

A Pilot Study on Horti-Poultry Integrated Farming Model

ABSTRACT

Aims: Under the innovative concept of integrated farming, a trial using vanraja birds was conducted to find out the comparative performance of birds reared in confinement and outdoor in orchards

Study design: 600 Vanraja birds of one month age were divided into two equal groups was conducted. One group (T₁) that served as control was confined to shed and put on concentrate feeding and the another group (T₂) were given free access to the KVK orchard during day and confined to shelter during night and were allowed to feed on herbage, insects and other scavenging resources during the day and in the evening hours were offered kitchen waste comprising of leftover rice, vegetable waste, egg shells, leftover pulses etc. collected from the hostels of Faculty of Veterinary Sciences & Animal Husbandry, Shuhama that are in the close vicinity of the Kendra.

Methodology: the two groups of vanraja birds were compared with respect to body weight gain, egg production and mortality rate and at the end of 40 weeks trial the concentrate feeding cost in case of free range reared birds was reduced and there was less mortality, increase in the body weight and egg production with additional income from the existing orchards as compared to the control group kept confined to sheds

Results and conclusion: This innovative model of integrating the poultry with horticulture has been termed as horti-poultry model that proved to increase performance of birds with respect to decreased mortality, lower body weight (fat accumulation) that caused increased egg production and lower mortality. Further an additional income of 101850/hectare of land was observed. The model when replicated in fields is expected to be game changer in improving rural income by rearing birds in orchards.

Key words: Innovative, Integrated, horticulture, poultry, farming.

INTRODUCTION

Optimum utilization of resources is a dominant factor for maximizing returns from minimum inputs and integrating livestock rearing and horticulture is an important medium to do so. Backyard poultry farming is not new and is being practiced since the time immemorial and livestock and poultry provide a major contribution to India's economy (Nath *et al.*, 2012). Poultry farming also helps in income generation for unemployed rural youth and women (Padhi, 2016). However, most of the backyard poultry production comprises of rearing indigenous birds

with poor production performances. The potentiality of indigenous birds in terms of egg production is only 60 to 80 eggs/ bird/ year and meat production is also very less. However, the backyard poultry production can be easily boost up with improved varieties of chicken and can promise a better production of meat and egg (160-200 eggs/year). **Improved strains perform better than the indigenous strain. Vanaraja has proved to be the best strain with all features to be a suitable candidate for backyard poultry farming (Banja *et al.*, 2017).**

With the introduction of newly developed bird strains, backyard poultry farming is considered as the sure tool to improve the socio-economic status of the traditional farmers. Birds have certain inherent attributes and are a promising source of rural income with low input, short gestation period, and efficient production, better and quicker returns. Backyard poultry contributes about 17.8% (18.41 billion) of the total egg production (103.32 billion) of India (BAHS, 2019). Of the total egg production from the backyard poultry farming, the native birds produce about 11.9 billion eggs, the improved fowls lay about 5.19 billion eggs, while other avian species produce 1.32 billion eggs in the country. India ranks 3rd in egg production and 5th in meat production in the world and the per capita availability is 79 eggs and 3.12 kg chicken meat per annum. **The availability of eggs and chicken meat is highly variable in different parts of the country due to disparities in production levels and their transportation and availability between urban and rural areas (Chatterjee and Rajkumar 2015).**

J&K in general and Kashmir valley in particular with predominantly being non vegetarian society has a huge demand for chicken and eggs. Unlike other states of the country poultry sector failed to pick up in Kashmir due to multiple reasons and lack of feeding resources is one of the important reasons. **The gap between production and requirement is partially fulfilled by purchase of huge quantities of live broilers and eggs from neighboring states thus draining the state exchequer (Reshi, PA, 2018).** While there has been some progress in commercial broiler production by way of opening more and more broiler farms particularly in rural areas. Commercial layer industry is virtually non-existent and there is limited egg production from backyard poultry which has witnessed some revival after the popularization of strains like Vanaraja. These birds particularly Vanaraja has shown tremendous performance in Valley fields and has raised hope of transforming the economy of rural Kashmir. The backyard poultry farming has a huge potential in enhancing the availability of egg and chicken meat in the rural and tribal areas, besides generating employment and a supplementary income, and empowering

women. If the amount of land under fruit cultivation is exploited doubly by introducing backyard poultry birds alongside fruits under the concept of horti-Poultry model, there will be a tremendous revenue generation vis-à-vis organic farming and soil health management.

METHODOLOGY

Integrating poultry with horticulture (fruit crops) following a standard procedure is here termed as horti-poultry model. To start with and to give concept a practical shape KVK-Ganderbal under the technical guidance of Division of LPM, SKUAST-K started the trial with 600 Vanraja birds to evaluate the concept. The birds were divided into two groups of 300 birds each, with one group put on the confined feeding and other group (T₂) reared open in orchards in which birds were given free access to the KVK orchard during day and confined to shelter during night. These birds were allowed to feed on herbage, insects and other scavenging resources during the day and in the evening hours were offered kitchen waste comprising of leftover rice, vegetable waste, egg shells, leftover pulses etc. collected from the hostels of Faculty of Veterinary Sciences, Shuhama that is in the close vicinity of the Kendra. The birds were constantly checked for any signs of diseases particularly deficiency diseases. Small amount of supplemental feeding (10 gms/bird comprising equal proportion of yellow maize and broken rice) was also offered during the night confinement. Whereas, the group confined to intensive rearing was fed entirely the concentrate feed and mineral as well as vitamin supplements (60 gms concentrate feed with multimineral, multi vitamin liquid supplements). In addition to the normal production of fruit crops from the orchards an additional income of Rs. 101850/hectare of land was realized by rearing birds in such orchards (table-1)

RESULTS AND DISCUSSION

In control group of 300 birds initially within first 08 weeks 22 birds died due to different infectious and non-infectious diseases (mainly enteritis, pneumonia, non specific diarrhea etc) and at the end of the trial (40 weeks), 31 birds were died totaling a mortality rate of 10.3% where as in the treatment group (T₂) only 22 birds died (7.3% mortality), 10 due to enteritis and 02 due to predators. At 21 weeks of age in the control group male and female birds attained a body

weight of 3.2-4.0 kg, 2.7-3.5 kg respectively whereas in the treatment group male birds attained a weight of 2.2 -2.5 kg of weight while the hens acquired a weight of 1.8 to 2.3 kg. in both the

Farming System	Production Cost (Rs. per hect.)	Gross Return	Net Return/yr
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groups only 14 active and healthy cocks were retained for mating purpose as a parent flock with male to female ratio of around 1:8. The extra male birds were sold out @ Rs 200/kg live weight. In the control group the birds started egg laying at the age of 31 weeks with an initial laying percentage of 37% that increased to 45.5% after 35 weeks of age and afterwards the egg percentage ranged between 28-47%. Whereas in the treatment group the birds came to lay at 28 weeks of age and initially for the first 4 weeks 33.3% (37 eggs/day) egg production was recorded that increased to 46.8% (52 eggs/day) after another 3 weeks. Thereafter the egg production ranged between 25-49%. Some eggs collected from birds from the T₂ group were distributed among farmers for house hold incubation and some were sent to a local hatchery for hatching and rest were sold @ Rs 6/egg and. The chicks so obtained from the hatchery were again distributed among the farmers

The major observations of the trial at the end of 40 weeks were that the concentrate feeding cost in case of the treatment group (T₂) was reduced by 80% upto 28 weeks (start of egg laying) and no supplemental feeding was required after birds came to lay as against 60 gms of concentrate feeds that a birds confined to indoor rearing (T₁). Only 10.0 gms of concentrate feed was required under this model for feeding of birds in the treatment group (T₂) till the start of lay and complete restriction of concentrate feeding after 28 weeks of age. Besides being economical in terms of feed and labour cost, the integrated farming concept ensured resource optimization, income supplementation, deweeding, orchard sanitation, organic fertilization, hoeing, disease control of birds and additional income from the fruit orchards.

Horticulture Crop (fruit crops)	300000/-	680000/-	380000/-
Backyard Poultry	82650/-	1,84500/-	1,01850/-
Horticulture Crop + Poultry (integrated Horti-Poultry Model)	382650/-	864500/-	481850/-

Table-1: Income generation from fruit orchard with and without integrating with backyard poultry

Table-2: Effect of integrating poultry with horticulture in third week body weight of vanaraja Birds

Body weight	Control Group (T1)		Treatment Group (T2)	
	Male	Female	Male	Female
Body weight at 21 weeks of age	3.2-4 kg	2.7-3.5 kg	2.2-2.5 kg	1.8-2.3 kg

Table 2: Effect of integrating poultry with horticulture on egg production characteristics of vanaraja birds

Attribute	Control Group (T1)	Treatment Group (T2)
Start of Lay	31 weeks	28 weeks
Initial percentage of egg production	37%	33.3%
Egg production at 35 weeks	45.5%	46.8%
Egg production after 35 weeks	28-47%	25-49%

CONCLUSION

At the end of the successful trial of Horti-Poultry integration it was concluded that birds grown under semi intensive conditions perform better, ensure better utilization of resources, serve as secondary sources of income to orchardists, cause deweeding and natural sanitation of orchards, is a means of women empowerment, can prove a potential means of enhancing farmers income and can contribute to food security food security but requires mass awareness and encouragement to exploit the concept fully.

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