CHAPTER VIII

FACTORS CONTRIBUTING TO BETTER ALLOCATION

This chapter reviews certain factors that have been working in the region under study, for a better allocation of resources from the product-product point of view. These factors are described below:

Improved educational standards of the farm operators: Complete data are not available about the educational achievements of the farm operators under study. However, there is ample evidence to show that the new generation of farm operators has higher educational level and thereby better managerial skill.

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1 See Punjab Agricultural University, Ludhiana (209, p.52).

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"During the past 7 years (1965-72), the Directorate of Extension Education organised 352 courses for the farmers, 101 for officials ... directly concerned with agriculture... The total number of individuals who attended these training courses was 20559, 4386...respectively... The University has been a pioneer in introducing the idea of organising Kisan Mahas and Kisan Divas... There is much enthusiasm and keenness among the farmers to visit the University on these days... The Directorate also arranges the National Crop Demonstrations... A large number of farmers are given training and guidance at the sites of demonstrations."

Besides the progress made in agricultural extension education, the improvement in the educational facilities for the rural Punjab is also noteworthy. The earliest official information for the educational set up of the Present Punjab is available for the year 1966-7. The following table shows the number of various educational institutions (upto Higher Secondary level) in the State for the year 1966-7 and 1976-7. The table clearly shows that the rural areas have benefitted relatively more from the additional educational facilities.
Uncertainty in yield: Provision of better irrigation facilities has reduced the uncertainty in the yield of various crops. The certainty of response on which the whole thesis put forth by Schults is based was not expected to be there in a traditional agriculture where only 20 per cent or so of the area under agriculture was irrigated. The Indian budget, because of its excessive dependence on revenue from agriculture, had been termed as a 'gamble in monsoons'. Punjab though better placed with regard to irrigation facilities as compared with other parts of the country also suffered from the impact of uncertain rains during the fifties. Uncertainty due to vagaries of nature is still there, though to a lesser extent because of improved irrigation facilities. Whereas in 1956-57, 62 per cent of the cultivated area of the state was under irrigation (all sources), in 1969-70, irrigation facilities had been provided on 70 per cent of the cultivated area. Crop yield was less certain in 1956-57 than in 1969-70.

In 1956-57 when crop yield was more uncertain, farmers generally grew a few drought resistant, though less

<table>
<thead>
<tr>
<th>Type of educational institutions</th>
<th>Total</th>
<th>Located in rural area</th>
<th>Total</th>
<th>Located in rural area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Schools</td>
<td>7002</td>
<td>6562</td>
<td>9857</td>
<td>9142</td>
</tr>
<tr>
<td>Middle Schools</td>
<td>866</td>
<td>785</td>
<td>1640</td>
<td>1528</td>
</tr>
<tr>
<td>High &amp; higher</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary schools</td>
<td>1023</td>
<td>565</td>
<td>1671</td>
<td>1161</td>
</tr>
</tbody>
</table>

Source: Education Dept., Punjab: Annual Reports.

Also see Fane [79] and Khaldi [151]. Their studies show that education improves managerial efficiency of the farmers and also the resource allocation.
remunerative, crops along with more remunerative ones to meet this uncertainty. With growing certainty in crop yields due to better irrigation facilities, many of the drought resistant crops have lost their importance. Jawar, Bajra, Guara, Barley, Sarson, Taramira are some of such crops. On the farms under study, whereas in 1956-57 as much as 24.5 per cent of the gross cropped area (excluding that under fodder) was under such crops, only 3.7 per cent of such area was used for these crops in 1969-70. The actual crop pattern is thus likely to be closer to the optimum in 1969-70 as compared with that in 1956-57. Certainty in crop yield has also increased due to greater use of insecticides etc. in recent years.

Reduction in the number of crops: Better irrigation facilities have also incidentally resulted in the reduction of number of crops actually sown on various farms. This reduction in turn implies that the problem of choice of crops for maximising the value of a given objective function has become less complex. In the data under study, whereas the average number of crops, besides fodder, was 5.28 in

1 Desai [55] in one of his studies has found that farms provided with greater irrigation facilities have better allocation of resources. Shah [26] says that irrigation leads to greater monetisation of crop pattern. Ramalingam [218] finds the replacement of subsistence crops by cash crops when irrigation facilities are provided on a farm. Both these assertions imply a greater exposure of the farmers to the operation of market forces and therefore a chance for better allocation of resources.
in 1956-57, it was 4.49 in 1969-70. The difference is significant at 5% level of significance.

**Increasing supplementarity of the crops:** Not only has the number of crops declined over the years, the competition among the remaining crops has also become less keen due to emergence of some new varieties of these crops. Competitive nature of the crops is also a hindrance in the way of achieving the optimum crop mix. If crops were completely supplementary to each other, i.e. they did not compete with each other for any of the resources used, there could be no possibility of misallocation i.e. of having a sub-optimal crop mix. After 1965, the use of new varieties of wheat, i.e. the mexican wheat has somewhat reduced the intensity of competition among various crops. Wheat in the area under study, irrespective of its variety, competes with American cotton so far as land is concerned. Land under American cotton is generally cleared in the month of

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1 This number also includes the crops which were ignored because the area under them was almost negligible and, therefore not included in the input-output matrix. The number of such crops for all farms, however, is very small.

2 A large number of crops need not always mean a greater misallocation. It can also mean a greater number of alternatives and therefore a better chance for a more efficient allocation of resource. This however assumes that the additional alternatives are better than some of the existing ones. The data under review for the two years do not confirm such an assumption. Here the large number of crops in 1956-57 was due to the production of some crops which were definitely less remunerative than others as indicated in the earlier paragraph.
December. Sowing of wheat, on the other hand starts in mid October (Desi wheat) and continues through November to mid December (some varieties of Mexican wheat). Thus generally, wheat is not grown on the area cleared of cotton. There are of course some exceptions to this practice in case of a few farmers. In 1956-57 these two crops were competing for irrigation facilities also. Both needed water in the months of October. In the year 1956-57, the data under review shows that out of 44 farms on which cotton and wheat (or wheat gram) were sown, on 25 farms, the two crops competed for water in one or two or all the three peak months of September, October and November. In 1969-70, the situation is much changed. Wheat and cotton were grown on all the farms under study. Out of these, on one farm, wheat and cotton competed in September, on one in October and on 7, in the month of November. In other words, we can say that whereas on 58 per cent of the farms, wheat and American cotton competed for water in 1956-57, only on 30 per cent of the farms, these two crops competed for water in 1969-70. This supplementarity between the crops so far as irrigation is concerned, has become possible due to the fact that the Mexican varieties of wheat can be sown a bit late. Now first watering for wheat can be postponed till November — a month in which cotton does not need any water, since it is almost ready for picking. This supplementarity of crops, puts a limit on the change in the actual area of a crop in
the upward direction as a result of reallocation. This is because such an increase is possible only by using the resources devoted to other crops. But as these crops are not competing with the particular crop in question and have, therefore, not used the input also required by the particular crop, area under the latter even under optimum plan cannot be increased. A limit on the change in area of one crop even after reallocation in turn may reduce the changes of area under other crops also to change. The difference between the optimum value of an objective function and its actual value may thus decline. Some other crops too, besides wheat and American cotton were in some cases competitive with regard to irrigation in 1956-57. These were Guara and wheat gram. The intensity of competition between them has also considerably declined. This is because of the fact that wheat gram - a mixed crop is no longer popular and has been replaced by wheat. Guara and wheat are supplementary to each other both with regard to land and irrigation.

The Changed Technology and Consequent area-ster exposure of the Farmers to influence of market forces

Low productivity on a farm can also be responsible for misallocation of resources so far as the crop pattern is concerned. Low productivity implies less marketable surplus and, therefore, weaker influence of market forces.
on crop mix. Agricultural productivity in the Punjab increased significantly during the sixties due to large scale adoption of new seed-fertilizer technology. Adoption of this technology and the consequent changes in productivity pushed the farmers, in general, both into the input market for the purchase of new inputs and into the product market for the disposal of marketable surplus which had increased/ appeared on various farms. The changed situation was expected to make them more calculating while deciding about the crop pattern.

Here, we would like to specially refer to the impact that increase in the yield of wheat had on resource allocation. We have referred to the growing influence of market forces caused by increased output. Increase in the yield of wheat has improved allocation of resources in another way also. Every farmer produces wheat for domestic consumption on the farm itself. Production of wheat up to the amount needed for domestic consumption is completely isolated from the influence of market prices. Compulsory production of wheat will imply misallocation of resources if it is less remunerative as compared with other competing crops. This was the situation in 1956-57. Wheat was less remunerative than cotton. In 1969-70, the situation was completely changed. Wheat production had become more remunerative than cotton. This encouraged production of wheat.
As a result, from being a cause of misallocation wheat production turned into an instrument of better allocation of resources on many farms, even when its production was purely for domestic needs.

Better marketing facilities: No doubt, the adoption of the new seed-fertilizer technology and the consequent increase in the yield of various crops has pushed the farmer more into the factor and the product market, the process has been accelerated by the provision of better marketing facilities to the farmers. The markets have come closer to the farmer. In 1956-57, there were 68 regulated markets in the area covered by the present Punjab. On the average, one market served 178 villages and an area of 380 sq. kms. In 1969-70, the number of regulated markets increased to 88. The average number of villages served by a regulated market declined to 118 and the area served by a market fell to 251 sq. kms.

1 This view of ours finds an indirect confirmation in a study conducted by Dhawan and Kahlon. 2 Economic Statistical Organisation, Punjab.
This increase in marketing facilities is also reflected in the data under study. The average distance of a regulated market from the villages under study was 15.60 kms in 1956-57, it fell to 9.72 kms in 1969-70!

Reduction in the distance of a regulated market from the village, however, is not the only explanation for the improvement. Construction of metalled roads, linking the villages with the main road and the regulated markets have also acted as a stimulant to 'production for the market'. In 1956-57, the length of the metalled roads maintained by the P.W.D. and local bodies in the Punjab was 5343 kms while it increased to 10043 kms in 1969-70. Needless to say that the provision of more storage facilities in the markets, better control over the activities of the market functionaries, better market intelligence, and the price support policy of the government (by reducing uncertainty) have also pushed the crop pattern towards the optimum.

1 See Kahlon and Kehal who have shown that the distance from the market influences the crops pattern. Crops like vegetables, despite their being very remunerative, are replaced by less remunerative crops as the distance of the farm from the market increases.

Also see Mukhopadhya and Sarkar. According to them nearness to market centres, good roads, and efficient transport facilities do seem to exert a favourable influence on crop pattern. See also Malya and Jasadwala. They also emphasise the fact that nearness of the market brings about remunerative shifts in the crop pattern.