

Risks, Problems and Profitability of Seed Production in Puducherry

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ABSTRACT An attempt was made to study the risks, problems and profitability of seed production in the Union Territory of Puducherry. Primary data on the risk involved, problems faced by the seed growers and cost of cultivation of both seed and commercial crops were collected from the representative farmers. The conventional tabular and percentage analyses were used to analyze the data. The findings indicate that seed production is profitable but risky. The farmers withdrew from the seed production programme in the initial stage due to non-availability of seeds, poor rainfall, poor germination, grazing and admixture. During the final stages of seed production, farmers faced the risk of rejection due to presence of other distinguishable varieties and germination failures. The farmers also faced problems of late payment made by the purchasing agency, late release of subsidy, timely non-availability of seeds and delay in processing. The analysis on economics of seed production showed that the expenditure on seed production specific activities like, drying, marketing, registration and field inspection contributed towards the differences between the seed and commercial production. The findings of the study indicate that the cost of cultivation was higher in seed production as compared to the commercial crop production. But the total return was higher in seed production than commercial crop production.

Key words: Seed production, risks, problems, profitability, economics

A sustained increase in agricultural production depends on the development of new improved varieties and an efficient system for supply of quality seeds to farmers. Seed production programmes for cereals, pulses, oilseeds, fibre, fodder crops and potato are implemented through various public and private sector organizations, viz. National Seeds Corporation Ltd, State Farms Corporation of India Ltd, State Seeds Corporations, other State Seed Producing Agencies and Private Seed Companies. Almost all the states have their own seed certification agency. During 2000, Puducherry Seed Certification Agency was established by the Government of Puducherry in exercise of its powers under the Section 8 of the Seeds Act 1966 (Central Act 54 of 1966). Since establishment of

Puducherry Seed Certification Agency, no study was undertaken to evaluate the impact of seed production programme in the Union Territory of Puducherry. Hence the present study was undertaken with the following objectives: (1) to know the production risks and problems associated with seed production and (2) to study the economics of seed production *vis-a-vis* commercial production.

MATERIALS AND METHODS

Approximately 25 per cent of the seed growers were selected randomly from the registered seed growers. A matching sample of the same number of farmers, having commercial cultivation of the respective crops were selected randomly from the

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same village where from the seed growers were selected, thus making the total sample of 220. The sample framework followed in this study is presented in Table 1.

For analyzing and comparing the costs and returns of seed production *vis-a-vis* commercial

Table 1. Distribution of sample size in Puducherry

Crop	District	Sample size
Paddy	Puducherry	126
	Karaikal	52
Pulses	Puducherry	10
	Karaikal	-
Groundnut	Puducherry	8
	Karaikal	-
Vegetables	Puducherry	24
	Karaikal	-
	Total	220

production, major crops like, paddy, pulses, groundnut and vegetables, where maximum seed production is in vogue, were selected. Analysis on cost of cultivation of paddy in the Puducherry region was worked out (on per acre basis) separately for seed production and commercial production in order to show how the resources were used in the seed as well as commercial production.

Primary data, through a suitable pre-tested schedule, were collected from the sampled farmers for the selected crops. Various policies influenced by the political and economic conditions and the critical review by different personnel were collected and discussed for the preparation of the schedule. Secondary data on quantity of seeds certified, total area under seed production, number of farmers registered for seed production, number of farmers who failed in seed certification and the causes for the failure for all the available crops were collected from the Seed Certification Agency, Puducherry.

The Garrett's ranking technique was used to rank the factors that influence the choice of

variety. The Garrett's ranking was ascertained as:

$$\text{Per cent position} = \frac{100 (R_{ij} - 0.50)}{N_j}$$

where,

R_{ij} = Rank given for i^{th} factor by j^{th} individual

N_j = Number of factors ranked by j^{th} individual

The per cent position of each rank thus obtained was converted into scores by referring to the table given by Garrett. Then for each factors, the scores of individual respondents were added together and divided by the total number of respondents for whom the scores were added. The mean scores for all the factors were arranged in descending order and the ranks were allotted.

RESULTS AND DISCUSSION

Risks involved in seed production

Seed production is a risky enterprise as compared to the commercial crop production. However, farmers selected seed production based on several criteria (Table 2). One of the most important criteria was higher profit which was assigned first rank by the farmers of Karaikal and Puducherry regions. Another important criterion was the subsidy given by the government, especially to the seed producing farmers. The other criteria were technical assistance rendered by the departmental officials as well as better yield of the seed crop, which attracted the farmers to take part in seed production programmes.

Several sampled farmers withdrew from the seed production programme due to major risk factors. Nearly 18 per cent of farmers withdrew from the seed production programme in both the regions, due to several reasons as shown in Table 3. About 40 per cent of farmers withdrew due to the effects of rainfall in Karaikal. The other reasons, like poor germination (20%), admixtures (20%) and grazing (20%) which affected the seed crop. About one-third of Puducherry farmers withdrew from the seed production programme due to the admixture,

Table 2. Reasons (%) for choosing seed production

Reason	Karaikal		Puducherry	
	Mean score	Rank	Mean score	Rank
Higher profit	63.39	1	66.91	1
Subsidy	52.04	2	60.62	2
Technical assistance	26.89	3	31.35	3
Better yield	24.11	4	29.70	4

Table 3. Reasons (%) for withdrawal after initiation of seed production

Reason	Karaikal	Puducherry
Admixture	20	33.33
Maintenance	0	6.67
Non-availability of seeds	0	20
Poor germination	20	13.33
Rainfall	40	6.67
Grazing	20	20

finally non-availability of seed (20%), grazing (20%) and poor rainfall (13.33%).

A total of 560 farmers were registered as seed producers with 1066 acres, producing 878.30 q of foundation seed and 7382.93 q of certified seed. However, there was no procurement of either foundation seeds or certified seeds of ash gourd, okra, cotton and greengram. Further, seed production from 167 paddy, 21 groundnut and 9 blackgram seed producers could not be procured due to label for rejection (LFR) (44.95%), ODV (22.94%) and various other reasons (27.98%) as shown in Table 4. Therefore, farmers have to face the risk of rejection due to strict adherence of seed quality parameters by seed certifying agency.

Problems faced regarding seed production

The information with respect to problems in seed production programme were collected from the

farmers and presented (Table 5). Late payment made by the purchasing agency affected about 39.28 per cent Karaikal farmers and 50.00 per cent Puducherry farmers. About 35.71 and 35.36 per cent of farmers of Karaikal and Puducherry, respectively had problems with subsidy; timely non-availability of seeds affected 21.43 and 29.27 per cent of farmers in Karaikal and Puducherry districts, respectively. And for about 25.00 and 15.85 per cent of farmers in Karaikal and Puducherry districts, respectively, faced delay in processing as one of the many problems.

Economics of seed production vis-a-vis commercial production

Economic comparison is essential to test the profitability and viability of any firm or business. Hence, economics of seed production *vis-a-vis* commercial production has been studied and compared for the existing crops, so as to analyze the economic efficiency or feasibility of seed production over commercial production.

The present analysis on cost of cultivation was worked out on per acre basis, separately for seed production and commercial production.

Economic comparison showed that the cost of seed production was higher over commercial production in all the crops. This was mainly due to weeding and irrigation, which had higher shares in total cost in seed production compared with commercial production. Drying and processing costs were the additional costs that were specific in seed production.

The net returns for seed crop was highest for

Table 4. Reasons (%) for non-procurement of seeds from the farmers

Crop	LFR	GF	ODV	Other reason	Total
Paddy	84	3	50	30	167
Amaranthus	0	1	0	0	1
Ashgourd	1	0	0	0	1
Okra	0	0	0	1	1
Bittergourd	0	1	0	0	1
Blackgram	1	1	0	7	9
Clusterbean	0	1	0	0	1
Cotton	0	0	0	1	1
Greengram	3	0	0	8	11
Groundnut	8	1	0	12	21
Ridgegourd	0	0	0	0	0
Snakegourd	0	0	0	0	0
Tomato	1	1	0	2	4
Total	98 (44.95)	9 (4.13)	50 (22.94)	61 (27.98)	218

Note: Figures in parentheses indicate per cent of total row value

LFR: Label for rejection in the field, GF: germination failure, ODV: failed in other distinguishable varieties

Table 5. Problems (%) regarding seed certification programme

Problem	District	
	Karaikal	Puducherry
Late release of subsidy	35.71	35.36
Timely non-availability of desired variety	7.14	24.39
Timely non-availability of seeds	21.43	29.27
Delay in processing	25.00	15.85
Restriction in allotment of areas	3.57	13.41
Poor quality of inputs	3.57	9.76
Late payment	39.28	50.00

chilli (Rs 8662/acre), whereas the lowest was for tomato (Rs 1840/acre). The cost : benefit ratios were more than one for all the crops [ranged between highest of 3.2 for chilli to lowest of 1.37 for tomato (Table 6)]. Total returns from seed production was higher than commercial production. Even though the yield was lower and cost was higher for seed crops, the net return was higher in seed crops as compared to the commercial crops, since the per kilogram price was higher in seed crop.

Economics of paddy seed production vis-a-vis commercial production

Results showed that costs incurred for field preparation (main field), transplanting, harvesting and threshing accounted for 13.47, 13.92 and 23.84 per cent, respectively of the cost, in commercial production, whereas in seed production, it was 12.00, 11.44 and 18.52 per cent,

Table 6. Economics of seed production *vis-a-vis* commercial production in vegetables and pulses

Crop		Total cost of cultivation (Rs)	Yield (kg/acre)	Total returns (excluding incentives) (Rs)	Net returns (Rs)	Cost : benefit ratio
Groundnut	Commercial crop	13425	1250	16625	3200	1.24
	Seed crop	14021	1100	20848	6827	1.49
Brinjal	Commercial crop	4205	430	5380	1175	1.28
	Seed crop	4763	19	9350	4586	1.96
Okra	Commercial crop	3805	400	6300	2495	1.66
	Seed crop	4350	22	12150	7800	1.79
Snakegourd	Commercial crop	3950	600	6600	2650	1.67
	Seed crop	4260	25	12550	8290	2.94
Bittergourd	Commercial crop	3510	525	6850	3340	1.95
	Seed crop	3750	20	10050	6300	2.68
Tomato	Commercial crop	4198	350	5600	1401	1.33
	Seed crop	4490	13	6150	1840	1.37
Chilli	Commercial crop	3653	500	7000	3346	1.92
	Seed crop	3937	26.5	12600	8662	3.20
Pulse (blackgram)	Commercial crop	1806	325	3900	2530	2.15
	Seed crop	3128	273	7100	3421	2.26

respectively (Table 7). The share of fertilizer cost (main field) in commercial production and seed production were 16.42 and 13.45 per cent, respectively. Manures cost was incurred only in seed production among the sampled farmers and it accounted to 4.77 per cent of the total cost of cultivation. The share of seeds and sowing in grain production (9.68 per cent) was higher than those in seed production (5.68 per cent), which was due to the effect of subsidies and per acre allotment of seeds. The cost of weeding accounted for 10.17 per cent in commercial production and it was 12.50 per cent in the seed production, indicating that the farmers follow clean practices to keep the field free of admixtures. Percentage share on drying and total field inspection accounted for 1.40 and 6.12 per cent of the total cost of cultivation under seed production.

The total cost of cultivation was Rs 7538.01

and Rs 9394.73 per acre for grain and seed production, respectively. Total returns were Rs 10618.22 and Rs 20149/acre for commercial and seed production, respectively which was mainly because of the share of incentives that alone accounted for Rs 7142.61/acre under seed production. The total higher return in seed production than commercial crop production was due to various incentives given by the Government to seed growers to encourage the farmers to take up seed production.

The share of seed cost under seed production in paddy was comparatively lesser than the costs incurred under commercial production. This is due to the fact that the seed producers used recommended seed rate, whereas grain producers used higher seed rate than the recommended rate, and often they used twice the recommended seed rates. In addition, the role of incentives in the

Table 7. Operation wise comparison of costs (Rs/acre) in paddy crop in Puducherry

Operation	Commercial crop	Seed crop		
<i>Nursery</i>			Drying	- 131.45 (1.40)
Field preparation	250 (3.32)	250 (2.66)	Marketing	190.23 (2.52) 203.91 (2.17)
Seeds and sowing	729.83 (9.68)	533.39 (5.68)	Total seed inspection fee	- 575.36 (6.12)
Seed treatment	9.32 (0.12)	14.78 (0.16)	Total cost of cultivation	7538.01 9394.73
Weeding	0 (0)	90.36 (0.96)	Yield (kg)	2034.75 1972.86
Plant protection	12.71 (0.17)	12.97 (0.14)	Incentive	- 7142.61
Fertilizer	121.95 (1.62)	377.6 (4.02)	Total return (inclusive of incentives)	10618.22 20149.00
Irrigation	100 (1.33)	100.16 (1.07)	Net return	3080.21 10754.27
<i>Main field</i>			Cost : benefit ratio	1.41 2.14
Field preparation	1015.51 (13.47)	1127.10 (12.00)	<i>Note:</i> Figures in parentheses include percentage to total cost of cultivation	
Transplanting	1049.49 (13.92)	1075.14 (11.44)	purchase of certified seeds has a greater role to play in affecting the share of seed cost under seed production.	
Manure	0 (0)	448.55 (4.77)	Hence, it is evident from the above that cost of cultivation was higher in seed production than the commercial production. The seed grower has to strictly adhere to the recommended cultural practices to ensure genetic purity as laid down by the seed certification agency. Seed production plot must be free from weed and off-types, to maintain genetic purity. Proper drying of seeds and preliminary processing is another special operation in seed production. All these operations required additional labour. Moreover, certification charges are an additional expense in seed production. Hence, cost of cultivation was higher in seed production as compared to the commercial production.	
Fertilizer	1237.85 (16.42)	1264.05 (13.45)	CONCLUSION	
Plant protection	56.61 (0.75)	59.56 (0.63)	The analysis showed that farmers faced the risk of rejection due to presence of other distinguishable varieties and germination failures. The farmers also faced the problems of late payment made by the purchasing agency, late release of subsidy, timely non-availability of seeds and delay in processing. The analysis on	
Irrigation	200.61 (2.66)	215.61 (2.30)		
Weeding	766.78 (10.17)	1174.6 (12.50)		
Harvesting and threshing	1797.12 (23.84)	1740.14 (18.52)		

economics of seed production showed that expenditure on miscellaneous items, like drying, marketing, registration and field inspection contributed towards the significant differences between the seed production and commercial production. The findings of the study indicate that the cost of cultivation was higher in seed production as compared to commercial production. But the total return was higher in seed production than commercial production.

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