

Chapter 4

Rethinking Diversification of Agriculture in the Indian Punjab: An Examination of Strategy and Mechanisms

Sukhpal Singh

4.1 Introduction

The issues of agricultural or crop diversification and specialization have attracted attention of researchers over the last decade in the context of South Asian region including Punjab—both the Indian and the Pakistan (Kurosaki 2003; Singh 2004; Akanda 2010; Shergill 2013). Given the climatic factors, resource constraints especially water, changing food habits, and policy and economic environment, it is expected that more diversified cropping patterns are needed and they will be more sustainable (Akanda 2010; Sidhu and Vatta n.d.).

The concept of diversification has been defined differently in the literature. It can include the following: (a) a shift of resources from farm to non-farm activities; (b) use of resources in a larger mix of diverse and complimentary activities within agriculture; (c) a movement of resources from low-value agriculture to high-value agriculture (Sharma and Singh 2013); and (d) a change in the mix of crops in a season or year growing more number of crops per unit area of land. The link between agricultural diversification and long-term structural change in the economy occurs mainly because diversification is a bridge between the declining income opportunities from growing food crops and an exit from agriculture altogether (Ahmad and Isvilanonda 2003).

Diversification could also be of livelihoods or occupational involving two usually related components: (1) multiplicity, i.e. multiple livelihoods (jobs, incomes, etc.) requiring several part-time and concurrent activities and (2) change, transformation or adaptation: usually from an essentially subsistence agricultural sector to non-subsistence, non-agricultural sectors, part of which could be the rural non-farm economy (Start n.d.). The benefits of farm diversification include high and more stable

S. Singh (✉)

Centre for Management of Agriculture, Indian Institute of Management, Vastrapur,
Ahmedabad 380015, India
e-mail: sukhpal@iimahd.ernet.in

farm incomes and employments, greater long-term prospectus for farm income growth and more environmentally sustainable farming system. The simplest interpretation of farm diversification is that farmers seek to generate a portfolio of income from activities with different degrees of risk, expected returns, liquidity and seasonality and adjust their output mix accordingly. Farm diversification is different from village-level diversification where households become more specialized overtime, but village economy offer a wide range of goods and services for sale under commercialized rural economic development process (Delgado and Siamwalla 1997).

This chapter examines the logic of diversification, its rationalization in the state agricultural programmes and policy (first agricultural policy of the state) in Sect. 4.2 and mechanisms identified and used to bring about diversification in Sect. 4.3. Section 4.4 discusses the way forward in terms of reorientation of policy and institutions to move towards achieving more sustainable farm and rural sector from a livelihood perspective as a strategy, and Sect. 4.5 concludes the paper.

4.2 Strategy for Diversification: What and Why

Punjab's farm sector which was known for its crop diversity until the Green Revolution (GR) is today completely dominated by wheat in *Rabi* (accounting for 86 % of *Rabi* area with 2 % for potato and 12 % for other crops) and paddy in *Kharif* (accounting for 63 % of *kharif* area with cotton another 14 % and other crops 23 %). Wheat and paddy account for almost 80 % of gross cropped area (GCA) and 85 % of the gross value of crop output (Sidhu and Vatta n.d.). Further, cereal crops account for 95 % of cropped area and within that wheat and paddy account for 55 and 42 %, respectively (Sodhi and Singh 2013). Therefore, there is no doubt that crop diversity in Punjab has declined over the years and across regions (Singh and Sidhu 2004).

The Johl Committee report on diversification of Punjab agriculture (1986) recommended that at least 20 % of the area under wheat and paddy should be brought under new crops such as oilseeds, pulses and fruits and vegetables which accounted for only less than 2 % of the GCA at that time as they were not, like many other crops, competitive with wheat or paddy in terms of their relative profitability. It was thus realized that the economic condition of a vast majority of farmers, especially marginal and small, could not be improved unless there were changes in the cropping pattern and the technology of production. Diversification, intended to stabilize incomes and employment in the farming sector, could either be in terms of variety of crops grown or technologies used. The processing and marketing activities were necessary to bring dynamism to the agricultural sector by way of either reduction in cost of cultivation through productivity improvement or cutting costs directly, or raising returns to the producers by value addition or diversification.

It is only an irony that the Johl Committee had to recommend as strategy for diversification in 2002 what it had recommended 15 years ago (in 1986) for the first time. Despite these reports and many attempts at diversification, the state's farm

sector is yet to see any perceptible change. The diversification strategy suggested by the second Johl Committee report was that one million hectares of paddy and wheat cultivation should be replaced with high-value crops such as oilseeds and pulses. It proposed a crop adjustment programme (CAP) to compensate farmers who were willing to make the switch. This amount came to Rs. 12,800 million which was less than the cost incurred on procuring and storing 8 million tonnes of paddy/rice and wheat, i.e. Rs. 70,000 million for procurement and Rs. 20,000 million for handling storage and transport including wastage.

After the first Johl Committee report (1986), there was not much academic analysis of the farming crisis in the state except a seminal paper by Gill (1988) which examined the contradictions of Punjab model of growth and attempted alternatives to it. The second Johl Committee report (2002) evoked more academic analysis of policy and mechanisms in the form of papers by Sidhu (2002) and Singh (2002). That was followed by some more research such as Singh (2004) and Shergill (2007), the latter opposing crop diversification. More recently, there has been some more policy analysis, i.e. Singh (2012) and Shergill (2013), the latter once again reasoning why paddy area will not reduce.

4.2.1 Diagnosis and Diversification

The Committee for Formulation of Agricultural Policy for Punjab State submitted its draft report to the state government which was published by the State Farmers Commission in March 2013. This report was accepted soon after and is being implemented since 2013–14. The policy report documents the performance of the farm sector in the state, identifies the challenges and sets policy objectives and measures and strategies to achieve them. It has chapters on the crop sector, live-stock sector and the institutional framework besides an introduction and a summary of recommendations.

The policy document recognizes the emerging food grain production in other states, especially of paddy, and, therefore, underlines the need to move away from paddy not only for the reasons of natural resource conservation but also for demand-side changes. Therefore, the challenge identified is to sustain farmer incomes without degrading natural resources such as soil and water and still produce for the market, such crops and products which are in demand and remunerative. It identifies the aims of the policy as addressing various interlinked concerns of sustainability of the current cropping pattern and stagnating farm incomes through a simultaneous and multi-pronged action with an emphasis on the improvement in production technology and infrastructure pushing up capital formation, restructuring incentives and streamlining the institutions to achieve a long-term growth rate of 3 % in the primary sector (farming and dairying).

The policy report talks of tenancy laws and the size of landholding constraint forgetting that Punjab has the largest size of operated holding in India (4 h against 1 h in India). It fails to recognize that it is not the size of land but what you do on it

which matters—small can be prosperous and there are millions of such small and prosperous farmers in India. It recognizes the poor state of small farmers, but does not say anything specific about them in recommendations. Rather, it talks of promoting corporate dairy farms (large) which is already happening due to the Punjab government policy. That trend in policy is not good for small farmers as there will be exclusion of small dairy farmers even from (cooperative) dairy sector.

The policy still is focused on yield enhancement even in new crops, citing yield gaps, but market orientation which is much needed is lacking though it talks of demand-driven agriculture. It views diversification in terms of new crops being grown using old ways which are not desirable. The policy document recommends intercropping only in agroforestry. Why intercropping is not possible in mainstream crops is not explained. Further, the most important production risk management strategy—crop insurance—is not even mentioned. The report forgets to recognize that the two pressing problems of farmers are production risk and market risk.

The policy paper recognizes the need for diversification within the crop sector, shifting of area from paddy to other crops, such as maize. But, if one is also worried about crop diversity for other than groundwater reasons, and for enhancing income of farmers, then wheat also becomes a candidate for diversification though policy does not target it at all. Further, summer crops take only less than 5 % of the summer area which is surprising in a state like Punjab which can easily take third crop. Additionally, rice–wheat cycle takes place on 54 % of area and cotton–wheat on another 12 % area. A good 20 % area is put to other crops—wheat cycle (Bal et al. n.d.). Pearl millet and many vegetables easily fit into summer cropping cycle and maize and vegetables as alternative to wheat in Rabi.

In fact, the policy needs to go beyond crop diversification. There is a need to diversify the entire rural economy as most of the rural population and workers are still dependent (directly or indirectly) on agriculture and allied agricultural activities. Diversification of entire rural economy would entail: (i) shifting of surplus workforce in agriculture and allied agricultural activities to non-agricultural activities, (ii) development of rural non-farm sectors, which in turn would require (iii) integration of agricultural and rural planning with overall economic planning (Ghuman 2013).

The policy paper has very conveniently ignored the issue of power subsidy to agriculture. The crop diversification (as being emphasized in the policy paper), depleting water table and free electricity to the farm sector, does not go well with each other. The free electricity to the farm sector goes against the argument for crop diversification. If other measures were taken, perhaps paddy would not be grown as much as it is. But, why shy away from measures like systems of root intensification (SRI) or microirrigation systems (MIS) to save water and cut cost of production which are gaining ground everywhere? In fact, many states and agencies in India are now looking at SRI across crops and enterprises. It misses many upcoming and innovative methods and technologies on water saving like *khettalavadis* (farm ponds) and does not learn from other states such as Andhra Pradesh or Gujarat which have special purpose vehicles (SPVs) or projects for promotion of MIS. The policy document is still shy of sustainable agricultural practices like organic and

mentions lack of organic matter as the reason for not recommending organic practices. This, despite the fact that a private agency has been helping the state in going organic for the last many years and there is an organic farming council existing as a special purpose vehicle (SPV) since the mid-2000s.

Another argument made is that paddy and wheat crops have the lowest yield risk and market/price risk, but it is a case of low-level equilibrium in terms of net returns. Should one continue farming paddy as it is less risky—both in production and marketing?

Interestingly, the policy talks of the need and plans for diversification but does not touch upon the previous experience of this strategy and why it failed during 2002–2007 and how it will be done differently now. The last attempt at diversification (2002–2007) could not go beyond 0.25 million hectares against a target of diversion of 1 million hectares from that under paddy despite all kinds of perverse incentives and schemes. Now, the target is 12 million hectares diversion away from paddy without any specific mechanisms. It still asks for assured markets and prices for new crops which may not be possible and may not be sustainable. That is the minimum support price (MSP) culture. It has been well established that the present wheat–paddy system has been mainly the outcome of the GR and the MSP regimes. The policy paper, while suggesting alternative crops, emphasizes the system of remunerative MSP for alternative crops. It does not take into account the changing national scenario rapidly heading towards market-driven economy, including agriculture. The emerging contradictions between market-determined prices and the administered prices (such as MSP) need to be taken care of by any agricultural policy in the presence of changing position of Punjab in India's food provision especially rice and wheat and the multiple stakeholders and considerations in determination of MSP (Ghuman 2013). The MSP and procurement already exist for many alternative crops, but how can it be done for perishables, especially procurement, without which MSP has little meaning?

The policy proposes tripling of area under sugarcane but without any reference to the functioning of the sugar mills—cooperative and private—in the state and assessment of their competitiveness and performance especially when the sugar sector is likely to be decontrolled. Maize area is targeted to be increased four times of the existing area without any assessment of its demand and mechanisms of procurement. Surprisingly, potato—a very important and well-established crop with plenty of state support including a Potato Development Board, and infrastructure in place like cold storages and processing units, is not even mentioned in the new crop plan other than seed potato. Similarly, barley is missing from the list of new crops though in practice, it is a major crop for diversification of cropping pattern. Other than small area under groundnut in a couple of districts proposed by the policy document, the oilseeds, including sunflower, are completely missing from the list of crops proposed for diversification and no explanations are given for this bias.

The policy is still in traditional farmer cooperative mode and not even aware of producer companies (PCs) provision and other institutions such as Joint Liability Groups (JLGs), Multi-State Co-operative Societies (MSCS) which can be set up at local level with plenty of support from the Union government institutions like Small

Farmer Agribusiness Consortium (SFAC) or National Bank for Agriculture and Rural Development (NABARD). Similarly, SFAC has launched many programmes to promote farmer producer organizations (FPOs) which are essentially PCs. In the 2013–14 Union budget, SFAC has been provided Rs. 500 million to provide matching equity grants to registered PCs up to a maximum of Rs. 10 lakh per PC to enable them to leverage working capital from financial institutions. It has also been allocated Rs. 1000 million for credit guarantee fund for PCs (SFAC 2013). Besides this, SFAC is also procuring pulses at MSP from various producer agencies and has replaced National Co-operative Agricultural Marketing Federation (NAFED) for this role.

On promoting more affordable farm mechanization, it sticks to only agroservice centres for machinery, managed largely by Primary Agricultural Co-operative Societies (PACS). What about PCs, Self Help Groups (SHGs), agribusiness centres and private entrepreneurs like *Zamindara* Farm Solutions, with the latter already doing a good job in this field and promoting co-ownership model? It talks only of farmer income and not of landless labour and recommends mechanization which can hit the labour interest hard. The large subsidies given on paddy transplanters and other equipment in the recent past are not even mentioned. For example, action plan for diversification provides 75 % subsidy on mechanical cane harvesters costing more than Rs. 10 million each. On the other hands, small cotton-picking machines which can increase efficiency or reduce labour drudgery are not even mentioned in the action plan. Today, even value chains talk of labour interest for sustainability. Then, how can a state policy on a sector ignore farm and allied labour interest? The mechanization needed is one which provides for proactive and creative involvement of workers, not their displacement. Is it that farmers continue with paddy and wheat as it sustains combine harvesters which are used more for custom hiring in other states? Is there a political economy to supporting mechanization in the name of the average farmer? Earlier, under the agricultural marketing infrastructure (AMI) scheme of the Union government, 92 % of the projects sanctioned and 66 % of the subsidy sanctioned were for combine harvesters alone. Further, four districts accounted for 60 % of these subsidies. Due to this bias, the combine harvesters were removed from the scheme in 2006 (Singh 2012a).

In agricultural extension which is central to any diversification attempt, no new models are proposed. There are public–private partnerships (PPPs) and franchise models in operation in India which should have been studied for their value and relevance while planning for high-value crops. Just relying on existing public extension mechanisms may not do. The policy proposes the creation of an agricultural research development fund by charging a cess from farmers at the time of sale of their produce. If so far, the largest gainers from agricultural business/trading have been non-farmers, i.e. traders and processors, why should not the technology fund/cess be charged from buyers and *arthiyas* instead of farmers? This is suggested as farmers are in dire crisis already, whereas other stakeholders are doing well and should not mind paying it. If farmers are being asked to fund their own technology development, why support other sectors with public funds?

The policy recommends in great detail the promotion of dairy sector as a diversification of income strategy since it is growing well, but asks for milk price stabilization fund. If that is the state of affairs in the cooperative dairy sector after a few decades of its existence, and in the presence of MNCs in the milk sector, then where is the sustainability of the sector? Demand-driven agriculture should be investment based, not subsidy based.

Though the state has seen contract farming (CF) practice for 20 years, the APMC Act has still not been amended. But, the state government has already passed the Regulation of Contract Farming Act, 2013. That leaves out two important aspects of APMC reform—direct purchase and private wholesale markets. The report should have examined the said contract farming Act and the experience of CF in the state in various forms for the last two decades to make specific suggestions to leverage CF for demand-driven diversification. Similarly, it recommends *Apnimandis* (farmers' markets) but does not mention or analyse why they did not work in the past as Punjab was the pioneer in this innovation. The recently politically proposed and advocated denotification of perishable produce from the APMC Act is also not discussed at all and is being attempted without a thought to leverage it for incentivizing CF and direct purchase. Untargeted waivers are no good.

It was also recognized quite early that it was important to move farmers with investible surpluses from the GR period to the industrial sector. But, that has never been attempted. On the other hand, private agribusiness firms have been thought to be harbingers of change since the late 1980s. There are also doubts being raised whether the state (provincial) is serious about diversification given its back and forth and contradictory policies on the agricultural sector over the years (Shergill 2013).

4.2.2 The New Diversification Agenda

Punjab government plans to reduce area under paddy by about 1.2 million hectares from 2.8 million hectares to 1.6 million hectares during next five years because of excessive exploitation of natural resources including groundwater depletion and depleting soil fertility due to paddy sowing. It has proposed to shift this area to maize (0.4 million hectare), cotton and Basmati paddy (0.2 million hectares each), sugarcane (0.26 million hectares), agroforestry (0.14 million hectares), pulses (0.05 million hectares) and fruits and vegetables (0.08 million hectares). For 2013–14, it has planned to shift paddy area towards maize (40,000 ha), cotton (50,000 ha), Basmati (50,000 ha), pulses (10,000 ha) and sugarcane (17,000 ha), totalling 1.67 lakh hectares. Basmati paddy buyers have been exempted from payment of market fee (2 %), rural development cess (2 %) and infrastructure cess (3 %), reducing their purchase costs by half. Financial assistance of Rs 10,000 per hectare is provided to farmers for seeds, insecticides and other inputs with Union government provided funds for diversification accounting for 30 % of total expenditure in the annual diversification plan. The state government has approved Rs. 1980 million for

setting up of a Center of Excellence under the Crop Diversification Program to carry out the research work at the Punjab Agricultural University in a phased manner during the next five years. Furthermore, one litchi estate will be established at Pathankot and one pear estate at Amritsar at a cost of Rs. 38 million each besides establishing subestate for litchi at Gurdaspur. Punjab Agricultural Marketing Board will set up 20 big dryers across the state at a cost of Rs. 1600 million to facilitate the farmers in getting remunerative price of their produce.

The Union government has also stepped in with additional funds of Rs. 2240.5 million for the state as part of its Rs. 5000 million crop diversification plan in original GR states (of Punjab, Haryana and West UP) under Rashtriya Krishi Vikas Yojana (RKVY) during 2013–14 (Table 4.1). The activities under the Union diversification plan include alternate crop demonstrations, farm mechanisation and value addition, site-specific activities, awareness training and incentives for effective implementation (Table 4.2). There are specific tasks at farmer level which can be supported from this funding (Table 4.3). But, unfortunately, even the Union scheme does not provide any funds for facilitating marketing of new crop produce.

The alternate crops proposed are direct-seeded Basmati, cluster bean, *kharif* pulses (green gram, black gram and pigeon pea), oil seeds and maize. Cluster demonstration units (one unit = 10 ha) of identified alternate crops in each district will be organized through identified beneficiary groups by State Department of Agriculture (SDA). One progressive farmer will be designated as group leader for organization of cluster demonstration. Honorarium of Rs. 2000 per cluster demonstration of 10 h is provided on one-time basis for organization of cluster demonstration. Assistance at the rate of Rs. 10,000 per hectares for maize, *kharif* pulses (*arhar*, *mung* bean, *urd* bean, cluster bean) and oilseeds (soya bean, *til*) and Rs. 10,000 per hectares for poplar-based agroforestry system for sole crop is provided. The financial assistance of Rs. 10,000 per hectares, except poplar-based agroforestry system, is given in the form of Rs. 5000 for critical inputs including honorarium and other activities, Rs. 2500 for land development and Rs. 2500 for marketing support. An amount of Rs. 5000 per hectares for intercropping of pulses and wheat is provided to the farmers, in terms of critical inputs, for organization of demonstrations. The District Programme Management Group (PMG) is responsible for arrangement of critical inputs for organizing cluster demonstrations. All critical

Table 4.1 Distribution of paddy area for diversification across states

State	No. of districts	Total paddy area ('000' ha, 2011–12)	% share of respective state of paddy area to all three states' paddy area	Targeted area of paddy for diversion ('000' ha)
Punjab	20	2759.20	50.25	140.00
Haryana	10	1194.00	21.75	60.00
West UP	15	1537.20	28.00	80.00
All	45	5490.40	100.00	280.00

Source GoI (2013)

Table 4.2 State-wise and activity-wise allocation of funds for crop diversification across states during 2013–14

S. No	State	% share of respective state to total rise area of all three states	Allocation of funds (Rs. million)					Total
			Alternate crops demonstrations (60 %)	Farm mechanization and value addition (23 %)	Site-specific activities (15 %)	Contingency for awareness training, implementation and monitoring (2 %)	Incentives for implementation of programme (10 %)	
1	Punjab	50.25	1347.0	516.3	336.7	45.0	0	2245.0
2	Haryana	21.75	591.0	226.5	147.7	19.8	0	985.0
3	West UP	28.00	753.0	288.6	188.2	25.2	0	1255.0
4	National level		0	0	0	15.0	0	15.0
	State total	100.00	2691.0	1031.4	672.6	105.0	0	4500.0
	National level	0	0	0	0	0	500.0 ^a	500.0
	Grand total	100	2691.0	1031.4	672.6	105.0	500.0	5000.0

^aThe amount is earmarked as incentive which will be disbursed to any state depending on the performance against the indicators developed by NCAP irrespective of their entitled allocation
Source GoI (2013)

Table 4.3 Crop and component-specific pattern of assistance (Rs./ha)

S. No	Components	Crops/systems	
		Maize, <i>kharif</i> pulses (<i>arhar</i> , <i>mung</i> bean, <i>urd</i> bean, cluster bean), oilseeds (soya bean, <i>til</i>)	Poplar-based agroforestry system (sole)
A	Cost of critical inputs (seeds, micronutrients, seed treating chemical and PP chemical)	4500	7500
	Production technology and publicity materials	150	150
	Honorarium and mobility to group leader of cluster demonstration	200	200
	Visit of GOI/state officials for hiring of vehicle or POL	150	150
	Subtotal	5000	10,000
B	Land development charges ^a	2500	–
C	Marketing support (store bin, etc.) ^b	2500	–
D	Intercrops with poplar (critical inputs)	–	5000
	Grand total	10,000	15,000

^{a, b}Land development charge and marketing will be paid to the farmers in cash to support the losses incurred due to diversion of area from paddy to alternate crops

Source GoI (2013)

inputs are ensured by the SDA well in advance before the sowing/transplanting of the crops. State will decide crop-specific cluster demonstrations as per the availability of quality seeds of identified alternate crops.

23 % of total state allocation is earmarked for farm machinery, processing and value addition activities. The crop-specific farm machinery is provided to the farming groups (of 10 farmers each) on custom hiring basis. An assistance at the rate of 50 % cost of machine limiting to Rs. 25,000 for maize sheller, Rs. 0.5 million for portable maize dryer, Rs. 3000 for powered sprayer, Rs. 25,000 for multi-crop thresher, Rs. 0.2 million for portable cleaner-cum-grader for pulses and Rs. 1 million for maize processing unit is made available. 15 % of total state allocation is earmarked for site-specific activities which are to a part of the action plan submitted by the state. 10 % of total state allocation is earmarked and kept at Union Ministry of Agriculture level for incentive to the state governments for implementation of the programme of diversion of paddy area to alternate crops as per target fixed. This amount is released separately after monitoring and evaluation of the programme by designated agency.

State Department of Agriculture is mandated to organize awareness trainings for farmers for diversification of paddy to other alternate crops for additional income generation, restoration of soil fertility, agroprocessing and value addition of crop produce to make farming as a profitable enterprise. The SDA is also required to develop training material with the help of other line departments like Forest and

State Agricultural Universities (SAUs). Assistance at the rate of 50 % Rs. 5000 for a group of 50 beneficiary farmers for cluster demonstration is provided for awareness training program. 2 % of the total state allocation is earmarked for awareness trainings, implementation and monitoring of the programme out of which an amount of Rs. 0.2 million for state level and Rs. 0.2 million per district is provisioned for publicity, organization of review meetings, implementation and monitoring visits, contingencies, etc. (GoI 2013).

4.3 Mechanisms Planned and Used (The How) and Performance

The contract farming arrangement with the growers by the private domestic and multinational agribusiness interests has been central to all the diversification reports and attempts since the Johl Committee Report (1986) and was to achieve both the objectives of cost reduction and value addition by providing farmers better seeds and other inputs, and better markets and prices (Singh 2002, 2004). The increasing cost of cultivation was the reason for the appearance of CF in villages of Japan and Spain also during the 1950s (Singh 2004).

The percentage share of contract farmed area in total in 2002–03 was merely 0.12 %. It increased to 0.96 % in 2003–04 and 1.2 % in 2004–05. The area under CF remained almost same, hovering around 1 % during 2004–05 to 2008–09 and declined to 0.97 % in 2009–10 (Table 4.4). The extent of contract farmed area shows that CF as scheme has not done much to change the scenario of agricultural sector of the state. Thus, during 2002–03, the actual area under CF as against targeted was only 5.6 % with some crops reaching 100 % or 2/3 but others only 10–20 % each of the respective targets. But, by 2009–10 when targets were lowered instead of raising them, the actual achieved area under CF reached 71.5 % of targeted but no crop achieved more than 60 % with the exception of Basmati paddy (Table 4.5). In 2002–03, out of 13 crops targeted, CF was undertaken only in

Table 4.4 Extent and share of contract farming in Punjab (area in 000 ha)

Year	Area under CF	GCA	% share of CF
2002–03	09	7826	0.12
2003–04	76	7905	0.96
2004–05	99	7932	1.2
2005–06	87	7868	1.1
2006–07	96	7861	1.2
2007–08	96	7870	1.2
2008–09	94	7912	1.2
2009–10	76	7900	0.97
2010–11	34	7900	0.4
2011–12	4.8	7900	0.06

Source Sharma and Singh (2013); PAFC website

Table 4.5 Target area and actual area under contract farming in Punjab (area in hectare)

Year	2002–03			2009–10			2010–11
Crop	Targeted area	Actual area	Actual as % of target	Targeted area	Actual area	Actual as % of target	Targeted area
Hyola	30,000	3919.20	13.06	24,281	7412	30.5	–
Barley	2000	328	16.40	6070	3315	54.6	6070
Winter maize	1200	1261.20	105.10	–	–	–	–
Durum wheat	40,000	–	–	–	–	–	–
Sunflower	5000	3416.40	68.63	–	–	–	–
Spring corn	2000	–	–	16,188	9710	59.9	–
Basmati	10,000	–	–	24,281	30,317	124.8	–
<i>Kharif</i> corn	60,000	–	–	40,469	23,705	58.6	–
Guar gum	2000	–	–	–	–	–	–
Castor	2000	–	–	–	–	–	–
Groundnut	400	–	–	–	–	–	–
Organic Basmati	400	–	–	–	–	–	–
Vegetables	800	–	–	–	1122	–	–
Others	4200	–	–	–	4062	–	–
Total	160,000	8924.80	5.58	111,287	79,643	71.5	6070

Source Sharma and Singh (2013)

4 crops. Moreover, actual area for CF in three crops was very low as compared to the targeted area, i.e. in *hyola*, it was 13.06 % of the targeted area, barley 16.4 % and sunflower 68.63 %, but in maize actual area was more than the targeted area, i.e. 105.10 %. In later years, very few crops were selected for CF namely Hyola, barley, spring corn, Basmati and *Kharif* corn. Actual area under CF for these crops was very low as compared to the targeted area with the exception of Basmati. However, in 2010–11, only barley was selected to be undertaken for CF which again points to the poor performance of the CF scheme. It is worth mentioning here that initially many companies operated through PAFC (indirect CF), but by 2012, only one company was involved in indirect CF, i.e. United Breweries. As per the information from PAFC, the major driving force for the companies to do indirect CF was the concession given by the Punjab State Agricultural Marketing Board in market fee (0.25 % instead of 2 %) and Rural Development Cess (0.25 % instead of 2 %). Thus, aggregate reduction of 3.5 % made the procurement of agricultural produce very attractive for the processors. But this concession was later withdrawn by the Government of Punjab. Therefore, either companies had quit CF or were involved in direct CF. After that, the programme was shelved until recently when it has been revived with new targets and mechanisms under a new agricultural policy.

Table 4.6 Area of different crops under contract farming in Punjab during the second phase of diversification (area in acres)

Year	Crop							Total
	Hyola	Barley	Durum wheat	Basmati	Maize	Mint	Potato seed	
2007–08	33,812	7550	–	84,034	113,513	–	–	228,279
2008–09	35,324	6220	–	84,016	107,530	1121	–	234,211
2009–10	18,315	8192	–	74,914	82,750	1122	4062	189,175
2010–11	–	7627	1500	70,806	–	635	4178	84,746
2011–12	–	11,961	–	–	–	–	–	11,961

Source PAFC Website

The targets were lowered in the second phase, and the achievements thus seem higher in % age terms, but are very low in absolute terms (Tables 4.5 and 4.6).

In April 2013, the Punjab assembly enacted the Punjab Contract Farming Act, 2013. It should be noted that Punjab has still not amended the APMC Act despite the fact that it was the first state to undertake and promote CF in the 1990s and then during the last decade for bringing about diversification in the crop sector. Direct purchase from farmers and setting up of private wholesale markets to give choice to farmers to sell wherever and whoever they would like to are two major aspects of the model APMC Act besides the legalization of CF. The CF Act of Punjab deals only with CF, and the other two reforms are still pending as they are to do with amendment of the APMC Act though CF also did not need a separate legislation as many other states, including neighbouring Haryana, have legalised CF by amending the APMC Act. Therefore, it is important to understand why Punjab took the route of a separate legislation on this aspect instead of doing all the required reforms in the APMC Act and the implications of this Act for various stakeholders. The major reason for Punjab going for a separate Act on CF can be found in the political economy of the state's agribusiness sector wherein the farming and the trading interests are at loggerheads in protecting their interests. There has been a constant battle on direct payments to farmers for their produce by buying agencies between the two lobbies, and the issue has been hanging fire since over a decade now. Whereas the farmer lobby would like to have direct payments, the *arthiya* (Commission Agent) lobby opposes it tooth and nail. This is so as direct payments hit the business of interlocking of credit, input and output markets run by *arthiyas* where a *parchi* (slip) system prevails for lending in kind to farmers and recovery of payments at the time of sale of produce. The direct purchase (when permitted with the APMC Act amendment) will reduce volumes in APMC *mandis*, and therefore, *arthiyas'* and traders' hold on farmer produce and the private wholesale markets (again under APMC Act amendment) will create competition for *arthiyas*/traders operating from APMC *mandis* and the *Mandi* Board itself. This is perhaps the reason that instead of amending the APMC Act which would involve allowing direct purchase and setting up of private wholesale markets and, therefore, upset the

appliance of the *arthiyas* and the *Mandi* Board itself, the separate Act route has been taken.

Under the new CF Act, the state government will declare control over purchase, sale, storage and processing of agricultural produce to be covered under CF. The buyer has to register with the local registering authority by paying a fee as specified in the by-laws. A company as per the Act means public limited company under the Companies Act. Duration of contract can be one crop season to three years, and 108 crops are notified under the Act. The buyer will have to submit reports of the contract transactions to the registering authority as well as the Commission.

Contract farmed produce can be sold in the APMC market, or at the farm itself or as specified in the agreement. The net weight of the packing unit has to be as per APMC Act and the buyer will have to make arrangements for packing and weighing of the produce in advance of delivery and give a receipt to the farmer as proof of delivery of produce. There can be no rejection of produce after delivery to buyer. Payment will be made by cheque/demand draft or electronic clearing system (ECS) on the spot at the time of delivery, otherwise with interest for delay up to 30 days, failing which the Contract Farming Commission can recover it as land revenue with interest. If there is a deliberate delay by the buyer in payment, produce bought by the contract farming agency can be seized by the Commission. Crop loss or damage will be recovered from the buyer if it supplied inputs and extension as per Commission's decision. Only temporary structures on farmer land for the duration of the contract can be put up by the buyer, and if not removed immediately after the expiry of the contract duration, it will become property of the producer. No recoveries of any dues or penalties can be made from the producer by way of sale or mortgage of his/her contracted land. This provision is in line with the Model APMC Act and removes the perceived fears about contracting companies staking claims on contract growers' land.

The district collector will be responsible for CF dispute resolution and give decision within 30 days, and no civil court can entertain such cases. Decisions of the Commission will be like a decree of a court. A contracting party can appeal after payment of 50 % of dues of disputed amount. Buyers can be fined up to one month in prison and/or Rs. 0.1–1 million for a violation of the Act and at the rate of 50 % Rs. 500 per day for violation of first conviction, and the farmer is liable for one month jail and/or Rs. 5000 fine for violation of the Act and at the rate of 50 % Rs. 100 per day for violation of first conviction.

It is interesting to note that the provisions of the Act are very different from the provisions for CF in APMC Acts of other states. For example, Gujarat or Haryana amended APMC Acts have bank guarantees from buyers/contracting agencies (5–15 % of the value of the contracted produce, respectively, in the two states) to protect farmer interest in case of company/buyer default. The Haryana APMC Act even prescribes that, wherever applicable, the contract price will not be lower than the MSP of the crop. In Gujarat, only processors and exporters are eligible to purchase the commodity from the farmer grown under CF. The Gujarat APMC Act also specifies that market fee will not be charged more than once for a given produce within the state and it will be 50 % of the normal for contracting agencies and nil in tribal areas of the state for CF agencies. The Gujarat Act also allows

contracts for up to 5 years and even beyond with mutual agreement. In both the states, the State Agricultural Marketing Board is the arbitrator for CF disputes.

There are many missing elements in the Punjab Act. The state is promoting agroforestry as part of its diversification plan but how can three year contracts work in agroforestry? Surprisingly, the Act notified crops also include *gur*, *shakkar* and *khandsari* which are never contract produced generally as they are value-added products from sugarcane. Another important crop being contract produced in the state, baby corn, is missing from the list, as is garlic.

4.3.1 Mechanism of Diversification (Contract Farming) and Issues

Though CF is an important mechanism for diversification, it is more about who does CF, why and how that it can help or hinder diversification. Though the state has enacted the new contract farming Act, it has not been operationalized and an agency with direct interest in the matter has been entrusted to look after it until the Commission is in place. In order to ensure better farm incomes from new crops, it is important to ensure that contracts are fair and balanced and reduce farmer's market and production risks of new crops. This is not fully provided for in the Act.

Further, since resource conservation such as water and soil is central to diversification agenda, it is also important to examine how CF influences these resources and sustainability. Contract farming influences the direction of ecological change through two actors. One, the contracting agency lays down the production schedule for the farmers at the farm level. By determining the crop to be grown and the husbandry practice the farmer has to follow, the contracting agency influences the impact CF will have on the environment. The government is the second actor as the main source of conservation measures, i.e. advisory, financial and material. The farmer's access to these measures is, to a large extent, is determined by the government policy. Thus, the contracting agency and the government have a larger role to play in environmental/ecological change than the farmer, since they occupy a 'privileged' position in the realm of decision-making.

Contracts tend to be concerned with land management measures which ensure crop growth and quality and production levels only in the short-term agricultural cycle, except in organic CF situations. Land management measures geared to maintain resource quality over the long term are not specified. The grower is responsible for decisions about investment in the long-term maintenance of land quality and productive capacity in conditions where contracting companies influence the land use practices through contracts which tie growers to larger markets and encourage production growth. Environment is also impacted through rejection of some produce of the grower by the contracting agency as the cost of not harvesting results in soil loss through tillage and excessive use and wastage of chemicals causing nutrient depletion (Singh 2010).

The environmental implications of CF include monocultures leading to depletion of soil quality and effect of fertilizers and pesticides on natural resources, environment, humans and animals. The contracting firms tend to aggravate the environmental crisis as most of the contracts are short term (one or two crop cycles) and the firms tend to move on to new growers and lands after exhausting the natural potential of the local resources, particularly land and water, or when productivity declines due to some other reason. The overexploitation of groundwater, salination of soils, decline in soil fertility and pollution are examples of environmental degradation due to CF. The firms do not pay heed as the costs of such effects are externalized so far as the firm is concerned (Singh 2010).

During the last phase of diversification attempt (2002–2007), it was found that CF led to less water consumption on contract farms as against non-contract farms. The water consumption for paddy was 265.71 h per acre compared with only 183.86 h for Basmati paddy promoted and grown under the CF arrangement. Similarly, maize cultivation under CF led to water use of the order of only 18.35 h per acre. This meant that crops being grown under CF arrangement were water saving. That was so due to the provincial government plan to promote those crops. Overall, contract growers' weighted water consumption per acre was 120.49 h compared with 129.58 h in case of non-contract growers. But, reduced water consumption on contract farms was due to greater area devoted to the new crops (Basmati and maize) and not due to any new agricultural practices promoted by the contracting agencies. In fact, the contract farmers were practicing more intensive agriculture than the non-contract farmers and were devoting significantly higher number of water hours to Basmati and maize than that by non-contract farmers across all crops. Thus, increased commercialization of the various crops under CF propelled these contract farmers to use various inputs more intensively. Further, crop combination of potato and sunflower promoted under CF was more water intensive, though more remunerative than wheat (the alternative traditional crop) and therefore defeated the very purpose of CF in the state (Singh 2007).

In fact, the crops chosen for diversification do not score well on water use as number of irrigations is quite high in case of Basmati (15), sugarcane (14) spring maize (12) and winter maize (8) and they account for a major chunk of power subsidy after paddy, even higher than wheat (Singh 2012). On the other hand, crops which could have helped save water such as bajra, pulses, barley, mustard and soya bean have been left out.

4.4 Rethinking Diversification

Diversification is not just about changing from one set of crops to another but about its purpose, i.e. sustainability of farming systems and enterprises. It is also about doing same thing differently, i.e. following different crop practices for the same crop/s or doing altogether different things like growing new crops in new ways, i.e.

organic castor which Punjab has never grown. Unless practices and incentives for certain practices are changed, the present policy will not cut much ice.

Choices involved in promoting technological progress and providing rural infrastructure are likely to remain critical for providing the incentives for successful diversification of farmers faced with a structural need to adjust their output patterns away from exclusive dependence on cereals. The major requirements for diversification into non-traditional activities include (1) transfer, adaptation and extension of technology for cost reduction, (2) investment at farm level with some lag before pay back, (3) availability of specialized inputs, (4) heavy investment at processing level, (5) availability of infrastructure, (6) a conducive regulatory environment and (7) thorough knowledge of markets and established reputation in markets. The major institutions for lowering transaction cost in new crops and activities include CF and producer collectives, but monopolistic approaches to institutions of collective actions are not desirable. Actions taken need to encourage the use of markets, not to replace them (Delgado and Siamwalla 1997).

Delgado and Siamwalla (1997) emphasize that where technologies are available, infrastructure and institutions become constraints. Private marketing initiatives can help diversification in the presence of infrastructure and a trading class. It is also the experience of many countries like Denmark in dairy and Japan in sericulture that a combination of technological innovations in the new activity and non-monopolistic institutions of collective action such as cooperatives were critical to diversification away from cereals. The need for institutional innovations for farm diversification is the greatest in economies which have not gone through agricultural transformation and where agricultural markets do not work. Therefore, rural production and marketing institutions are key to farm diversification.

Since, diversification is about larger questions of resources and livelihoods, it is important to look beyond crops. In Punjab, still 25 % tube wells are run with diesel engines (Perveen et al. 2012), and central Punjab alone accounts for 70 % of all tube wells in the state. The owner farmers have been deepening them over the years with 90 % at least once, around 55 % twice and 20 % thrice during the last 10 years. Measures like putting cap on tube wells (Shergill 2013) have equity dimension which cannot be ignored. For example, in 2010–11, each electric tube well farmer, on an average, obtained power subsidy of Rs 50,000 per year (ranging from Rs. 19,184 to 42,671 and 1,12354 across semi-medium and medium to large farmers, respectively) with average subsidy of Rs. 10,000 per h per year assuming 20 % tube wells were diesel based and average operated holding size of non-small farmers was 5 h each (Singh 2012) and those with diesel could avail nothing. Thus, paddy cost would go up by 47 % and wheat cost by 13 % if power subsidy is withdrawn (Singh 2012).

Diversification in the farm sector was achieved successfully in Thailand through private initiatives where the state played an essential role in setting the investment climate and investing infrastructure and supporting small farmers with farm credit. In partnership with private sector, the state agencies, i.e. Bank for Agriculture and Agricultural Co-operatives (BAAC) and the Department of Agricultural Extension (DOAE), provided credit and extension support, respectively, to the contract growers working with private companies in high-value crops (Singh 2005). The

Board of Investment (BOI) provided incentives to CF agencies in the form of exemption from import duties on machinery, exemption from income tax for certain activities for five to eight years, 50 % deduction in normal income tax rates on net profits from certain operations for five years after the income tax exemption for first five years and a deduction of an amount equal to 5 % of the increased income over previous year for ten years. The Ministry of Commerce also actively promoted organic agriculture providing training and funding to food chain actors, i.e. producers, processors and exporters (Ellis 2011). The Thai success in diversification in agri-food sector was jointly determined by the synergy of government actions and private sector initiatives. Stable policies supported by continuity in programmes and competent bureaucracy were also major factors (Dyster 2014).

The private sector can play an important role in moving the state's agriculture out of the existing crisis. Contract farming can come handy to rectify the situation as export-oriented firms which need chemical-free raw materials due to international market pressure and can make contract growers switch to less environmentally harmful/more environmentally friendly production processes as they have the resources, including technologies and markets, to promote this kind of farming. It makes both business and development sense. These firms can also help farmers adopt good agricultural/farm practice (GAP/GFP) as the international market is increasingly demanding this kind of system in agroproducts. Further, PPPs can be explored as individually neither state nor private sector can attend to the problems which are so deep-rooted and require institutional structures and innovations. There are many examples of successful PPPs in agribusiness in India including one in the form of Mahagrapes (a grape growers' cooperatives' company created through PPP for export of grapes) and Asia which can be learned from (Singh 2011, 2013).

It is also important to remember that modern high-value crops whether for export or domestic markets are prone to high production and market risks. Therefore, there is need to bring in modern risk reduction arrangements like warehouse receipt systems and crop insurance already in place in India to help farmers manage risk better. Unfortunately, the state has not looked at the crop insurance issue seriously as the present dominant crops (wheat, paddy and cotton) all have MSP and yields are more or less assured.

4.5 Conclusions

Agricultural diversification is also about technological and institutional diversification. The state should not depend on its own apparatus only and the private sector to deliver the diversification agenda. New and more innovative institutions need to be created and supported such as SHGs, PCs and franchises. There are hundreds of PCs in India across states, crops and services with plenty of support being provided by various agencies but hardly any in Punjab (Singh and Singh 2014). Given that subsidized provision of irrigation water is one of the main incentive factors of the GR, diversification away from paddy may be hard to achieve in the absence of

tradable property rights in water that match social and private cost in water used. Therefore, one needs to be careful about assuming that markets alone will insure a smooth adjustment out of over reliance on cereals. Also, other sources of energy like solar need to be explored and water sharing arrangements encouraged especially for small farmers. Further, when it is larger farmers who devote higher proportion to paddy and wheat crops compared with small farmers (Perveen et al. 2012), there is no logic in providing free electricity to all farmers irrespective of farm size.

What comes out from the analysis of the CF situations as mechanism of diversification is that increasingly environmental concerns are dictated by the market demand, e.g. the case of chemical residues or organic practices. However, markets may not signal the importance of ecological concerns in all situations and all times due to various imperfections in the market and externalities in the presence of weak monitoring. For example, in Kenya, soil erosion was not attended to by the contracting agencies as that was not reflected in the product quality and was an externality of the contract production. It continued to be seen as the responsibility of the farmer and the government. Similarly, price premiums for environmentally friendly food may not encourage genuineness due to incentive to cheat and mislabel due to information asymmetry. Therefore, it is important to proactively provide for ecological concerns into CF programs and policies. This can be done by way of land use planning based on soil depth, soil quality, land slope and suitable water availability. It is also important to understand previous land use and make it mandatory to follow crop rotation, if necessary (Singh 2010).

Further, from a smallholder perspective, the crop choice for diversification is very important. For example, Kinnow will not fit the bill as it has large gestation time and needs large investments. On the other hand, maize or baby corn is good choice but may not compete with Maharashtra and Karnataka unless alternative export markets are explored. But, if there are already private enterprises which are able to export Global GAP-certified fresh produce from Punjab, there is no reason to doubt that it cannot be scaled up and done even better with enabling support from the state and other development agencies.

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