

Issues and Challenges in Indian Agriculture

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Abstract

The agricultural sector is one of the most important sectors of the economy, especially with respect to employment and this sector is undergoing agrarian crisis. Growth rate in this sector is very important because it will bring about growth rate in the overall economy of India. This paper discusses the issues and challenges faced by Indian agriculture and also directs the road ahead. Yield and production of several crops have been analyzed over various states and also the statistics have been compared with international countries.

Keywords: Agriculture, Growth, Irrigation, Yield, Crop.

JEL Classification Codes: O13, Q13, Q18, R14.

1 Introduction

At the time of independence, India inherited an economy of food shortage. It was not really 'hand-to-mouth' but it was 'ship-to-mouth' because we were importing food grains under the PL-480 agreement. So obviously, after independence, during the first five-year plan, high priority was accorded to the agricultural sector and to give priority, two full strategy was adopted, that of institutional and technology. The gross irrigated area is around 48% in India. The other issue is that the area irrigated differs from state to state. Certain states like Punjab have about 98% area irrigated. Punjab, Haryana, Uttar Pradesh are the states where the area irrigated is high but there are some states where the irrigation percentage is very low. For example, in Maharashtra it is just about 18%. So, lack of irrigation facilities does not allow us to take a second crop and therefore we have a low cropping intensity.

When we look at the source-wise irrigation, we find that about 47% of the area is irrigated by tube wells. Although tube wells have played a major role in increasing the area under irrigation, they have brought about certain problems as well. The ground water resources are getting over exploited and we have to dig into deeper and deeper aquifers, so therefore what is important is that we have to seriously think of recharging the ground water resources.

When we look at the index of price received over the years from 2004-2005 to 2015-2016 and we look at the index of price paid, we find that most often the terms of trade are against agriculture. In most of the cases it is less than 100. In 2015-2016 it is 97.03%, which means that the farmers are paying more than the prices they are receiving, therefore the index terms of trade are often against agriculture. Two types of costs have been considered, the first is cost (A2 + FL) and the second is the cost (C2). The cost (A2 + FL) refers to variable costs and (FL) is the family labour. So, we have included value to family labour, so basically the first cost roughly is the variable cost and second cost is the variable and the fixed cost, that is cost (C2).

2 Scenario

Now, we can see the returns to the farmers over various crops, it is very unremunerative farming. It only shows that agriculture is not at all economically viable. In cotton he is earning hardly 19,912 per hectare when we take the returns over the variable cost and it reduces to 14,934 when we take returns over (C2) cost. For every crop, we find that the farmer is earning a very economically unviable amount and therefore this shows that farming is not a very profitable proposition. Therefore, we try to look at the growth rate of the cost of production and the growth rate of the wholesale price index.

We find that the growth rate of the cost of production is much higher than that of the wholesale price index except with respect to the pulses. In case of paddy, we find that the cost of production is going much higher than the growth rate in the wholesale price index. It is only with respect to pulses that the wholesale price index is higher than that of the growth rate of the cost of production. What is happening is that Indian agriculture is characterized by the Cobweb cycle, so when the price of particular agricultural commodity increases like for example onion, sometimes the price of onion goes up to as high as 90 rupees a kg, then the farmers find that the price is high and therefore in the next season they allocate huge area under that particular crop, so there is a positive supply response of the farmers to price and since the price is high the farmers bring in more area under the crop, more area means more production and more production means fall in price.

So, when the price falls again, the farmers are discouraged and in the next season they bring less area under the crop, when there is less area, less production, the price goes up. So therefore, equilibrium is not through a simple intersection of the demand and supply curve, it moves around in the shape of a Cobweb and therefore we say that Indian agriculture is characterized by a Cobweb phenomenon and therefore price rise-price crash and this continuously goes on. Now when the prices fall to very low levels, the Government often has to enter and buy the crop. If the price falls below minimum support price, then the Government has to intervene and purchase the crop. Some states have adopted what is called price deficiency payment, that means if the market price is lower than the minimum support price, the difference between the minimum support price and the market price is paid to the farmers and the farmer keeps the produce with himself. The Government resorts to this measure because if the Government purchases the crop, it will bring in another host of problems about entering the markets, purchasing the crop, storage, etc. So therefore, the Government has decided to price deficiency payment, which helps to salvage situation and also avoid distress sale.

3 Issues

Indian agriculture takes a beating on two fronts. First of all, irrigation facilities are in great shortage and Indian agriculture depends to a large extent on the monsoons. If the monsoons fail there is crop failure, besides even if the monsoons do not fail sometimes it is delayed, the farmer has sown his crop and after sowing his crop it does not rain, monsoon is delayed so therefore he has to again sow. So, his cost of production goes up. Secondly, there is uneven and unseasonal distribution of rainfall, there are cases when it rains in February, farmers' crops get destroyed.

On the other hand, if the monsoons do well, i.e., there is a good monsoon, then there may be a bumper crop and when there is bumper crop, price crashes and again the farmer loses. So, on both fronts, if monsoons fail, he may lose, and if the monsoons are good, he has to cope up with price crash and both ways there is a loss to the farmer. This kind of situation is being experienced in Indian agriculture in the recent past, the Government therefore has made one policy suggestion to try and increase the minimum

support price so that the farmer would get not only his cost of production covered but also some kind of normal profit. While increasing the minimum support price is a good strategy and may help the farmers, it is better to increase investment. Investment is always better than subsidies, this would help to make agriculture more sustainable. Also, it is important to get the markets right rather than having an administered price, let the market decide the cropping pattern and this would definitely help to make agriculture more sustainable.

Agriculture is still the dominant sector in the Indian economy with respect to employment. Although, the productivity growth rate is yet to achieve its potential. This can be achieved only by increasing irrigation facilities and proper extension services. Then we have to adopt climate resilient agriculture. Looking at the growth rate of area of production and yield of major crops from 1990s to 2010, we find that many crops have negative growth rate in yield which means that technology is lagging behind. Area cannot be a source of growth because area is limited, we need to try to increase the growth rate of yield. But looking at growth rate in 2010, we find that pulses had a growth rate of -0.04%, oilseeds had a negative growth rate. Cotton too showed a negative growth rate. However, we find that growth rate of cotton production was 14% in 2000. This is because we had a B-T cotton technology and therefore the production increased. Let us take the example of pulses. In various states, we find the potential yield is 16.6 per hectare. So, we have realized only half the yield, the entire potential is not been tapped. The potential is far higher than the actual realized and with respect to soya bean it shares the similar experience. The potential yield in Maharashtra is 20.6 per hectare and 8.1 quintals per hectare is achieved when there is a year of normal monsoon. When the monsoon is failed, the yield is much lower again. Rajasthan is another state where yield of soya bean is much lower than the potential yield. Similar is the case of Madhya Pradesh (major soya bean producing state), the potential yield is 14.9 quintals per hectare and what is received is 10.6 quintals per hectare. Another major crop is cotton, where we can find that potential yield is far higher than that realized, this is because cotton is mainly rain fed cotton and is an important crop in Maharashtra. If we look at Maharashtra, about 42 lakh hectares of area are under cotton. The potential yield is 15.4 quintals per hectare but what we have realized is only 3.5 quintals per hectare. Therefore, it is important to improve irrigation facilities so that cotton is no longer a rain fed crop. In case of Gujarat, the potential yield of cotton is 24.2 quintals per hectare but what is realized is 6.1 quintals per hectare of state average. Similar is the case with other states. With respect to groundnuts also, the potential yield is much higher than that of state average. In case of Rajasthan, the potential yield is 27.4 quintals per hectare but what is realized is 20.3 quintals per hectare.

4 Challenges

We can now compare yield of the crops in the world with that achieved in India. We can see that world average yield is higher than what is achieved in India. With respect to paddy, the world yield is 4636 quintals per hectare whereas the all-India average is 2400 quintals per hectare, which is just half and the world's highest yield is in China which is almost close to 7000 quintals per hectare. India's Punjab has the highest yield because of irrigation facilities which is close to 4000 quintals per hectare. But the Indian average is just 2400 quintals per hectare. Therefore, India's average is just half the yield of Punjab. Similar is the case with all other crops. In case of maize, the world's average is 5640 kg per hectare, whereas in India it is 2562 kg per hectare, although Tamil Nadu is doing well with 10960 kg per hectare and it is very important for India to increase the yield of maize which is very important ingredient for poultry feed. In case of pulses also, we are lagging behind, although the world's average is 731 kg per hectare. Countries

like Australia has achieved 5540 kg per hectare, India has high yield in Gujarat with 931 kg per hectare but the average is 656 kg per hectare. Now India is not at all self-sufficient, we are importing it in a big way and one of the reasons for low yield is because we are growing it on low quality land and without irrigation facilities. So, we can see that there is a huge potential to increase the yield of various crops which help us lower the cost of production.

Now, let us look at the important crops which India is importing. We find that vegetable oil is our major import, 47% of vegetable oil is being imported in our country. India is experiencing increase in per capita income. As the demand for major food grains - rice and wheat are growing, the demand for pulses and oil seeds are also rising. However, we are not able to cope up with production, and therefore there is an increase in demand which is compensated by importing edible oil and pulses. So, we find that these two commodities - vegetable oil and pulses are our major imports. The other imports are fresh fruits, sugar, spices, etc. Tea and coffee which are our traditional exports have the share of 8.4 and 2.3 percent respectively, while spices have the share of 17 percent.

Next, we are trying to compare domestic price of certain crops with international price. It is only with respect to paddy that the domestic price is much less than the international price. However, with respect to other crops, we find that the international prices are far lower than that of India. The price of maize in India is much less than the international economy. In case of pulses, cotton, groundnut, etc., the international prices are lower than the domestic prices. In case of soya bean also, we find that the international price is far lower than the domestic price. This is also true in case of soya bean oil where the international price is 4919 per quintal, whereas the domestic price is 6633 per quintal. Since the international price is far lower than the domestic price, obviously it is much cheaper for our country to import and we are doing this. However, at times, this brings some kind of loss to domestic producer because cheap import comes into the country and Government is forced to increase tariff to give some kind of protection. So, it is important to increase the productivity of soya bean so as to reduce the cost of production therefore be competitive in the international market.

If we look at the per hectare value of output of major crops with respect to pulses, we find that the current share in total area is 11.95% but the contribution is only 4.14% to the value of output. With respect to cereals, the share in the area is 50.36% where the value of output is 29.26%. However, in contrast, if we look at fruits and vegetables, the contribution to area is 8.6% whereas the contribution to the total output is 25.96%. So, cereals have more than half the area under cultivation which contribute 30% of value of output. Fruits and vegetables which contribute less than 10% of area also contributes something close to the value of output of cereals which is around 26%. Although, India has huge potential in exporting horticulture products, there are no tariff barriers to trade in international market due to sanitary measures and stringent quality norms adopted mainly by developed countries.

5 Road Ahead

Dairy sector also has severe limitations. Despite being a world leader in milk production, yield per animal is very low coupled with infrastructure bottleneck. The success of Amul has been achieved not by mass production but production by masses which helped small and marginal producers to reap the benefit of economies of scale. The major challenges which have to be faced by Indian agricultural sector is that of APMC (Agricultural Produce & Livestock Market Committee) Act that was introduced soon after independence and which brought about regulation of market post 2003. The amended act focused on competitive market, direct market, contract farming, etc.

The agricultural market, an electronic trading platform, which brings about transparency in sale and reduces transaction cost is also a major Government initiative to reduce asymmetric information. This can also help farmers to price discovery. Then Government also introduced new policy of soil health cards which carry crop-wise recommendation for nutrients and fertilizers to the farmers. So, farmers know exactly what are the micro nutrients which are deficient in the soil and accordingly they can refinish the soil therefore improving the yield level. Then Pradhan Mantri Fasal Bima Yojana (PMFBY) is another flagship program of Government of India and it provides financial support to the farmers in case of crop failure. As we know agriculture is still dependent on the monsoon and in case of crop failure, if a farmer opts for insurance, then at least he is able to get indemnity and therefore he may not be entitled to financial inclusion from where he has taken the farm loan.

6 Conclusion

In conclusion, we come to policies to mitigate agrarian crisis. What is needed is not only policies in the agricultural sector but what we need is a holistic approach, increasing irrigation facilities and work-shed strategies which will in turn help to provide relief in drought years. Pradhan Mantri Krishi Sinchai Yojana (PMKSY) is a step in this direction. It is also important to adopt micro irrigation facilities for ground water, drip and sprinkle irrigation, and soil and water conservation - all these strategies help to reach the trooping intensity and will help to increase yield and therefore will make agriculture more sustainable and then eventually we have to promote mechanization in agriculture which helps in precision farming.

Custom hiring of farm machine can be boosted. Employment will be generated in industrial sector as well as rural non-farm employment will be created. Then we can also capitalize on agro-export through appropriate branding, establishing traceability system and upgrading logistics. These strategies include Government policies of 'Make in India' because agriculture has to be linked to the industry. Until and unless there is relation between agriculture and industry, there will be no growth in the economy. Agro-processing should be improved which will provide vital relation between agricultural and industrial sector and a major road driver. Finally, rural infrastructure should be strengthened, the Government should promote school, road, electricity, telecommunication, sanitation and public health. All these will create positive externalities in the farm's input and output market and therefore will promote agricultural sector.

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