MEETING REPORT

Farming system for nutrition consultation*

Malnutrition and hidden hunger are among the most pressing development concerns in the world today. The United Nations (UN) estimates that over 795 million people in the world are undernourished. The number is higher if we consider the World Health Organization (WHO) estimate that two billion people suffer from 'hidden hunger' or lack of vitamins, minerals and essential nutrients.

The UN's Sustainable Development Goal (SDG) 2 aims to end all forms of malnutrition by 2030. To achieve this, agriculture plays a crucial role, especially in South Asia and Sub-Saharan Africa that have predominantly small and marginal farmers. Focusing on linkages between agriculture and nutrition can help provide pathways to achieving Zero Hunger.

Agriculture scientist M. S. Swaminathan while propounding the farmer-led strategy of Farming System for Nutrition (FSN) defined it as follows: 'The introduction of agricultural remedies to the nutritional maladies prevailing in an area through mainstreaming nutritional criteria in the selection of the components of a farming system involving crops, farm animals and wherever feasible, fish'. FSN aims to change food production, enhance availability and access to food for small-scale farming households.

It was on this theme, that a meeting was held last year, which brought together over 300 stakeholders from agriculture, nutrition and health from India and across the globe.

At the inaugural event Karnataka Agricultural Minister Krishna Byre Gowda spoke of the need to change mindsets of people on nutritious foods and how Karnataka was pushing nutritious foods and including millets in the Public Distribution System (PDS).

Trilochan Mohapatra (Principal Secretary, Government of India; Director General ICAR and DARE) mentioned that ICAR was focusing on nutrition as an important area. Maria Andrade (International Potato Centre, Mozambique) shared the experience of the orange-fleshed sweet potato that helped reduce vitamin A deficiency in 70% of the population in Mozambique.

The consultation had the following technical sessions: (i) Pathways of farming system for nutrition (nutrition-sensitive agriculture); (ii) Agro-biodiversity/ climate change and farming system for nutrition; (iii) Nutritionists' perspective on farming system for nutrition; (iv) Role of technology in farming system for nutrition; (v) Bridging the gaps; (vi) Farmers' experiences with farming system for nutrition; and (vii) Policy support required for farming system for nutrition.

During the consultation, the need for life-cycle approach in nutrition, importance of biofortification, role of agro-biodiversity in farming systems and the need to mainstream neglected and underutilized crops were highlighted. The concept of 'genetic garden' of naturally fortified and biofortified crops for awareness and planting materials was discussed.

The link between agriculture, health and nutrition, and possible remedies for deficiencies was explored. Also, evidence and influence of non-food factors on nutrition and health, and on dietary diversification through farm-based approaches were shared.

The conference noted that new technologies are needed to address yield gaps, but we also need to augment nutritional value of food products. Panellists emphasized the need for proper technology assessment from environment safety and public health perspectives. Policy, regulation and political will are required to address food safety and nutrition.

Factors for effective adoption of nutrition-sensitive agriculture such as gender and social inclusion, community awareness, use of Information and Communication Technology and the importance of water and sanitation best practices were shared.

The ground reality of farming and constraints were discussed by farmers from four states of India. Farmers elaborated on issues of productivity and diversification of crops in changing rainfall patterns. The increase in household consumption of nutritious food but challenges of seed, lack of marketing facilities and pricing were mentioned.

During the consultation at Chennai, Rajan Sankar (TATA Trusts), Anthony Michael Whitbread (International Crops Research Institute for the Semi-Arid Tropics, Hyderabad), Purvi Mehta-Bhatt (Bill & Melinda Gates Foundation) shared evidence from their experiences.

Swaminathan said, the seed for a nutrition revolution had been sown at the meeting and should be taken forward. Beyond the agricultural community, the nutrition status of non-farmers who also constitute a large group, needs examination to understand the requirements for their nutrition security. Over 50 years ago, the Green Revolution was ushered in to fight the calorific hunger that helped transform India to self-sufficiency in foodgrains. However, we need to fight protein hunger. The focus on pulses – with India being the highest producer and consumer – as well as on fish would help address protein deficiency. However, in spite of increased food production, to combat micronutrient deficiency and for increasing concerns over malnutrition, the need of the hour is for a strategy to eliminate this 'hidden hunger' through a 'Nutrition Revolution'. Ramesh Chand (NITI Aayog) called for farming system package recommendations for nutrition-sensitive agriculture. The heavy cost of malnutrition had led to the United Nations General Assembly resolution proclaiming 2016–2025 as the UN Decade of Action on Nutrition said Lalitha Bhattacharya (FAO, Bangladesh).

Rasha Omar (International Fund for Agricultural Development, India) emphasized how coordinated action across health, agriculture and sanitation was needed to address nutrition, along with women's empowerment and education.

The consultation came up with an action plan for better nutrition outcomes in India. The 'Chennai action plan for a nutrition revolution' was circulated to all participants and suggestions incorporated before finalizing the same. The following is the action plan.

*A report on the Conference organized by the M.S. Swaminathan Research Foundation, with the support of TATA Trusts.

(I) *Strengthen agriculture – nutrition linkages*

(1) Incorporate principles of 'Evergreen Revolution' and a farming systems-based approach for dietary diversity and better nutrition status of small-holder farmers.

(2) Undertake more agronomic research on nutrient-dense crops in irrigated and rainfed agro-ecosystems, for small holders to adopt the FSN approach.

(3) Facilitate big data analysis from the Soil Health Card programme of the Government of India for appropriate action.

(4) Attention on soil management technologies and crops with high and balanced micro nutrients to address micronutrient deficiencies endemic to different agro-ecosystems.

(5) Promote research on wild edibles, tubers, and neglected and underutilized species (NUS) in natural environment and farming systems for cultivation and consumption.

(6) Mandate Krishi Vigyan Kendras (KVKs; agriculture extension centres) to build locally relevant models for nutrition farming and provide support for extension.

(7) Support scientific validation of nutritional value of traditional crops and wild species to understand their importance for diversification and inclusion in the food basket.

(8) Facilitate inter-generational discourse amongst indigenous communities to document and revitalize traditional knowledge and practices on nutrition and farming systems.

(9) Promote access to planting material of nutritious crops and varieties, community seed banks and region-specific genetic gardens of nutri-dense crops.

(10) Build nutrition-sensitive value chains of food crops by promoting local products with processing and value addition along with farmer collectives.

(11) Identify crops to address specific nutritional deficiencies and promote their cultivation and consumption focusing on local, easily available and affordable solutions.

(12) Establish community-managed nutrition gardens in common lands of all Panchayats (local bodies) to create access to nutritious food for the landless.

(II) *Education, training and awareness*

(1) Incorporate importance of nutrition in health and information on locally available nutri-rich food in the school curriculum. Revamp primary and secondary school syllabus to include malnutrition concerns, its prevention and rectification.

(2) Establish 'Nutri clubs' in schools and colleges to inculcate good nutrition practices, including safe cooking, nutrient retention and improving nutrient bioavailability.

(3) Strengthen curriculum of professional agriculture courses with inclusion of agriculture and nutrition linkages, and related aspects.

(4) Set up a grid of model nutrition gardens in schools, home science and other colleges, agricultural research stations and KVKs.

(5) Promote crop-based nutrition awareness approach through the various systems.

(6) Strengthen national, state and local leadership to mainstream nutrition in agriculture schemes and activities.

(7) Implement a convergent communication campaign with uniform messaging across departments and institutions on agriculture–nutrition awareness.

(8) Establish a knowledge portal on naturally biofortified crops and plants along with agronomic practices.

(III) *Policy support*

(1) Promote interventions to address malnutrition in mission mode at state and centre levels, with inter-departmental convergence, operational guidelines and implementation processes.

(2) Provide necessary support to take FSN approach to scale with KVKs as the focal point in each district for this purpose.

(3) Analyse, monitor and enhance budgets for FSN and nutrition-sensitive agriculture.

(4) Review existing agricultural schemes to identify the scope for integrating nutrition dimension and mainstream this in agricultural production.

(5) Include FSN as a model for funding support under Rashtriya Krishi Vikas Yojana.

(6) Consider gender divisions of work in planning interventions, to provide support to address time trade-offs, access to knowledge and advisory services, financial services, and markets for both men and women farmers.

(7) Establish a grid of genetic gardens of fortified plants across the country for educational awareness and multiply necessary planting material.

(8) Enable states to supply millets in the PDS as provided for under the National Food Security Act. Pulses should also be provided.

(9) Improve governance mechanisms on food safety and standards by ensuring their implementation.

(10) Facilitate the setting up of an Asia-focused platform for policy initiative on nutrition-sensitive farming systems.

This action plan seeks to provide suggestions for greater impact on nutrition-sensitive efforts across India for policy makers and stakeholders in the country and the region.

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