



Towards 'agriculture' serving 'food security'

 [sanskritias.com/current-affairs/towards-agriculture-serving-food-security](https://www.youtube.com/watch?v=sanskritias.com/current-affairs/towards-agriculture-serving-food-security)



(Mains GS 3 :Major Crops - Cropping Patterns in various parts of the country, - Different Types of Irrigation and Irrigation Systems; Storage, Transport and Marketing of Agricultural Produce and Issues and Related Constraints; E-technology in the aid of farmers.)

Context:

- The UN Food Systems Summit called for action by governments in areas like to nourish all people; boost nature-based solutions; advance equitable livelihoods, decent work and empowered communities; build resilience to vulnerabilities, shocks and stresses; and accelerate the means of implementation.
- To achieve these broad objectives, Indian would involve enhancing interfaces between the spheres of science, society and policy, focusing on sustainability, resource efficiency and circularity.

Science-society interface:

- India's Green Revolution in the 1960s, enabling food security and addressing widespread hunger and poverty, was achieved not only through science and technology and the development of improved high-yielding varieties of rice and wheat but also through policy measures and development of institutional structure.
- It included a vast agricultural research and technology transfer system at the national, regional, State and local levels.

- The Training & Visit (T&V) system introduced in the 1970s with World Bank assistance was key to the science-society interface as it established a cadre of agriculture extension specialists at the local level.

Widespread concerns:

- Although India is now self-sufficient in food grains production in the macro sense, it has about a quarter of the world's food insecure people, a pointer to the amount of food necessary to allow all income groups to reach the caloric target (2,400 kcal in rural and 2,100 kcal in the urban set-up).
- Nutrition indicators have marginally improved over the years; however, as per the recently released fifth National Family Health Survey (2019-2021) phase 2 compendium, macro- and micronutrient malnutrition is widespread, with 18.7% of women and 16.2% of men unable to access enough food to meet basic nutritional needs, and over 32% of children below five years still underweight.
- India is ranked 101 out of 116 countries in the Global Hunger Index, 2021 thus widespread concerns about poverty, malnutrition and the need for a second Green Revolution are real and required.

Bring focus back:

- An important takeaway from the Green Revolution-era is that for science to be relevant to societal outcomes, it has to be planned and executed within the theory of change.
- The necessary behavioural changes in adopting the improved seeds and practices brought about by the T&V system in the 1960s enabled science to steer the process of change.
- In the context of the intensifying economic, environmental and climate challenges and crisis, the need of the hour is a good theory of transition encompassing the spatial, social and scientific dimensions, supported by policy incentives and mechanisms for achieving a sustainable, resilient and food secure agriculture.
- A theory of change ought to bring the focus back on sustainability, resource efficiency and circularity as the central pillars towards transforming food systems.

Agro-climatic approach:

- An agro-climatic approach to agricultural development is important for sustainability and better nutrition.
- Harnessing the spatial diversity of agricultural production systems adopting the principles of sustainability, resource efficiency and circularity could correct the limitations and unintended consequences of the Green Revolution.

- These are the loss of indigenous landraces, soil nutrients depletion, groundwater stress, excessive use of agrochemicals and its residual presence in foods and environment, income gap between large, marginal and small farmers, and the gap between irrigated and rain-fed areas.

Towards sustainability:

- Data compiled in the agro-climatic zones reports of the Indian Council of Agricultural Research and the erstwhile Planning Commission of India reveal enormous potential for crop diversification and precision for enhanced crop productivity based on soil type, climate (temperature and rainfall), and captive water resources.
- The livelihood of more than half of India's working population is linked to agriculture and allied activities; the sector has a direct influence on the health and nutrition status of dependent communities.
- Thus, the focus should be on improving farmers' competitiveness, supporting business growth in the rural economy, and incentivising farmers to improve the environment.
- It is assumed that a meticulous review of agro-climatic zones could make smallholders farming a profitable business, enhancing agricultural efficiency and socio-economic development, as well as sustainability.

Prioritising research and investments:

- Strengthening and shortening food supply chains, reinforcing regional food systems, food processing, agricultural resilience and sustainability in a climate-changing world will require prioritising research and investments along these lines.
- A stress status of the natural resource base will help understand the micro as well as meso-level interventions needed with regard to technologies, extension activities and policies.
- Lastly, infrastructure and institutions supporting producers, agripreneurs and agri micro, small and medium enterprises (MSMEs) in their production value chain are central to the transition.

Aligned with policy:

- The efforts of sustainable agriculture should be aligned to the national and State policy priorities such as the National Policy guidelines 2012 of the Ministry of Agriculture for the promotion of farmer producer organisations, and the National Resource Efficiency Policy of 2019 of the Ministry of Environment, Forest and Climate Change.

- It would encourage a resource efficient and circular economy for production, processing and storage techniques of food products through renewable energy solutions, reduction of supply chains and inputs (materials, water, and energy).
- It would also ensure the efficient use of by-products, thereby creating value while using fewer inputs and generating less waste for long term and large-scale impact.

Conclusion:

- The country faces the dual challenge of achieving nutrition security, as well as addressing declining land productivity, land degradation and loss of ecological services with change in land use.
- Thus, science, society and policy have a lot to gain from an effective interface encompassing the range of actors and institutions in the food value-chain and a multidisciplinary and holistic approach, along with a greater emphasis on policy design, management and behavioural change.