

E.F. No. Q-11050/45/2018-Agri.
Government of India
National Institution for Transforming India (NITI) Aayog
(Knowledge & Innovation Hub)
Agriculture Vertical

NITI Bhawan, Sansad Marg,
New Delhi - 110 001
Dated the 13th March, 2018

Subject :- Minutes related to the Consultation on Leveraging Agriculture for Nutrition held at NITI Aayog on January 30, 2018.

Please find herewith the minutes of the Consultation on Leveraging Agriculture for Nutrition held at NITI Aayog on January 30, 2018 with the joint initiative of NITI Aayog and LANSa Wing of M.S. Swaminathan Research Foundation, Chennai for kind perusal and needful action.


(Manash Choudhury)
Joint Adviser
Room No. 1259
Tel : 011 2309 6630

Encl : As stated above.

To

1. Secretary, Department of Agriculture, Co-operation and Farmers' Welfare, Ministry of Agriculture and Farmers' Welfare, Krishi Bhawan, New Delhi.
2. Director General, ICAR & Secretary, Department of Agricultural Research and Education, Ministry of Agriculture and Farmers' Welfare, Krishi Bhawan, New Delhi.
3. Secretary, Ministry of Women and Child Development, New Delhi.
4. Secretary, Ministry of Health & Family Welfare, New Delhi.
5. Chief Executive Officer, National Rain-fed Area Authority (NRAA), Department of Agriculture, Co-operation and Farmers' Welfare, Ministry of Agriculture and Farmers' Welfare, Krishi Bhawan, New Delhi.
6. Pr. Scientific Adviser to the Hon'ble Prime Minister, PMO, South Block, New Delhi.
7. Additional Secretary, Ministry of Women and Child Development, New Delhi.
8. Joint Secretary, Ministry of Women and Child Development, New Delhi.
9. Agriculture Production Commissioner, Department of Agriculture, Co-operation and Farmers' Welfare, Ministry of Agriculture and Farmers' Welfare, Krishi Bhawan, New Delhi.
10. Deputy Director General (Health & Nutrition), Ministry of Health & Family Welfare, New Delhi.
11. Dr. Renu Swaroop, DBT-BIRAC, Department of Bio-technology, Ministry of Science and Technology, New Delhi.
12. Dr. Suresh Pal, ICAR-National Institute of Agricultural Policy, Pusa, New Delhi.
13. Dr. Hemlatha, Director, National Institute of Nutrition, Hyderabad.
14. Dr. Anura Kurpad, HoD (Physiology), St. John's Research Institute, Bengaluru.
15. Dr. Shyam Bahadur Khadka, FAO Representative in India, FAO-India Office, New Delhi.
16. Dr. Hameed Nuru, Country Director, UN World Food Programme, New Delhi.

17. Prof. Madhura Swaminathan, Chairperson, MSSRF, Chennai.
18. Sh. Basanta Kumar Kar, Chief Executive Officer, The Coalition for Food and Nutrition Security, New Delhi.
19. Dr. Pramod Kumar Joshi, Director for South-Asia, International Food Policy Research Institute, New Delhi.
20. Dr. Anirban Ganguly, Research Officer, DFID South-Asia Research Hub, New Delhi.
21. Dr. Nupur Barua, Head, DFID South Asia Research Hub, New Delhi.
22. Dr. Rachel Lambert, Senior Livelihood Adviser, Agricultural Research, DFID. London.
23. Dr. S. Mahendra Dev, Director & Vice Chancellor, Indira Gandhi Institute of Development Research, Mumbai.
24. Dr. Prema Ramachandran, Director, Nutrition Foundation of India, New Delhi.
25. Dr. Purvi Mehta Bhatt, Deputy Director and Asia Lead – Agriculture, Bill & Melinda Gates Foundation, New Delhi.
26. Dr. Rajan Sankar, Director – Nutrition, Tata Trusts, New Delhi.
27. Dr. Prabhu Pingali, Director, Tata Cornell Initiative, New Delhi.
28. Dr. Avinash Kishore, Research Fellow, IFPRI, New Delhi.
29. Ms. Rasha Yousef Omar, Country Representative, IFAD, New Delhi.
30. Dr. V. Selvam, Executive Director, MSSRF, Chennai.
31. Dr. R. Rukmani, Director, Food Security, MSSRF, Chennai.
32. Dr. R. V. Bhavani, Programme Manager, LANSAs (MSSRF), Chennai.
33. Ms. Sangeetha Rajeesh, Research Uptake Manager, LANSAs (MSSRF), Chennai.
34. Dr. R. Rengalakshmi, Director, Eco-technology, MSSRF, Chennai.
35. Dr. Arjan de Wagt, Chief, Child Development and Nutrition, UNICEF, New Delhi.

Cc :

- (i) PS to Vice Chairman, NITI Aayog.
- (ii) PPS to Member (RC), NITI Aayog.
- (iii) PPS to Member (Health & Nutrition), NITI Aayog.
- (iv) Sr. PPS to CEO, NITI Aayog.
- (v) PPS to AS (YM), NITI Aayog.
- (v) PS to Adviser (Health), NITI Aayog.
- (vi) PS to Adviser (Agri.), NITI Aayog.
- (viii) Dr. Shivendra Kr. Srivastava, Agriculture Economist, NITI Aayog.

Minutes of High Level Consultation on Leveraging Agriculture for Nutrition

A multi-sectoral one-day round-table on 'Leveraging Agriculture for Nutrition' was held at NITI Aayog on 30th January, 2018 to discuss the nutritional dimension in agricultural policies and programs in India. Prof Ramesh Chand, Member (Agriculture) and Dr Vinod K Paul, Member (Health & Nutrition), NITI Aayog co-chaired the consultation. *The list of participants is annexed.*

Prof. Ramesh Chand, Member (Agriculture) opined that linking agriculture, nutrition and health is paramount for food and nutritional security. This realization has occurred at the top level and NITI Aayog has been tasked with the responsibility of finding ways to achieve this leveraging to tackle the under-nutrition problem in the country. The UN approach to human nutrition is largely about basic nutrition, but over time, the concept of nutrition has evolved. He observed that FAO's estimation of India's undernourished populations is under estimated and shows that while poverty rates are declining, under-nutrition is not reducing at the same pace. The rate of decline is slower than that of poverty because the latter is related to income. Under-nutrition is also found among high income groups indicating lack of awareness. Nutrition is dependent on complex factors and situations and the recommended dietary intake per capita in India as per NIN-ICMR is different from the prescribed FAO standard. We need a simple indicator at the country level to understand balanced nutrition intake.

Much research is happening at the micro level on understanding the linkages between agriculture, nutrition and health; the learning from these will have to be scaled up at the state/national level. There is a serious need to find strong associations with the data sets available at a country level. Micro studies will show patterns that will be different across the country because nutrition, health and agriculture have different dimensions. However, it may be feasible to find linkages that work across space. Nature of agricultural production determines availability of nutrition and income from farming plays a vital role in determining nutrition intake. There are several studies on household expenditure on food, especially for rural communities; there are also patterns relating to production-consumption and income. A farming systems approach can help to address household nutrition and bio-fortified varieties can be another way to better nutrition. In this context, studies have to examine the linkage between household production and nutritional outcomes.

Dietary transition in India over the last forty years needs to be studied carefully. While per capita food grain production has increased by 40 per cent, per capita consumption of cereals has not increased. . Per capita production of fruits, vegetables, eggs, fish, meat, *etc.* have all increased at a high rate. It is time to look beyond calories, broaden the concept of nutrition to cover various dimensions and leverage linkages with agriculture and health.

Dr Bhavani, Programme Manager, Leveraging Agriculture for Nutrition in South-Asia (LANSA), M. S. Swaminathan Research Foundation (MSSRF) presented an overview of the LANSA research consortium and focused on the India-related studies under it and the emerging implications for policy. Among the several steps suggested include availability of quality seeds of millets and pulses to increase their production, timely announcement of Minimum Support Price (MSP) for these crops and assured procurement; evidence of improved dietary diversity following interventions under the Farming System for Nutrition (FSN) study focusing on increasing availability of nutrient dense crops, viz. millets and pulses, promoting nutrition gardens of fruits and vegetables and nutrition awareness, demonstrated feasibility of a FSN approach to address the problem of under-nutrition in small farmer households. The window of the first 1000 days however needs focused attention under social protection programs for pregnant women and children, given the trade-off in the case of women in agriculture in time use between farm work and care work. Promotion of and linking nutrition gardens in schools and ICDS centers with the midday meal, establishing location specific FSN models in KVKs and integration for funding support under programs like the Rashtriya Krishi Vikas Yojana (RKVY) and special attention to the needs of women farmers were highlighted.

Dr. Anura Kurpad, HoD, Physiology, St. John's Research Institute highlighted issues related to lack of comprehensive surveys linking diet and nutrition in India. He detailed the TATA-NIN dashboard which is being populated with a variety of datasets related to agriculture, nutrition and health outcomes. It can be used to draw inferences on agriculture nutrition linkages, identify risk factors for different malnutrition outcomes and for programme surveillance and monitoring.

Dr. Kurpad highlighted the need to redefine the Recommended Dietary Intake (RDI) levels, and for taking into account the bioavailability of nutrients from different foods, the benefits of an additional 100 grams of millet in the diet for iron intake and what to prescribe to the population. Decisions on optimal amount of consumption have to consider health benefits, additional nutrient supply and absorption. The cultivation of millets will need to be scaled to meet procurement and distribution through the Public Distribution System (PDS). For protein, the recommended intake is 70gms per day per person, but the actual intake is less than 50 per cent of that. The production of pulses is also inadequate to meet current demand and India is at a risk of low protein intake if pulse production is not escalated.

Dr. A. Laxmaiah, Scientist 'G', National Institution of Nutrition (NIN) highlighted the role of the National Nutrition Monitoring Bureau (NNMB), NIN in monitoring diet and nutritional status of population groups in India. The repeat surveys from 1975-77 to 2011-12 conducted by NNMB showed the food consumption pattern of different food groups and nutrients by the rural population as percentage of the recommended dietary intake and recommended daily allowance showed deficiency in intake of proteins, calorie and iron and vitamin A; over consumption of fats/oils in urban areas, under-consumption of protein in rural areas; negligible consumption of milk and milk products among tribal communities were observed.

Dr. D.K. Yadav, ADG, Seeds, Indian Council of Agricultural Research (ICAR) explained the efforts undertaken to address the under-nutrition problem, through the development of fortified varieties and technologies to usher in higher production of nutri-cereals and other agri-produce. He specifically mentioned the bio-fortified crop varieties, such as introduction of high zinc rice (DRRDhan45) and high protein (10.3%) containing rice variety (CR Dhan 310). This is released for Odisha, UP and MP. High iron and zinc rich wheat (WB2), vitamin A enriched maize and quality protein maize, micronutrient rich millet varieties, beta-carotene rich cauliflower and other vegetables and fruit varieties with enhanced micronutrient content have also been developed. The presentation mentioned about concept of Genetic Gardens of bio-fortified crops as conceived by Professor Swaminathan. This will help creating awareness and provide planting material, and the plan for promoting nutri-smart villages. Policy support for uptake of the bio-fortified crops varieties to address specific nutrition deficiencies by way of seed availability, extension services and awareness was the key recommendation.

Key points that emerged :

1. Need to revisit RDI norms.
2. Naturally bio-fortified crops : moringa, tamarind and sweet potato, Mendelian breeding : QPM and orange flesh sweet potato and genetic engineering: vitamin A enriched Golden rice are strategies to alleviate malnutrition through agriculture.
3. Promote location-specific FSN models that include bio-fortified crops to diversify diets and address micronutrient deficiencies.
4. Promote Genetic Gardens of bio-fortified crops to generate awareness and provide necessary planting material.
5. Promote Nutrition Gardens at household / community, also in schools and ICDS Centers and link to mid-day meal.
6. Nutrition Awareness involving sensitization of agriculture officials on nutrition-sensitive agriculture and a farming systems approach to nutrition.
7. Promote the use of locally available and affordable foods, also local food practices and preparations for improved maternal and young child nutrition, especially in rural areas.
8. Document experiences and best practices on child and maternal nutrition.
9. Support for Nutrient-dense crops with regard to timely supply of quality seeds, timely announcement of MSP, effective MSP implementation, its processing and value addition.
10. Recognition of women farmers' needs, their time use in agriculture and need for support for care work, drudgery reduction.
11. Continued focus on Social protection for first 1000 days.
12. Strengthen collaboration among agriculture, health and nutrition institutions for integrated support to communities.
13. Agriculture, nutrition and health institutions should serve both educational and facilitator purposes to promote and sustain nutrition security.

Sh. Rakesh Srivastava, Secretary, Ministry of Women and Child Development (MoW&CD) stated that NFHS data showed that 1/3 children are stunted and more than 50% women and children are anemic. The National Nutrition Mission aims to reduce stunting by at least 10% by 2022; promotion of bio-fortification is a welcome step and can be linked with the food distribution programmes. Mandatory fortification of wheat flour, oil and salt is in place. Circulars have been issued to include millets in the food being served at Anganwadi Centers. Pulses are being demanded for mid-day meal at Anganwadi Centers. So far, Health, Agriculture and Nutrition are viewed as separate, which should be brought together to address the problem of nutrition. He sought the help of NITI Aayog to do this.

The deliberations raised issues regarding agri-nutrition data gaps, data quality and refining the RDI and nutrition norms prescribed by ICMR. The potential of bio-fortification of food crops to address nutrition deficiency came out strongly and the need for necessary policy support in this direction. The relevance of a FSN approach for household-level nutrition security for small and marginal farmers was flagged as important. The focus of the PDS has been primarily food security; can it be remodeled to be the vehicle for nutrition security. Also, the need for a lifecycle mode to tackling under-nutrition coupled with nutrition literacy at multiple levels was emphasized.

Dr. Vinod K Paul, Member (Health & Nutrition), NITI Aayog observed that the, thinking that agriculture is only about food is changing, and a new dimension, how agriculture can be optimized to improve nutrition has emerged. The recent NFHS data has propelled us to take serious note especially when only ten per cent of children in the age group of 6 to 24 months are reported to be getting complementary food in the country. That translates to 90 per cent Indian children having less brain development due to lack of nutrition. Over-nutrition (obesity) is another growing problem in India, and it is rising faster among women. He reflected that there is a huge mismatch with normative standards for India. He strongly stressed the need for a comprehensive review of these and develop a strategy in definite timeline for surveys, a clear matrix of linkages, a road map to promote fortification and draw on best practices from across the world. He stressed for NIN to revisit the RDI norms urgently, activities by gender and age for both rural and urban populations must be looked into, and also biomarkers have to be drawn up – all in a systematic way.

Dr. Paul sought opinion on how the PDS be used to provide balanced food; the experiences of other nations on the problem; international best practices; orchestrating the convergence of agriculture, nutrition and health; who should be accountable and what is the roadmap for promoting bio-fortification.

Actions :

- (i) Issues related to the Basic Metabolic Rate (BMR) data from FAO were brought up and points were made relating to their inefficacy when it came to metabolic rate of Indians in comparison to those from the Western part of the world; hence there is a need to revisit RDI norms (**Action : ICMR**).
- (ii) Other parameters like muscle ratio, bio-markers, apart from height and weight data must be recorded (**Action : ICMR/NIN**).
- (iii) NNMB should be revived; NIN to provide a note on the resources required (**Action : NIN**).
- (iv) State Level Nutrition Institutes may be set up (**Action : MoH&FW**).
- (v) District Atlas to capture agriculture, nutrition and health data is a must for a sustainable public health prescription (**Action : MoA&FW, ICAR, MoH&FW**).
- (vi) Address gaps in information related to nutrition, the need to move beyond mother-child, and look at elderly-related data also (geriatric nutrition) (**Action : MoH&FW**).
- (vii) Good quality data, and quality assurance measures for nutrition data and health projections are extremely important; the norms for surveys; minimum essential training, sharing and improving the data access should be finalized (**Action : MoH&FW/ NIN**).
- (viii) The data on post-harvest and fortification are available but not much on pre-harvest and diversification (**Action : MoA&FW**).

- (ix) Agriculture seasonal patterns and availability of food in rural areas and how reformation of PDS could allow for millets and pulses is being thought of by many state governments across the country; data relating to spending and the nutritional impact is required to support such decision **(Action : MoF&CA)**.
- (x) Balanced food Distribution through PDS or alternative mechanism like regulated wholesale shops (e.g. Maveli stores, Kerala) could be examined **(Action : MoF&CA)**.
- (xi) Develop a sustainable system of processing, storing, and marketing particularly for fruits and vegetables – use agriculture universities technology of drying as part of vegetable processing that does not harm nutrition **(Action : DARE/ ICAR)**.
- (xii) FSN approach can help ensure household nutrition security at the level of the small farmer. FSN models could be set up in all KVKs to evolve context specific intervention in bringing strong agriculture – nutrition link and funding support made available under government programs **(DARE/ ICAR)**.
- (xiii) International best practices : Brazil's experience is a good example on tackling under-nutrition; in the South Asian region, Sri Lanka is a good example; however we need to be careful since the issue is localized, learning lessons from international best practices may not provide an answer. There are also success stories / lessons learned from within India. Maharashtra for instance.
- (xiv) Apart from legislation, education and information communication on agriculture-nutrition-health linkages is important.
- (xv) Nutrition literacy for the community as a whole, rather than only a mother-child centric approach.
- (xvi) The linkage and convergence of agriculture nutrition and health was seen as possible under NITI Aayog.
- (xvii) Attention to Food Safety in the development of food value chains – especially attention to aflatoxin content; Food Safety audits by Gram Sabhas can be introduced.

List of Participants :

Sl.	Name	Designation	Organisation
1.	Prof. Ramesh Chand	Member (Agriculture)	NITI Aayog
2.	Dr. Vinod K Paul	Member (Health & Nutrition)	NITI Aayog
3.	Sh. Rakesh Srivastava	Secretary	Ministry of Women and Child Development (MoW&CD)
4.	Dr. Madhura Swaminathan	Chairperson	M S Swaminathan Research Foundation (MSSRF)
5.	Dr. Renu Swarup	Senior Adviser/ Scientist 'H' & MD, BIRAC	Dept. of Biotechnology, Ministry of Science & Technology
6.	Dr. R Hemalatha	Director	National Institute of Nutrition
7.	Dr. A. Laxmaiah	Scientist G & Head, Division of Community Studies	National Institute of Nutrition
8.	Dr. S.S. Tomar	Additional Commissioner (Crops)	Dept. of Agriculture Cooperation & Farmers' Welfare (DAC&FW)
9.	Dr. D.K. Yadav	Assistant Director General (Seed)	Indian Council of Agricultural Research (ICAR)
10.	Dr. J. P. Mishra	Adviser (Agriculture)	NITI Aayog
11.	Sh. Manash Choudhury	Dy. Adv., Agriculture Vertical	NITI Aayog
12.	Dr. Jaspal Singh	Consultant (Agriculture)	NITI Aayog
13.	Dr. S. K. Srivastava	Agricultural Economist	NITI Aayog
14.	Sh. Padma Kant Jha	Dy. Adv. (RD, Water & Sanitation)	NITI Aayog
15.	Sh. Charanjit Singh Bhatia	S.R.O.(DMEO/ SDGs)	NITI Aayog
16.	Dr. Ganesh Ram	Research Officer (Agri.)	NITI Aayog
17.	Dr. Pradeep Saxena	Addl Deputy Director General, Dte. General of Health Services	Ministry of Health and Family Welfare (MoH&FW)
18.	Dr. Sila Deb	Dy. Commr. (Child Health)	MoH&FW
19.	Dr. Ajay Khara	Dy. Commr. & Public Health Expert	MoH&FW
20.	Sh. Manoj Kumar Singh	Director	MoW&CD
21.	Sh. Rohit Parasar	Consultant	MoW&CD
22.	Dr. Anura Kurpad	Prof & Head, Dept of Physiology	St. John's Research Institute
23.	Dr. Usha Rani Ahuja	Principal Scientist	ICAR- National Institute of Agricultural Economics and Policy Research (NIAP)
24.	Dr. Jaya Jumrani	Scientist	ICAR-NIAP
25.	Dr. Avinash Kishore	Research Fellow	International Food Policy Research Institute (IFPRI)
26.	Dr. Prema Ramachandran	Director	Nutrition Foundation of India
27.	Dr. Basanta Kumar Kar	Chief Executive Officer	Coalition for Food and Nutrition Security (India)
28.	Dr. Nikhil Raj	Director	Tata Cornell Institute-for Agriculture and Nutrition (TCI-TARINA)
29.	Dr. Shweta Khandelwal	Associate Professor	Public Health Foundation OF India (PHFI)
30.	Ms. Milli Asrani	Programme Policy Officer (Food Technologist)	World Food Programme (WFP) - India
31.	Dr. Robert Johnston	Nutritionist	United Nations Children's Emergency Fund (UNICEF)
32.	Dr. Nupur Barua	Head	Department for International Development (DFID) - South Asia Research Hub, British High Commission
33.	Dr. Purvi Mehta Bhatt	Asia Head (Agriculture)	Bill & Melinda Gates Foundation (BMGF)
34.	Dr. V. Selvam	Executive Director	MSSRF
35.	Dr. R Rukmani	Director (Food Security)	MSSRF
36.	Dr. R. Rengalakshmi	Director (Eco-technology)	MSSRF
37.	Dr. Bhavani R V	Programme Manager, LANSa	MSSRF
38.	Ms. Sangeetha Rajeesh	Research Uptake Manager, LANSa	MSSRF