



Short communication

An assessment of contract farming system for potato seed production in Punjab – A case study

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ABSTRACT

The study was conducted to assess the contract farming system of potato seed production in Punjab with a sample of 30 contract and 30 non-contract farmers from Jalandhar district of Punjab. The major motivating factors identified for participating in the contract farming were assured price, diversification, access to assured market, extension services etc. There was no participation of marginal and small farmers in contract farming. The average net income of contract farmers was about 12 per cent higher than non-contract farmers. The major constraints in potato seed contract farming were pest and disease attacks, non-availability of labor during peak period, difficulty in meeting quality requirement etc. The study suggests that government, non-governmental organizations and other related agencies should play an active role in the contractual arrangement.

Key words: Contract farming, constraints, motivational factors, potato farming.

As per Census 2011, 52 per cent of the workforce in India is engaged in agriculture. Unfortunately, majority of the farming communities in the country get very less remuneration for their hard work. Out of total value of the produce, farmer gets only 35 per cent and majority of the price hike is done by the intermediaries (Deloitte, 2). Tripathi *et al.* (13) argued that despite much of technological and economic advancement, the condition of the farming communities continues to be miserable and unstable due to uncertainty in crop yields and prices of produce. Hence, contract farming system, if carefully planned and executed, is a viable alternative farming system that provides a win-win situation for both farmers and processing firms as it ensures better prices of agricultural produce to the farmers and timely and consistent supply of quality raw-materials to the agro-based processing firms (Pandit *et al.*, 8; Tripathi *et al.*, 13). The Government of India in the XII Plan (2012-2017) also emphasizes the promotion of properly designed contractual farming arrangement, so that marginal and small farmers have the requisite technology and market access (Planning Commission, 9).

Many studies reported that contract farming provides many advantages to the farmers such as assured price, assured market, credit, technologies, inputs, extension services, risk sharing; augment income, employment generation and reducing the cost of production and transaction (Kumar *et al.*,

5; Pandit *et al.*, 8; Singh, 12). In spite of several advantages, farmers under contract farming also faced many problems like delay in payments, delay in the delivery of inputs (Nagaraj *et al.*, 6), lack of remunerative price (Rampal and Gill, 10), lack of clear contract agreement (Pandit *et al.*, 8), withdrawal of extension services, reneging on prices and procurement (Kumar *et al.*, 4), *etc.* Presently, in developing countries including India there are very few studies related to potato contract farming system in general and potato seed contract farming system in particular. With this backdrop, the present study was undertaken.

Ex post facto research design was used for the study. The state of Punjab was selected purposively for the study, because it is a major player in the supply of potato seeds in India. Jalandhar district of Punjab, also known as potato seed hub was also selected purposively for the study (Indian Express, 3). Farmers of Jalandhar district who were under contract with PepsiCo's Frito-Lay for seed production were selected for the study. Frito-Lay Division undertakes contract farming for production of good quality seeds and processing potatoes for ensuring regular supply of raw materials to its three state-of-the-art plants in Punjab (Sangrur), West Bengal (Sankrail near Kolkata) and Ranjangaon near Pune in Maharashtra. At the first stage, company officials were contacted and a list of blocks with large area covering large number of farmers was obtained. Based on the list, two blocks, namely, Nakodar and Phillaur were purposively selected as higher number

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of contract farmers was concentrated in these blocks. Consequently, from each block 15 contract farmers and equal number of non-contract farmers were randomly selected for the study. Thus, a total of 60 farmers, comprising of 30 potato seed contract farmers and 30 non-contract farmers were studied.

Data was collected through personal interviews with the respondents during January 2015 and was analyzed with the help of simple descriptive statistics like frequencies, averages, percentages, etc. The t-test was used in order to know the significance of differences between variables/ items under contract and non-contract farming. For studying the motivating factors for participation in the contract arrangement, a set of 12 statements was framed to elicit the motivating factors of contract farmers. The farmers were asked to indicate the extent of their agreement to each statement on a five point continuum Likert-type scale (1-5 scale from strongly agree to strongly disagree). The weighted total score was arrived at by summing up the weightage of responses for each statement. Mode of operation was analyzed through an interview schedule containing the terms and condition that could possibly represent the mode of operation of contract farming like price settlement, nature and kind of contract, linkages, credit facility, etc. Comparative economic analysis was done by estimating the total cost of variable cultivation and net income generated under contract and non-contract farming using enterprise budget technique. The constraints of contract farming was measured based on the responses of farmers to a set of 13 statements.

The respondents were asked to response to each statement using a 5-point response categories ranging from “very severe” to “least severe” (score ranging from 1 to 5). The weighted total score was obtained based on the summation of weightage of response of each respondent for each selected statement.

The motivating factors for participating in the contract farming were identified and presented in Table 1. It can be observed that “assured price” with a mean score of 4.57 was ranked as the first motivating factor followed by “access to assured market” with a score of 4.27. Similar findings were also observed by Rampal and Gill (10) in their study about contract farming in Punjab. “Diversification” was ranked third (4.23) by the respondents. Contract farming was adopted by the Government of Punjab as a tool to promote diversification in the state (Sharma and Singh, 11). “Access to extension services” having mean score of 4.10 was ranked fourth by the farmers. Frito-Lay hired one area manager and five agronomists for monitoring and providing technical services to the contract farmers in Jalandhar district. The experience of contract farming in India shows that there is significant saving in consumption of production inputs due to the introduction of improved technology and better extension services (Pandian *et al.*, 7).

The practice of contract farming differs across regions, crops, firms and farmers and it also varies according to situation-specific variables making it difficult to generalize the concept (Singh, 12). PepsiCo’s Frito-Lay division undertook contractual

Table 1. Ranks accorded to motivational factors for participating in potato seeds contract farming system among the contract farmers (n = 30).

Motivational factor	Frequency					WTS	WMS	Ranks
	SA	A	N	DA	SDA			
Assured price	17	13	0	0	0	137	4.57	I
Access to assured market	14	2	2	2	0	128	4.27	II
Diversification	14	12	1	3	0	127	4.23	III
Access to extension services	11	14	3	1	1	123	4.10	IV
Efficient transportation facilities	9	14	5	2	0	120	4.00	V
Access to appropriate technologies	7	18	4	0	1	120	4.00	V
Supplies of inputs by the company	7	13	8	2	0	115	3.83	VI
Favorable climate for potato	10	8	7	5	0	113	3.77	VII
Reduction in yield uncertainty	9	8	4	6	3	104	3.47	VIII
Access to loans or credit	4	12	8	4	2	102	3.40	IX
Inspired by other contract farmers	3	11	10	5	1	100	3.33	X
Just to have a try	1	6	12	6	5	82	2.73	XI

Rating Scale: Strongly agree (SA) = 5, Agree (A) = 4, Neutral (N) = 3, Disagree (DA) = 2, Strongly disagree (SDA) = 1; WTS = Weighted total score, WMS = Weighted mean score

agreement with more than 400 potato seed farmers in Punjab during 2014-15. Its purpose of contract farming in Jalandhar district of Punjab was solely for good quality seed production. Potato varieties produced by the company under contract potato seed farming in Jalandhar were ATL, FC1, FC3 and FC5. The company undertook contract farming with only those farmers who were willing to cultivate at least 5 acres of land for potato seeds production. Thus, there was no participation of marginal and small farmers. Kumar *et al.* (4) also observed that contract farming in Punjab was skewed towards medium and large farmers. The duration of contract was for one crop season (October to March) and the contract was renewed every year based on the loyalty and willingness of the farmers. The contractual agreement was a direct (bi-partite) agreement between the company and the farmers. The format of contractual agreement was a written agreement. The agreements were written in English and given to farmers. The company supplied seeds to the contracting farmers at Rs.10-12/ kg and bought back the produce (potato seed) at pre-agreed price and quality. The payment for purchasing of seeds by the contracting farmers was done in two installments; 60 per cent of the seed cost was paid by the farmers in advance and 40 per cent was deducted by the company at the time of procurement of the harvested produce. All technical advice and extension activities were provided free of cost. The company procured 100 per cent (full buy back) of the produce, which were under contractual agreement. The price was pre-agreed at Rs.10/ kg for A grade (28-35 mm seed size) and B grade (36-45 mm seed size), Rs. 8/ kg of C grade (46-55 mm seed size) and Rs. 5/ kg for D (>55 mm seed size) and Z grade (<28 mm seed size). The company paid the transportation cost as per the distance covered from the farms to the collection centre. The company also

paid the cost of sorting and grading through third party arrangement. No compensation was paid to the farmers in case of crop damage.

The total variable cost of cultivation under contract farming and non contract farming was Rs. 63,412 and Rs. 56,160 per hectare, respectively (Table 2). The higher cost of cultivation under contract farming was mainly due to a higher expenditure on seeds. Majority of non-contract farmers adopted indigenous varieties developed by the ICAR-Central Potato Research Institute, Shimla like Kufri Pukhraj, Kufri Jyoti, Kufri Bahar *etc.*, which were obtained locally at a relatively lower price. The average seed cost under contract farming was about Rs. 33,167 per hectare, which was nearly 23.21 per cent higher than that under non-contract farming (Rs. 25,467/ ha). Other cost components like expenditure on fertilizers, plant protection, irrigation, labour, *etc.* had no significant difference. This may be because these inputs were not supplied by the company and therefore the cost was more or less the same. Pandit *et al.* (8) and Tripathi *et al.* (13) also observed the higher cost of cultivation in contract farming than in non-contract farming.

Data in Table 3 indicated that the yield under non-contract farming was about 6 percent higher than that of contract farming. This could be due to the fact that the company encouraged the contract farmers to produce optimum seed size so that they would get higher price for the produce. However, the price received by the contract farmers was higher at Rs. 6.33 per kilogram as against Rs. 5.25 per kilogram of the non-contract farmers. The average net income of contract farmers was Rs. 73,468.94 per hectare, which was about 12 per cent higher than that of non-contract farmers (Rs. 64,259.25/ ha). Pandit *et al.* (8) and Tripathi *et al.* (13) also observed a better profitability of potato production under contract farming than non-contract farming.

Table 2. Variable cost of cultivation of potato seed contract farming *vis-à-vis* non-contract farming (n = 60).

Cost component (Rs./ha)	Contract (n ₁ = 30)	Non-contract (n ₂ = 30)	Difference	Increase/ decrease %
Seed cost	33166.67	25466.67	**	23.21
Fertilizers cost	7160.00	7950.00	NS	-9.94
Farm yard manure	883.33	683.33	NS	22.64
Plant protection	5016.67	5100.00	NS	-1.66
Irrigation	2136.67	2093.33	NS	2.02
Human labour [#]	11516.66	10833.33	NS	5.93
Hired machineries ^{##}	3883.33	4033.33	NS	-3.86
Tot. variable cost of cultivation	63412.67	56160.00	**	11.43

Note: [#]including hired and family labour, ^{##}including cost of fuel, repairing cost, *etc.* ** Significant at 1 %, NS = Non-significant

Table 3. Economic profitability analysis of potato seed contract farming *vis-à-vis* non-contract farming (n = 60).

Particulars/ Items	Contract (n ₁ = 30)	Non-contract (n ₂ = 30)	Difference	Increase/ decrease (%)
Avg. yield (q/ha)	216.13	229.37	NS	-6.12
Avg. price (Rs./q)	633.33	525.00	*	17.10
Gross Income (Rs./ha)	136881.61	120419.25	NS	12.02
Net income (Rs./ha)	73468.94	64259.25	NS	12.53

*Significant at 5%, NS = Non-significant

The constraints in potato seed contract farming were analyzed and the results were presented in Table 4. The results revealed that “pest and disease attack” with a mean score of 3.37 was considered as the first major constraint in potato seed contract farming. Occurrence of late blight and viral diseases had been potential threats to potato seed cultivation in the study area. Arneja *et al.* (1) reported similar findings. Late blight disease in potato sometimes caused 80 to 100 per cent loss (Indian Express, 3). The second important constraint was “non-availability of labour during the peak period” with a mean score of 3.20. In Jalandhar, potato was grown by a large number of farmers and majority of labour were hired from outside the state. Pandit (8) reported that after the initiation of Mahatma Gandhi National Rural Employment Guarantee Scheme in the country, the problem of labor had aggravated. “Difficulty in meeting quality requirement” with a mean score of 3.13 was the third important problem. This might be due to

the fact that the company fixed too many grades (A, B, C, D and Z) with price ranging from Rs. 5-10/ kg. The farmers expressed dissatisfaction of the pre-agreed price fixed by the company, especially for large sized potato, which could fetch higher price in the open market. Thus, “price fixed by the company is lower than the prevailing price” was ranked fourth along with “absence of government’s active role” with a mean score of 3.00. Singh (12) suggested that government needs to play an enabling role by legal provisions and institutional mechanisms, like helping farmers co-operatives and groups, to facilitate smooth functioning of contract system.

The contract farming of potato seed production was beneficial in the study area. Hence, it may be promoted in other states or regions which grow potato for seed purpose. The study suggests that the Govt./ NGOs/ VOs should play an active role in the contractual arrangement in order to prevent conflicts/ breach of contractual agreement between the two

Table 4. Ranking of various constraints faced by farmers in potato seed contract farming (n = 30).

Constraint	Frequency					WTS	WMS	Ranks
	VS	QS	S	NS	LS			
Pest and disease	8	7	7	4	4	101	3.37	I
Non-availability of labour during peak period	6	7	7	7	3	96	3.20	II
Difficulty in meeting quality requirements	7	7	4	7	5	94	3.13	III
Price fixed is lower than the prevailing market price	3	8	8	8	3	90	3.00	IV
Absence of government’s active role	3	9	7	7	4	90	3.00	IV
Faulty grading by an agency	6	7	3	8	6	89	2.97	V
Delay in procurement of produce	4	6	4	10	6	82	2.73	VI
Lack of visits by field officers	2	6	7	11	4	81	2.70	VII
Terms and conditions made in favour of firm	3	7	6	5	9	80	2.67	VIII
Lack of irrigation water	2	7	4	12	5	79	2.63	IX
Lack of credit and crop insurance facilities	3	6	5	9	7	79	2.63	IX
Delay in delivery of inputs	0	6	5	12	7	70	2.33	X
Delay of payment	0	7	3	13	7	70	2.33	X

Rating scale: Very severe (VS) = 5, Quite severe (QS) = 4, Severe (S) = 3, Not so severe (NS) = 2, Least severe (LS) = 1; WTS = Weighted total score, WMS = Weighted mean score

contracting parties. The government should also develop a mechanism for the inclusion of marginal and small farmers in the contract farming system.

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