates including Project Leader and work to be done:

Sl. No.	Name and Designation	Time spent	work done
1.	**N.S.Nair, Sci.Sl(Poultry Sci) Project Leader**	**35 months**	**Evaluation of the pure lines crosses, and HH 260. Identification of suitable crosses and for intensive and backyard system. Study of comparative performance, multilocation studies Establishment of Franchise hatchery**
2.	**A.R.Bhattacharyya, S3(Animal Production) Associate**	**7 months**	**Multilocation studies & establishment of franchise.**

7. Location of Research Project with complete address (Division/Section/Sub-Centre)

Division of Animal Science Section of Poultry Science ICAR Research Complex for Goa (CPCRI) Ela, Old Goa.

8. Date of start

1978

9. Date of termination

1984

10. (a) Objectives (Not more than 150 words)

To evaluate comparative peformance of (i) the breeds/strains available at Government Poultry farm, (ii) their crosses and reciprocal crosses and (iii) HH 260 hybrids so as to identify economic layers suitable for commercial egg production under different systems of management of Goa.

(b) Practical Utility including background information (Not more than 150 words)

Non availability of good quality breeding chicks within the territory had been one of the major problem of poultry development in Goa. The local poultry farmers particularly small farmers are finding it difficult to get their consignments of breeding chicks regularly from the neighbouring states. Moreover these breeding chicks becomes costlier due to transperation cost and mortality during transit. Therefore for the development of poultry industry in the territory it is essential to produce good quality chicks locally But before starting production of breeding chicks it is important to test their performance in the same environmental condition they are going to be reared to find out their suitability. In Goa at present both extensive and intensive systems of poultry keeping are popular. So two different types of layers are to be identified for these two system. Under this project all the available strains at the Government poultry farm, their variaous crosses along with promising commercial layers introduced from outside sources will be evaluated under Goa conditions to find out their suitability. So the results of this project will enable to identify suitable layers for economic egg production under different systems of management. By producing these chicks locally and supplying to local farmers one of the major constraints for poultry development can be solved to a great extent. Thus the findings of the project is going tobe of great practical importance.

Evaluation of the available breeds/strains, their crosses and reciprocal crosses and HH 260 hybrids for production performance.

(N.S.Nair & A.R.Bhattacharyya)

Objectives: To evaluate comparative performance of (i) the breeds/strains available at Government Poultry farm, (ii) their crosses and reciprocal crosses and (iii) HH260 hybrids so as to identify economic layers suitable for commercial egg production under different systems of management in Goa.

Technical programme:

I. Evaluation of the performance of:
   a) pure lines of available breeds/strains in Govt. Poultry Farm;
   b) their crosses and reciprocal crosses and
   c) HH 260 introduced from CPBF, Bangalore.

II. Identification of suitable crosses based on the above studies for:
   a) intensive system and
   b) backyard system.

III. Study of comparative performance of selected crosses with other commercial layers.

IV. Confirmation of performance by multilocation studies under different management conditions.

V. Establishment of Franchise Hatchery for production of breeding chicks for supply.

I. Evaluation of performance:

a) Pure lines:- The pureline performance of four strains of chicken available at Government Poultry Farm, Ela, Old Goa, was studied. Of these three strains ('B', 'M', and 'G') were white leghorns and another one ('A') was Australorp.

MATERIALS AND METHODS: Random samples of 110 chicks(one day old) each of the four strains were reared under deep litter system providing optimum, identical managemental conditions.

The data on all important economic traits were recorded. These data were analysed for the interpretation of results.

Results: The results are presented in the Table 1 below.

Table 1: Comparative performance four strains:

Strains	Mortality (%)	Age at 1st egg (days)	Age at 50 % production (days)	Av. egg production up to 280 days(No.)	Av. egg wt. at 40 weeks (g)	Av. Body wt. at 40 weeks (g)
M	2.7	126	150	91	49.3	1470
B	2.3	132	158	76	45.5	1440
G	4.1	123	177	66	47.6	1430
A	4.1	123	230	54	48.3	1730

From the table it may be noted that 'M' strain maintained better performance followed by 'B' strain. The other two strains had poor performance.

b) Crosses: The performance of various crosses (A x M, B x M, G x M, M x B, and G x B) and HH 260 were studied at Government Poultry Farm, Old Goa.

MATERIALS AND METHODS: Random samples of 85 chicks each of the above crosses were reared in Govt Poultry Farm, Old Goa under optimum and identical managemental conditions.

The data on all important economic characters were recorded and these data were analysed for interpretation of results.

Results: The results are presented in the table II below.

Table : II. Comparative performance of crosses:

Crosses	Mortality % Chicks	Mortality % Adult	Age at maturity (days)	Av. egg production upto to 280 days	Feed efficiency	Av.egg wt at 40 weeks(g)	Av. Body wt. 20 weeks (g)	Av. Body wt. 40 weeks (g)
HH 260	10.6	5.3	155	65.3	2.09	47.7	1170	1370
A x M	5.3	2.3	170	56.9	2.40	52.0	1280	1730
B x M	15.5	3.5	162	50.6	2.30	51.5	1145	1350
G x M	13.4	5.4	160	57.5	2.30	51.5	1115	1340
M x B	5.7	1.2	163	53.8	2.38	52.0	1137	1360
G x B	20.0	4.7	161	55.5	2.37	51.8	1073	1340

From the table it could be seen that HH 260 came to production earlier and had highest average egg production. Further HH 260 were the most efficient converters of feed production was generally poor in other white leghorn crosses.

The A x M breed cross recorded lowest mortality and highest body weight and fairly good average production.

II. Identification of suitable crosses:

a) For intensive system: HH260 was selected for intensive system of egg production because of their earlier maturity, better feed efficiency and highest average egg production.

b) For backyard system:- White Leghorn x Austrolorp cross was selected for backyard system because of their sturdiness(lowest mortality) good average production and heavy body weight(dual purpose).

III. Study of comparative performance of selected crosses with other commercial layers.

a) Study of the comparative performance of HH 260:

The comparative performance of HH 260 was studied along with three other commercial layers(Hisex, Babcock - 300 and BH -78).

MATERIALS AND METHODS: 500 one day old chicks each of HH 260 and three other commercial layers were obtained and reared under identical conditions in deep litter system at Government Poultry Farm, Old Goa.

The data on all important economic traits were recorded and these data were analysed for interpretation of results.

Results:- The results are presented in table III below.

Table III. Comparative performance of HH 260 and other commercial layers.

Commercial Layers	Mortality (%)	Body wt at 20 weeks (g)	Age at 1st egg (days)	Age at 50% production (days)	Av. egg production upto 280 days	Av. egg mass weight (g)	Av. feed intake per hen per day (g)	Feed efficiency
HH 260	8.8	1225	141	151	104.6	49.8	116.6	1.8
Hisex	6.8	1153	156	166	102.0	52.1	129.4	2.0
Babcock	7.4	1139	157	168	98.8	51.3	129.5	2.1
BH-78	8.2	1288	142	156	94.4	51.4	118.1	2.0

From the table it could be seen that HH 260 performed best with regard to early maturity, average egg production and also feed efficiency and proved their superiority over the other popular commercial layers.

b) Study of the performance of white leghorn x austrolorp cross under back yard system.

White leghorn x austrolarp cross was produced and the performance of female chicks for egg production and male chicks for meat production under backyard system were studied.

(i) Studies on egg production:

Materials and Methods: 75 female chicks of white leghorn x australorp cross were reared under backyard system in five farmers places(15 each) in the nearby village. They were maintained only on kitchen waste and other material picked up by them. No concentrate feed was given to them at any stage. The data on all important economic traits were recorded and analysed.

Results: The results are presented in table IV.

Table IV: Performance WLH x AL cross under backyard system:

	Mortality (Nos)	Age at 1st egg (days)	Age at 50% prod. (days)	Egg production/hen/year	Egg wt. (g)	Body weight at 20 weeks (g)	Body weight at 40 weeks (g)
Range	2-5	140-161	161-189	180-216	40-63	1240-1275	1643-1660
Average	3.4	147.6	175	195	52	1250	1650

From the table it could be noted that they were well adapted to the system. They started egg production on 5th month and attained 50% production by 7th month. The average egg production was as high as 195 eggs. These results had indicated this cross in suitable for backyard system of poultry keeping.

(ii) Studies on growth rate and broiler production by male chicks.

MATERIALS AND METHODS: 100 male chicks of WLH x AL cross were reared under backyard system in five farmers places(20 each). These chicks were maintained only on kitchen waste and no concentrate feed was provided.

The data on mortality and by weekly body weight were recorded and analysed. A random sample of 15 birds were slaughtered and the dressing losses were recorded.

Results: The results are presented in table V.

Table V: Growth rate of WLAx AL cross male chicks.

Age chicks	Ave. Body weight (g)	Actual gain in body wt over the previous period (g)	Percentage gain in body wt. over the previous period.
One day	30.14		
2 weeks	63.38	30.24	100.33
4 weeks	148.52	88.14	145.98
6 Weeks	262.32	113.80	76.62
8 weeks	429.21	166.89	63.62
10 weeks	684.64	255.43	59.51
12 weeks	946.17	261.53	38.20
14 weeks	1127.61	181.44	26.50

From the table it could be observed that the growth was very fast upto 4th week which declined gradually up to 10th week beyond 10th week the growth rate was very slow. These chicks attained a marketable weight(1 kg minimum) by 12-14 weeks.

The mortality recorded was within normal range(5%) which was due to accidents only. No particular disease problems was noticed which indicated these chicks were well adapted to the system.

The sample study on dressing losses indicated that the average dressing loss was only 31-33% which was comparable to other broiler crosses.

The overall results had indicated that WLH x AL cross is well adapted as dual purpose cross for backyard system of poultry keeping.

IV. Confirmation of results by multilocation studies:

The performance of HH 260 under intensive system and WLH x AL cross under backyard system were studied in farmers places in the adopted villages under Lab and Land and also in other places.

MATERIALS AND METHODS:- The breeding chicks of HH 260 and WLH x AL crosses were supplied from the Govt. Poultry Farm to be reared under intensive and backyard system respectively by the farmers. These units were followed up by frequent visits.

The data on all important economic traits were recorded and analysed.

Results: The results had indicated their satisfactory performance for the respective systems. These field results had confirmed the earlier observation and indicated their suitability for the respective systems under Goa conditions.

V. Establishment of Franchise hatchery for production of breeding chicks:

Considering the importance of production breeding chicks locally for supply of proven strains of Layer chicks a Franchise hatchery was established in collaboration with Central Poultry breeding Farm, Hessargatta.

The parental lines of HH 260 were obtained from CPBF and were crossed for production good quality breeding chicks of HH 260 for supply to the local farmers.

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Similarly breeding chicks of WLH x AL cross were produced in sufficient quantity and supplied to small farmers for keeping under backyard system.

Results:- HH 260 and WLH x AL crosses had become very popular in the Territory. More and more farmers had kept these birds in their farms. The poultry production in the territory had increased considerably (doubled).

Conclusion drawn from the experiments:

From the results it could be concluded that HH 260 is one of the most suitable birds for Goa conditions to be reared under intensive system because of their early maturity, better egg production even during heavy monsoon, and better feed efficiency.

Similarly WLH x AL cross is a suitable dual purpose bird for backyard system because of their better adaptibility, low mortality, better egg and meat production compared to country birds.

Recommendations to be passed on to the extension agency:

i) HH 260 can be recommended to farmers for economic egg production under intensive system(deep litter and cage system) in Goa.

ii) WLH x AL cross may be recommended to marginal farmers, Agricultural labourers and tribals for keeping in their traditional backyard system for better and most economic egg and meat production.

PUBLICATIONS:

1. Nair, N.S. and Bhattacharyya, A.R. 1984. Studies on the growth rate and Broiler production of white leghorn x austrolarp cross(Male chicks) under Backyard system. Poultry Adviser XVII(9) : 33-35.

2. Nair, N.S. and Bhattacharyya, A.R. 1984. Studies on the performance of white leghorn x australarp cross under backyard system. Poultry adviser, XVII(12):53-54.

3. Nair, N.S. and Bhattacharyya, A.R. 1984, Comparative performance of HH 260 under the agroclimatic condition of Goa. Indian J. of Poult. Sci. Send for publication.

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13. Approximate expenditure incurred in the Project: (Give reasons for variation, if any, from original estimated cost)

Rs.85,000=00

14. Publications and material (one copy each to be supplied with this proforma)

a) Research papers — Reference to 3 Research Papers enclosed on Pg.No.7 of the report.

b) Popular articles — Nil

c) Reports — Annual reports

d) Seminars and workshops (Relevant to the Project) in which the Scientists have participated:

Participated in the 9th Annual Conference and Symposium of the All India Poultry Science Association held at Veterinary College Tirupati from 10-12th May,1982.

e) Material developed such as new varieties of crops or breeds of farm animals, implements, products, etc.)

White leghorn and x Australorp crops for backyard system of poultry keeping.

15. Details (Nos. etc.) of Field/Laboratory Note books and final material and their location,

All records available at ICAR Research Complex Ela Old Goa.

16. Comments/suggestions of Project leader regarding possible future line of work that may be taken up arising of this project:

17. Signatures with name of Project Leader and Associates:

N. S. Nair Project Leader.

A. R. Bhattacharyya Associate.

18. Signature (with comments, if any) of Head of Division/Section/Station :

Works were carried systematically. Very important aspects of poultry production were tackled. Suitable layers for intensive and backyard systems of poultry keeping have been identified and recommended for local condition

Head, Div. Anim. Sci.

19. Signature (with comments, if any) of Director :