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DISTRIBUTION OF AGRICULTURAL PROCESSING AND SUPPLY INDUSTRIES IN THE PUNJAB

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India is faced with grave food scarcities under the mounting pressure of population as well as increasing money incomes due to various investment programmes. In such a situation the country cannot afford even marginal wastes in agricultural commodities including fruits and vegetables. The need of the day, therefore, is to boost up production and preserve whatever is produced. In the field of agricultural production and in developmental programmes, the importance of an adequate supply of agricultural inputs also cannot be over-emphasized. There is thus a need for a well developed and suitably located processing and supply industries. Although allocation of a processing or supply industry will depend upon many factors such as supply and product markets, costs involved in transporting inputs to the industry and products from the industry to the markets, economies of scale, technological development and other economic and non-economic facilities available, yet by and large, the processing industries should be located in relatively high production areas where an adequate marketable surplus is available and a supply industry should be attracted by a good actual or potential demand for a particular input.

This is an attempt to examine the existing distribution of the processing and supply industries in the Punjab. More specifically the objectives of the study are (i) to estimate the production of important agricultural commodities available for processing and to estimate the existing capacity of the various processing industries in the Punjab districtwise, with a view to examining their adequacy or inadequacy for the purpose, and (ii) to examine the adequacy and location of supply industries vis-a-vis the needs for the supply factors in different regions of the State.

Sources of Data

Production data relating to foodgrains, oilseeds, cotton and sugarcane were averaged over three years from 1962-63 to 1964-65 from the Statistical Abstract of Punjab, 1965. Vegetable and fruit production data were obtained from crop and season reports for 1962-63 to 1964-65. Production figures for vegetables and fruits were rationalized with the information collected through farm management specialists located in different districts of the State.

Information on small scale supply and processing industries was obtained from the "Directory of Small Scale Industries of Punjab 1965." Information on large scale industries was supplied by the Director of Industries, Punjab. Information on implements and machinery was obtained from the Statistical Abstract of Punjab, 1965. This information was based on the survey conducted by the Director of Land Records, Punjab. Data pertaining to fruit preservation units and cold stores were obtained from the Deputy Marketing Development Officer (Fruit Products), Amritsar. These data pertained to the year 1965.

RESULTS AND DISCUSSION

The results of the study are discussed under two heads : (i) Supply industries, and (ii) Processing industries.

SUPPLY INDUSTRIES

The discussion here is related to implements and machinery only. The term agricultural implements and machinery as used in this paper includes sugarcane crushers, tractors, tractor trailers, oil engines with pumping sets, electric motors for tube-wells and plant protection equipment.

The number of such implements and machinery, together with the number and location of manufacturing units, facilities for repairs and availability of spare parts are discussed below for each district.

Sugarcane Crushers

The total number of sugarcane crushers in the Punjab State was estimated at 93,645 in the year 1961. The maximum number of sugarcane crushers was found in the Jullundur district, followed by Hoshiarpur, Gurdaspur and Rohtak. These four districts together constituted 59.26 per cent of the total number of sugarcane crushers in the State. Great variation in the number of crushers was observed from district to district ranging from three in the Mohindergarh district to 17,792 in the Jullundur district. The surprising aspect of it was that there was no organized facility available to the farmers of the State in either of the districts for repairs. There were, however, 15 manufacturing units in the State, six in Gurdaspur, five in Rohtak, two in Hoshiarpur and one each in the Ludhiana and the Ambala district. Repairs and spares facilities need to be, therefore, provided to the farmers at least in these areas where the number of sugarcane crushers runs into thousands.

Tractors

The total number of tractors in 1961 in the State was estimated at 7,866. Ferozepur district had the highest number of tractors (1,378) followed by Bhatinda (1,153), Hissar (940), Rohtak (645), Karnal (632), Patiala (561) and Sangrur (474). These districts together accounted for 73.22 per cent of the tractors in the State. Well organized units exclusively dealing with spares and repairs were inadequate in number in relation to the number of tractors in these areas. The total number of such units in these districts were only 2, 1, 0, 1, 3, 1, and 2 respectively. However, districts like Ludhiana having 458 tractors. Ambala with 413 and Jullundur with 369 tractors were relatively better off in respect of the avail-

ability of such facilities, although even there the facilities may not be considered adequate. In all, there are at present 24 such units in the State. There is thus a good scope for agencies dealing with spares and repairs in the districts of Hissar, Karnal, Rohtak, Patiala and Sangrur.

At present there are only 74 sales-service agencies of different makes in the State varying from one in Gurdaspur to a maximum of 13 in the Ferozepur district. These sales-service agencies also provide spares and repair facilities but only for their own make. Districts such as Kapurthala and Mohindergarh had no such facility at all. An important point to note is that these facilities, whatsoever, are available only at the district headquarters and very few at the tehsil level. It takes therefore a long time for the cultivators to remove even minor defects in their tractors and operational efficiency is adversely affected. There is, thus, scope throughout the State for organizing repair and spare services, which should provide easily accessible quality service to the cultivators.

Trailors

There were 17 units engaged in the preparation and distribution of farm trailors in the State in the year 1964-65. Rohtak, Gurgaon and Jullundur districts had each three units, Patiala and Hoshiarpur two each, while Karnal, Ludhiana, Ambala and Ferozepur had only one each. In the Hissar district there was not even a single unit dealing with tractor trailors, although it occupied third position in the State in so far as the total number of tractors was concerned (940 tractors). The sales-service agencies of different makes of tractors, however, supply tractor trailors suitable for their own makes but they are inadequate.

Electric Motors for Tube-wells

The total number of electric motors in the State was estimated at 8,774 in 1961. Out of this, Jullundur district had the maximum number (1,963) followed by Amritsar (1,122), Hoshiarpur (1,056), Ludhiana (946), Karnal (811) and Gurdaspur (742). These six districts accounted for 75.68 per cent of the electric motors in the entire State and 76 per cent of the manufacturing, sales-service and spare parts agencies. There were altogether 25 such units which were providing sales as well as spare and repair services. Of these, ten were situated in the Jullundur district alone. Eleven districts of the State were not having any of these services available to them. There is scope for establishing electric motor repair and spare service facilities throughout the State especially in the areas suitable for well irrigation, i.e., in the central parts of the Punjab State.

Plant Protection Equipment

There were in all three units (two in the Ludhiana district and one in the Gurdaspur district) in the State which were engaged in the manufacture of plant protection equipment in the year 1964-65. Other districts of the State had no such manufacturing units but a few had sale and service agency. Ferozepur had three; Gurgaon, Karnal, Ambala, Ludhiana, Jullundur, Amritsar and Bhatinda each had one sale and service agency mainly at the district headquarters while other districts were not having any of such services. This repair, spare and supply service needs to be expanded throughout the State.

Other Agricultural Implements

Under this category is included all improved implements hand operated, animal-driven or power-driven, such as disc harrows, hoes, cultivators, seed drills, land-levellers, triphalies maize dibblers, paddy weeders, spade, sickles, khurpas, etc.

The total number of manufacturing units in the State dealing with such implements was 693, while the total number of repairing units was 205. A great variation in the number of repairing units was observed between different districts. It was quite surprising not to find any repair facility for improved implements in districts like Hissar, Patiala, Kapurthala, Bhatinda and Mohindergarh. These repairs were done only in a crude manner in the villages. The repairing facilities for improved implements were available only in big cities and towns. This is not conducive to operational efficiency of the implements, because even a slight breakdown in any implement might upset the whole programme of agricultural operations for one or more days.

PROCESSING INDUSTRIES

The agricultural processing industries are discussed here under four main categories. (1) Foodgrains; (2) Oilseeds; (3) Cotton and Sugarcane; and (4) Fruits and Vegetables.

Processing of Foodgrains

All the major foodgrains, *i.e.*, wheat, gram, barley, maize and paddy can be processed before final consumption. For wheat there were 17 flour mills and 383 registered *atta chakies* in the State in the year 1965. There is however a large number of *atta chakies* in the villages which cater to the needs of the village population only. No records in respect of them were available. The flour mills and the registered *atta chakies* together have an yearly capacity of 3,49,971 metric tons only. After making allowance for the present capacity of the mills and *chakies*, it was estimated that a little over 2.4 million tons of wheat could further be converted into flour before exporting it outside or for distribution to the consumers within the State. Keeping in view the production level of different districts and the existing capacity of mills and *chakies*, the districts of Sangrur, Karnal, Bhatinda and Patiala hold a good promise for establishing of additional flour mills.

In respect of gram, there were 82 units in the State for making of *dal*. Thirty-two out of them were located in the Hissar district, 12 each in Patiala and Gurgaon, 11 in Karnal, 9 in Ferozepur and 2 each in Bhatinda and Mohindergarh districts. In order to match the capacity of *dal* making units with the marketable surplus of different districts, Hissar, Sangrur, Bhatinda, Rohtak and Ferozepur districts require further expansion of *dal* making units.

Punjab barley is reputed for its malting and brewing qualities due to well developed plump grains. Although there are five brewers in the State located at Gurgaon, Karnal, Jullundur, Amritsar and Kapurthala they do not brew beer. Barley surpluses of Gurgaon, Ferozepur, Karnal and Sangrur need to be processed into beer through some suitably located breweries in the State.

Punjab produces large quantities of maize, which is exported from the State to starch mills outside. Often restrictions of movement of maize outside the State create a desperate situation as it happened for the harvest of 1965. There were only two starch mills located at Jagadhri and Fagwara and only three corn-flake manufacturing units located at Gurgaon. These processing facilities are inadequate. Keeping in view the production of maize in the different districts of the State, Patiala and Sangrur districts could maintain one such processing unit, Karnal and Ambala another one and Hoshiarpur alone could feed successfully one separate unit.

Paddy production in the State has increased during the last decade, especially in the districts of Karnal, Amritsar, Gurdaspur, Ferozepur, Ambala and Kangra. Together these districts produce over 70 per cent of the total paddy in the State. At present paddy husking and rice-polishing facilities are inadequate. For example, Ambala which is a major paddy growing district in the State has only one sheller. Kangra district had no sheller but only hullers. It would be profitable to establish some shellers in all these districts of the State.

Oilseed Processing

Main oilseeds produced in the State are groundnut, rape and mustard. Of the 1,15,870 metric tons of groundnut production in the State, Ludhiana, Patiala and Sangrur districts account for 74 per cent. Other oilseeds production is concentrated in Hissar, Gurgaon, Bhatinda, Mohindergarh, Amritsar and Ferozepur districts which account for over 75 per cent of the total production. At present there are 72 oil mills and 175 small crushing units in the State. But their capacity does not match with the production. There is, thus, scope for establishing some oil mills in these districts of the State.

Processing of Cotton and Sugarcane

Of the total cotton production of 5,70,591 metric tons in the State, 5,03,842 metric tons (88 per cent) is ginned in the State. There is some marginal scope of expanding the ginning capacity of the factories. The major emphasis should be on rational location. There is excess ginning capacity in the Jullundur division; in the Ambala division the capacity is almost consistent with production. But in the Patiala division, production is almost double (2,07,688 metric tons) compared to the ginning capacity (1,02,332 metric tons). There is, thus, scope for establishing some new ginning and pressing factories. Sangrur and Bhatinda districts are the major cotton producing districts of Patiala division. These districts need more ginning and pressing factories than are available at present.

In respect of sugarcane, there are nine sugar mills with a capacity to crush 14,81,300 metric tons of sugarcane during the season and 15 *khandsari* units in the State. At present Rohtak with 26.12 per cent of the sugarcane production in the State has only one sugar mill with a capacity of 168 thousand metric tons per season. Ambala has two factories with a capacity of 483 thousand metric tons although it produces only 7.43 per cent of the total sugarcane in the State. Similarly Gurdaspur, Hoshiarpur and Kapurthala each has one sugar mill with

a capacity of 128, 152 and 120 thousand metric tons although they account for only 4.97 per cent, 3.5 per cent and 1.38 per cent of the total sugarcane production (76,88,100 metric tons) in the State. There seems to be scope for establishing a new sugar mill in the Rohtak district in addition to the one already working and also in Hissar and Gurgaon districts. Ludhiana and Ferozepur would also need one sugar mill.

Processing of Fruits and Vegetables

Fruits and vegetables are highly perishable products. Absence of processing and preservation facilities puts fruits and vegetable crops to disadvantage. The seasonal gluts and off-season scarcities of fruits and vegetables are well known. In the post-harvest period a large part of the surplus and inferior quality fruits and vegetables go waste. Such fruits can be processed and preserved into pickles, preserves, juices, squashes, jams, jellies, syrups, beverages, etc. Similarly, vegetables can be pickled, canned and dehydrated. This will not only add to the total revenue of the State, but would meet more adequately the hot weather and off-season needs of the people of the State and outside demand.

Coming to individual fruits, production of apples is estimated at 60,940 metric tons in the State, of which about 98 per cent is grown in the Kulu district. A lot of this fruit gets wasted due to inadequate transportation, especially during rains. Kulu district needs one food processing and preservation unit. In addition to apple, supplies of other temperate fruits are also available here in adequate quantities to justify the setting up of a processing and preservation unit in this district.

Mango is a sub-montaneous area fruit. There are large quantities of low quality mango fruit produced in the Ambala and the Hoshiarpur district of the State which in large part go waste or are sold at throw-away prices. These districts account for more than 80 per cent of mango production in the State. These low quality mangoes are fortunately the best suited ones for preparing juices, squashes and preserves. There is, thus scope to establish fruit preservatories at Ambala and Hoshiarpur.

Citrus fruits also occupy a place of importance in the State. Of the 2,05,980 metric tons citrus fruit production in the State, Ferozepur, Ambala, Bhatinda and Kangra account for more than 70 per cent. While preservatories meant for mango at Ambala and Hoshiarpur would take care of the citrus fruit also in these areas, Ferozepur and Bhatinda districts would need separate processing and preservation units.

Another important fruit being cultivated in the State is grape. As a result of grape development programmes, acreage under this crop is expected to be rising fast. Even at present 5,088 metric tons of grapes are produced in the State. Jullundur, Ludhiana and Ferozepur are the main grape growing districts accounting for about 37 per cent of the total production. These districts as well as the southern districts of the State would need grape processing unit facilities for preparing vinegars and wines, etc., in the very near future. Lack of or inadequacy of grape processing and preservation units would likely to hit the grape growing industry adversely.

These fruit preservation and processing units established in different parts of the State as suggested above would also be able to get supplies of other fruits in different seasons throughout the year. These fruits include guava, pear, plum, apricot, litehi, falsa and papaya. The production of these miscellaneous fruits in the State is estimated at 1,57,250 metric tons annually.

Among vegetables, tomatoes, peas, cauliflower, carrot, radish and turnip are the important vegetables which can be pickled, canned and processed. Tomatoes in the harvest period sell at a very low price and sometimes hardly meet the cost of picking and transportation. The quality of tomato during the period on the other hand is normally very high. There is a good scope to establish processing units in the main urban centres of the central Punjab, which would prepare sauces and ketchups from tomato at a very low cost. In these very urban centres, processing units for other vegetables such as canning peas, cele-crops, radish, turnip and carrot as well as dehydration of peas and cele-crops hold a great promise.

The present situation in respect of location and distribution of fruits and vegetable processing industries is that there are in all 77 such units in the State, out of which 15 are large scale units processing fruits and vegetables worth more than one lakh of rupees each. Unfortunately, with only few exceptions these units do not utilize modern techniques and methods and are not operating under hygienic conditions. All these units put together process only about 2,973 metric tons of processed products. There is thus a good scope for expanding fruits and vegetables processing industries in the State.

Potato, one of the most important vegetables of the State, is faced with another problem, i.e., the problem of cold storage. The total production of potato in the State at present is about 2,88,690 metric tons. Major potato growing districts are Hoshiarpur, Jullundur, Karnal and Ambala, which produce about 68 per cent of the total potatoes in the State. Whereas yearly production in these districts amounts to about 65, 62, 41 and 26 thousand metric tons respectively, the cold storage capacity available in these districts is only up to about 6, 21, 10 and 12 thousand metric tons. Even the total storage capacity (86,945 metric tons) of all the 79 cold stores in the State at present cannot cope with the surplus potato production in the State. There is, therefore, a need to expand the cold storage capacity in these districts as well as in other potato growing areas of the State. The necessity of enhanced capacity for cold storage also arises for storing other vegetables and fruits, from the peak period through lean months. Cold storage also serves as a complementary facility for processing and preservation industries.

To conclude, this study brought out some inadequacies in capacity of both the supply and processing industries in the State. There is a clear need to create additional supply and processing services as well as rational location of these facilities in different parts of the State.