

AGRICULTURE & ALLIED SECTORS : QUANTUM JUMP THROUGH NEW INITIATIVES

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From a deficit to food surplus country, Indian agriculture has witnessed various structural changes since independence. With farmers increasingly preferring to grow horticultural and cash crops in place of grains, the agriculture and allied sectors at present need thrust from the government to ensure that farmers get remunerative prices, and also protection against crop losses due to variability in the climatic conditions.

The first phase of transformation of Indian agriculture (1950–70) was mainly driven by the need to achieve self-sufficiency in food grains as India was importing a large quantity of cereals, for meeting domestic shortages in 1950s and 1960s. The growth in foodgrain production during the first two decades, following the country's independence, was small. The grain output could touch close to 100 million tone only in 1974–75 from around 50 million tone reported during 1950–51.

Post independence era, the area under irrigation was low and there were frequent droughts and the prime objective at that time was to make adequate food supplies available to the increasing population and ensuring provision of raw materials for the expansion of industrial sector. This was to be achieved by way of - imports, reorganisation of the agricultural sector and a series of development measures encompassing expansion of irrigation and, extensive as well as intensive farming. These initiatives were given further boost by strengthening agricultural administration and kicking off special area programmes.

The advent of new high yielding varieties brought Green Revolution in late 1960s, which in combination with expansion in area under cultivation and usage of chemical fertilisers increased the output of cereals, mainly – wheat and rice, followed by other coarse cereals such as maize to a certain extent chiefly in Punjab, Haryana and western Uttar Pradesh. The Green Revolution efforts were led by renowned agricultural scientist MS Swaminathan and team of scientists from Indian Council for Agricultural Research (ICAR). Thus a combination of technological development, significant investments as well as support by the government led to a significant increase in production of cereals.

The early phase of green revolution was largely associated with the spread of new technology to better endowed and irrigated regions of northern India, therefore, special efforts were then made to spread new technology into those regions, which had remained outside the fold of technological revolution. Consequently, special programmes were launched during late 1970s and mid-1980s.



White revolution follows Green revolution

The second phase of transformation (1970 – 1990) witnessed a play of a combination of expansion of the Green Revolution into new crops and areas and introduction of the 'White Revolution' or also known as Operation Flood, which laid the foundations for consolidation of gains made in first phase and led to enormous growth of milk production in the country during 1980 and 1990s. Led by Verghese Kurien, also known as 'Milk Man of India', the country's milk output saw a huge increase through setting up cooperatives in various states. Since then the milk output has risen to 146.31 million tone in 2014 – 15 and India continues to top the list of major milk-producing countries in the world followed by the USA, China, Pakistan and Brazil.

The 'Operation Flood' programme used a combination of food-aid in the form of milk powder and butter oil from the European Economic Community to stabilise domestic prices of dairy products and develop dairy cooperatives by creating physical and institutional infrastructure for procurement, processing and marketing of milk and building linkages with the main cities of the country. This was followed up by financial aid from the World Bank during the second phase of Operation Flood in the 1980s to integrate efforts made by state governments into a national level programme.

Besides during the 1980s an attempt was also made to increase supplies of oilseeds and reduce imports of edible oils through a Technology Mission on Oilseeds. The approach was very much on the lines of dairy development model and the effort was to develop location-specific technologies to boost supplies, create marketing facilities, and modernise edible oil processing technology. The mission was successful in boosting supplies of oilseeds initially.

Besides, in the second phase of transformation of Indian agriculture, while the gross cropped area expanded by just about 12% from 164 million hectares to 185 million hectares, but gross irrigated area during this period continued the growth momentum. More than 27 million hectares were added to the existing 39 million hectares of irrigation capacity that existed in the early 1950s. The other factors such as use of fertilisers, road network and electricity generation also expanded significantly.

An era of horticulture, poultry and fisheries

In the most recent phase of transformation, witnessed since early 1990s saw the launch of economic reforms and liberalisation of the economy. There was a significant shift in the drivers of transformation which focused from the supply side factors to the demand side factors. Though there was a respectable growth in gross irrigated area the huge increase in the usage of fertilisers witnessed in earlier two phases also decelerated. Although there was an increase in the road network and electricity generation and investment in the agricultural and allied sectors also expanded. But the supplies of all main commodities like cereals, oilseeds and sugarcane did not show much increase. The only exceptions were fruits and vegetables and cotton, the supplies of which increased significantly during this period. Similarly supplies of livestock products



– milk, eggs, and meat maintained their growth momentum.

The noteworthy aspect is that aquaculture and catch fishery is amongst the fastest growing industries in India. Fisheries at present supports livelihood of almost 1.5 million people. During 1990 - 2010, the Indian fish capture harvest doubled, while aquaculture harvest tripled. **According to fisheries census released recently, the country's fish production rose from a level of 0.75 million tone in 1950 - 51 to more than 10 million tone in 2014 - 15. The total fish production comprises of 3.7 million tone of marine and 6.4 million tone for inland resources. The export earnings were to the tune of Rs 33,441 crore in 2014-15.**

An official with the department of fisheries under the Ministry of Agriculture said that the future demand would be based on capture fisheries in reservoirs and the required financial support for the growth of fisheries sector is met through various central schemes, National Fisheries Development Board, Rashtriya Krishi Vikas Yojana (RKVY) etc.

While agricultural or crop production has been rising at the rate around 2% per annum over the past two to three decades, poultry production has been rising at the rate of around 8% per annum. What was largely a back-yard venture before the 1960s has been transformed into a vibrant agribusiness with an estimated annual turnover of more than Rs 60,000 crore.

The country's poultry sector represents one of the biggest success stories in the past few decades. India is the second largest egg producer and third largest broiler chicken producer in the world with production estimates of 65,000 million (2.8 million tones) eggs and 3 million tones of broiler meat per year.

The impressive growth is a result of several factors, such as active developmental support from the state and central government, institutional research and development, and participation of private sector.

Horticultural production surpass foodgrain output

The country's horticultural production that surpassed its grains output for the first time in 2012-13 improved the lead to 10% last year, data released by agriculture ministry recently had stated. The production of horticulture crops that include mainly vegetables and fruits stood at an all-time high 283.47 million tone (MT) in 2014-15, compared with the grain volume of 257.07 MT.

The area under horticulture farming increased from 12.8 million hectare in 1991-92 to 23.41 million hectare during 2014-15, aided by the multi-pronged National Horticulture Mission (NHM) launched in the 11th Five-Year Plan period (2007-2012). Production of these crops rose 194% between 1991-92 and 2014-15. India is now second only to China in the production of fruits and vegetables.

"We have achieved record horticultural production despite deficient rainfall last year which was followed by unseasonal rains earlier this year," Agriculture Minister Sh. Radha Mohan Singh recently said.

According to an Agriculture Ministry official, the horticulture produce has surpassed foodgrain output in last few years mainly because of thrust given to horticultural crops in the 11th Plan (2007-2012) through NHM, Horticulture Mission for North East & Himalayan States (HMNEH), National Bamboo Mission (NBM), etc.

Implementation of National Horticulture Mission paved the way for adoption of cluster-based approach for the development of horticulture crops through linking with creation of infrastructure for post harvest management and marketing.

Boost in agri exports

Since 1990s when the per capita income grew at a much higher rate in comparison to the earlier two phases, the per capita consumption expenditure on food items such as meat and meat products (eggs, meat and fish), dairy products,

Production of horticultural crops vis-à-vis foodgrains (in million tone)

Year	Horticultural crops	Foodgrains
2001 – 2	145.79	212.85
2002 – 3	144.38	174.77
2003 – 4	153.30	213.19
2004 – 5	166.94	198.36
2005 – 6	182.82	208.60
2006 – 7	191.81	217.23
2007 – 8	211.24	230.78
2008 – 9	214.72	234.47
2009 – 10	223.09	218.11
2010 – 11	240.53	244.49
2011 – 12	257.28	259.29
2012 – 13	268.85	257.13
2013 – 14	277.35	265.57
2014 – 15*	283.47	257.07

Source: Horticultural Statistics, 2015, *provisional

fruits and vegetables, and other food items increased significantly. The leading development of this phase was a decline in per capita consumption expenditure on cereals. As a result, much like in second phase, the bulk of growth in food consumption basket came from the contribution of fruits and vegetables, dairy products, and meat products. The other significant development was the emergence of external demand with significant increase in exports from agricultural and allied sector. While the share of the agricultural exports in total export is low, the country has emerged as a net exporter of a range of agricultural and allied products.

According to a research paper by former Commission for Agricultural Costs and Prices (CACP) chairman Ashok Gulati, in 2011-12, the country's agricultural exports were more than \$37 billion against an import of commodities worth around \$17 billion. India has emerged as the world's largest exporter of rice, replacing Thailand and Vietnam, and the country is also the biggest exporter of buffalo meat, beating traditionally strong countries such as Brazil, Australia and the United States.

The CACP discussion paper titled 'Farm trade: tapping the hidden potential' has stated that agricultural exports have increased more than 10 times from \$3.5 billion in 1990-91 to \$37.1 billion in 2011-12 — a healthy annual growth rate of 13.6%.

India's share in total global exports of agricultural products mainly consisting of rice, wheat, sugar, guar gum, meat and marine products has increased from 0.8% in 1990 to 2.1% in 2011. "This share is more than the share that India has in global merchandise exports," the paper has noted.

However, the fall in global commodity prices and sluggish demand have resulted in a sharp decline in India's agricultural and processed food exports in the first three quarters of 2015 – 16. According to latest data compiled by the Agricultural and Processed Food Exports Development Authority (APEDA), the shipment of agricultural produce and processed foods, which had seen a phenomenal rise for a few years to 2014, shrank by more than 21% during April-December, 2015 in comparison with the same period last fiscal.

The exports of buffalo meat, Basmati, non-Basmati rice and others have declined to Rs 78,503 crore in April-December, 2015 from Rs 1,00,094 crore achieved in the same period last fiscal. The realisation from the shipment of rice (Basmati and non-Basmati), buffalo meat, guar gum etc. have declined sharply in the current fiscal. Experts say that this decline in exports is mainly because of global factors and India's huge agricultural good export potential is yet to be harnessed fully.

Govt push for crop insurance & diversification: the way forward

Agricultural experts also say that crop diversification is the best way for a farmer to manage the risks associated with the market and ensure that the crop is suited to the agricultural conditions. Besides prevailing the climate change issues impacting the crop output, the government thrust on providing crop insurance to farmers would be crucial support in terms of ensuring that farmers' income is not hit hard. In order to provide relief to drought-hit farmers, the government has announced a new Rs 8,800 crore crop insurance scheme, with significantly lower premium, to cover for loss of crop to natural calamities.

The government has approved continuation of Rashtriya Krishi Vikas Yojana (RKVY) during the Twelfth Plan whereby the funding will be routed into three components - production growth, infrastructure & assets and sub-schemes & flexi-

fund. The proposed allocation for implementation of this scheme during 2015-16 was Rs 9954 crore.

The National Food Security Mission (NFSM) is being implemented with the new target of additional production of 25 million tones of foodgrains comprising 10 million tones rice, 8 million tones wheat, 4 million tones pulses and 3 million tones coarse cereals by the end of the Twelfth Five Year Plan (2016-17).

Besides the budgetary allocation, as Krishi Vigyan Kendras and e-governance backed Community Service Centers expand their scale of operations, farmers are gaining knowledge about scientific farming techniques including suitability of crops for their soil and climatic conditions. Thus, they are shifting to the best suited crops such as cotton, fruits and vegetables. With the global commodities prices falling sharply in the past 3-4 years, many farmers have realised the value of crop diversification.

It should be noted that most of the cash crops require assured irrigation and fertilisers which raise their input costs and also make them more vulnerable to climate risks like poor or excess rainfall. On the other hand, oil seeds, soyabean, pulses etc. do not need extra care.

The government has also devised schemes and missions like the National Horticulture Mission, National Mission on Oil Seeds and Oil Palm etc to promote these crops. The government has also signalled its intent to promote diversification by modestly increasing the Minimum Support Price (MSP) for rice and wheat while there was a comparatively larger rise in MSP for pulses. Crops like oilseeds and soyabean also have a well developed processing industry which ensures that there is a stable demand for these crops.

Since assuming office in 2014, the Prime Minister Sh. Narendra Modia had been advocating a 'lab to land' approach to increase agricultural productivity. The Prime Minister has repeatedly urged agricultural scientists to disseminate technologies to farmers in simple and acceptable manner and make 'per drop, more crop' a mantra to promote farming through optimum utilization of water. Thus use of technology mainly supported by the government would be key to ensuring country's food security as well as farmers' income security.

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