



## Agriculture Development in Punjab: Problems and Prospects

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### Introduction:

The Punjab economy has been showing structural change since reorganisation in 1966. Primary sector of the state is witnessing a decline in its share of gross state domestic product (GSDP) as well as the share of workforce and rural workforce. This sector accounted for 55.11 per cent of GSDP in 1970-71 which declined to 28.70 per cent in 2012-13. On the other hand the share of secondary and tertiary sectors has increased from 18.09 per cent and 26.80 per cent in 1970-71 to 24.41 per cent and 46.89 per cent in 2012-13 respectively. During period of 1970-71 and 2012-13, the share of agriculture and live stock in GSDP of primary sector has remained more than 95 per cent. The share of agriculture in the total workforce of the state stood at 62.66 per cent in 1971, 39.36 per cent in 2001 and declined to 35.6 per cent in 2011. Agriculture and livestock continued to be the backbone of the states' rural economy. Cultivators and agricultural labour accounted for 78.84 per cent of the rural workforce in 1971 which declined to 53.50 per cent in 2001 and further to 46.50 per cent in 2011 of rural workforce is engaged in non agricultural activities.

Therefore, the basic character of states' economy was agrarian and industrial sector of Punjab was not important sector of the economy as its share in states' GSDP and share in state's workforce and rural workforce had declined during period 1970-71 to 2012-13 and become less dominant.

Green revolution resulted in rapid growth of state's net state domestic product (NSDP) at the rate of 5 per cent during 1966-67 to 1988-89 which resulted in reduction in rural poverty. As a result of this Punjab's per capita income ranked number one for so many years in the country. Unfortunately, the gains of green revolution could not be sustained as agrarian sector of the state is passing through an unprecedented crisis.

### Agriculture Growth:

Punjab agriculture had made remarkable progress through taking a big leap forward in terms of irrigation facilities, use of chemical fertilizer, pesticide, high yielding varieties, mechanization etc. The growth and progress of agriculture in Punjab is unparalleled in the history of world agriculture. New agricultural technology, consolidation of holdings, development of irrigation infrastructure, high yielding variety

**Table 1: Area, production and yield of major crops in Punjab (1971-72 to 2011-12)**

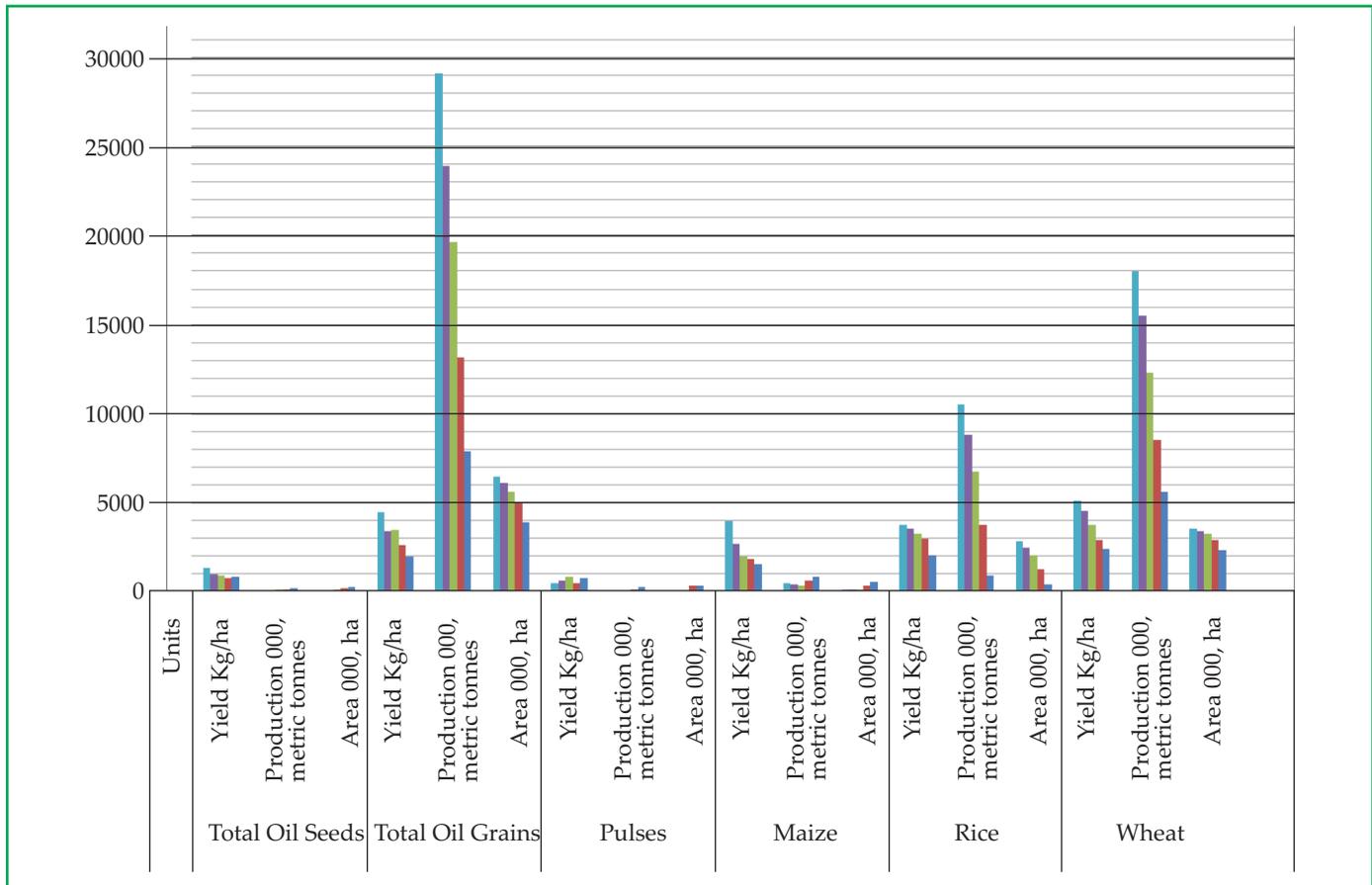
Crop	Years	1971-72	1981-82	1991-92	2001-02	2011-12
	Units					
Wheat	Area 000, ha	2,336	2,914	3,237	3,420	3,527
	Production 000, metric tonnes	5,618	8,544	12,309	15,499	17,977
	Yield Kg/ha	2,405	2,932	3,803	4,532	5,097
Rice	Area 000, ha	450	1,269	2,069	2,487	2,814
	Production 000, metric tonnes	920	3,750	6,739	8,816	10,527
	Yield Kg/ha	2,044	2,955	3,257	3,545	3,741
Maize	Area 000, ha	548	340	176	165	130
	Production 000, metric tonnes	857	625	345	449	517
	Yield Kg/ha	1,564	1,838	1,962	2,722	3,981
Pulses	Area 000, ha	384	325	90	49	20
	Production 000, metric tonnes	302	161	75	30	10
	Yield Kg/ha	786	495	833	612	500
Total Food Grains	Area 000, ha	3,915	4,999	5,638	6,152	6,507
	Production 000, metric tonnes	7,925	13,156	19,632	23,878	29,085
	Yield Kg/ha	2,024	2,632	3,482	3,381	4,470
Total Oilseeds	Area 000, ha	319	225	141	83	52
	Production 000, metric tonnes	212	173	127	84	69
	Yield Kg/ha	853	769	901	1012	1327
Milk	Production (Lakh Tonnes)	21.04	34.94	53.82	79.30	95.51

Source: Relevant Issues of Statistical Abstracts, Punjab

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**Graph 1. Area, production and yield of major crops in Punjab (1971-72 to 2011-12)**



**Source:** Based on Table 1

of seeds, use of chemicals, hard working peasantry and adequate agricultural policies were the major identified growth drivers. Punjab state with only 1.5 per cent geographical area of the country besides feeding its growing population has been contributing 35-40 per cent of rice and 45-70 per cent wheat to the central pool. Selected agricultural growth indicators of state are presented in Table 1 and Graph 1.

Analysis of area, production and yield of different crops over the period of time clearly established that wheat and rice presently are the two major food grain crops of Punjab. Other crops like maize, pulses and oilseeds have witnessed decline in area, production and yield during the same period. Further, it can be safely concluded that Punjab agriculture seems to be agriculture of wheat and rice only and this created problems of environment, ecology, irrigation water scarcity and stagnating yields and farm incomes. All this resulted in to agrarian distress among farmers and rural agricultural labour, as a result and manifestation of this crisis, the farmers and agricultural

labourers have been committing suicides in the state. Therefore, it is desirable to reorient agriculture policies and practices in the state to mitigate the crisis.

#### **Agrarian Crisis:**

Prevailing agrarian crisis was identified as early as mid 1980s and literature expressed concern about stagnating productivity levels and recommended the diversification of cropping pattern as a remedy to the problems of agriculture sector of the state. Agrarian crisis is the result of policies pursued by the government and many other factors; firstly, stagnation of yield, especially of wheat and decline in rice and cotton and successive crop failures due to natural and manmade factors (spurious pesticides, seeds and fertilizers) along with failure and non implementation of crop diversification programme due to uncertain yield, prices and marketing of alternative crops. Crisis of Punjab agriculture has also been supplemented by the increased operational as well as fixed costs of cultivation and consequently declining income from agriculture. Around

30 per cent of the operational holdings of the state are small and marginal and their economic viability, existence and continuation is suspected due to squeezing profitability of major crops and increasing production costs. Small and marginal farmers are facing hardships and fighting for their survival which is under threat. Over farm capitalization and mechanization with underutilization of farm machinery, transfer of agricultural land for non agricultural purposes and unfavourable terms of trade for agriculture further deepened the agrarian crisis and has contributed to hardship especially of small and marginal farmers of the state.

World Trade Organization policies added to the woes of farmers as these prematurely pushed them to compete with

**Table 2:Farmer Suicides in India**

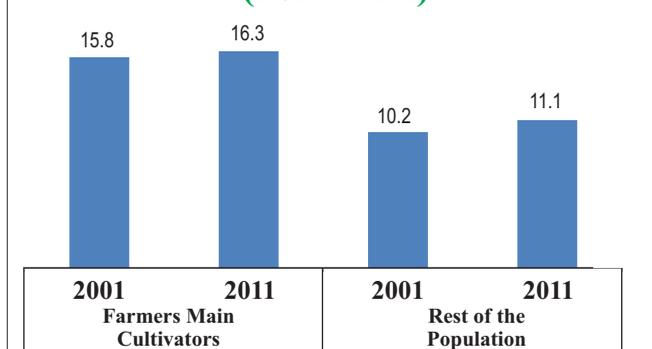
Year	Number	Year	Number
1995	10720	2005	17131
1996	13729	2006	17060
1997	13622	2007	16632
1998	16015	2008	16796
1999	16082	2009	17368
2000	16603	2010	15964
2001	16415	2011	14027
2002	17971	2012	13754
2003	17164	2013	11744
2004	18241	Total	297038

Source: National Crime Records Bureau, New Delhi

farmers of developed nations enjoying high subsidies without a level-playing field. New economic agenda focused on industry and other sectors has resulted in stagnated public investment in agriculture has marginalized agrarian sector and wrecked havoc with farmers. State politics turned against the interests of the farmers, as strong political position of farmers emerging during green revolution period weakened and fragmented in 1980s and now on the margins during liberalization period due to the shift in the political affiliations and disjuncture between interest's of farmers and the politicians. Punjab politicians who once advocated the cause of agriculture development and farmer interests developed interests in industry and business and were no more interested in agriculture as agriculture no more remained the main source of their income. As a result small and marginal farmers suffered and marginalization of

**Graph 2**

**Comparative Suicide Rate in India (Per 1 lakh)**



Source: Compiled from National Crime Records Bureau, New Delhi

agriculture further deepened the crisis.

**Present Scenario:**

Punjab agriculture seems to be no longer a viable and profitable/rewarding occupation as the earnings from crop cultivation are not enough to meet the annual cultivation expenditure in most of the states. This has led to indebtedness among farmers.

Over capitalization and under utilization of capital assets in agriculture sector of the state, excessive use of pesticides and fertilizers and decreasing farms size hit the profits negatively especially that of small and marginal farmers.

Consequently, these high and increasing costs and declining farm income rendered Punjab agriculture economically unviable and non-competitive and gains from green revolution are not being sustained and states' farm sector has been in deep crisis.

Unremunerative prices of crops, successive crop failures, non implementation of crop diversification programme due to uncertain yield, prices and marketing of alternatives crops, high and increasing costs of cultivation and high and exorbitant interest rates charged by money lenders and banks have landed the farming community of Punjab, especially small and marginal farmers, in debt trap.

**Innovative Practices and Reorientation of Agricultural Practices:**

There is broad consensus that innovative agricultural practices are critically important to improve competitiveness,

sustainability and equality in agriculture. Agriculture also needs to produce more food for a growing population, using a limited amount of farmland, while at the same time reducing its greenhouse gas emissions, use of chemicals and energy to avoid worsening climate change. This suggests that agricultural production needs to use knowledge more intensively, by applying new ideas and innovative practices in irrigation, energy and diversification of Punjab agriculture. The innovative agricultural practices adopted by many progressive farmers of Punjab are presented below.

## **Model and Best Practices: Potentials and Possibilities**

### **a) Organic Farming**

#### **Hartej Singh Mehta**

(Vill & Post Mehta Teh. & District Bathinda, Punjab. Cell: 09417507771)

Hartej Singh Mehta belongs to a farming family with 11 acres of farmland. The farm is irrigated mainly through canal. He has been farming for the past 25 years and switched to organic techniques 10 years ago because of the failure of chemical farming and the adverse effects of pesticides. He cultivates wheat with companion crops, cotton and vegetables and vegetable seeds for commercial purposes and Guar, jowar and bajra as animal fodder for his Indian hump back cow and one buffalo. Now, Mehta also grows organic fruit trees. Biogas slurry and farmyard manure go in as organic inputs. Herbal repellants and trap crops are used for controlling pests. The surplus is sold at a premium directly at home and also through the mandi. Initially his output decreased but it has now stabilized.

### **b) Diversification**

#### **Harjinder Singh**

Village: Ramtattwali Block : Bhunga, Tehsil: Dasuya, District: Hoshiarpur (07589445526)

Harjinder Singh, bought 10 acres of barren land in 2011. He started diversified organic agriculture in vegetables especially onions and ground nuts, wheat by the sprinkle and gun irrigation to save water by installing submersible pump. The farmers of the area were provided sufficient subsidy for sprinkles, guns, pipes, submersible pump and preference in electricity connections. He told that 10 acres of land irrigated

in only three hours. He also started leasing in nearby land for half year for single crop of ground nuts. He claimed that this type of agriculture is successful by cutting irrigation costs and other costs.

#### **Beant Kaur**

Village: Ramtattwali Block : Bhunga, Tehsil: Dasuya, District: Hoshiarpur

Similarly, Beant Kaur started diversified agriculture in vegetables especially onions and ground nuts, wheat by the sprinkle and gun irrigation to save water by installing submersible pump on 7 acres. The yield of wheat and other crops was very good as compared to others in the area. She prefers manure than chemical fertilizers. She is also a successful farmer of the area.

#### **Kinnow and Mango Orchids**

Ramtattwali and other villages near Dholbaha Block : Bhunga, Tehsil: Dasuya, District: Hoshiarpur

Many migrated farmers and local people have started planting orchids of Kinnow and Mango in this area by applying drip irrigation technology. Orchid planters have been given subsidy on drip irrigation implements and installing submersible pump. This has made agriculture of these farmers successful and gives them more income per acre compared to the traditional crops of wheat and paddy.

### **c) Sewerage Manure and Irrigation**

Village: Chakar, Tehsil: Jagraon District: Ludhiana

The village has three well functional sewerage water treatment plants established by community organizations with NRI financial support, logistics, motivation and involvement; connecting every house with underground sewer pipes. The treated water is supplied to around 60-70 acres fields nearby for irrigation through underground water pipes. The plan was to cover maximum possible agricultural land of the village. The solid waste of the system was used as manure for agriculture of the village. Further, rain water from village has been channelized and accumulated into three water bodies called lakes with provisioning of boating. Thus, garbage ponds got converted into beautiful lakes and water treatment sites. About thirty thousand trees have been planted in the village streets with a huge target to increase the number to 1, 50,000 in future.

Common places have been developed for the gathering and use of villages' elders. Now, the village is a classic case of rural sanitation, hygiene, decline in use of chemical fertilizers in fields irrigated with treated water, water saving and development, community involvement, reduction in drug abuse and litigation, channelization of youth energy, increase in green cover, check on social evils, strengthening of brotherhood and community feeling, collective approach to common problems, reduction in out migration, linking of second and third generation of NRI to their ancestral villages, change in thinking patterns from individual-centric to social-centric, etc.

#### d) Agriculture Allied Activities

Dairy Farming is the most important and advantageous allied agricultural activity of the state. The milk production of Punjab has increased from 21.04 lakh tonnes in 1971-72 to 95.51 lakh tonnes in 2011-12 (Table 1). Many programmes for the improvement of dairy operations have been initiated with objective to raise the quality and quantity of milk e.g. recently through J.K.Trust a programme of artificial insemination of buffaloes has been started in 8 districts of the state. Field reports suggests that this initiative has been working very successfully and raised the quality and quantity of milk. Therefore, it is suggested that this programme of artificial insemination of buffaloes should be extended to whole state.

Many farmers in the state are also practicing beekeeping as allied activity, cultivation of mushrooms, strawberry, etc. It was reported during field visits that these activities have

supplemented the farmers' incomes to a great extent.

#### e) Linkages of Exports and Imports to Pakistan (Vegetables/Cotton Exports)

India can export and import its vegetables and cotton products to Pakistan; this will be beneficial for India as well as for Pakistan. Table 3 shows that on the basis of Revealed Import Dependence (RID) of two countries and Revealed Comparative Advantage (RCA) of India and Pakistan, in case of some vegetables and cotton products exports of India to Pakistan and vice-versa, bilateral trade between two countries can be boosted. Therefore, this bilateral trade should be encouraged.

#### f) Land to Landless and Collective Farming

Recent example of village panchayat land distribution among the landless households of a village in Sangrur district should be considered a step in the right direction and innovative practice. In Punjab, the village panchayat land should be provided firstly, to landless households of the village and secondly if there were no landless households in the village then this land should be given to small and marginal farmers of the village, on the condition of collective/cooperative farming. This practice will ensure the livelihood to rural landless households of the state.

#### Policy Issues and Suggestions:

On the basis of innovative agricultural practices and prevailing agrarian crisis, it is suggested that, there is a need to rethink, reorient and reformulate agrarian and rural development policies to pullout the rural society particularly small and

Table 3: India's and Pakistan's Potentials Exports and Imports on the basis of revealed import dependence (RID) and revealed comparative advantage (RCA)

(percentages)

Product	Pakistan's Imports (RID)	India's Exports (RCA)	Product	India's Imports (RID)	Pakistan's Exports (RCA)
Vegetables	2.9	1.3	Vegetables	1.9	1.1
Sugar, molasses and honey	4.1	2.2	Fruits and nuts (excluding oil nuts), fresh or dried	1.4	1.8
Tea and mate	25.9	13.9			
Spices	5.4	13.2	Spices	2.8	4.0
Silk	2.3	2.1	Cotton	2.3	10.1
Cotton	15.4	4.8			
Synthetic fibres suitable for spinning	7.8	1.5	Worn clothing and other worn textile articles	2.6	3.4
Other man-made fibres suitable for spinning	13.1	1.1	Synthetic fibres suitable for spinning	1.4	1.2
Textile yarn	2.2	6.6	Special yarn, special textile fabrics & related	1.2	1.0

Sources: United Nations, COMTRADE Statistics

marginal farmers from the mess. In this regard multi-pronged short term and long term policy measures can be offered.

- Innovative agricultural and rural development practices like sewerage treatment systems, diversification to vegetables, orchids, strawberry, groundnut, etc. and organic farming should be encouraged in the state by adequate and concrete policy measures and state support system in all respects.
- On the basis of RID of Pakistan and RCA of India, in some vegetables and cotton products bilateral trade between two countries should be encouraged.
- Remunerative prices of farm and allied products should be ensured by considering the cost of cultivation and crop insurance need to be introduced and in case of crop failure/damage compensation at market rate of the produce should be given.
- Government must ensure the reasonable prices and quality of farm inputs and inputs for allied activities. Cost of credit from both the sources should be further reduced and monitored by the state and any type of harassment of farmer by the lender be stopped.
- Budget provisions of Central and state governments should be sufficiently raised for rural development and provision of 40 per cent priority sector lending of which agriculture is main constituent must be enforced upon institutional credit agencies so that entire credit needs of the farmers are fulfilled, especially of small and marginal farmers.
- Government on its own or on cooperative basis should establish machinery/input delivery centers in a cluster of 10 or

more villages for small and marginal farmers and all machinery requirements and inputs should be supplied at subsidized rates through these centers.

- Long term policy measures should be directed to develop rural physical and social infrastructure. Extension of formal credit institutions, fulfillment of required credit needs of small and marginal farmers at low rates of interest, modernizing and refurbishing the canal irrigation systems along with social infrastructure of health and education especially rural education requires proper attention.
- Agriculture research should be strengthened to develop new high yielding variety seeds/ low cost cultivation techniques and the confidence of the farmers must be restored in agriculture research institutions and their extension services.
- Encouraging people's initiatives through rewards/incentives and policy support for organic farming, grading, marketing and trading for new initiatives, exports of agricultural crops to Pakistan, new technology solutions such as sprinkles/drip/ piped irrigation.
- Policy initiatives should be made to provide village panchayat land to landless households/small and marginal farmers of the village and collective farming must be encouraged on this land.
- Rural education needs to be strengthened to allow the youth from the marginal and small farmers to acquire non-farm skills and training to enter remunerative off farm and non-farm employment.

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