
Growth and Performance of Agro Based Industries in Punjab

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ABSTRACT:

The study revealed that area under wheat and paddy crops, which was 40.50 and 6.90 per cent of gross cropped area (GCA) in 1970-71, increased to 44.65 and 35.66 per cent in 2011-12. Paddy-wheat crop rotation became predominant at the cost of maize, other cereals, oilseeds and pulses in the state. Share of Punjab in food grain production has declined over the years, it has come down to 10.57 per cent in 2011-12 from 11.14 per cent during 1992-93. The total area under contract farming which was about 234211 acre during 2008-09 has decreased to 84747 acre during 2010-11 and then showing a huge decline to 14852 acre during 2012-13. The number of sugar mills which accounted for only eight in 1980-81 has increased to 17 in 1990-91 and then rose further to 24 in Punjab. Sugar production also increased at a very high rate with the increase in daily crushing capacity of sugar mills in Punjab. The study also reveals that the number of spinning and composite mills which were only 93 and two during 2000-01 has increased to 119 and four during 2009-10 and then rose further to 133 and nine during the year 2012-13 with an overall growth rate of 3.11 and 13.28 per cent per annum, respectively. High electricity charges, heavy imposed taxes, less labour availability and high prices of property were the main challenges faced by the investors to invest in agro industries in Punjab. Lastly, it was inferred that Punjab agriculture has reached at a point of stagnation and there is a need for various Government initiatives such as demonstrations, awareness training camps to farmers to grow commercial crops i.e. spices, medicinal, aromatic plants etc which can be helpful in promoting agro industries in Punjab.

Keywords: *Agro processing industries, Contract farming, Cropping pattern, Punjab agriculture*

INTRODUCTION:

Agro-industry processes materials of plant or animal origin by transformation and preservation through altering physical and chemical characteristics and packaging. It transforms raw material into finished products for consumption. The demand and necessity of agro-processing industries increase as agricultural production rises. Conversely, new processing activities can open up new opportunities to farmers, and thus, create additional revenues for them. By creating new market for farm products, it can boost income of small farmers. In the regional development context, it provides economic justification to build rural infrastructure. When agro-industry creates backward demand, farm employment usually increases.

Punjab is the richest Indian state. Being the neighbour of the national capital Delhi, it has a high growth of economy for years. This north Indian state has very affluent neighbouring states and cities such as Haryana, Jammu & Kashmir, national capital Delhi, Rajasthan and

Himachal Pradesh and Pakistani states of Punjab which has been creating multiple trade opportunities for the people from all walks of life. The people of this north Indian state have migrated to the every corner of the world creating business and employment for the people of the country. Punjab is highly advanced as far as roads, rails, and telecommunications is concerned. The high-end communication creates trades, business and employment opportunities for the exporters, industrialists, importers, distributors and suppliers etc. It has been instrumental in ensuring national food security, consistently contributing significant percentage of wheat and rice to the Central Pool. The state of Punjab has achieved significant strides in the development of agriculture. Since agriculture is the primary employer in the developing countries. Further, it creates jobs in sectors like transportation, distribution and retail trade as well. So, Keeping in mind the development of Punjab state and to increase the income of farmers, agro industry and contract farming is the best way.

DATA AND METHODOLOGY

The present study was based on secondary data. The data on area under major crops in Punjab from 1970-71 to 2011-12 and data related to various agro based industries were collected from Statistical Abstracts of Punjab (various issues), Chandigarh, Government of India. Punjab's food grain production contributing to central pool from 2001 to 2011 has been compiled from RBI, Ministry of Agriculture.

ANALYTICAL TECHNIQUES

The growth rates at two point of time were also calculated to data related to various aspects of agro processing industries of the Punjab state.

$$r = \text{Antilog } (Y^x - 1) * 100$$

A = base year

B = current year

$$B = A (1+r)^t$$

$$B/A = (1+r)^t$$

$$\log B/A = \log (1+r)^t$$

$$\log B - \log A = t * \log (1+r)$$

$$t * \log (1+r) = \log B - \log A$$

$$\log (1+r) = (\log B - \log A) / t \quad (\log B - \log A) / t = Y^x$$

$$(1+r) = \text{Antilog } Y^x$$

$$r = (\text{Antilog } Y^x) - 1$$

$$(\text{Growth rate}) r = (\text{Antilog } Y^x) - 1 * 100$$

RESULTS AND DISCUSSION

Cropping pattern in Punjab

Punjab agriculture witnessed spectacular transformation as a result of green revolution during the period 1970-71 to 2011-12. Gross cropped area saw a sharp increase from 5724 thousand hectare in 1970-71 to 7902 thousand hectare in 2011-12. The cropping pattern in Punjab state at selected points over time is given in Table 1. It is quite clear

from the table that in 1970-71, about 40.5 per cent of the gross cropped area (GCA) was under wheat crop which increased to 42.91 per cent in 2000-01 and was around 44.65 per cent during the year 2011-12. Paddy, which occupied around 6.90 per cent of the gross cropped area in 1970-71, increased to 32.89 per cent in 2000-01 and rose further to 35.66 per cent in 2011-12. The increase in wheat cultivation has been at the cost of gram and rapeseed mustard, while that of paddy, it was due to shift in area from maize, groundnut, millets and cotton crop. The proportionate area under cotton in 1970-71 was seven per cent of gross cropped area and increased to 9.32 per cent in 1990-91. After mid 1990's the area under cotton declined due to inclement weather and pest attack and its share in GCA came down to 5.95 per cent in 2000-01. With the introduction of Bt cotton varieties area under cotton started increasing and in the year 2011-12, it accounted for 6.52 per cent of the GCA in the state. Respective share of pulses and oilseeds in GCA has recorded a sharp decline from 7.30 and 5.20 per cent in 1970-71 to 0.29 and 0.63 per cent in 2011-12, respectively. It can be inferred that imbalance in favour of two main cereals i.e. paddy and wheat in the cropping pattern has further sharpened despite all efforts on diversification of state agriculture. This happened because of better relative profitability of these crops with minimum production and marketing risk as compared to other crops. The cropped area under other crops including fodder, aromatic and medicinal crops, spices etc has also shown a sharp decline in its share to GCA from 14.9 per cent in 1970-71 to 7.44 per cent in 2011-12.

Table 1: Shift in cropping Pattern in Punjab (Per cent)

Year	1970-71	1980-81	1990-91	2000-01	2011-12
Paddy	6.90	17.07	26.8	32.89	35.66
Cotton	7.00	9.36	9.32	5.95	6.52
Maize	9.80	5.51	2.50	2.06	1.59
Sugarcane	2.30	1.02	1.34	1.52	1.01
Bajra	3.70	0.99	0.16	0.07	0.04
Wheat	40.50	40.58	43.53	42.91	44.65
Barley	1.00	0.93	0.50	0.40	0.15
Total pulses	7.30	4.84	1.90	0.69	0.29
Total oilseeds	5.20	3.43	1.38	1.08	0.63
Total vegetables	0.90	1.10	0.73	1.38	1.20
Total Fruits	0.50	0.40	0.90	0.43	0.82
Other crops	14.90	14.77	10.94	10.62	7.44
Gross cropped area (GCA)	100.00	100.00	100.00	100.00	100.00
Cropping intensity	140.09	161.37	177.86	186.07	191.00

Source: Computed from Statistical abstracts of Punjab (various issues).

* other crops include fodder, medicinal and aromatic, spices etc.

** indicates statistical significance at 5 per cent level; and ns indicates non- significant values.

Punjab's position in Indian agriculture

The state of Punjab has achieved significant strides in the development of agriculture. The present level of prosperity in the state is one of the highest with highest per capita income and consumption in the country. It is all due to the spectacular progress made in agriculture by the farmers of Punjab. Punjab stands at second position at all India level in terms of food grain production. The state's food grain production has grown from 20.00 million tonne during 1992-93 to 23.49 million tonnes during 2002-03 and further increased to 27.22 million tonne during 2011-12. Share of Punjab in food grain production has declined over the years, it has come down to 10.57 per cent in 2011-12 from 11.14 per cent during 1992-93. Production of rice in Punjab has grown from around 9 million tonnes in 2001 to around 11 million tonnes in 2011. However, production of wheat has remained stagnant at around 15 million tonnes during the last decade. Table 2 revealed that the share of Punjab in the India's total rice production has remained more or less same during the last decade while, the share in wheat production of India has declined from around 22 per cent during 2001 to around 18 per cent in 2011.

Table 2: Food grain production in Punjab vis-à-vis India

Year	Punjab (MT)	India (MT)	Contribution of Punjab to India (%)	Year	Punjab (MT)	India (MT)	Contribution of Punjab to India (%)
1992-93	20.00	179.48	11.14	2002-03	23.49	541.45	4.33
1993-94	21.58	184.26	11.71	2003-04	24.73	213.61	11.58
1994-95	21.82	191.49	11.39	2004-05	24.72	198.36	12.46
1995-96	19.81	180.41	10.98	2005-06	25.67	208.60	11.78
1996-97	21.56	199.83	10.79	2006-07	25.18	217.82	11.56
1997-98	21.14	192.64	10.97	2007-08	25.31	230.77	10.97
1998-99	22.91	204.01	11.23	2008-09	26.81	234.47	11.43
1999-00	25.20	210.22	11.99	2009-10	27.33	218.10	12.53
2000-01	25.32	197.20	12.84	2010-11	27.32	244.77	11.16
2001-02	24.89	213.27	11.67	2011-12	27.22	257.44	10.57

Source: RBI, Government of India.

The Punjab is consistently contributing 60-70 per cent of wheat and about 45-50 per cent rice to the central pool. The production of wheat has increased from 24.51 lakh tonnes in 1966-67 to 144.60 lakh tonnes in 1998-1999. In fact, if we compare the production of wheat in 2000-01 with the production of wheat in 1960-61 than during these forty years it has gone up by more than nine times. Similarly, the production of rice has gone up from 3.38 lakh tonnes in 1966-67 to 79.40 lakh tonnes in 1998-99. The production of rice which is the major crop of Punjab has gone up more than thirteen times between 1970-71 and 2000-01. Total food grain production in the state has also increased by more than three and half times (Singh G, 2012). The crops such as rice, wheat, cotton, potato and some fruits showed an increase in area for their cultivation while others such as maize, bajra, jowar, pulses and oilseeds etc showed a

major decline. This is all due to availability of price assurance schemes for crops such as wheat and rice in Punjab and availability of new technology to enhance the productivity of these crops.

Contract farming in Punjab

Table 3 reveals that the area under contract farming in Punjab is very less as malting barley is the only crop which has shown a consistent growth in area under contract farming with 6220 acre in 2008-09 to 14852 acre in 2012-13 pertaining to a growth rate of 24.45 per cent per annum. The other crops such as hyola, durum wheat, basmati pure, maize, green pea potato seed have also shown a good contribution in encouraging the system of contract farming in Punjab. The total area under contract farming which was about 234211 acre during 2008-09 has decreased to 84747 acre during 2010-11 and then showing a huge decline to 14852 acre during 2012-13. So, it can be inferred here that after 2008-09, the scope of contract farming has been adversely affected. But now with the recommendation of Punjab Government to diversify 16 lakh hectares of area from paddy crop to other crops i.e. maize, sugarcane, cotton, agro forestry, pulses, fruits and vegetables, there is a ray of hope for contract farming in Punjab as it will attract many agro based industries to choose a path way to Punjab to get raw material for the production of bi-products.

Table 3 Area under contract farming in Punjab (Acre)

Year	Hyola	Durum wheat	Malting barley	Basmati pure	Maize	Green pea	Potato seed	Total
2008-09	35324	-	6220	84016	107530	1121	-	234211
2009-10	18315	-	8192	74914	82570	1122	4062	189175
2010-11	-	1500	7627	70806	-	636	4178	84747
2011-12	-	-	11960	-	-	-	-	11960
2012-13	-	-	14852	-	-	-	-	14852
Growth rate (%)	NA	NA	24.45	NA	NA	NA	NA	-49.6

Source: Statistical Abstract of Punjab (various issues)

Sugar industry in Punjab

The trends in the various activities performed by sugar industry in the Punjab state from 1980-81 to 2012-13 have been presented in Table 4. A perusal of the table reveals that growth in number of sugar mills, daily crushing capacity, cane crushed, sugar production and recovery percentage over the period 1980-81 to 2012-13 went up tremendously by 4.01, 6.02, 6.98, 7.00 and 0.14 per cent per annum, respectively. The number of sugar mills which accounted for only eight in 1980-81 has increased to 17 in 1990-91 and then rose further to 24 in Punjab. Sugar production has also increased at a very high rate with the increase in

daily crushing capacity of sugar mills in Punjab. So, now is the time to boost up sugarcane production in Punjab and to get rid of paddy- wheat monoculture in Punjab.

Table 4: Growth of sugar industry in Punjab

Year	No. of sugar mills	Daily crushing capacity (tonne)	Cane crushed (000' tonne)	Sugar production (000' tonne)	Recovery percentage
1980-81	8	10250	585.9	51.9	8.7
1990-91	17	35125	3102.9	278.2	8.9
2000-01	23	52016	5112.7	496.1	9.7
2011-12	24	70016	4270.5	389.6	9.13
2012-13	24	65766	4739.2	450.1	9.04
Growth rate (% age)	4.01	6.02	6.98	7.00	0.14

Source: Statistical Abstract of Punjab (various issues).

Cotton mills in Punjab

The growth rate of cotton spinning and composite mills in the Punjab state from 2000-01 to 2012-13 have been presented in Table 5. The table reveals that the number of spinning and composite mills which were only 93 and two during 2000-01 has increased to 119 and four during 2009-10 and then rose further to 133 and nine during the year 2012-13 with an overall growth rate of 3.11 and 13.28 per cent per annum, respectively. The increase in cotton spinning and composite mills was due to easy availability of cotton crop in Punjab and also increasing trend of fashion in Punjab. The cotton confined area of Punjab i.e. Bathinda, Ferozepur, Sri Mukatsar Sahib, Fazillka districts attract many agro based industries to invest in Punjab to fetch raw material for their mills.

Table 5: Growth of cotton spinning and composite mills in Punjab (Number)

Year	Spinning mills	Composite mills
2000-01	93	2
2007-08	109	4
2008-09	119	4
2009-10	119	4
2010-11	127	6
2011-12	128	8
2012-13	133	9
Growth rate (% age)	3.11	13.28

Source: Statistical Abstract of Punjab (various issues)

Challenges faced by agro industries in Punjab

Agro-industries have been given significant priority in economic development in Punjab. Mahatma Gandhi's emphasis on developing village-based agro-industries in the movement for independence marked the beginning of this strategic view. Is the priority given to agroindustries justified today? This analysis finds that the agro-industrial sector in Punjab contributes a large share of the overall employment in industry, as well as in value addition and income generation. Its continued role in promoting development and reducing poverty will depend on its capacity to contribute to small farm income and rural employment, particularly among the landless poor. Managerially, one of the major challenges lies in organizing sustained production and procurement from large numbers of small farmers. A partnering approach appears to be most promising in overcoming multiple constraints. It can be implemented either through building cooperative organizations, or by building confidence and trust through a mutually beneficial business relationship involving private enterprise and farmers. In both cases, and with other successful models, the government must play a facilitating role through enabling policies, regulations, financing options and research and development. High electricity charges, heavy imposed taxes, less labour availability and high prices of property were also the main challenges faced by the investors to invest in agro industries in Punjab.

CONCLUSION:

The study concluded that the Punjab agriculture witnessed spectacular transformation as a result of Green Revolution during the period 1970-71 to 2011-12. Rice, which occupied around 6.90 per cent of the gross cropped area in 1970-71 increased to 35.85 per cent in 2010-11. The increase in wheat cultivation has been at the cost of gram, rapeseed and mustard, while that of rice has been obtained by shifting the area from maize, groundnut, millets and cotton. This happened because of better relative profitability of these crops with minimum production and marketing risk as compared to other crops. The results also showed that the yield of major crops in Punjab has been stagnated and to sustain the agriculture of Punjab, there is a need for diversification. Sugar and cotton industry in Punjab is increasing at a good rate and contract farming has shown a downward trend after 2008-09.

SUGGESTIONS:

- The food-processing sector covers a wide spectrum of products and is one of the largest in terms of production, consumption, export and growth prospects. The vast potential of agricultural resources available in Punjab can be better exploited and utilized by preserving and processing, using available technologies. Though the Government of India has sanctioned a number of schemes, so far not much progress has been made towards setting up agro-based food processing industries, proportionate to the agriculture potentials and commodities available in the state. At present, the agro processing industry is mainly limited to traditional processing of agricultural raw materials, such as atta chakkies, oil mills, cotton ginning and rice shelling, etc., using a basic, low-grade technology. There is little high-tech agro/food industry adding value to primary products. Only less than two per cent of the fruits and vegetables produced is processed, compared with 80 per cent in

Malaysia. Therefore, there is scope for setting up a processing industry in the state, on a priority basis, using indigenous technologies as well as the latest technologies from abroad. (<http://planningcommission.nic.in>).

- The blue print outline made by state government conclude that the area under paddy will be brought down from 28 to 16 lakh hectares in a phased manner over a period of six years. The biggest shift would be towards maize, from 1.5 to 5.5 lakh hectares, while two lakh hectares would be diverted to cotton which is currently grown at 5.5 lakh hectares. Of the remaining, 1.5 lakh hectares each can go to sugarcane and fodder, two lakh hectares to agro forestry and one lakh hectare towards pulses, fruits and vegetables (kaur S 2012).
- Contract farming should be encouraged.
- Cheap credit facilities should be made available.
- Government initiatives should be there for the encouragement of agro based industries in the Punjab state by imposing less taxes, providing high subsidies, cheap electricity facilities etc.

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