



## A Study on the Performance, Suitability and Economics of Pratapdhan Under Backyard Poultry Farming in Banswara District of Rajasthan

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### ABSTRACT

A study was conducted on Pratapdhan birds under backyard poultry rearing in Banswara district of Rajasthan. During the study four block of Banswara were selected randomly. 15 farmers from each block were randomly selected, 15 farmers away from them having Pratapdhan poultry birds (beneficiaries under ARYA project) and rest 15 farmers having native poultry birds (non-beneficiaries) were selected out of 60 respondents. 20 Pratapdhan chicks per farmers provided by Krishi Vigyan Kendra, Banswara under ARYA project after training for the respondent of economic point of view. The impact of training on poultry farming was significantly high and average knowledge score of the trainees increased from 3.68 to 8.50. The performance of dual purpose breed Pratapdhan was better under backyard poultry farming. The overall mean body weight, the mean eggs production were significantly ( $P \leq 0.05$ ) higher in Pratapdhan poultry birds than native birds. The overall mortality rate of Pratapdhan poultry birds were significant lower ( $P \leq 0.05$ ) than native birds. The benefit cost ratio of rearing in Pratapdhan poultry birds was recorded 1:5.15 per family. The income of small, marginal and landless poultry farmers were increased due to rearing of Pratapdhan poultry birds under backyard through low input and high output venture within a very short span of time. Pratapdhan poultry bird is one of the promising dual purpose strains of poultry, which can be popularized in rural areas of Banswara district of Rajasthan.

### HIGHLIGHTS

- We studied Performance, Suitability and Economics of Pratapdhan under Backyard Poultry Farming.
- The Pratapdhan bird a dual purpose strain performs better than native bird.
- The income farmers were increased due to rearing of Pratapdhan birds under backyard poultry farming.

**Keywords:** Backyard Poultry, Economics, Growth Performance, Pratapdhan, Production

Backyard poultry farming plays an important role in the economic upliftment of poor farmers. Stress free and harmful residue free poultry obtained from backyard poultry farming get a great scope in the availability of quality meat. Poultry sector contributes about 36 per cent of total meat production in India (Department of Animal Husbandry, Dairying and Fisheries, 2018-19). Eggs contribute 3.77 per cent as value output from total livestock rearing. India shares 3.17 per cent of total poultry in the world, (Anonymous, 2018-19). The population of poultry under courtyard system is 317 million (20<sup>th</sup> census). As per 20<sup>th</sup> livestock census, there were 80.24 lacs poultry in Rajasthan, from which 30.33 lacs poultry were at backyard

and remaining 49.91 lacs were at farm poultry. Generally, in rural areas farmers have been maintaining backyard poultry for income generation, home consumption, gifts and sacrifice for guests. Backyard poultry is a great need to increase the availability of protein food source in rural areas to alleviate protein malnutrition. This can be achieved by adopting poultry farming in small scale in the back yard

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of rural households or rearing them under intensive farm conditions in small numbers by utilizing locally available, less expensive feed and housing inputs. Backyard poultry is identified as a significant livelihood activity for many poor and landless families and particularly for women who look for additional income. In traditional backyard poultry farming, farmer rears 5 to 10 indigenous birds which produce only 60 to 70 eggs per year and low meat production. The contribution of backyard poultry is only 11 per cent of total eggs production of the country. The present per-capita availability of eggs is 54, while chicken meat consumption is 2.2 kg whereas, the ICMR recommendation is the consumption of 180 eggs and 10.8 kg poultry meat per person per annum (Shekhar and Ranjan, 2020). To increase the income of such family a need was to introduce Pratapdhan breed of backyard poultry for livelihood security of poor family. In the context of Indian poultry production, during the past four decades, poultry industry has transformed itself from the age-old backyard farming into a dynamic agri based industry.

Pratapdhan poultry were dual purpose and have found great acceptance and good adaptability to local conditions. It was developed as part of AICRP on Poultry Breeding by MPUAT, Udaipur. Attractive multi colour feather pattern, as rural people like coloured birds from aesthetic point of view and better looking. Because of colour plumage birds have camouflagic characters to protect themselves from predators. Longer shank length which help in self protection from predators in backyard areas. Good adaptability in backyard/ free-range, it has good immune competence as there is lack of availability of good quality food and drinking water, the birds have to roam into dirty surrounding in search of food. Further it has capacity to survive on low plane of nutrition (low and negligible input) and harsh climatic conditions. Produce brown shell egg and broody characteristic.

Hence, the rural poultry farming has good potential in the state especially in the rural areas to improve the socio-economic condition and overcoming protein deficiency. So, that the present study has been undertaken pratapdhan poultry birds under backyard poultry rearing in Banswara district of Rajasthan.

## MATERIALS AND METHODS

The present study was carried out by the Krishi Vigyan

Kendra, Banswara district of Rajasthan. Before start Poultry farming training programmes was organized under ARYA project on different aspect of scientific poultry farming for knowledge up gradation and skill development especially in rural youth. For this purpose Abaapura, Bagidora, Garhi and Kushalgarh block were selected for backyard poultry distribution under ARYA project during the year 2019-20. 15 farmers from each block were selected randomly making it a total of 60 respondents and 15 farmers of them having Pratapdhan poultry (beneficiaries under ARYA project) and rest 15 having Native poultry birds (non-beneficiaries) were selected out of 60 respondents for this study. Data were collected with the help of a semi structured interview schedule and through observation. Data so collected, tabulated and analyzed as per standard statistical procedures of Snedecor and Cochran (1994).

## RESULTS AND DISCUSSION

### Knowledge level

The study showed that most of the farmers are unaware and very less number of farmers were using scientific management techniques in poultry farm. The impact of training was significantly high and average knowledge score of the trainees increased from 3.68 to 8.50 (out of 10) as showed in Table 1. Importance of farmers training for successful poultry farming was also highlighted by earlier workers (Ram *et al.*, 2017; Chatterjee and Rajkumar, 2015; Shekhar *et al.*, 2019).

### Growth Performances

Comparative data on body weight of different age groups (0 day to 40 weeks) are presented in Table 2. The average body weights at 0 day, 4 week, 20 week and 40 weeks were recorded as 36.45±0.085, 295.25±0.103, 2075.25±1.123 and 2455.15±1.045 gram, respectively in Pratapdhan birds and in case of native birds 25.80±0.102, 172.26±1.056, 1222.75±1.852 and 1495.50±1.631 gram, respectively. It clearly indicated that the body weights of Pratapdhan birds were significantly ( $P \leq 0.05$ ) higher than the corresponding body weights of native birds. The present findings are in accordance with the report of earlier workers (Khadda *et al.*, 2017; Singh *et al.*, 2018). The difference in body weights may be due to varied agro-

climatic conditions, availability of feeding materials and management practices adopted by the farmers. More or less comparable body weight of native birds at 40 weeks of age is reported by Singh (1997).

**Table 1:** Knowledge level or score of poultry farmer (based on questionnaire)

Sl. No.	Farm Management Practices	Average Score (Out of 10)	
		Before Training	After Training
1	Backyard poultry breed, Brooding and Housing	4.65	8.51
2	Disease Management and Schedule Vaccination and deworming	3.10	8.58
3	Poultry Nutrition and Feed formulation	4.72	8.95
4	Bio-security and sanitation	2.95	8.10
5	Marketing and waste management	2.97	8.35
Overall Average Score		3.68	8.50

**Table 2:** Growth Performances of Pratapdhan birds in comparison to native birds

Age of bird	Body Weight (Gram)	
	Pratapdhan Bird	Native Bird
Day old	36.45±0.085	25.80±0.102
1 Week	95.23±0.182	49.65±1.035
2 Week	145.12±0.245	70.85±0.945
4 Week	295.25±0.103	172.26±1.056
6 Week	510.12±0.256	225.42±2.045
8 Week	695.14±0.202	380.25±1.521
10 Week	785.30±0.098	508.25±0.564
12 Week	1012.40±1.012	650.45±0.845
14 Week	1285.75±0.354	770.49±2.457
16 Week	1525.10±0.179	921.25±1.094
18 Week	1832.25±0.285	1075.12±0.912
20 Week	2075.25±1.123	1222.75±1.852
40 Week	2455.15±1.045	1495.50±1.631

### Production performances

The average age at sexual maturity in Pratapdhan birds and native birds were recorded to be 172.05 ± 1.103 and 195.52 ± 1.965 days, respectively (Table 3). Low age of sexual maturity 173 and 169 days recorded by Khadda *et al.* (2017) and Singh *et al.* (2018). The average egg production

of Pratapdhan birds and native birds were recorded to be 162.15±0.462 and 58.00±0.640, respectively (Table 3). The average egg production of Pratapdhan birds was also significantly ( $P \leq 0.05$ ) higher than native birds, which might be due to different genetic makeup of two groups. In contrast to present findings low egg production of 54.94 and 167.89 was recorded in 40 and 72 weeks respectively reported by Khadda *et al.* (2017). The average egg weights of Pratapdhan birds and native birds were 49.35 ± 1.853 and 42.50 ± 0.965 gram, respectively. The mortality rate during 0 to 4, 5 to 20, 21 to 40 and Above 40 weeks of age in Pratapdhan birds and in native birds under backyard poultry farming system of rearing is presented in the Table 3.

**Table 3:** Production Performances of Pratapdhan birds in comparison to native bird

Quantitative traits	Pratapdhan Bird	Native Bird
Age at Sexual Maturity (Days)	172.05±1.103	195.52±1.965
Egg Production	162.15±0.462	58.00±0.640
Average Egg Weight (g)	49.35±1.853	42.50±0.965
Mortality 0 to 4 week (%)	10.00±0.751	17.15±1.090
Mortality 5 to 20 week (%)	7.5±2.065	14.24±1.325
Mortality 21 to 40 week (%)	2.45±0.150	5.56±2.590
Above 40 weeks	1.05±0.089	3.05±0.923

There was significant ( $P \leq 0.05$ ) low mortality rate in Pratapdhan birds as compared to native birds. The results of study indicate that survivability percentage of Pratapdhan birds in prevailing agro-climatic conditions of Banswara was well within the standard range 90-95 percent (Khan, 2008), which may be due to presence of good brooding, timely vaccination, good immune competence, disease resistance, ability to protect from predator and proper management practices followed by farmers.

### Economics of rearing poultry birds

The total production cost i.e. cost of chick, feed, treatment, labour or housing cost of Pratapdhan birds and native birds was calculated ₹ 3155 and ₹ 1680, respectively (Table 4). The higher production cost in Pratapdhan birds might be due to higher feed and chick cost. The total gross income earned from sale of eggs and birds of Pratapdhan and

**Table 4:** Economics of rearing Pratapdhan poultry birds comparison to native birds per family (20 birds) under backyard condition of Banswara district of Rajasthan

Items	Pratapdhan Bird	Native Bird
Cost of Day old chick		
Rate of Pratapdhan Chick @ ₹ 75/chick	$75 \times 20 = 1500$	$30 \times 20 = 600$
Rate of Deshi Chicks @ ₹ 30/chick		
Cost of Feed		
1.25 kg of feed per bird for Pratapdhan Rate of feed @ ₹ 25/ kg	$31.25 \times 25 = 625$	$10 \times 15 = 150$
500 gm of Maize per bird for Native bird Rate of broken rice @ ₹ 15/kg		
Treatment Cost	200	100
Cost of Labour	430	430
Housing Cost	400	400
Total Cost	3155	1680
Income from sale of egg (10 Pratapdhan layer and 10 local layer) Price of egg @ ₹ 10/Egg	$162 \times 10 \times 10 = 16,200$	$58 \times 10 \times 10 = 5,800$
Income from sale of cocks (Sale of 4 pratapdhan cock and 4 local cock) Price of cock @ ₹ 500/cock	$500 \times 4 = 2000$	$500 \times 4 = 2000$
Income from sale of female birds (Sale of 4 female of Pratapdhan and 4 female of local)		
Price of Pratapdhan female @ ₹ 300/Hen	$300 \times 4 = 1200$	$250 \times 4 = 1000$
Price of Local Female @ ₹ 250/Hen		
Total Gross income	19,400	8,800
Net income	16,245	7,120
B:C ratio	5.15	4.24

native birds were ₹ 19,400 and ₹ 8800, respectively (Table 4). The benefit cost ratio in Pratapdhan birds and native birds were recorded as 5.15 and 4.24, respectively (Table 4). The high benefit cost ratio 4.68 in CARI-Nirbheek birds was recorded by Khadda *et al.* (2017). Pratapdhan backyard poultry significantly role in increase income reported by Yadav *et al.* (2018). The higher benefit cost ratio in Pratapdhan birds was due to more egg production and body weight in the given period of time as compared to native birds. The comparative analysis revealed that the performance of Pratapdhan is very promising, can be promoted in large scale in the backyard poultry farming system.

## CONCLUSION

It is concluded that training was one of the most important

tools for knowledge up gradation and skill development among the poultry farmers. The Pratapdhan bird a dual purpose strain performs better than native bird. The phenotypical similarity particularly multi-coloured plumage, better adaptability and protected well from predator of Pratapdhan bird, it is well adopted by the farmers of the Banswara district of Rajasthan. The income of small, marginal and landless farmers was increased due to rearing of Pratapdhan birds under backyard poultry farming of Banswara through low input and high output venture within a very short span of time.

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