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Changing Modes of Agriculture in Punjab

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The crises of Punjab's agriculture are rooted in the same history that made it the granary of India. Ensuring sustainability for farmers and the farm sector requires an engagement with the shifting trajectories of agriculture over the last seven decades.

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Despite Punjab's meagre size, the region has remained an important constituent in the self-imagination of the Indian nation. The imprints of Punjab's agrarian economy and culture have continued to expand in the past seven decades, suggesting an influence that far exceeds its demographics and geographical boundaries.

In the recent national discourse, though, Punjab's agrarian economy is invariably represented through its negatives: depleting water tables, declining incomes, growing farmer-indebtedness, lack of alternative sources of employment, and a general sense of social fragmentation, reflected presumably in widespread drug addiction among its youth.

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While there is an element of truth in some of this, these images do not provide a fair and balanced view of the ground realities of rural life in the state. The reason for the relative decline of Punjab is not to be viewed in its agricultural sector alone. In fact, agriculture continues to do reasonably well in the state. There is no denying the negatives or the crises that plague rural Punjab and its agrarian economy. These have been well-known for quite some time. The local elite has been acutely aware of these crises; so have the cultivating farmers.

However, the Punjabi farmer has found it hard to escape the whirlpool of an ecologically unviable cropping pattern and its commercial entrapments created by the history of its past six decades or so. The alternatives, proposed by well-wishers or on the state's initiative, such as for crop diversification, have been non-starters. The recent farm laws by the central government have only added to the anxieties of an already distressed farming population. This article revisits these shifting trajectories of agriculture in Punjab.

Agricultural development after Independence

Until the early 1990s, Punjab was an economically leading state of the country, with vibrant urban centres and thriving agriculture. This was not a result of post-Independence state initiatives alone; Punjab had occupied a special status during British rule as well. The British saw Punjab as a region with a potential for agricultural growth. With a good number of rivers flowing through the region, they invested in building a network of canals and moved some sections of Sikh farmers from its central and eastern districts to the newly irrigated lands of western Punjab (now in Pakistan), thus setting up the 'canal colonies' (Ali 1988). Almost all of these Sikh farmers or their descendants returned to their native districts after Partition, bringing with them the experience of entrepreneurial farming.

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Even though the British invested in expanding agriculture in Punjab, thanks to their policies and priorities, colonial India's agrarian economy had experienced an overall serious decline. With Independence, agriculture became an urgent priority for the native elite. The independent Indian state saw Punjab as a region that could help solve the serious food deficit problem that the country faced from the mid-1960s onwards. It initiated a series of reforms and introduced developmental programmes. Punjab was able to capitalise on these initiatives and record positive growth during the early years.

The first major irrigation and power project in India after 1947 was primarily designed to serve the agricultural lands of Punjab. Though the construction of the legendary Bhakhra Nangal Dam on the river Satluj had been visualised by the colonial Punjab government, its construction was completed in 1963, just a few years before the introduction of the Green Revolution in the region. As an extension of the Bhakhra Nangal project, the region saw the construction of an extensive network of canals, all the way to some parts of Rajasthan and Gujarat. The hydropower generated by Bhakra Nangal became a cheap source of electricity for the tube-wells used extensively for irrigation in the region and their numbers steadily grew. Despite the social and political disruptions of Partition, Punjab's agriculture grew at an impressive rate of 4.6% during 1950-64 (Bhalla et al. cited in Kumar (2019), 43), greatly improving India's food supplies.[1]

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In the geopolitical and academic environment of those Cold War years, countries like India were seen as "Malthusian time bombs," whose rapidly growing populations could not be sustained by the slow pace of growth in their ability to produce food. (Kumar 1999, 44). This was seen as a source of "worry" by the western political powers, who feared that hunger could turn the people in India — and other Asian and African nations — towards 'socialist revolution' as in neighbouring China, which had turned communist in 1949. To stave off such perceived challenges, they advocated technology-driven solutions. The hybrid high yielding variety (HYV) of seeds being developed in North America during the 1950s were seen as a way to avoid an impending human and political crisis in these countries.

The western powers succeeded in selling this idea to the government of India. HYV seeds arrived in the country in the mid-1960s and were introduced as a package programme for the 'revolutionary' growth of the agricultural economy. This 'package', called the Green Revolution, included the use of chemical fertilisers and a variety of pesticides and herbicides and extensive use of machinery. It came with a variety of incentives, such as cheap credit from commercial banks and subsidies on farm inputs.

> Water flowing from the Bhakra Nangal project strengthened Punjab's position at the forefront of the Green Revolution. The adoption of HYV seeds was much more extensive in Punjab.

It was around this time that the state governments were encouraged to put in place a marketing network in the form of mandis for assured procurement of farm produce. To build up stocks of food grains for the Public Distribution System, the central government too began to procure food grains through the newly set-up mandis at a pre-declared minimum support price (MSP), which was decided after calculating all the costs incurred by the cultivators, including the costs of labour. The new technological revolution in agriculture was supported by a scientifically trained mass of professionals educated in the newly set-up agricultural universities, the first of which in Punjab (and the second in India) was set up at Ludhiana in 1962.

Punjab takes the lead

The success of the new seeds was premised on the availability of assured irrigation. While several districts from across the country were selected for the experiment with HYV seeds, the canal network and water flowing from the Bhakra Nangal project strengthened Punjab's position at the forefront of the Green Revolution. The adoption of HYV seeds was much more extensive in Punjab as compared to the other states. Against the national average of 31% for 1974-76 and 54% for 1983-85, the total area under HYV seeds in Punjab was 73% and 95%, respectively. Similar was the case for use of other inputs such as chemical fertilizers, pesticides, tube-wells, tractors and other machines. For example, by 1984-85 Punjab had 4,642 tractors per one lakh hectares of gross cultivated area against the national average of 230 (Singh and Kohli 2005:286-89).

As a result of these initiatives, Punjab turned out to be the most successful state in terms of increases in agricultural productivity. While the average growth rate of the agricultural sector for the entire country during 1961-62 to 1985-86 was 2.6%, in Punjab it was 6.4%, the highest across all the states. Neighbouring Haryana followed with 4.7% and Gujarat with a 3.4% growth rate was placed third during this period.

> While smaller landholders too took to the new seeds, many of them did not have the resources required for all the inputs that could only be purchased from the market. They borrowed money.

Such extensive adoption of the new Green Revolution technologies was made possible because of its acceptance across classes of cultivators in Punjab. The new technology was supposed to be scale-neutral. However, as John Harriss (1987) argues, it was not resource-neutral. While smaller landholders too took to the new seeds, many of them did not have the resources required for all the inputs that could only be purchased from the market. They borrowed money, often from informal sources. The commission agents, the *arhtiyas*, in the newly set-up mandis did not hesitate to lend as long as the farmers, in turn, promised to bring their farm yield to them for sale.

Even those who did not have the resources to own tractors shifted from the traditional bullocks and preferred hiring machines from the bigger landowners. Smaller landowners used their family labour more intensively, often getting a slightly higher yield per acre from their farms as compared with the more resourceful bigger farmers (Bhalla and Chadha 1983). Everyone was soon integrated into market-oriented agriculture. The all-round prosperity produced by its agricultural sector made Punjab the state with the highest per capita income in the country.

Water and rice

Punjab's agriculture also witnessed a significant change in its cropping pattern during this time. Given that the logic of the Green Revolution was about feeding the growing population and the production of food-grains, the initially introduced HYV seeds were of wheat, the staple food of the Punjabis.

> [Rice] turned out to be an economic and ecological boon for perpetually waterlogged pockets of the state, […] Tubewells that irrigated paddy took care of the problems created by water seeping in from canals and left the fields ready for the rabi crops later in the year.

However, a large proportion of the Indian population ate rice. Though rice cultivation was not unknown in Punjab, it was a marginal crop as it needed a much larger volume of water than was available at most times of the year in the region. With new sources of irrigation becoming available, cultivation of rice was no longer a difficult proposition. It also turned out to be an economic and ecological boon for perpetually waterlogged pockets of the state, a problem which had only worsened with the laying of canals in these regions. The tube-wells that irrigated paddy took care of the problems created by water seeping in from canals and left the fields ready for the rabi crops later in the year (Shergill 2005).

Since paddy was eagerly procured by the Food Corporation of India (FCI), it quickly became a viable commercial crop for the Punjabi farmers. Given paddy's wider market, locally and abroad, farmers could often also sell it at high prices to private traders. Some varieties, such as Basmati, continue to be sold at a much higher price in the open market than the MSP available in the mandis.

Consequently, wheat and rice emerged as the two most popular crops in Punjab and the number of crops sown came down from 21 in the year 1960-61 to only 9 by 1990-91 and has remained so. The proportion of area under crops other than wheat during the rabi season declined to 17.12% in 2004-05 from 62.74% in 1960-61. The change was much bigger for the kharif season, for which the proportion of area under rice cultivation increased ten-fold to 63.02% in 2004- 05 from 6.05% in 1960-61 (Toor et al cited in Lakhwinder Singh (2013).

Caste, class and power

The use of new technology and HYV seeds also implied a shift to a far more intensive agriculture.

> With a significant increase in the productivity of land, sharing produce with labour was no longer acceptable to the landowners They preferred hiring *siris* on annual wages [… and] engaged greater numbers of casual labourers.

Cultivation of paddy required much more labour, and it was needed throughout the cropping season. Machines also helped bring barren and uncultivated lands under cultivation. Landowners began to increasingly self-cultivate, preferring to hire wage labour over leasing their lands out to tenants or using *siris*— attached labourers who were traditionally paid a share of the produce (generally one-fifth) for

their labour. With a significant increase in the productivity of land, sharing produce with labour was no longer acceptable to the landowners. They preferred hiring siris on annual wages, as *naukars* or farm servants, but often kept them tied by paying them wages in advance and keeping them perpetually indebted. They also engaged greater numbers of casual labourers. Demand for labour was particularly high during peak farm operations such as sowing, harvesting, and paddy transplantation.

As elsewhere in the subcontinent, land and labour relations in rural Punjab also have a caste dimension. Land ownership is caste-centric. Almost the entire population of Dalits, who make for nearly one-third of the population of the state, is mostly landless and had traditionally been the source of agricultural labour.

> If electoral democracy after independence enabled the Jatts to emerge as the regional ruling elite, the Green Revolution strengthened their hold over the rural economy and regional politics.

Most of the agricultural land is owned and cultivated by the Jatts. While the Jatts are heterogeneous in terms of their holding size, almost all the big landowners are Jatts. The British colonial rulers had strengthened their position by recruiting them in the armed forces in big numbers and giving them land titles. Besides Jatts, other landowning castes include Rajputs, Gujjars, Sainis, Kambojs, and Labanas. But these communities are either confined to a few pockets of the state or are small and marginal landholders.

If electoral democracy after independence enabled the Jatts to emerge as the regional ruling elite, the Green Revolution strengthened their hold over the rural economy and regional politics. The increasing demand for labour and growing formalisation of labour relations tended to produce frictions in their relationship with the Dalits. In the emerging capitalist agrarian economy, the labouring poor began to unite to demand better wages. In response to the growing assertion of the local Dalits, farmers began hiring casual labour from poorer regions of the country like the eastern districts of Uttar Pradesh and Bihar. The migrant labourers initially came only for the peak season, arriving for the wheat harvesting and staying back until paddy transplantation. Over the years, some of them began to stay back through the year, working as regular farm servants, replacing the local Dalits. But post-1990s, the demand for this labour too has declined, with increasing mechanization of agricultural processes such as harvesting of wheat and paddy, and paddy transplantation.

However, the caste question has not gone away and continues to be conflictual, although the nature of caste conflict between the Dalits and Jatts seems to have shifted from the axis of class to a question of dignity and citizenship. Though Dalits are sharply divided across *jatis*, they all ask for a dignified space in village life. The traditionally dominant Jatts, including Sikh Jatts, continue to see themselves as a superior people even when this claim has no sanctity in their religious traditions. They often see any form of Dalit assertion as a challenge to their authority, which occasionally leads to inter-caste tensions and conflict (Jodhka 2002).

> A practice of reverse tenancy has kept the average size of operational holdings relatively large in the state.

The landowning Jatts have also been looking outwards, aspiring to diversify their sources of income by investing in urban trade and educating their wards (Jodhka 2006). Many of the richer farmers have themselves become *arhtiyas* in grain mandis and have diversified their economic portfolios in other ways (Sinha 2020). The Jatt Sikhs of Punjab have also been among the most mobile communities of the subcontinent and have been emigrating abroad in large numbers, mostly to the countries of Europe, North America and Australia. However, even when they leave the village and country along with their families, they tend to not sell their agricultural lands. Some of the smaller cultivators too have been exiting from agriculture to pursue careers in the non-farm economy. They lease out their land to enterprising farmers with resources and farm equipment. All of this has produced a vibrant land tenancy market (Bansal 2020).

Such a practice of reverse tenancy has kept the average size of operational holdings relatively large in the state. Punjab had only 33% of its operational holdings in the small and marginal categories and they operated only 9% of the total cultivated area in the state, as per the Agricultural Census of 2015-16. In comparison, 86% of all the operational holdings in India were small (less than two hectares) and marginal (less than one hectare). Together, these small and marginal holders cultivated 47% of all of India's cultivated area. Nationally, only 5% of all the operational holdings were over 4 hectares, making up 29% of the total area under cultivation (Economic Survey Punjab 2018-19; 63-64). In Punjab though, as much as 33% of the operational holdings in Punjab were classed as medium (4 to 10 hectares) and large (above 10 hectares), and together made up two-thirds of the total cultivated area. (The remaining 34% of the holdings were 'semi medium' sized, with 2 to 4 hectares of land, cultivating 25% of the land.)

The futures of Punjabi agriculture

Punjab has occupied a special place in the contemporary history of Indian agriculture, with the Green Revolution identified the most with Punjab. Thanks to the enormous success of the Green Revolution in the state, Punjab came to be known as the food granary of the country. But the shift in India's development trajectory during the early 1990s unleashed new forces of economic growth that began to marginalise the region and its agrarian economy. The prolonged conflict in the region around the question of Khalistan during the 1980s also dented the Punjab economy. Its position in the national economy has since been declining and it currently stands at 10 among the major states of the country.

> The value of Punjab's agriculture also lies in the fact a significant proportion of the urban trade and industry are allied to it.

However, unlike some other parts of India, the practice of agriculture continues to be a valued activity and serious business in Punjab. The state has the best infrastructure required for agriculture in the entire country. As mentioned above, two-third of the operational holdings in Punjab are larger than two hectares. Nationally their number is only 14%. This has been made possible by a significant number of erstwhile cultivators moving out of agriculture. As per the Periodic Labour Force Survey (PLFS) 2017-18, against the national average of 44.1% of workers above 15 years employed in the agricultural sector, in Punjab the proportion was only 26%.[2] Even in rural Punjab, agriculture does not employ a majority of the resident workers. In 2017-18 only 40.7% of the rural workers, including landless labourers, were employed in agriculture.

Thanks to these factors, despite declining acreages returns, an average agricultural household in Punjab still generates a monthly income of Rs 23,133, the highest across all the states of the country. Punjab is followed by Haryana with Rs 18,496 and Kerala with Rs 16,927.[3] Punjab also has very low levels of poverty with the unique distinction of its rural poverty (7.7%) being lower than urban poverty (9.2%).[4]

The value of Punjab's agriculture also lies in the fact a significant proportion of the urban trade and industry are allied to it. Punjab ranks fourth in terms of the number of agro-processing units in the country, after Andhra Pradesh, Tamil Nadu, and Telangana. The sector added 44% to the total gross value added by the manufacturing sector with about 46% of the total workers employed by registered factories.[5] Punjab also continues to be ahead of other states in terms of productivity of wheat and rice and the surpluses it generates. During 2017-18, the average per-hectare yield of cereals in Punjab was 4,733 kg against the national average of 2,661 kg.

> The agenda of crop diversification thus has been around since 1986 [… but] in the absence of any concrete alternatives offered to the farmers it is unlikely to be taken seriously.

However, this does not seem to be translating into a sustainable life for the Punjabi farmer. As is the case with the rest of India, agriculture in Punjab has been under severe stress since the early 1990s. While rice cultivation made sense for a limited period, it is no longer a viable crop for the state, certainly not at the scale at which it is being cultivated. Unregulated and subsidised exploitation of groundwater could produce a serious ecological crisis for the local agrarian economy, indications of which are already visible. Declining returns and rising costs have further strained the farming population of Punjab. The growing incidence of deaths by suicide (Singh *et al* 2016) and increasing desperation to emigrate for a better future among the rural Punjab youth are indicative of the severe stress that the cultivating households experience today.

When water tables go down, cultivators are the ones for whom the cost for installation of a tubewell goes up substantially. The agenda of crop diversification thus has been around since 1986 when a committee headed by S.S. Johl prepared a report on the subject for the Punjab government. While the proposal of replacing paddy with other crops has been forcefully advocated by many 'outsiders', in the absence of any concrete alternatives offered to the farmers it is unlikely to be taken seriously.

The way forward from these crossroads is difficult but certainly not impossible. Unfortunately, the latest farm laws, endorsed by a section of the establishment economists, which let the free market take care of all the problems of India's agrarian economy, have only added to the anxiety of the farmers in Punjab, as elsewhere. It is not surprising that those who have come out most vociferously against the laws have been the farmers of Punjab. To register their protest, they reached the national capital in November 2020 and have since occupied Delhi's borders. By inspiring farmers from other states to join them, they have succeeded in bringing back the questions of agriculture to the centre-stage of national politics.

Footnotes:

1 As cited by Kumar (ibid:43) India's food availability per capita increased from 144.1 kilograms (kg) per person per annum in 1951 to 171.1 kg per person per annum in 1961.

2 Ibid page 40

3 Ibid page 64

4 Ibid Page 67

5 Ibid page 40

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