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Evaluation of Production and Economics in Various Strains of Broiler Breeder Parent Stock at Rawalpindi, Islamabad, Pakistan

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Abstract: A survey was carried out on production and economic evaluation of different strains of broiler breeder parent stock (BBPS). 25 BBPS breeder farmers in and around Rawalpindi/Islamabad area were interviewed from August to October, 2002. Results show that Arbor Acres (AA, 7 farms), Hubbard (HB, 10 farms), Indian River (1R, 2 farms). Lohman (LN, 1 farm) and Starbro (SB, 5 farms) strains were housed. LN produced significantly more number of eggs (150.0) than HB (148.4), AA (140.3), IR (139.5) and SB (136.2) per hen housed. Better socio-ecnomic status observed in breeders those housed HB (2.0) than SB (3.2), 1R (3.5), AA (3.7) and LN (4.0) strains, respectively. Average farm income was 6399, 13581, 7195, 6794 and 10184, expenditure was 6036, 11782, 5968, 7779 and 9137 th. Rs/farm and profit was 537, 2087, 1227, -985 and 1291 th. Rs/farm for AA, HB, IR, LN and SB farms, respectively. Mortality of various broiler breeder strains was not significantly different during initial rearing and production period followed by overall number of deaths. Chicks of breeder stocks purchased and hen housed at different farms shows no significant variation between various strains. Hatchability percentage of various breeder strains eggs was not different (80.0 LN, 80.5 AA, 81.9 HB, 84.9, 84.9 SB and 85.0 1R) percent. The socio-economic conditions exhibit that HB farmers enjoy better socio-economic status, followed by IR and SB, AA had average socio-eonomic status, while LN farmer falls under average.

Key words: Strains, broiler breeder, egg production, hatachability ,capital investment, income and socio-eonomic status

Introduction

During the past decade (1991-2000) total production of broiler breeder parent stocks has gone up to 5.2 million. It resulted in the saturation of marketing and lowering the prices of hatched chicks sold into the market. Althrough disease attacks like Avain Influenza and Hydropericardium syndromes reduced the flocks size at the farms (Anonymous, 2001). A sustained effort by private enterpreneurs got rid of the bad patch. Presently common five strains of of broiler breeder parent stocks are available in Pakistan namely, Arbor Acre Classic (AA), Hubbard (HB), Starbro (SB), Lohman (LN), Indian River (IR).

Economics plays an imperative role and was of prime consideration in the establishment and running of an established enterprise. Each industrial unit/enterprise is planed in such a way to minimize expenses and maximize profits. Per capita availability of meat was 13 kg as compared to 40 to 55 kg in developed countries (i.e. USA and Canada), depicting that we are far short in the gra. day^{-1}, deficient by 10 grm. day^{-1} but the availability of proteins is only up to the degree of 27 grm. day^{-1}, deficient by 10 grm. day^{-1} (Anonymous, 1992). So, poultry industry seems capable to fill this gap at local level economically. Keeping in view the importance of the breeders flock a study was designed with the objectives to determine the comparative efficiency and evaluation of available strains of broiler parent stock in the study area.

Materials and Methods

A proforma was developed for the collection of broiler breeder parent stocks data consisting of the farmer details and farms inventory, land/housing area, fixtures, equipment, machinery, various capital investments and expenditures, birds purchased, production of eggs, hatchability, mortality, depreciations, farms income and net returns were recorded. Rawalpindi/Islamabad and its surrounding areas, which starts from 26th August to 28th October, 2002.

Capital Investment: The capital investment includes all the expenditures which was involved as working capital, purchase of chicks, feed and feeding during rearing and production periods, farm staff, salary and depreciation (%).

Working Capital + Laying expenditure + Salary/wages + Depreciation

Gross Expenditures: This reflects the overall expenditure involved in the business from purchased of day old chicks upto the last produced egg or marketable chicks.

Capital investment + Salary /wages + Depreciation + Hatching cost (in case of sale of chicks).

Recurring cost: It includes electricity charges, feed purchased, various vaccines consumed, water charges, mortality and various depreciations over birds housed over prescribed period.

Depreciation: On each flock land and building expenses were calculated based on given percentages per annum, Building (10%), Equipment (20%), Furniture and Fixture (20%) and Machinery (10%).

Farm income: It was worked out as the total price of hatchable eggs/total chicks sale and empty feed bags + culled birds sales and farm yeard manure disposal etc.

Profit/loss: Profit or loss for broiler breeder parent flock was worked out on the basis of individual farm as under:

Profit/loss = Gross income - Net expenditures

Socio-eonomic status of breeder: This refers to economic conditions, general outlook, social environment, vehicle (model and condition), personal house, loans on its debit or surplus. It was denoted in the proforma as excellent (1), very good (2), good (3), average (4) and poor (5). The data has been collected by making the status of breeders and analysed.

Input/output ratio (Ior):This ratio was calculated by a comparison between gross income and gross expenditure, by using the formula given below:

Ior = Gi / Ge
Gi = Gross income
Ge = Gross expenditure

Capital turn over (Cto):
Cto = (Nr x 100) / Ci
Nr = Net returns
Ci = Capital investment
100 = Compute percent returns on capital investment (Egg/chick prices)

The collected data was tabulated and statistically analysed in General Linear Model (GLM) by using Minitab Computer Software (M. T. B., 1992).

Results

Space allocation in every broiler breeder parent stock farms was 3.5 to 4.0 sqft male^{-1} and 3.0 to 3.5 sqft female^{-1} during their production period in Rawalpindi/Islamabad area.

The average number of day old broiler breeder chicks purchased and average hen housed at different breeding farms were ranged from 4603 ± 2367 (AA) to 10499 ± 1981 (HB) and 4064 ± 2217 (AA) to 9806 ± 1855 (HB) at each farm, respectively (Fig. 1).

Egg production: Both LN (150.0) and HB (148.4) were produced higher number of fertile eggs than AA (140.3), IR (139.5) and SB (136.2), while the difference between strains was significant. Furthermore, broiler breeder tend to produce more fertile eggs at their peak age and its range starts from 80.2 (SB) to 85.5 (IR) percent (Fig. 3).

Hatchability: The hatching of fertile eggs artifically incubated was ranged from 80.0 (LN) to 85.5 (IR), (80.5 AA, 81.9, HB and 84.0, SB) percent, respectively (Fig. 4).

Mortality: Mortality rate during rearing (1), production (2) and overall (3) for various strains of broiler breeder parent stock were not significantly different between each other, however, it ranges from 5.2 (HB) to 7.0 (IR); 9.5 (IR) to 17.0 (LN) and 16.5 (HB/IR) to 23.0 (LN) percent, respectively (Fig. 2).

Income, Expenditure and Profit: Average income, expenditure and profit of different broiler breeder strains housed at various farms of Rawalpindi/Islamabad area were ranged from 6399 to 13581 thousand rupees (average 13581, HB; 10184, SB; 7195, IR; 6794, LH and 6399, AA th. Rs/farm, Table 1). The expenditures incurred at various broiler breeder farms studied ranged from 5968 to 11782 thousand rupees. Comparatively more expenditures of 11782 thousand rupees on average were observed at the farms reared with HB broiler breeder strains, followed by the expenditures of 9137, 7779 and 6036 thousand rupees recorded at the farms reared with SB, LN and AA strains of broiler breeders respectively; while relatively lower expenditures of 5968 thousand rupees were recorded at the farms of IR broiler breeder strains (Table 1).

The profit at various broiler breeder farms studied ranged from -984.60 to 2086.8 thousand rupees. Relatively higher profit of 2086.8 thousand rupees was recorded at the farms reared with HB broiler breeder strains, followed by the profit amounts 1290.8, 1226.7 and 537.1 thousand rupees recorded at the farms of SB, IR and AA strains of broiler breeders respectively; while broiler breeder farms reared with LN strains suffered with huge loss averaged -984.6 thousand rupees (Table 1). However, the difference between broiler breeder strains for each farm for their income, expenditure and profit were not statistically significant between each other.

Table 1: Income, expenditure and profit of broiler breeder parent flocks at Rawalpindi/Islamabad area

Strains	AA	HB	IR	LN	SB
No. of farms	7	10	2	1	5
Income (Rs. in thousand/farm)[1]	6399 ± 3759	13581 ± 3145	7195 ± 7033	6794 ± 9946	10184 ± 448
Expenditure (Rs. in thousand/farm)[2]	6036 ± 3070	11782 ± 2569	5968 ± 5744	7779 ± 8123	9137 ± 3633
Profit (Rs. in thousand/farm)[3]	537 ± 828.8	2087 ± 693.4	1227 ± 1550.5	-985 ± 2192.8	1291 ± 980.6

Table 2: The capital turn over and input/output ratio at different broiler breeder parent stock farms at Rawalpindi/Islamabad area

Description	AA	HB	IR	LN	SB
Capital turn over[1]	0.874 ± 0.016	0.890 ± 0.013	0.925 ± 0.031	0.790 ± 0.044	0.890 ± 0.019
Input/output ratio[2]	1.163 ± 0.030	1.212 ± 0.025	1.120 ± 0.056	1.290 ± 0.080	1.179 ± 0.035

[1]P = 0.184
[2]P = 0.383

Table 3: Socio-eonomic status of different broiler breeder parent flocks at Ralwapindi/Islamabad area

Description	AA	HB	IR	LN	SB
Socio eonomic status	3.7 ± 0.420	2.0 ± 0.351	3.5 ± 0.786	4.0 ± 1.111	3.2 ± 0.497

P = 0.041

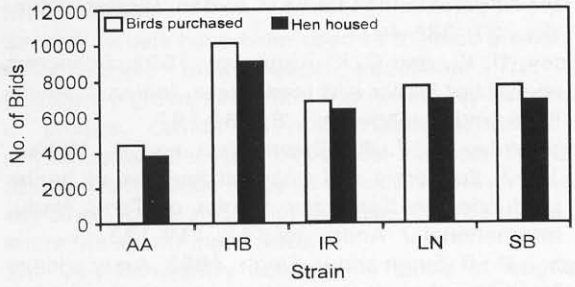

Fig. 1: Birds purchased and hen housed at broiler breeder parent flocks in Rawalpindi/Islamabad area

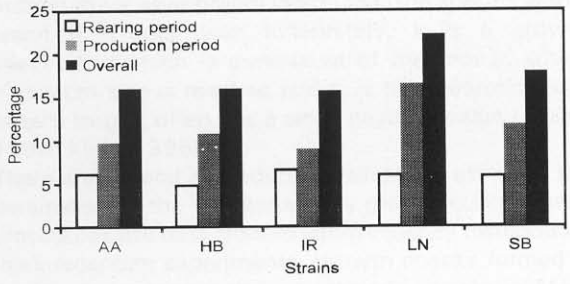

Fig. 2: Mortality in broiler breeding parent stocks in Rawalpindi/Islamabad area

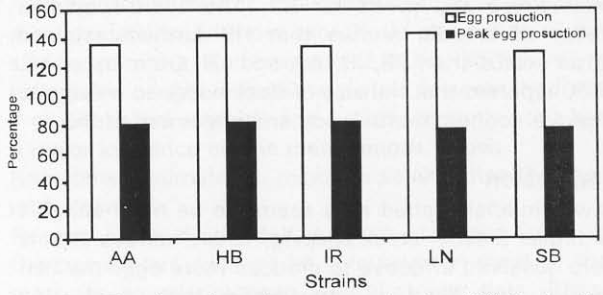

Fig. 3: Total and peak egg production(%) in broiler breeder parentstock in Rawalpindi/Islamabad area

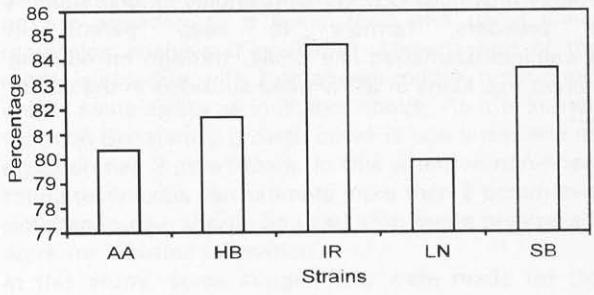

Fig. 4: Hatchability of eggs at broiler breeder parent stock farms in Rawalpindi/Islamabad area

Capital turn over and Input/output ratio: Capital turn over of various broiler breeder strains was not differnet significantly, however, the rank of the capital turn over of IR (0.925) was leading, followed by HB (0.890), SB (0.890), AA (0.874) and Ln (0.790) respectively. This shows that all strains of exotic parents breeders were found equally capable to compete under provided scientific management, feeding practices and improved environemnt for their effective survival and efficiently maintaing the hatching egg production at Rawalpindi/Islamabad area. Similarly findings was observed from input/output ratio (P > 0.05), however, LN (1.290) was at the top in rank order followed by HB (1.212), SB (1.174), AA (1.163) and IR (1.130), respectively (Table 2).

Socio Economic Status:The results of socio-economic status of broiler breeder parent stock holders showed that HB strains housed farmers was enable to be in better socio-economic status followed by IR and SB which almost going to be in good status where as AA and LN were almost trying to get entry into the category of good status in the study area (Table 3).

Discussion

The results showed that various strains of broiler breeder parent stocks housed were competing efficiently during early and production period, however more investment on farming per flock size, boosted up the overall returns/profit. This indicates to have large commercial units broiler breeder (more expenditure) to run poultry breeder business in higher profits. Farooq *et al.*, 2001, agrees with the present results for maximum total expenditure, production cost and profit in favour of HB strain and reported lowest production, expenditure and profit for SB. The socio-economic status of breeder shows that HB farmers attained better status than SB, IR, AA and LN. Othman, *et al.*, 2000 reported that the size of flock needs to enlarge to improve economic efficiency and maximum profit.

Conclusion

Rawalpindi/Islamabad area seems to be most suitable for broiler breeder stock keeping, where various strains were observed effective to produce more eggs per hen housed and tend to maximized their peak egg production. Range of farmers socio-economic status was good (HB) to average (LN). Study suggests that Federay provincial Governments should extend support to breeders farmers to keep parent in Rawalpindi/Islamabad like areas, through introducing interest free loans or allow more subsidies in the sector etc.

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