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## **Performance of khaki campbell duck integrated with fish in small scale income generation among the tribal farmers of Arunachal Pradesh**

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### **Abstract**

In the present study improved verity duck farming using Khaki Campbell integrated with fish was undertaken in two field units and evaluated few major performance parameters. The average body weight gain, egg production, egg weight and cost benefit ratio of demonstration units were recorded as 1.2 kg, 150 no's, 60g and 1.8:1 respectively which shows better result in comparison with local check of 1kg, 60 no's, 50g and 1.5:1 respectively. The result on net income in demonstration unit shows a much better result in compare to local check. Production parameters and economic efficiency were studied and found to be beneficial to the rural farmers in terms of small scale income generation and self-employment.

**Keywords:** duck, integrated farming, khaki campbell

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### **Introduction**

The tribal people of Arunachal Pradesh are mostly non vegetarian in nature. The meat and egg are the major source of animal protein in their daily diet. Integrated farming system proves to be a potential tool to boost up the economy and provide nutritional security among the rural poor farmers. Duck is a major component in integrated farming system along with fish a plays a vital role in proper utilization of resources and also get mutual benefit with fish in terms of growth and production. It gives regular animal protein through egg and meat and also provides financial security to the farmers in lean period when farmers cannot earn capital from the fish sector. The waste from the duck shed can be recycled and may be used for fish culture in integrated duck-fish farming (Bhagaban K, 2006) [2]. Due to the swimming behaviour it releases dissolve oxygen from the water and waste can be dispersed uniformly. Because of these, expenses for fertilizer, feed, supplementary feed for fish is minimized. (Rajput *et al.* 2014) [7]. Duck eat the unwanted weeds, insects, worms etc and increases biological productivity of the pond. The feed cost can be minimized using kitchen waste, broken rice, rice bran etc. Since the waste from duck feed can be utilized by fish so more return can be achieve with low input cost. Duck cum Fish integration is very common in countries like China, Hungary, Germany, Poland and Russia and to a very small extent in India (Ayyappan *et al.* 1998) [1]. As small scale farmers comprise the bulk of the population in India, their socioeconomic conditions encourage them for fish cum duck integration to raise farm productivity (Edwards *et al.* 1988). From the viewpoint of input output relationship fish cum duck integration is one of the best

models of integrated fish, livestock and poultry. Hence, the present study was undertaken to evaluate the role of duck farming integrated with fish in up liftmen of socio economic status of tribal farmers of Arunachal Pradesh.

### **Materials and Methods**

The performance of Khaki Campbell Duck integrated with fishery on two different Agro climatic conditions *viz.* Sub-tropical plain Zone and mid tropical Hill Zone were analysed. The temperature recorded in the region is favourable for livestock rearing with a range of minimum 14.03°C to maximum 33.25 °C with average relative humidity 76.55% for the year. Two trials were conducted in Rukmo and Kebali village under Roing-Kornu block of Lower Dibang valley district, Arunachal Pradesh (28.1429° N, 95.843° E). A total of 62 numbers of one month old ducklings were procured from Assam and allowed to rear in semi intensive system. Comparative studies were done for some important economical parameters like body weight gain, egg production, egg weight and cost benefit ratio with local check to know the differences in terms of income generation from duck sector.

### **Results and Discussion**

Two units of duck cum fish integrated farming systems were undertake in the present study. Results on major performance parameters like body weight gain, Egg production and Egg weight for both demonstration and local check were depicted in table1.

**Table 1:** Comparative economical results of Demonstration unit (Demo) and Local check

Major Performance parameters		Economics of demonstration unit (Rs./Unit)				Economics of local check (Rs./Unit)			
		Gross Cost (GC)	Gross return (GR)	Net return (NR)	Benefit Cost Ratio (BCR)	Gross Cost (GC)	Gross return (GR)	Net return (NR)	Benefit Cost Ratio (BCR)
Demo	Local Check								
Average body weight: 1.2 kg	Average body weight: 1 kg								
Egg production up to 60 <sup>th</sup> week: 150	Egg production up to 60 <sup>th</sup> week: 60	5000	9000	4000	1.8:1	4000	6000	2000	1.5:1
Egg weight: 60g	Egg weight: 50g								

In the present study, the egg production up to 60<sup>th</sup> week of age was found to be 150 no's. Similar study of egg production performance was also recorded by Padhi *et al.*, 2010<sup>[5]</sup>, where he recorded an average egg production of  $195.15 \pm 2.89$  up to 60<sup>th</sup> week of age. The difference in egg production in the present study might be due to the system of rearing and feeding pattern.

The average egg weigh was found to be 60g in the present study, a slightly higher average egg weight of 65.15 g was earlier reported by Rahman *et al.* 2010<sup>[6]</sup>. In Khaki Campbell egg. The difference on egg weight in present study may be due to differences in diet. The Benefit cost ratio (BCR) in the present study was found to be 1.8:1. Kumar *et al.*, 2012<sup>[1]</sup>. reported, the benefit: cost ratio in case of integration of duck with fish was found to be 3.49: 1 which was much more profitable to farmers than in case of fish culture without ducks, found to be at 2.74:1 under village conditions of Chhattisgarh. The low BCR reflect in the present study is due to the economics calculated from the duck venture only omitting the fishery sector. He found in a duck cum fish integrated farming system, the average initial mean weight of duck was 820 g and the maximum mean weight of ducks increased to 1304 g; similar record on body weight were recorded in our present study.

In comparison to the local check, the integrated duck farming using Khaki Campbell results higher economic return with a BCR 1.8:1 in compared to local check i.e. 1.5:1, which in turns helps to improve socioeconomic status of the tribal farmers. Similar report was reported by Majhi *et al.*, 2018<sup>[4]</sup> in Purulia district of West Bengal where he mentioned that integrated management of fish cum duck farming can be further developed towards achieving a higher economic efficiency.

## Conclusion

The study will provide a basic information on profitability of Khaki Campbell duck farming integrated with fish for better utilization of available resources and increase in income generation for the fish farmers without expenses more additional input and can plays an important role to achieve doubling farmers income.

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