

Trends in Agricultural Production and Productivity Over the Planning Period :

Agricultural production has two components — food grains and non-food grains. The former contributes approximately $\frac{2}{3}$ rd of total agricultural production. In the index number of agricultural production (1981-82) equals to 100. The weight assigned to food grains and non-food grains are 62.9 & 37.9 respectively. The most important component in food grains categories is rice (29.7) followed by wheat (14.5). In the non food grain category, oil seeds constitute the most important group (12.6), followed by sugarcane (8.1) and cotton (4.4). For the purpose of analysis of agricultural production and productivity over the planning period, the entire period can be divided into 2 parts —

- ① The period upto the end of the 3rd plan.
- ② The period after the 3rd plan which is often referred as the period of green revolution.

The trends in agricultural production is shown in the table below —

(1950-51 to 2011-12)
(in million units)

Crop	1951-56 (1st plan)	3rd plan	10th plan	2011-12
Total food grains	63.2	81.0	202.9	252.6
Non-food grains				
1. Oil seed	5.5	7.3	23.2	30.1
2. Sugarcane	55.3	109.2	277.0	351.2
3. Cotton	3.9	5.5	16.0	35.2
4. Jute	3.9	4.9	10.1	10.1

Source — Economic Survey, Government of India (2007-08) (2011-12),
GOI, Ministry of Agriculture, Directorate of Economics and Statistics

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From the above table it is clear that as far as food grains output is concerned, the total production increased from 63.2 million tons in the 1st 5 year plan to 202 million tons in the 10th plan. Food grains production touched the record level of 252.6 million tons in 2011-12.

As far as non-food grains crop are concerned the production of oil seeds increased considerable in the later half of 1980s for example - oil seeds production increased from 7.3 million tons in the 3rd plan to 23.2 million tons in the 10th plan. As far as sugarcane production is concerned it registered a more or less steady growth over the planning period. Among the non-food grains group jute has shown a slow and lanting progress during the plan entire period of planning.

Agricultural Productivity in terms of
yield per hecter (in kgs/hecter)

Crops	1950-51	1990-91	2000-01	2010-11
Total food grains	55.2	1380	1626	1921
Oil seeds	481	771	810	1159
Cotton	88	225	190	510
Jute	1043	1833	2026	2344

Source - Economic Survey, (2007-08), (2011-12)

The above table shows that, yield per hecter of all food grains have increased by $3\frac{1}{2}$ times from 55 in kg/hecter in 1950-51 to 1921 kgs/hecter in 2010-11. Due to the adoption of high ~~br~~ hybrid maize varrities and Bt cotton in recent times the production of maize and cotton has increased substantially.

There is a slow and steady rise from 1950-51 to 2010-11 for most of the crops. However compared to oil

countries and as compared with potential and actual productivity level in agriculture continues to be very low, for example - productivity of wheat in India is about 37% of productivity in UK and 61% of productivity in China. As far as rice is concerned, productivity in India is less than half of productivity in China. As far as productivity of sugarcane is concerned, it's 53% in India of the productivity in Egypt. Similar conclusion holds for most of the other crops:

Information on India's global rank in major agricultural crop is still more revealing. India happens to be one of the agricultural crops but ranks a very low in terms of yield. For instance, it has the largest area under rice and wheat in the world and is the second largest producers of these crops. In terms of productivity, its rank is only 52nd in the rice and 38th in wheat.

Not only productivity in Indian agriculture is lower than that in other countries, it is much lower than its the potential. On instance - in the case of wheat (success crop of green revolution), the actual productivity of 2010-11 was only 2988 kgs/hectare as against the potential of 6000-6800 kgs/hectare.

✓ Farm Size and Agricultural Productivity:

For over two decades economists have been engaged in a debate on the relationship between farm size, productivity and profitability while farm productivity implies output per unit of land, farm productivity profitability or farm efficiency refers to the surplus of value of output over all cost originally on a priori reasoning economist asserted that small farms in India were far more productive than large holdings because of intensive cultivation. Some economist argued that there exist inverse relationship

between farm size and productivity while some other economist feel that no such relationship ever exist. Thus there was no clear cut conclusion on these issue.

Economist like A.K Sen, Khurru, Rao, Daini etc. observed that with the increase on size of holdings productivity declines and thus the productivity was more on small farms in comparison to large farms.

Arguments in favour of inverse relationship between farm size and productivity - Various explanation offered by different economist in favour of inverse relationship have been broadly classified by Ashok Rudra into two categories —

- (i) Quality based explanation.
- (ii) Intensity based explanation.

1. Quality based explanation - This explanation argued that —

- (a) Fertility of land is higher in small farms compared to large farms (Khurru, Rao, Bhagawati, S. Chakrabarti).

- (b) Smaller plant used relatively superior technique and they are more efficiently managed. (Rao and Sen)

- (c) In a small farm indivisible factors have a higher impact in comparison to larger farm (Khurru and Rao).

(ii) Intensity based explanation - This explanation argued that —

- (a) Family labour is comparatively cheaper than hired labour and in small farm family labour is predominantly used and this leads to higher labour and land ration and subsequently higher productivity as compared to large farms (A.K. Sen).

- (b) Application of agricultural inputs is more in case of small farms as the small farmers are under compulsion to provide for themselves and their families (Mazumdar, Khurru, K. Bhattacharya and Usha Ranu).

Arguments against -

1. It is not correct to argue that the small farm will use labour till MP_L become 0 or almost 0.
2. There is plenty of empirical evidence to show that the opportunity cost of labour on small farms is not significantly different from market wage. Thus the explanation of inverse relationship of low opportunity cost of family labour doesn't appear to be correct.

Thus, we may conclude Saini's words, "... by and large the inverse relationship between farm size and productivity is a confirmed phenomenon in Indian agriculture and that its statistical validity is established by an analysis of disaggregated farm management data."

• Role of Agriculture in Indian Economy:

A prosperous system of agriculture is pre-requisite for growth of an economy. A highly productive agriculture system contribute to economic growth in many ways -

1. Agriculture is the source of supply of basic food articles. Scarcity of food may produce imbalances in the economy and slow down economic growth.
2. Agriculture supply raw materials to a number of industries. The failure of agriculture crop in any season spells disastrous. Those industries like cotton textile, rubber, jute etc.
3. Rising incomes in agriculture stimulate the progress of industry in two ways -
 - (a) Rising agricultural incomes create rural purchasing power needed to buy new industrial goods.
 - (b) These create rural saving which help to build up financial resources required for investment.
4. Surplus agricultural production can easily be exported.

thus it may help an economy to achieve equilibrium in BOP.

In short, it will be no exaggeration to say that all planning ~~are~~ for development must emphasise the growth of agriculture to make this sector of the economy totally self-reliant.

The role/importance of agriculture during the process of development in India can be charged from the following points —

1. Share in national income — Although the share of manufacturing industries and service sector in the total national income is increasing. The contribution of agriculture continues to be significant. The share of agriculture in national income was as high as 51.3% in 1950-51. During 2011-12, it was about 14% indicating thereby that agriculture remains a large source of income in India even after about 6 decades of economic planning.

2. Source of raw materials ^{for industries} — dependence of number of industry on agriculture is evident by the fact that the failure of agricultural crop in any season spells disaster for industries. This is more true of industries like cotton textile, rubber, sugar etc.

3. Source of employment — In India, according to census of 2001, 56.7% of total labour were engaged in agriculture. In other countries like U.K., USA, Russia is 3%, 4% & 20% respectively. It implies that occupational structure is very much characteristic of developing economy.

4. Role of agriculture in field of international trade — Agricultural product — tea, sugar, oil seed constitute as main item of export in India. The contribution of agriculture to total export was 50% in 1950-51 came down to

9.9% in 2011-12.

5. Dependence of trade and transport - This agency secure most of their business for movement of agricultural goods. Food grains, raw materials and other agricultural products are transported in bulk from producing region to consuming region. Their movement helps to sustain the vast network of roads and railways.

In short it has been rightly observed that agriculture is the backbone of the Indian economy. No scheme or programme of economic welfare / development can afford to ignore the reality of Indian economic situation.

• Causes of low Productivity in India:

Factors which are responsible for the backwardness or low agriculture can be grouped under three broad categories.

① General factors, ② Institutional factors ③ Technological factors.

1. General factors -

① Overcrowding in agriculture - There is heavy pressure of population since the non-agricultural sectors of the economy have not been able to expand at a sufficiently rapid pace over the period of last six decades. This pressure has continuously increased. In 2001 about 208 million workers were employed in agricultural sector. Over crowding in agricultural land has resulted in gradual subdivision and fragmentation. These have also declined the area of cultivated land per cultivator. All these result in low agricultural productivity.

② Social economic factors - Various social economic factors like, farmers' conservative outlook, ignorance, illiteracy, superstition etc. stand in the way of adoption of modern technology.

© Natural factors - The rains are totally uncertain in India. Sometimes rains are insufficient and sometimes too much of rain causing heavy flood both of which cause widespread damage and destruction. Other natural calamities such as hail storm, frost or attack by pest etc. always go against Indian farmers in stepping up their agricultural productivity.

① Lack of adequate finance - Indian agriculture remains backward due to its inadequate financial provision. Although various sources of agricultural finance i.e. both institutional and non-institutional exist but their contribution are almost insignificant in quantity.

2. Institutional factors -

② Small size of holdings - The average size of agricultural holdings in India is very small and uneconomical and also fragmented too. According to the National Sample Survey, 53% holdings in 2005-06 has a size of less than 2 hectares.

③ Defective pattern of land tenure - Land tenure system in India is totally defective and is standing in the way of its agricultural development. The cultivator has to pay high rent to the land lords subjected to frequent expropriation. Further there are delay in implementation of land reform and uncertainty about the rights of farmer on land.

3. Technological factors -

④ Traditional methods of cultivation - Most of the Indian farmers continue to use outdated agricultural techniques. Use of fertilizers and new high yielding varieties of seed is also extremely limited.

⑤ Inadequate irrigation facilities - Indian agriculture is still

suffering from lack of assured and controlled water supply through artificial irrigation facilities. In 2007-08, only 44.6% of gross crop area had irrigation facilities.

© Agriculture research in India - It is still very poor in comparison to its requirement.

Remedial Measures to Raise Agriculture Production and Productivity:

The following measures should be adopted for raising agricultural productivity in India -

1. Consolidation of holdings - Consolidation of holding should be done immediately enacting proper legislation, forming co-operatives and co-operative farming society.
2. Proper steps should be taken to overcome previous problem of agriculture resulted from natural factors. These include extensive flood control methods, supplying adequate quantity of pesticides and insecticides.
3. Indian farmer must apply modern technique of cultivation, by utilizing modern implements, applying adequate amount fertilizer, using HYV seeds, by adopting scientific cultivation of crop and carefree crop planning. Moreover agriculture resources should be intensified and fruits of research should be made available to Indian farmers.
4. Economic measure must be adopted which include the improvement of farm organisation and land management, provision for adequate credit and marketing facilities, establishment of different types of agro based industries in rural area, etc. Moreover the government must introduce minimum price of agricultural product of the country and implement

crop insurance scheme to cover the various risk in agriculture.

5. The quality of farmers should be improved and they should be imparted with general and technical education. Adequate public health measure should also be undertaken in rural areas.

Thus the agriculture productivity in India can be improved with the adoption of aforesaid measures in the agricultural sector in the economy.

✓ Marketable and Marketed Surplus:

Marketable surplus is the total quantity of the commodity available for sale of the current production. After meeting the normal requirements of the production for household consumption, necessary payment for wages, rent, share of produce etc. In short, marketable surplus is the surplus which is left with the farmer for market disposal after meeting the genuine requirement of the family consumption.

On the other hand market surplus is that type of surplus which a farmer actually sale i.e. farmers production available for purchase to non-farm urban population. In other words marketable surplus refer to as gross surplus from agriculture while marketed surplus refers to net surplus from agriculture.

Importance of marketable surplus -

1. Helpful for industrialisation.
2. Increase in income.
3. Increase in foreign exchange earnings
4. Growth with stability.
5. Capital formation.

Measures/steps to increase marketed and marketable surplus -

1. Increase agricultural output.

2. Inducement of ~~con~~ less consumption
3. Adequate supply of credit to agricultural farmers.
4. Forced collection of food crops.

• Agricultural Holdings in India:

The average size of holdings is very small in India. It was merely, 1.33 hectares in 2000-01 which further fell to 1.23 hectares in 2005-06. 64.8% operational holdings i.e. holding less than 2 hectares are considered together as many as 83.3% belong to this category. Thus, more than $\frac{4}{5}$ th of operational holding in India were small and marginal in 2005-06 area operated by them was 40%. As again this 0.8% holdings were large (more than 10 hectares) they ~~total~~ had 11.8% of area under them.

(Source: GOI, agricultural statistics at a glance, 2011)

Thus there exist extreme in equalities in land ownership in India. Not only are the majority of the holdings are very small, they are fragmented into a number of unit.

• Various Categories of Agricultural Holdings in India:

Agricultural holdings in India are broadly classified into five categories, they are -

1. Marginal — less than 1 hectare.
2. Small — 1-2 hectares.
3. Semi medium — 2-4 hectares.
4. Medium — 4-10 hectares.
5. Large — more than 10 hectares.

• Causes of Subdivision and Fragmentation of Holdings:

Subdivision refers to division of land among heirs on the death of the owner of the land. With the passing of each generation the land gets subdivision further and further, and after some generation only tiny plots are left with descendants of a large land owner. Thus a

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person gets one tiny plot at one place and another at a second place and so on. These lead to fragmentation of holdings. Some of the important cause of growing subdivision and fragmentation in India are —

1. With every increase in population, land gets divided and sub-divided among a large number of people and as a result size of holdings goes on diminishing.
2. Growing population coupled with the system of inheritance has been responsible for the small size holdings in the country.
3. The decline of joint family system — Under the impact of industrialisation and growth of towns and also because of western culture promoting individualism, joint families have broken down. These lead to division and sub-division of holdings.
4. The decline of handicraft and village industries — Due to the competition from machine made goods the artisans were forced to leave their ancestral occupation and fall back on agriculture. Thus further increased sub-division and fragmentation.
5. Rural indebtedness and indigenous money lenders — The village money lenders, in order to trap the needy village farmers, they encourage the farmers to borrow, charge them high rates of interest and adopt many unfair practices. As the only way of recovery loan is to acquire agricultural land ultimately plots of land pass from farmers, to the money lenders in lieu of debt payments.

Problem of sub-division and fragmentation of holdings:

The continuous sub-division and fragmentation of agriculture holdings have been resulting in serious problems —

1. The growing sub-division and fragmentation of holdings made the adoption of modernised method in agriculture operation quite difficult.
2. Due to sub-division of holdings a good amount of land (about 3-5%) is being wasted for drawing boundaries and fences.
3. It creates difficulties to the farmers to manage the agricultural operations smoothly.
4. Smaller size of holdings can't provide full time jobs. Thus disguised unemployment started to occur.

Thus clearly small and scattered farms are clearly impediment for the efficient organisation of agricultural. As a result the cost of production becomes very high as compared to large farms.

Remedies for Sub-division and Fragmentation:

1. Creation of economic holdings — To tackle the problem of sub-division and fragmentation economic holdings are to be created. Creation of economic holding requires —

(a) Fixation of ceiling on land holdings and distribute the surplus land to those farmers having uneconomic holdings.

(b) Inducing those farmers having tiny holdings to give up their lands and shift them to other occupations.

(c) To provide alternative occupation by developing agro based industries in rural areas.

2. Consolidation of Holdings - By consolidation we mean the bringing together one compact block of plots of land owned by farmers which is scattered all over the village. Consolidation of holdings can be achieved by -

- (a) Pooling all land in the village into a compact block and
- (b) then dividing it into compact blocks among all the farmers in the village.

Some of the important difficulties in the process of consolidation are -

- (i) The farmers are extremely attached to their ancestral land and therefore are unwilling to give up for the sake of consolidation of holdings.
- (ii) Those having better quality lands do not like to combine for the fear that they may get inferior holding after consolidation.
- (iii) Consolidation is a cumbersome process. The government officials who implement the scheme are generally slow and often corrupt.

• Co-operative Farming :

According to some authorities as well as the Indian government, a permanent solution to the problem of small and scattered holdings is cooperative farming. By the term 'cooperative farming' we mean a kind of farming operation where agricultural productions are conducted by individuals on their own holdings with certain common agencies on their behalf for the collection and purchase of agricultural inputs and also for the sale of agricultural products.

Features -

1. Farmers join the system voluntarily and not through

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compulsion.

2. Farmers retain their right to land.

3. Farmers pool their land, livestock and other implements.

4. The entire farm is managed as a single unit and the management is elected by all the members.

5. Each and every member earn a share of the total produce in accordance to their land contribution and labour performed.

✓ Agricultural Marketing:

The term agricultural marketing includes all those activity which are mostly, transporting and selling of agricultural produce. Thus agricultural marketing comprises all operation involved in the movement of farm produce from the producer to ultimate consumer. Thus agricultural marketing includes the operations like collecting, grading, processing, preserving, transportation, financing etc.

Present status of agricultural marketing in India - There are four different system of agricultural marketing prevailing in India —

1. Sale in villages - The first method open to farmers is to sale away their surplus produce to the village money lenders and traders at a very low price. In India, more than 50% of agricultural produce are sold in villages market in the absence of organised market.

2. Sale in market - The Indian farms used to sale their produce in the weekly village markets popularly know as 'haat' or in annual fairs.

3. Sale in Mandis - The third form of agricultural marketing on India is to sale a surplus produce through mandis in various small and large town.

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4. Co-operative marketing - The 4th form of marketing is the co-operative marketing where co-operative marketing societies are formed by farmers to sell the output collectively for obtaining a better class.

Defects of agricultural marketing -

1. Lack of storage facility - There is no proper storage or warehousing facilities for farmers in villages.
2. Distress sale - Most of Indian farmers are very poor and therefore they often had to go for distress sale of their output to village money lenders and traders at a very low price.
3. Lack of transportation - In the absence of proper transport facilities, Indian farmers can't reach the nearby mandis to sale their produce at a fair price.
4. Unfavourable mandis - The condition of the mandis are also not favourable. According to a study made by D.S. Sidhu revealed that the share of middleman in case of rice was 31%, in case of vegetables, it was 29% and in case of fruits 46.5%.
5. Intermediaries - A large number of intermediaries exist between cultivator and the customer who claim a good amount of margin and thus reduce the return of the cultivator.
6. Lack of market intelligence - The farmers are unaware of the ruling prices of their produce prevailing in market.
7. Lack of grading - Indian farmers do not give importance to grading of their produce and therefore they fail to fetch a good price of their quality products.