



Revamping the Agricultural Sector

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This article is based on “New Approach to Agriculture Sector” which was published in Livemint on 02/12/2019. It highlights the problems faced by the Indian agricultural sector and the solutions to tackle it.

India faces several challenges related to **agriculture and food security** that include fragmentation of land holdings, degradation of resource quality, climate change induced adverse impact, large scale migration of agriculturists to non-farming sectors, etc. The current status of agriculture therefore needs critical evaluation in order to provide suitable remedial measures.

Historical Background

- **Food security** has been a national priority since Independence to fulfill the food demands of a rapidly growing population.
- **Green Revolution** that started in the mid-1960s through adoption of fertilizer-responsive high yielding varieties (HYVs), farm mechanization and use of agrochemicals including fertilizers transformed India from being a **food importer to food exporter country** within five decades.

In the last 50 years, the food grain production (in the form of oilseeds, horticulture crops, etc.) in the country has increased by almost 3 times which has outpaced the growth of population that went up by 2.6 times during this period.

Issues in the Agriculture Sector

While Green Revolution technologies intensified the agricultural production, the misuse of inputs and deviant farm practices have led to an **emergence of second generation problems**.

Multi-nutrient Deficiencies

- Practising the high yielding intensive agriculture has put an extreme pressure on soil health reflected by the **continuous depletion of soil fertility**.

Due to selective subsidy scheme in the form of **Nutrient Based Subsidy (NBS) scheme** only for phosphatic and potassic (P&K) fertilizers, there has been an overuse of these fertilizers. This has led to the problem of **nutrient mining** (agricultural practices resulting in a negative nutrient balance) **in Indian soil**, impacting soil health over time.

- In addition to primary nutrients (NPK), deficiencies of secondary and micronutrients (boron, copper, iron, manganese, etc) have increased in Indian soils.
- Inadequate, imbalanced and inefficient use of mineral fertilizers with lack of use of organic sources of plant nutrients has given rise to multi-nutrient deficiencies.
- **Fertilizer/nutrient use efficiency** (economic production obtained per unit of fertilizer/nutrient applied) is also relatively low in India such as, with nitrogen (30-40%), phosphorus (15-20%) and potash (60-70%). This not only affects the **crop yields but also affects the environment** due to escape of unused nutrients.
- Also, the **crop response to fertilizers** has been declining continuously. The average crop response to fertilizer application (kg grain produced per kg of NPK applied) decreased from 12.1:1 (during the 1960s) to 5:1 (in the 2010s). With the decrease in crop response to fertilizers, the **profitability of the farmers has gone down** year after year.

Inefficient Water Management

- In agriculture sector, water management related challenges include low water use efficiency, water-energy nexus, growing water-intensive crops in water-deficient areas, poor quality waters characterized by the excessive toxic elements and salts, and poor rainwater management.
- **Water salinization and waterlogging** in canal command areas (like Punjab, Haryana, Western UP) and rapidly **falling water tables** in the tube well irrigated areas have aggravated the problem.
- Also, the **practise of flood irrigation** (one of the most inefficient methods of irrigation) has led to transformation of agro-climatic cropping pattern in India. For instance, easier availability of water through pumping of groundwater because of the **availability of free electricity to farmers**, has made the farmers of north-western India shift to rice cultivation during **kharif season** by replacing traditional maize and coarse cereals production.

Decreasing Farmers Income

- The declining farmers' income is largely on account of **low average crop productivity and poor price realization**.

- Government announces **Minimum Support Price** (MSP) for crops. However, farmers are forced to sell their produce at much lower prices due to the exploitation by the middle men, called Aadhteers.
- Therefore, in the absence of effective market interventions, infrastructure, backward and forward linkages, farmers are **unable to recover the cost of production**.

Remedial Measures

Sustenance of Soil Health

- **Organic carbon content** in Indian soils is relatively poor. Effective steps are needed to augment the organic nutrient sources that include agricultural composting (natural process of decomposition of organic matter by microorganisms under controlled conditions), returning crop residues to the soil, etc.
- For **soil health enhancement**, government can **link composting to Swachh Bharat Mission** and provide it free of cost to the farmers.
- The target of reducing the use of chemical fertilizers up to 25% can be achieved by **doubling the nutrient use efficiency**.

Correction in Fertilizer Policy

- Recently, a number of initiatives such as shift from urea to 100% neem coated urea, reducing the weight of urea bag from 50 kg to 45 kg and providing soil health cards to all farmers have been taken **to reduce urea consumption** and **promote more efficient use of nitrogen**.

However, it has not helped much because under the prevailing fertilizer pricing policy there is a huge gap in urea vis-à-vis P&K prices that continues to distort the NPK use ratio.

- It is time to revisit the present fertilizer pricing and subsidy scheme. Fertilizer policy should ensure balanced pricing of N,P, K and micronutrients.

Simple solution in this regard, is to bring urea under NBS scheme and transfer the subsidy directly into the farmers' accounts rather than routing through the fertilizer industry.

Efficient Water Management

- Education of the society at large on the necessity of **'judicious use of water', 'har khet ko pani' and 'more crop per drop'** is a welcome step towards efficient usage of water.

- Focus should be on agriculture sector with management technologies which have the potential of making water savings.
 - Savings on water and nutrients under **drip-fertigation** (method of fertilizer application in which fertilizer is incorporated within the irrigation water by the drip system) range from 20% to 60% and 20-30%, respectively. Adoption and development of cropping/farming systems should be guided by the potential water availability.
 - Regulatory mechanisms should be put in place for sustainable development and utilization of groundwater resources.

Enhancing Farmers' Income

- The inter-ministerial committee constituted to examine issues relating to **doubling of farmers' income by 2022**, has identified seven sources of income growth namely,
 - Improvement in crop productivity,
 - Improvement in livestock productivity,
 - Resource use efficiency or savings in the cost of production,
 - Increase in the cropping intensity,
 - Diversification towards high-value crops,
 - Improvement in real prices received by farmers, and
 - Shift from farm to non-farm occupations.
- For livelihood security of the country's millions of farmers (especially small and marginal ones) it is essential to shift to the approach of **Integrated Farming System (IFS)**. The IFS model integrates the latest production technologies of farming and livestock/ aquaculture development and management.

Market Reforms

Market reforms are needed to ensure that remunerative prices to the farmers are given for their produce. A step towards bringing reforms in **Agricultural Produce Market Committees** (APMC) was taken by the government in July, 2015 through creation of **National Agricultural Market (NAM)**.

Since the APMCs are a state subject, operation of NAM faces innumerable difficulties. Unless NAM becomes successful, farmers shall keep facing exploitation.

Way Forward

- Central and State Governments need to work in tandem to provide support and required financial assistance to the farmers, so as to improve the availability and use of organic sources of plant nutrients.

- Fertilizer policies need immediate course correction to promote the use of nutrients from inorganic, organic and biological sources. Industry freed from controls and task of reaching subsidy to the farmers by implementing DBT in true sense, will encourage innovation in products and services.

Indian agriculture is passing through a phase where sustainability of soil health and crop yields have come into question. The dependence on fertilizers will continue to increase in the foreseeable future to meet the increasing nutrient demands for higher food production.

Drishti Mains Question

Briefly discuss the issues faced by the Indian agricultural sector and suggest corrective measures that can be undertaken to overcome them.