

Farming System for nutrition: An integrated approach for combating malnutrition among farm families

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Introduction

Agriculture is way life and major source of livelihood in India. After independence, sincere efforts were made to increase productivity in agriculture and allied sectors to feed the growing population. As a result, India has witnessed green revolution in food grains, white revolution in milk, golden revolution in fruits and vegetables, yellow revolution in oil seeds and blue revolution in fisheries and looking forward for achieving rainbow revolution³ in all the activities of agriculture and allied sectors including value addition. Despite all these revolutions, major sections of Indian population are suffering from nutritional deficiencies like Malnutrition. The quality of food people consuming in rural areas is not meeting their nutrient requirements, so the food is deficient in micronutrients such as the vitamins and minerals that they need for their growth and development which is ultimately leading to hidden hunger or micronutrient deficiency. The consequence of malnutrition is caused by multiple factors such as small land holdings, lack of nutritional education, low purchasing power, lack of availability of nutrient foods etc, hence a multipronged need to be devised to address the issue of malnutrition.

After fifty years of green revolution in India, MS Swaminathan Research, Chennai Promoting Farming Systems for Nutrition (FSN) model by inclusion of agriculture and allied sectors with a main focus on availability of nutrients to entire farm family. MSSRF has been leading a study since mid 2013 to demonstrate the feasibility of a FSN approach under a research programme on Leveraging Agriculture for Nutrition in South Asia (LANSA). According to Dr. M S Swaminathan, The father of green revolution in India, Farming Systems for Nutrition envisages the introduction of location-specific agricultural remedies for nutritional maladies by mainstreaming nutritional criteria in the selection of farming system components involving crops, animals and wherever feasible fish.

What is Farming Systems for Nutrition?

It is an interventional approach that includes a combination of sustainable measures including advanced crop production practices, bio-fortification, promotion of nutrition gardens of fruits and vegetables, livestock and poultry development, and setting up of small-scale fisheries, combined with nutrition awareness, as stimulant for rendering consistent output of higher income and better nutrition. The objective is to address malnutrition in all its forms, viz. calorie deprivation, protein deficiency and hidden hunger or micronutrient deficiencies.

The principle of FSN

The underlying principle of FSN is ensuring the availability, accessibility and utilization of nutrient dense foods to farm families for their nutritional security. Because Food Security encompasses 'Availability', 'Accessibility' and 'Utilization' which includes 'absorption' and bioavailability of food making it inclusive of 'Nutrition Security'. Increasing food production alone cannot address the issue of malnutrition, unless there is a nutrition focus and the poorest have access to sources of diversified and nutritious foods.

Food production contributes positively to the diets of farm families, particularly small holders. In other words, a diversified food production system has the potential to diversify the consumption basket of farm families. The FSN model is a location-specific, inclusive model based on the resource endowments and specific environment, to address the nutritional needs of families. FSN is a flexible model that takes into account the nature of resource endowment, specificities in environment and nutritional problems, ideally a farmer can decide on the possible combinations of different components of FSN depending on his/her location. Nutrition literacy has to be an integral component of the FSN approach, as an understanding and acceptance of the concept is crucial for sustained practice.

The objectives of FSN

To encourage small and marginal farmers for implementing mixed farming in 1 acre so that they can meet the nutritional security.

The Main focus of FSN

1. Farming systems

2. To encourage farmers to address the problems of under nutrition and nutritional deficiencies by introducing bio fortified varieties and nutri-dense crops.

For nutrition broadly focuses on macro (Carbohydrates, Proteins and fats) and micro (Vitamins and minerals) nutrient requirements thus ensures the nutritional requirement of the farm families. FSN will help to not only improve the yield of crops but also mainstream the nutrition dimension in the choice of crops. In order to enable farmers to identify crops, which can provide specific nutrients like vitamin A, a Genetic Garden of Biofortified Crops is being established as part of FSN.

Examples of FSN:

Some examples of farming systems are:

1. Crop Husbandry with different nutrient-dense/nutrient rich crop combinations+ Nutri garden
2. Crop Husbandry + Livestock+ Nutri garden
3. Crop Husbandry + Livestock + Poultry/sheep+ Nutri garden
4. Crop Husbandry + Horticulture + Sericulture + Nutri garden
5. Crop Husbandry (Rice) + Fish culture+ Nutri garden
6. Crop Husbandry (Rice) + Fish + Mushroom+ Nutri garden
7. Crop Husbandry + Fishery + Duckery + Poultry+ Nutri garden

Based on the feasibility different nutri sensitive agriculture models can be taken up by farm families to guarantee nutritional security of its members.

The expected results of FSN are:

Converting the agriculture into nutri - sensitive and income generating agriculture. The pathways through which agriculture can influence nutrition outcomes cover four broad areas: (1) consumption of own production or agriculture as a source of food; (2) income from agriculture; (3) food prices; and (4) aspects related to gender such as the status of women in agriculture and women's nutritional status that directly or indirectly influence food, nutrition and health. Of the different linkages that prevail between agriculture and nutrition, 'cultivation and consumption of own production' is a pathway that can bring about direct changes in food production system enhancing availability and access to food for farming households, particularly the small holders.

Outcome of FSN

The expected outcome of FSN is ensuring availability of macro (Carbohydrates, proteins and fats) and micro (Vitamin and minerals) for family consumption to attain nutritional security.

