



## Impact of Krishi Vigyan Kendra Training on Knowledge Gain and Farmers Adoption Behaviour

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### Abstract

The study conducted in Dukenagar village of North and Middle Andaman district. The study was taken up here because Krishi Vigyan Kendra (KVK), Nimbudera ICAR-Central Island Agricultural Research Institute is carrying out development activities related to livestock. It was observed that people of this village were not aware of practices related to poultry for efficient poultry production. The data was collected from 24 respondents covering the main areas of Dukenagar village. Based on the response to field studies carried out in the month of June 2020, the training and demonstration activities were undertaken for respondents in Dukenagar village (n = 24) for rearing of Vanaraja birds. Evaluation of knowledge level of participants for the best practices in backyard poultry farming on Vanaraja chickens revealed increase in knowledge level after the training programme. The demonstration on backyard farming of Vanaraja birds resulted in higher growth performance of birds compared to local chick population. The benefit cost ratio after the demonstration for backyard farming of Vanaraja was 2.18 compared to local backyard chickens which was only 1.30. It was noted that percent change in adoption of best practices in backyard poultry farming was as follows; 1. separation of sick birds (56%) followed by 2 deworming (42%), 3. storage of eggs in refrigerator (38%), 4. rearing of Vanaraja birds (29%), 5. vaccination (25%), 6. artificial incubation (25%), 7. use of litter material (21%), 8. artificial brooding (13%) and 9. night shelter (8%). In conclusion, the training programme conducted for skill development, resulted in increase in knowledge and skill level of participants on scientific practices of backyard poultry.

**Keywords:** Training; Demonstration; Adoption; Backyard Poultry; Vanaraja

### Introduction

In the last 2 - 3 decades, the poultry industry in India has seen quantum jump with respect to poultry production. During this period, egg production has increased to 70 billion from few millions and the broiler meat production has increased to 3.8 million tonne from nowhere [1]. Growth in India's poultry sector stems mainly from limited number of large commercial producers, which have been expanding rapidly in Southern India, where climatic conditions are mild, but is at a slower pace in the Western and Eastern States [2]. However, the recent trend in poultry population indi-

cates that the number of backyard poultry birds in India has increased by 46% during 2012 - 2019 [3]. Though, the contribution of backyard poultry in India's is less than 40% of the total poultry population. Majority of the contribution comes from commercial farms; the sharp growth reflects an interesting development.

Backyard poultry in India is characterized by small flock size consisting of 5 - 10 non-descript birds maintained in extensive system under zero or low input venture [4]. It is characterized by indigenous night shelter, scavenging system with little supplementary feeding and natural hatching of chicks. Mainly non-descript

local birds are reared although there are specific improved varieties in some areas. The production performance of non-descript birds is relatively poor, with 35 - 40 eggs and yielding about 1 - 1.5 kg meat at the end of the production cycle [5]. The native chicken varieties adopted in free-range backyard conditions for centuries contributed about 30% of national egg production in India. In this system, the birds are kept under low-input, low-output conditions and managed by the women and children of the household [6].

In recent years there has been growing recognition among the developed communities with respect to the role of backyard poultry production by reducing poverty and reaching out to the poor. Besides off-farm employment and income generation, rural backyard poultry can provide nutritional supplement in the form of valuable animal protein as well as for gifts and religious sacrifices [7]. There is growing evidence to demonstrate the role of backyard poultry production in enhancing the nutrition security of the poor households and also in the promotion of gender equality. However, in order to make backyard poultry farming economically viable in the rural areas, basic training should be imparted.

Keeping this in view, we at Krishi Vigyan Kendra, North and Middle Andaman conducted trainings and demonstrations for improvement in rural poultry farming practices among the selected farmers residing in Dukenagar village of North and Middle Andaman district.

### Aim of the Study

The present study aims to know the pre-knowledge status and adoption of technologies/practices gained by the poultry farmers during the program.

### Materials and Methods

The study was conducted in Dukenagar village under Mayabunder tehsil, North and Middle Andaman district of Andaman and Nicobar group of islands, India. There are 247 households with a population of 1119 members. A total number of 24 farmers raising backyard chickens were selected from the village; based on their willingness to participate and take training on backyard poultry production. The village was mainly selected according to characteristics such as geographical location, the availability of backyard chicken farmers and the confidence with which respondents responded from previous studies and projects. It facilitated

data collection and making the participants understand the need of improvement of poultry rearing practices. Questionnaires were prepared to collect the information about the awareness on backyard poultry farming from the backyard poultry owners. The questionnaire was prepared to quantify the skill level of respondents on scientific backyard poultry farming practices. Twelve questions on different aspects of backyard poultry farming were framed and distributed to the villagers. Based on the answers and priority their awareness about practices was quantified.

### Implementation of training program

The backyard chicken owners in the identified village were trained on "General care and management of Vanaraja birds under backyard poultry farming". The training was designed to equip the backyard chicken owners with the requisite information and skill on scientific practices in backyard poultry farming. The knowledge level of the participants was assessed through a score card system by posing questions on different aspects such as characteristics of Vanaraja birds, nursery management, free range management, general care and management of health of birds before and after the training programme (Supplementary file).

### Implementation of demonstration activities

In order to make them aware of different technologies related to scientific practices in backyard farming, a demonstration on "Backyard farming of Vanaraja birds" was organised at farmer's field (Table 1). Vanaraja is a dual purpose colored bird developed at ICAR-DPR, Hyderabad. These birds are attractive and multi-colour with high degree of disease resistance. For demonstration, fifty Vanaraja day-old chicks each were supplied to two progressive self-help groups (Ujala and Kanyakumari) members (Smt. Asima Adhikarai and Smt. Gita Roy) of Dukenagar village for rearing the birds from 0-4th week. During the period, the selected farmers reared the birds by providing required temperature, balanced feed, vaccination and protection from predators. The birds were kept in confinement in separate houses constructed from forest produce, tin and bamboo. After rearing the birds for the first four weeks, the birds were distributed among the members of SHG group (supplementary file) for rearing under free range. During the period of demonstration, field visits, veterinary support (deworming, vaccination, diagnosis and treatment of sick birds) and best management practices were demonstrated to facilitate the stakeholder for adoption of scientific backyard poultry farming practices.

Sl. No.	Technology	Purpose	Source of Technology
1.	Dual purpose improved rural poultry Vanaraja.	Higher production	ICAR-DPR, Hyderabad
2.	Artificial incubation using Mini-hatching Machine	Sustainable supply of DOC/Scale up of operation.	ICAR-CIARI, Port Blair
3.	Low cost brooding	Higher survival rate	ICAR-DPR, Hyderabad
4.	Balanced feed preparation using locally available ingredient	Higher growth and sustainable production	ICAR-DPR, Hyderabad
5.	Vaccination	Prevention of infectious diseases	Department of AH and VS
6.	Deworming	Reduce worm load	ICAR-CIARI, Port Blair

**Table 1:** Technologies demonstrated at the farmer's field.

### Data collection and statistical analysis

Data were collected using a structured questionnaire. The approach was to collect primary data from individual by face to face meetings; also personal observations were made at the housing facilities and appearance of the birds. The data based on marks scored by the candidates pre and post training were obtained through self evaluation test. The body weight of Vanaraja birds were recorded at 4<sup>th</sup> and 8<sup>th</sup> week. The data were analyzed using Microsoft excel software program. Descriptive statistics such as frequency distribution, percentages, mean, average and standard (SD) deviation were used for categorization and description of the variables.

### Result and Discussion

#### Knowledge of the participants before and after the training programme

The knowledge level of the participants before and after training is presented in table 2. Before the training program, the participants scored least for the topics on health management (32%), followed by free range management (34%), nursery management (36%), general care and management (43%) and characteristic features of vanaraja birds (52%). The mean knowledge score of trainees increased from 3.9 to 8.4 after training. It is evident from the data that after the training program, the participants scored maximum on the topics related to characteristics features of Vanaraja birds (93%) followed by topics on health management (87%), free range management (83%), general care (81%) and nursery management (76%). This might be due to the fact that the participants got sensitized and were convinced, learnt the skill, gained knowledge through training program on the topic "General care and Management of Vanaraja birds".

Sl. No.	Particulars	Average score (Out of 10)	
		Before Training	After Training
1.	Characteristics of Vanaraja breed	5.2 (52)	9.3 (93)
2.	Nursery management	3.6 (36)	7.6 (76)
3.	Free range management	3.4 (34)	8.3 (83)
4.	General care and management	4.3 (43)	8.1 (81)
5.	Health management	3.2 (32)	8.7 (87)
	Overall Average Score	3.9 (39)	8.4 (84)

**Table 2:** Impact of training programme on gain in knowledge of respondents (n = 24) in Dukenagar village of Mayabunder tehsil.

Variables	Vanaraja Birds	
	Farmers practice	Low cost balanced feed*
Weight at 4 <sup>th</sup> week (gm.)	170.71	239.28
Weight at 8 <sup>th</sup> week (gm.)	282.57	577.28
Mortality (percent)	38.14	17.28
FCR	-	3.37
Benefit cost ratio	1.30	2.18

**Table 3:** Performance of demonstration on Backyard farming of Vanaraja birds.

\*Low cost balanced feed prepared using Broken rice (25 parts), Maize (25 parts), Rice Bran (20 parts), Groundnut cake (10 parts), Coconut cake (10 parts), Fish meal (08 parts), Mineral Mixture (1 part) and salt (1 part).

**Performance of Vanaraja birds during demonstration period**

The data on performance of the Vanaraja birds during the demonstration tenure is presented in table 3. The body weight gain of Vanaraja birds reared by following scientific management practices was found 542.28 g at 8<sup>th</sup> week compared to Vanaraja birds reared with farmers practice (248.57g) without aid table 2 and figure 1 of demonstration. Overall the mortality rate was less under the demonstration period compared to the non demonstrated way of rearing. The benefit cost ratio for the demonstration was also observed to be higher (2.18) compared to benefit obtained by local method of rearing (1.30). In the present study, the low benefit cost ratio observed for the local check may be attributed to the poor growth and loss of birds due to unbalanced feeding, disease condition and predation.



**Figure 1:** Field activities related to training and technical demonstration at farmers field in Dukenagar village. (a) Group photograph during the training program; (b) Supply of inputs to Smt. Gita Roy for demonstration; (c) Rearing of Vanaraja chickens (0-4 weeks) in confinement; (d) Smt. Asima Adhikari vaccinating Vanaraja birds at her farm; (e) Backyard farming of Vanaraja birds by the Smt. Gita Roy; (f) A farmwomen practicing deworming of the Vanaraja birds.

**Impact of training and demonstration activities**

The percentage of farmers adopting best practices among the participants is presented in table 4. The study observed higher

Sl. No.	Practices	Dukenagar (n = 24)				
		Before Intervention		After Intervention		Percent Change
		No.	(%)	No.	(%)	
1.	Rear improved rural poultry	02	8	09	38	29
2.	Use artificial incubation for hatching of eggs	00	0	06	25	25
3.	Perform artificial brooding	02	8	05	21	13
4.	Provide litter material	02	8	07	29	21
5.	Provide night shelter	17	71	19	79	8
6.	Provide nest in shelter	13	54	16	67	13
7.	Protect birds in early stages.	04	17	09	38	21
8.	Prepare balanced feed using locally available ingredients	00	0	08	33	33
9.	Vaccinate the birds	05	21	11	46	25
10.	Separate sick birds	03	13	16	67	56
11.	Perform de-worming of birds	03	13	14	58	42
12.	Store eggs in well ventilated space/ refrigerator	04	17	13	54	38
Average		4.5	19.1	11.0	46.2	27

**Table 4:** Adoption of best practices of backyard poultry farming among the target population in Dukenagar village of Mayabunder tehsil.

adoption level of best practices in the participants after intervention. After training and demonstration activities, out of 24 farmers, 09 farmers (38%) adopted rearing of Vanaraja birds. About 6 no. of farmers (25%) resorted to the facility of artificial incubation of eggs at KVK, Nimbudera. The adoption level was particularly high in the provision of night shelter (79%) followed by provision of nesting material (67%), separation of sick birds (67%), deworming (58%), storage of eggs (54%), preparation of balanced feed using locally available resources (33%), provision of litter material (29%) and artificial brooding (21%). Table 4 also depicts the extent of adoption for best practices among the participants. It was noted highest for the practice of separation of sick birds (56%) followed by deworming (42%), storage of eggs in refrigerator (38%), preparation of balanced feed (33%), rearing of Vanaraja birds (29%), Vac-



ination (25%), artificial incubation (25%), litter material (21%), protection of birds in early stage (21%), artificial brooding (13%) and night shelter (8%).

Moreover photographs related to training and farmers adopting the technologies at field level are depicted in figure 1a-1f. Legend under the figures is self explanatory.

### Conclusions

Training programs backed with field demonstration of technologies on backyard poultry farming are helpful in bringing desirable changes in backyard poultry farming practices among the stakeholders. In the present study, we noted improvement in rural chicken production and consequently the farm income due to adoption of recommended practices on backyard farming of dual purpose colored Vanaraja birds. Further, we observed that rural women self help groups can be used as an effective tool to promote scientific practices in backyard poultry. Hence, further studies may be undertaken at a larger scale to evaluate the effectiveness of such programs in improving the adoption rate of scientific practices in backyard poultry farming among the stakeholders.

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### Conflict of Interests

All authors declare no conflict of interest.

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