Case Study

Backyard poultry farming for food, nutrition and livelihood security of landless and marginal poor

The Challenge

Agricultural intervention and farming systems research in India has been largely focused on enhancing production, productivity and profitability of crop resources without much emphasis on better nutritional outcomes. A large majority (85%) are small and marginal farmers with less than 2 hectares of land. In this context, Wardha district located in Vidarbha region of Maharashtra has a predominantly agrarian economy where three-fifths of the cultivated area is with small farmers while two-fifths are with medium and large farmers (GoI 2011). The area is characterised by rain-fed agriculture and included in the list of districts with high burden of malnutrition. Cash crop based cropping system coupled with limited source of land with small and marginal farmers creates difficulty in getting enough food production from the field. Besides, the landless have limited access to credit and almost no access to food for consumption from the field making them more vulnerable to malnutrition. Therefore, a new approach to farming systems for food, nutrition and livelihood security especially for landless and marginal farmers is needed considering the cultural, environmental, social and economic needs of the local community.

Introduction

To address the food and nutritional needs of farm and non-farm families based on their resource endowments and surrounding environment, a Farming System for Nutrition (FSN) study under the research programme on Leveraging Agriculture for Nutrition in South Asia (LANSA), mainstreams the nutrition dimension in the design of the farming system approach encompassing crop-livestock-nutrition garden along with nutrition awareness activities to address identified nutritional maladies prevailing in an area (Das *et al*., 2014).

Background

Arun Verma and his brother with the poultry unit. Village: Saheli

This case study looks at the impact of backyard poultry among 25 households across five study villages viz., Saheli, Bitpur, Susund, Heti and Borgaon in Wardha district, Maharashtra. Out of 556 households in the five villages, 175 (32 per cent) were landless with agricultural and non-agricultural wage labour being the primary occupation and 39 per cent belonged to small and marginal category having agriculture as their primary occupation. In addition, more than 80 per cent of children (<5 yrs age), adolescent girls (12-17yrs) and women (18-45 yrs) were found to be anaemic. The consumption of animal protein was once a week and consumed at a very low quantity at only 65.3g/day/person. This is reflected as in the high prevalence of undernutrition particularly underweight among the population (43% of 0 to 5 years children; 30.1% of 5 to 9 years; 52% of 10 to 14 years; 57% of 15 to 17 years; 39.1% of adult women and 50% of adult men). Vitamin A deficiency was also found to be high among 1 to 5 years children (35%) in the area. Backyard poultry was proposed as an activity to address the problem of undernutrition. Table 1 gives the nutritive value of eggs and meat from poultry.

Bebi Shankar Uike with the eggs produced from her backyard poultry. Village: Bitpur

Table 1. Nutritive value of poultry (Chicken and egg)

Type	Moisture (g)	Protein (g)	Fat (g)	Energy (Kcal)	Calcium (mg)	Phosphorus (mg)	Iron (mg)	Retinol (Vitamin A) (µg)
Chicken	67-78	17-21	2-14	386-1605	12-28	178-199	0.83-1.43	6-30
Egg	51-83	12-16	10-27	220-1290	53-55	23-586	0.15-4.92	180-456

(All values are expressed per 100 gm of edible portion) ***Source:*** *Indian Food composition tables, 2017, NIN, Hyderabad*

Plan of action and outcome

Following participatory discussion, backyard poultry was piloted with 25 landless/marginal and/or anaemic households in the study villages in January 2016. Under the approach, each household was provided with 16 chicks of improved poultry breeds along with other critical inputs; 50 per cent of the cost was met by each household. See **Box 1** for details.

Several training programmes covering aspects of backyard poultry management (comprising balance feeding, handling of feeder and drinkers (watering), use of low cost poultry feed (comprising of grain, bran, cake calcite, salt, minerals and vitamins etc.) besides purchase of feed from market and health management etc were organized by MSSRF with technical support from Maharashtra Animal and Fishery Science University (MAFSU), Nagpur. Further recommended vaccination schedule (Table 2) was also provided by the district Animal Husbandry Department, Wardha and MAFSU.

Box 1:

Cost of Setting up a Backyard Poultry Unit

- Fixed cost (Rs. 1700): Double layered iron cage (3 ft x 2 ft x2.5 ft) including electric wire and electric bulb,
- Variable cost (Rs. 1300 including transportation cost): 16 Chicks @ Rs. 40 per chick and 25 kg starter feed @Rs. 25 per kg feed
- Total cost of setting up a backyard poultry unit: Rs. 3000

Critical Factors to consider:

- Improved breeds (recommended by MAFSU): Vanaraj, Giriraj, Swarnadhara, Rhode Island Red
- Recommended age of chicks for backyard rearing: one to two weeks old
- Certified suppliers of chicks:
    - Government Hatchery Unit, Seminar Hills, Telang Khedi garden, Nagpur;
    - Krishi Vigyan Kendra, Washim

Table 2. Vaccination schedule adopted for poultry birds:

Sl No.	Age of chicks	Targeted Diseases	Vaccine	Dose	Route
1	1Day	Mareks	Mareks	0.2ml	Intra-venus
2	5-7Day	Ranikhet (Manmodi)	Lasota	1Drop	Nose
3	52 Day	Ranikhet (Manmodi)	Lasota	1Drop	Eye drop /Oral
4	16-18Day	R2B	Mukteshwar	0.3ml	Intramuscular

Future strategy

Out of 25 participants, eight households have already started collecting and brooding the eggs for chicks. Box 1 gives the essentials for a backyard poultry unit. Considering the first year result (Table 3) and the interest in continuing as well as interest evinced by other farmers in the study villages, the project is working towards establishing the linkage between proactive entrepreneurs and authentic chick supplier units in the locality.

Table 3. Economics of backyard poultry per household (January-December, 2016):

Cost of production			Total Production		Consumption		Amount sold		[a]Total return (Rs.)	[b]Net return (Rs.)
Fixed cost (Rs.)	Variable cost (Rs.)	Total cost (Rs.)	Egg (no.)	Meat (kg.)	Egg (no.)	Meat (kg.)	Egg (no.)	Meat (kg.)		
1700	1300	3000	50	26	34	12	16	14	500 +6500 = 7000	4000

[a]*Total return was calculated taking the total production of eggs and meat per household multiplied with respective market sale price [egg@Rs. 10 per egg and meat@250 per kg].*

[b]*Net return was calculated by subtracting cost of production from total return.*

"I am a landless farmer with a family size of four. Through the survey, I got to know that all my family members are anaemic and was worried about tackling the situation with my limited income. But now I am glad that through backyard poultry, my family is getting enough eggs and meat for consumption. Sometimes, I am selling eggs to my neighbours. I have also started hatching chicks on my own in order to take it up as an enterprise."

- **Vinod Kamble, Landless farmer**
  Village: Heti

References:

Das P K, R V Bhavani, M S Swaminathan (2014) A Farming System Model to Leverage Agriculture for Nutritional Outcomes. Agricultural Research, 3:193-203 DOI 10.1007/s40003-014-0119-5.
Government of India - GoI (2011). Census of India 2011. Office of the Registrar general and Census Commissioner. For more information:http://lansasouthasia.org/content/farming-system-nutrition

Credits: This Brief was written by Aliza Pradhan, Coordinator FSN Study; Manoj Sayre, Senior technical Assistant FSN study, Wardha; Prashant Deokar, Coordinator FSN Study, Wardha and R V Bhavani, Programme Manager of the LANSA Research Programme Consortium at M.S. Swaminathan Research Foundation, India.

The team acknowledges the contribution of Mahesh Maske, former coordinator FSN Study, Wardha; D J Nithya, nutritionist FSN study and S Raju, FSN data manager.

This study is part of ongoing research under the LANSA Research Programme Consortium and is funded by UK Aid from the UK Government. The views expressed do not necessarily reflect the UK government's official policies.

April 2017