

Brief of Deliberations at the Meeting of the Technology Platform for the Farming System for Nutrition Initiative in Jeypore under the projecton Leveraging Agriculture for Nutrition in South Asia (LANSA)

Sunday 22 Dec, 2013, Deep Mahal Hall, Hotel Swosti Premium, Bhubaneswar

The meeting was chaired by Professor M S Swaminathan. Representatives from key research institutes and Initiatives in Odisha participated and gave their inputs and suggestions. The list of participants, photographs and presentations are attached separately.

The meeting began with Dr. Ajay Parida, welcoming the gathering. He briefly outlined MSSRF's work in Odisha since the mid nineties in the areas of coastal systems research and mangrove forest restoration in the Bhitarkanika region and biodiversity conservation in Koraput. MSSRF's work in the state had got international recognition with the Equator Initiative award from UNDP in 2002. Then came the Plant Genome Savior Award from the PPV&FRA in 2006, the National Water Award for 2010 from the Ministry of Water Resources, Govt of India; and the Koraput region was recognized as a Globally Important Agricultural Heritage Site (GIAHS) by FAO in 2012.

The Koraput region was however still a hotspot in terms of the major development indicators of poverty and food and nutrition security, calling for practical action at the ground level. MSSRF has been working to demonstrate different models that can help address the problems of food and livelihood security. It was one such initiative of pro-nutrition agriculture intervention that had been recently undertaken under the DFID supported multi-country project on Leveraging Agriculture for Nutrition in South Asia (LANSA). The purpose of constituting and convening the meeting of the technology platform was to seek partnership with other organizations, share our thoughts and seek suggestions on the way forward.

Following a round of introductions around the table, Professor M S Swaminathan set the tone for the meeting with his introductory remarks. He made a presentation outlining the problem of hunger and malnutrition, the initiatives at the international level (zero hunger challenge formulated by the UN) and at the Food Security Act at the national level. He discussed how agriculture could be leveraged to address the problem – the need to understand the nutritional challenges and identify the opportunities in agriculture, look for agricultural remedies for nutritional maladies; it could be through crop-crop / crop-livestock / livestock-fish-trees-crops systems, depending on the natural resource endowments and the asset base of the rural households. Multiple approaches were needed, based on local needs and opportunities.

Tracing the trajectory of India's tryst in addressing hunger from the time of the Bengal Famine in 1943 to doomsday predictions that were warded off by the Green Revolution in the late 1960s, he said that 2013 marked a landmark year in our history with the passage of the Food Security Act that made the right to Food a legal right for every citizen. The Act had unique features of addressing the entire life cycle of a human being, had enlarged the food basket to allow for

inclusion of coarse cereals or orphan crops like millets in the public distribution system and recognized women above 18 as the head of the household, in the process recognizing them as the custodians of food security. The Indian enigma was that it was not difficult to feed our people properly given our production levels; yet the problem of malnutrition persists. There was the problem of food loss and food waste. The latter was more in the developing countries. But in countries like India, food loss at the post harvest stage needed immediate attention.

Just quantity alone is not enough. Quality and nutrition are important. The Harvest Plus initiative of the CGIAR was an effort in this direction to develop bio-fortified varieties of sorghum, pearl millet. There were naturally biofortified plants as well in nature, like *moringa* (drumstick) and breadfruit. The orange flesh sweet potato was a rich source of food as well as vitamin A.

Issues of organic agriculture vs green agriculture, using all parts of the crop plant to help improve small farmer income (e.g. concept of rice bio-park) were also explained by him. It is important that we clearly understand what we are addressing and develop our own measurement indicators to assess impact of the interventions.

He called for an international year for underutilized crops / orphan crops

Dr. PK Das made a presentation describing the LANSAs research programme consortium, its goal and what was envisaged under the FSN initiative that had been undertaken in Wardha and Koraput districts. The concept of FSN, the steps involved and on-farm demonstrations undertaken in select villages of Koraput district were described in detail.

The meeting was then thrown open for comments and suggestions from participants around the table.

The relevance of the FSN approach was appreciated by Dr. D P Ray. He highlighted that a lot of interventions were happening through KVKs and these could be leveraged. There were 31 KVKs under the OUAT. Linkage with KVK would be useful for the FSN initiative. The state ranked high in vegetable production. Based on deficiency of nutrients, crops and vegetable to promote maybe decided upon. Given Koraput's climatic conditions, most off-season vegetables could be cultivated there. Backyard duckery and piggery may also be promoted and the dairy option should also be examined. The Extension department of OUAT could be drawn on for the documentation already in place on strategies and modules like mixed fishery and poultry and duckery. The help of the KVK should be taken when awareness programmes are organized.

Dr. Ashwani Kumar highlighted the issue of efficient water management. Although Koraput receives heavy rainfall, the major crop production is in kharif and rabi cultivation potential is underutilized due to water problem. Rabi maize has better potential in terms of productivity and can be more remunerative. Land consolidation has not taken place in the region and water delivery system does not exist – these infrastructural constraints need to be looked into when we

want to link with science. Farmers also need price support and assurance of market when they are being encouraged to diversify their production.

Dr. Dilip Kulkarni emphasized that on-farm water management was important. Increasing productivity of orphan crops/ nutria-cereals like millets under FSN should integrate a protocol marrying them with home consumption, not just growing for the market. How to conserve water on-farm and use it judiciously should be taught to the farmers. Use of drip kits; application of balanced nutrients (fertigation) through irrigation would help improve productivity of crops.

He also suggested promotion of 4-5 banana plants and other locally available plants like *moringa* in backyard with home water recycled for use. Nutrition awareness in local language was important. He mentioned that Jain Irrigation had translated NIN material into Marathi for wider outreach and was on the lookout for partners for translation in other languages.

Dr. Archana Singh highlighted how sweet potato and taro had helped poor get life support post super cyclone. Some beta carotene rich varieties of tubers were also rich in Zn and Fe. She also emphasised the importance of reaching out in the local language and the need to address both men and women. In-situ food habits and current consumption patterns have to be examined to understand and make suggestions on how best we can substitute.

Dr. Shukla highlighted his experience of promoting nutritionally rich *karaonda* (fruit of *Carissa carandas*) as a protective hedge around fields in Rajasthan. The Directorate of Research on Women in Agriculture had developed model of nutrition garden on 2000 sq meter and low cost protected shade net structures for vegetable cultivation and would be happy to share the technology.

Dr. Kushagra Joshi emphasized the importance of having gender indicators under impact assessment and the need for gender sensitization under the programme. She suggested gender mapping along the whole agriculture value chain to understand the role of women.

Dr. Bulliyya mentioned problems of mortality due to malnutrition, the need for dietary diversification, education and greater awareness. Home gardens could promote household food security. Bio-fortification was also an important strategy. Ongoing policies and programmes have to be strengthened. He submitted that the Annual Health Survey of 30 districts was currently in progress and the data for Koraput could serve as a baseline.

Dr. Srikant Attaluri highlighted that the objective of the Generating Advances in Income and Nutrition through sweet potato (GAINS) Project under RKVY was to reach poor and marginal farmers and work on market driven innovations. The CIP was working with CTCRI and local NGOs. A mobile kitchen initiative to train health and extension workers and encouraging inter-cropping with other food crops like pigeon pea and maize to get more nutrients from the same land were cited by him. Citing the importance of nutrition education, he expressed keenness to collaborate under FSN.

Dr. K Mohanta expressed that while fish can help address both protein and hidden hunger, quality seed and feed were problem areas. There was shortage of good quality feed at affordable cost. Expressing that fishery should be an essential component wherever there is a water body/pond, he suggested encouraging feed based aquaculture under FSN and outreach activity to promote fish feed production. Detoxified mahua oil cake for instance was both a good feed and fertilizer. He assured cooperation from CIFA under FSN.

Ms. Swagatika Pradan highlighted the work of AVRDC on kitchen garden models with better practices like rotation of crops to ensure nutritional balance, proper spacing; focusing on women, the importance of maintaining nutritive content during preparation of any food and IEC materials on common package of practices. She expressed that AVRDC had developed research lines of cowpea, chilly and tomato and would be happy to collaborate under the FSN initiative.

For better livestock management, information on what kind of diseases in which season and how to address would be useful.

Dr. Brahman opined that the emphasis should be on inclusion of locally available nutritionally rich fruits and vegetables. Vit A deficiency can be addressed through this route. Bioavailability of iron is however difficult. Right culinary practices are important in that vitamin C in foods is lost in cooking. Behavior change communication he said is a slow and tough process. It is important to have this as an integral part of FSN.

Dr. CM Khanda submitted that CSISA was working on farming system mode. In Odisha he felt every household could be seen as a farming system unit. Steps were needed to make them model Farming Systems to be nutritionally sustainable. Promoting hybrid Quality Protein Maize (QPM) was also part of CSISA and they planned to move to Koraput where there was potential for rabi maize. They would be looking for a partner and would be happy to collaborate under the FSN initiative. Nutrition of cattle also a component of ILRI under CSISA; A 'Nutri-village' model could be created for the district/state.

Dr. Mohapatra cited CRRI's farming system model of rice-fish-horticulture. He surmised that the FSN programme that was currently located at two sites, should be taken forward once validated; He suggested that too many components may deter farmers and the combinations should be kept at a minimum for better uptake. Working with familiar crops would be easier; thrust on processing post production was important to address the profitability aspect; a low scale processing unit could be thought of. Both high productivity and profitability should go hand in hand. CRRI could collaborate under ICAR's tribal sub-plan programme. If the Consortium could be expanded, ICAR could be sensitized to become a part. Nutrition education has to be an important component.

It was suggested that the green house gas emission under different components of the FS should be examined; Soil health and proper nutrient management of soil was also important. Small farmers need a platform to access inputs and market. While paddy is the main crop in Koraput;

some area can be diverted to other crops; there are nutritionally rich rice varieties also – protein/iron/zinc and drought resilient varieties as well that can be introduced.

It was clarified by Ms. Bhavani that while the LANSA consortium was fixed, MSSRF was looking to leverage the strengths of different members of the technology platform for the FSN initiative and have them as partners in the process. Some of them like CRRI, CIP/CTCRI and Jain Irrigation were already collaborators in the on-farm demonstrations that had been undertaken. Nutrition literacy using IEC material was an integral part of FSN and MSSRF would be looking to harness multiple means ranging from use of modern technology like mobile messaging as well as training a cadre of community hunger fighters in villages. Availability of relevant content in the local language was necessary. From the next *kharif* season, household level interventions would commence and MSSRF looked forward to active participation from all the technology platform members. Examining the soil health, providing farmers with soil health cards and taking appropriate measures to address nutrient deficiencies was also to be undertaken as part of FSN. Gender was an important cross-cut and time use and access to and control over resources and decision making surveys were planned to be part of the baseline surveys to be undertaken on the basis of which impact of the programme would be assessed.

Dr. Das added that the technology platform for FSN presented an open forum for discussion and collaboration.

Dr. Archana Singh suggested the need for policy initiative for awareness drive on nutrition and gender issues in schools to sensitize students.

Dr. Kulkarni shared the example of their company's experience in Himachal Pradesh where high productivity was observed in vegetables cultivated in low cost polyhouses on less than quarter acre of land. The quality of vegetables was also found to be very good. He also submitted that their company had designed 'Jain GAP' – for practice by very small farmers. They had got approval for the same from global GAP authority and also developed manuals. They could help demonstrate this for adoption in the FSN sites. On energy source, he suggested use of 0.2 HP low cost solar pump for in-situ energy creation.

Dr. Shukla expressed willingness to assist in polyhouse cultivation. Subsidy was also available under the NHM for use of shade nets. Further supplementation with insect proof net would help. Raising nursery of vegetable crops to make good quality disease free planting material could also be undertaken.

Dr. Parida expressed that MSSRF would be happy to work with different partners around the table to take locally adaptable technologies to the ground.

Dr. Buliya offered to share material in Odiya developed by the ICMR regional centre.

On sensitization through schools, Mr. Swain highlighted MSSRF's initiative of forming DNA clubs in schools that currently covered 9 districts in the state. Women - Water - Weather he felt were 3 key components of FSN and training community members to be climate risk managers he felt would be useful.

Mr. Susanta Chaudhury suggested having frontline demonstrations of enriched farmyard manure and INM, IPM that farmers can afford and access.

Coming to the end of the deliberations, Professor Swaminathan thanked all participants for the very useful suggestions and assurance of support. He summed up that any intervention to have potential for self replication should be economically viable, feasible and sustainable. Referring to the synergy between science, technology and policy that had together created the Green Revolution Symphony in the 1960s, he called for the technology platform to form a '*Malnutrition Free India symphony*' – integrating all the knowledge available and demonstrate and advocate for policy change for accelerated progress in addressing the problem of malnutrition.