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## SUMMARIES OF GROUP DISCUSSION

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### Subject I

## **Reassessing Agri-Food Systems for Sustaining Nutritional Food Security: Evidence, Imperatives and Way Forward**

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I feel privileged to present before this august gathering the Chairperson's report of the above theme, on the concluding day of the 83rd annual conference of the Indian Society of Agricultural Economics. I thank the office bearers and members of the association for giving me the honour of chairing a session on this very important theme.

A total of **35** papers were reviewed and recommended for publication in the journal, 3 in full length and 32 in summary form. Out of 35 papers, 14 papers were presented, and active discussions took place during the sessions in this conference. The paper contributors to this theme and deliberations during the Conference have provided rich insights through their observations, assessments, data generation and analysis, covering a wide range of issues on the transformation of the agri-food system towards sustainable and nutritional security. Out of the discussions, I would like to draw your attention to salient issues and recommendations emerging from the theme.

A. The stage was set by the very first paper, which provided valuable insights into the research landscape of agri-food systems and nutritional security by examining areas of research using the Systematic review method. The progression of research themes on nutritional security has emerged as per the global and national priorities. In the first time segment (2000-2010), there was a global emphasis on food security in Asian and African countries with little attention on nutritional security. Subsequently, most popular research themes (2010-2019) focused on gender, dietary diversity, breeding, etc, became prominent in global literature. The recent time slice 2020-2023 witnessed global challenges posed by climate change, nutrient management, abiotic stress, Covid 19 pandemic, and biofortification to address nutritional security.

However, certain areas are under-represented but emerge as important, like the effect of income distribution and its variation on food system transformation, food programs like PDS and its impacts, and intra-household food security etc.

B. A considerable amount of research focus & discussions were made on millets, including minor millets, addressing issues related to production growth, profitability, price stability, including strategies to enhance their production share. Undoubtedly, Millets are of paramount importance due to their exceptional nutritional value, climate resilience, and sustainability. Their economic potential and role in diversifying diets make them a vital component of global efforts to address nutrition, environmental, and food security challenges. Though, millet is recognized for its

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potential as climate-resilient food, studies showed that the cultivation of pearl millet and finger millet has faced negative trends in area and production but with positive yield trajectories in recent years. The findings also revealed that the profitability of small millet cultivation offers a promising avenue for farmers. Studies amply showed that farmers are discouraged from growing nutri-cereal crops due to low profitability, suggesting a clear preference for other cereal crops. Low yield of millets and other socio-economic challenges such as lack of market access and low awareness about MSP, value addition etc. are other identified constraints. The discussion pointed out strategies to enhance the role of the private sector in nutri cereal processing, especially value addition, to expand the consumer market. It was also recommended that there should be an added emphasis on community mobilization and behavioral change for crop diversification towards more sustainable and nutritionally secure agriculture.

C. Apart from Nutri-cereals, diversification towards horticultural crops is crucial for enhancing food and nutritional security by offering a wide range of health benefits, supporting sustainable agriculture, and providing economic opportunities for both farmers and consumers. They are an integral part of a balanced diet, ensuring that people have access to the essential nutrients needed for good health and well-being. Papers investigated crop diversification trends in different regions and found an overall increase in diversification. The determining factors include landholding size, literacy rate, cropping intensity, and fertilizer consumption. Improved irrigation, education, and capacity-building programs. Promotion of agri-clusters and collective market approach strategy were suggested as measures to encourage diversification and sustainably enhance farmers' income and food security.

D. Livestock and fisheries sectors have played vital roles not only ensuring household food security but also helping in livelihood security for millions. Women are the major caregivers in the livestock sector, contributing 70% of labor, but access to income from this sector is biased towards menfolk. A study on dairy value chains, gender roles, access to and control over income earned from milk in Odisha showed higher household expenditure on food and education by women from their income than the men in the household. This underscores the exploration of enabling factors needed to increase the capacity of women to access formal market linkages with confidence for their strategic needs.

E. The fishery sector contributes to the sustainability of the agri-food system and has lower CFP than the meat sector and addresses the increasing demand for protein from aquatic products. The fisheries sector has witnessed a structural transformation over time, and inland fish production has surpassed marine fish production. The growth performance of the states with respect to both inland and marine fisheries differed widely. However, we received only one paper in this session, which identified the potential to augment fish production & consumption. The study pointed out that in view of increasing urbanization, population growth, and changes in the tastes and preferences of consumers, the demand for fish is poised to rise in the future. Due to the high demand, fish as a commodity may become inaccessible to several low-income consumers unless its production is increased to

meet the demand. This warrants strategies to increase production through sustainable intensification through technologies, institutions, and policies while keeping the ecosystem healthy. It is noteworthy to mention here that house recommended that a systematic effort in data collection regarding Inland fishery sector is very important and so is the validation of data collected by different agencies like NSSO, State level data sources, FAO etc. It was felt that the inland fish production is highly diversified and contributes to household nutritional security through non-market transactions also.

F. Similarly, Food Consumption data sets also need updation in view of recent changes in food preferences due to greater health awareness and market choices available, growing urbanization, income, etc, especially in millet consumption & high-value commodities. Studies on the identification and mapping of high nutritive value food items under public nutritional intervention programs based on social & cultural food should also be done.

G. Policies play a crucial role in addressing the challenges of food and nutritional security. Government encompasses a range of policies and programs, such as the Public Distribution System (PDS), Integrated Child Development Services (ICDS), agricultural credit & insurance schemes, and nutritional education campaigns. These efforts aim to ensure the availability, affordability, and accessibility of nutritious food for all, with special emphasis on vulnerable sections. Additionally, these strategies empower women and improve child welfare, strengthening overall public health.

Integrated Child Development Services (ICDS) is one such crucial instrument in advancing the nutrition security agenda among the most vulnerable groups in the country. Anganwadis are responsible for ensuring nutritious food & supplements to pregnant women, lactating mothers, and children with the primary objective of improving the nutritional and health status of children. The findings of a study on the ICDS program in Telangana highlight the barriers and challenges faced by the ICDS program, particularly in rural Anganwadi centers, in fulfilling their mission to enhance child nutrition. These challenges are attributed to resource constraints, low wages, and limited support from both markets and political stakeholders. It was felt in the deliberations that addressing these issues are crucial for improving the nutritional status of marginalized children, especially girls.

H. The Ministry of Food Processing Industries and NAFED are jointly implementing the One District One Product (ODOP) approach of Pradhan Mantri Formalisation of Micro food processing Enterprises Scheme (PMFME). The study on Jharkhand suggested that the "One District, One Product" initiative holds promise for addressing critical challenges faced by sugarcane farmers in Jharkhand. Profit from Gur production is higher than mere sugarcane production, even though sugarcane yield is less than the national average. The study on agricultural credit showed a positive impact on crops but also highlighted constraints in accessing credit.

The findings of the studies included for discussion provided rich insights on primary drivers of diversification towards nutri-cereal crops, horticultural, livestock, and fishery sectors among farmers. Papers explored issues like how the challenges

faced by millet cultivators, such as low yields and limited market access, value addition, & how private sector and govt support can support to promote the sustainable production & utilization of these crops. However, more insights on strategies/incentive mechanisms for cultivation & value chains of minor millet and other nutri-cereal crops, particularly in regions where they face declining trends, is crucial. The constraints faced in agri-food systems have been studied but needs more robust datasets and methodological rigour. Some critical issues did not receive the authors' attention but are crucial for achieving food and nutritional security, such as the incorporation of indigenous food into national and regional dietary strategies. By recognising and supporting the value of indigenous foods, we can enhance dietary diversity, promote sustainable agriculture, and contribute to the overall well-being of communities while preserving traditional knowledge and cultural heritage.

Similarly, none of the studies addressed strategies for enhancing biofortified crops, which holds immense promise in addressing both nutritional and food security challenges. There were few studies on women's contribution and recognition of their pivotal role in achieving food security, reducing malnutrition, and fostering sustainable, healthy communities. Women's empowerment significantly contributes to dietary diversity within households. Women's economic independence through empowerment initiatives enables them to access a wider variety of foods. Their knowledge and awareness drive better nutritional practices, resulting in healthier and more balanced diets for their households. This, in turn, leads to improved food and nutritional security.

In addition to these, few more reflections and suggestions during in-depth discussion:

1. What strategies can be implemented to encourage value addition and processing in the high-value crops sector to increase its economic viability? How can the dairy sector be made more resilient to external shocks, such as pandemics, to ensure both income and nutritional security for farmers? In addition to livestock production, how can inland and coastal fish farming contribute to a more sustainable mode of animal protein production?

2. What is the potential contribution of local/indigenous food production & agricultural practices to the food and nutritional security as well as overall sustainability of food systems?

3. More insights on the impact of the nutritional intervention initiatives/programs on the anthropometric status of marginalized children and how its effectiveness can be improved. How can the Public Distribution System address issues related to targeting, diversion, and corruption to serve those in need better?

4. Innovations in technologies may help meet the rising demand for healthy and sustainable food. Emerging markets of new food items like synthetic meat, urban farming, non-conventional sources of nutrients like seaweeds & sustainable practices /techniques could contribute to strengthening sustainable healthy dietary choices. Evidence on the potential supply, consumer acceptability, and their willingness to pay are still need to be explored.