



Constraints in potato cultivation in Assam: Farmers' experiences

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Abstract : The study was conducted in the purposively selected Barpeta district of Assam during the year 2008. A multistage random sampling technique was utilized for selection of 120 sample farmers. The productivity of potato in Assam is very low as compared to national average and to increase the productivity of potato in Assam and to meet the growing demand, an attempt was made to identify the constraints experienced by the potato growers that would help to prioritize research and extension endeavour and thereby narrowing down the yield gap at farm level. The study revealed that non-availability of quality seed potato, high cost of quality seed, lack of reasonable support price, price fluctuation in the market throughout the year, heavy rotting of potato tuber in the storage, no suitable local method of storage, no cold storage facility in the production site and lack of efficient marketing facilities at village level were the major potato production constraints faced by the farmers. Farmers' opinions to surmount these problems revealed that potato farmers must have the facility of cold storage at the approachable distance, supply of quality seed by the govt., supply of production inputs on the subsidized rate, provision of training on scientific method of potato cultivation from time to time, better transport facilities for efficient marketing and low cost on-farm storage structure in order to increase the potato production in the state.

Key Words : Constraints, Potato cultivation, Farmers' opinion

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INTRODUCTION

Among the northeastern states, Assam is the leading state with respect to acreage and production of potato. As per the latest available data, the state produced 677.3 thousand tones of potatoes from the area of 80.5 thousand ha (Anonymous, 2002). Potato is one of the most important and widely cultivated horticultural crops of Assam. The significance of this crop to the rural economy as well as agriculture of the state could be comprehended from the fact that potato occupies more than 80.5 thousand hectares of land which accounts for 14.74 per cent of the total area under horticultural crops of the state. A majority of the area under potato crop in Assam falls under flood affected areas of the

state. But the growing season coincides with the flood free period and hence, farmers take the advantages of residual soil moisture and grow crop under rainfed condition. Further these soils are light in texture with good aeration status and, therefore, suitable for successful potato cultivation.

The productivity of potato in Assam, however, is as low as 8.4 t ha⁻¹ which is far below than the national average of 19 t ha⁻¹ and is quite disappointing though Assam is having good potential in all aspects such as agroclimatic condition which varies from tropical type to temperate type and light texture soil with good aeration status. Further the state Assam is deficit state in potato production which could be comprehended from the fact that every year a sizeable amount of potato comes to the state from the other parts of the country.

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Therefore, it is an urgent need to channelize our efforts to increase the productivity level of the state. To increase the productivity of potato in Assam and to meet the growing demand, it is essential to identify the constraints experienced by the potato growers that would help to prioritize research and extension endeavour thereby narrowing down the yield gap at farm level. Against the above ground, therefore, an attempt was made to find out the production, socio-economic, technological and institutional constraints that bottlenecked farmers from using recommended technologies capable of giving potential farm yield. Also, potato farmers' opinions to ameliorate these constraints were also ascertained in the participatory manner.

MATERIAL AND METHODS

The study was conducted in Assam during the year 2008. A multistage purposive cum random sampling technique was utilized for the study. Out of the 27 districts of the state, Barpeta was selected purposely on the basis of highest potato production (15.30%) and second in area (12.20%) under potato crop. Two blocks namely Mandia and Sarukshetri were selected purposively and from each of the selected block, 4 villages were selected randomly. 15 farmers from each village were selected randomly to constitute total sample size of 120 farmers.

Based on the discussion with potato growers from the

non-sample area in those villages, constraints were enumerated and classified into production, socio-economic, technological and institutional constraints. The sample respondents were then asked to indicate the constraints experienced by them in adoption of scientific cultivation of potato in the state. Similarly, farmers' opinions for amelioration of those constraints were also ascertained on open-ended questions. The frequency of respondents indicating each of the constraints along with the suggestions was found out and expressed in percentage and finally ranking was done. The data were collected with the help of a semi-structured schedule coupled with group discussion in participatory environment.

RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Constraints faced by the potato growing farmers :

Findings pertaining to the various constraints experienced by the potato farmers are delineated and discussed under the following sub-points.

Production related constraints :

It is evident from the Table 1 that the lack of quality seeds was the most important constraint mentioned by 94.16

Sr. No.	Production related constraints	Frequency and percentage	Ranking
1.	Lack of quality seed	113 (94.16)	I
2.	Lack of irrigation facility	58 (48.33)	IV
3.	High cost of quality seed	97 (80.83)	II
4.	Non availability of inputs like fertilizers, chemicals etc.	27 (22.50)	VI
5.	High cost of fertilizers and chemicals	48 (40.00)	V
6.	Heavy incidence of disease and pest	75 (62.50)	III

Sr. No.	Socio-economic related constraints:	Frequency and percentage	Ranking
1.	The scientific method of cultivation involves high cost and requires proper scientific knowledge	70 (58.33)	III
2.	Price fluctuation in the market throughout the year	96 (80.00)	II
3.	Lack of reasonable support price	109 (90.83)	I
4.	High involvement of middleman	54(45.00)	IV
5.	Scientific cultivation requires more labour and time	37 (30.83)	V

Sr. No.	Technology related constraints	Frequency and percentage	Ranking
1.	Lack of knowledge on HYV of potato suitable to their region	41 (34.16)	IV
2.	Lack of proper knowledge on plant protection	54 (45.00)	III
3.	Heavy rottage of tuber in storage	104 (86.67)	I
4.	No suitable local method of storage	75 (62.50)	II

per cent of the respondents which was probably due to lack of government seed farms and village level seed producers. The similar finding was reported by Gogoi (2002). High cost of quality seed was the second constraint reported by 80.83 per cent of the farmers. This was because the quality seed are not produced locally and hence even if the farmers wanted to grow it they required to purchase it from the distant places which added to the seed cost. Heavy pest and disease incidence was ranked as the third important constraint as experienced by 62.5 per cent of the respondents and this was primarily due to the growing of susceptible varieties by the farmers. Furthermore, most of the chemicals coming in the market were reported to be spurious and hence, had little effect on controlling disease as well as pest. The other production constraints reported were lack of irrigation facility (48.33%) followed by high cost of inputs (40%) and non-availability of inputs like fertilizers, chemicals etc. (22.5%).

Socio-economic related constraints :

It was observed from the Table 2 that lack of reasonable support price was felt to be the first important constraint by 90.83 per cent of the respondents. Most of the respondent felt that the cost of production increased every year due to increased labour charges and input cost. It is quite understandable that farmers would have anticipated increased price for their produce when the cost of inputs goes up. Price fluctuation in the market throughout the year was the second constraint expressed by 80 per cent of the respondents. This may be due to the lack of purchasing facility by the Government. The similar finding was reported by Gogoi (2002), Rai and Singh (2010); Pandit *et al.* (2010). Potato crop requires

a lot of inputs before and during growing period. Huge cost incurs for well prepared seed bed preparation, seed, fertilizer and weed control. Plant protection measure is another item that require sufficient amount of finance (Ahmad *et al.*, 2005; Singh and Mathur, 1994 and Manivel *et al.*, 2003)).

The third important constraint as expressed by 58.33 per cent of the respondents was that the scientific method of cultivation involves high cost and requires proper scientific knowledge and this may be because of the prevailing weak extension system. The other socio-economic constraints were high involvement of middleman (45%) and more labour and time consuming scientific cultivation (30.83%).

Technological constraints :

It is further evident from the Table 3 that the first and foremost technological constraint expressed by as high as 86.67 per cent of the respondent was heavy rotting of tuber in the storage which was due to higher temperature at the time of harvesting and storage. Non-availability of any suitable local method of storage was the second constraint expressed by 62.5 per cent of the respondents and this aspect emanates researchable area to find suitable low-cost alternative method of storage. The similar finding was reported by Gogoi (2002) and Rai and Singh (2010). The other constraints were lack of proper knowledge on plant protection (45%) and lack of knowledge on HYV of potato for their region (34.16%).

Institutional constraints :

Again it is evident from the Table 4 that the most frequently perceived constraint as expressed by 70.83 per cent of the respondent was lack of efficient marketing facilities at

Sr. No.	Institution related constraints	Frequency and percentage	Ranking
1.	No cold storage facility at the production site	78 (65.00)	II
2.	Lack of efficient marketing facility at village level	85 (70.83)	I
3.	Complicated procedure for obtaining Govt. loan	57 (47.50)	IV
4.	In-sufficient amount of loan	37 (30.83)	VII
5.	High interest rate on pvt. Loan	68 (56.66)	III
6.	Problem of transportation for marketing	51 (42.50)	V
7.	No soil testing facility available	6 (05.00)	VIII
8.	Non availability of credit facility in the locality.	46 (38.33)	VI

Sr. No.	Suggestions	Frequency and percentage	Ranking
1.	Provision of cold storage facility at approachable distance	106 (88.33)	I
2.	Arrangement for adequate and timely supply of quality seed by the govt.	97 (80.83)	II
3.	Procurement of produce by government through minimum support price	92 (76.66)	III
4.	Training on scientific method of potato cultivation	81 (67.50)	IV
5.	Supply of production inputs like fertilizer, chemicals, etc on subsidized rate	69 (57.50)	V
6.	Developing low cost on-farm storage structure	56 (46.66)	VI
7.	Better transport facilities for efficient marketing	53 (44.17)	VII

village level. Even though the Government or private owned marketing facilities were available at village level, they were not functioning effectively due to influence of middleman. The producers had to pay varieties of incidental charges in unregulated as well as regulated markets. This reduced the profit from the sale of the produce considerably. The yet another institutional constraint expressed by 65 per cent of the respondent was non-availability of any cold storage facility nearby the production site/villages. Further discussions with the farmers revealed that only one cold storage with capacity as low as 50 MT exist to cater need of the potato growers of entire BARPETA district. By any standard, this is inadequate. The high rate of interest on private loan was the third major constraint expressed by the 56.66 per cent of the respondents. Farmers were still found to attract to those local money lenders mainly due to the easy procedure of obtaining loan from the private sources in comparison to any financial institution. The other constraints revealed were complicated procedure for obtaining govt loan (47.5%), problem of transportation for marketing (42.50%), non-availability of credit facility (38.33%), insufficient amount of loan (30.83%) and no soil testing facility (05.00%). Similar findings were also reported by Rai and Singh (2010).

Farmer's suggestions to overcome the problems of potato cultivation in the state :

A perusal of Table 5 showed that potato farmers opined that provision of cold storage at the approachable distance from the village (88.33%) and arrangement for supply of quality seed adequately and timely by the Government agency (80.33%) should be accorded highest priority *i.e.* first and second ranks, respectively. Such perception would have emanated because of the fact that farmers need to purchase the seed tuber every year from the other states as the own seed potato tuber cannot be stored for the next planting season because of the heavy rotting in the store due to high temperature. Therefore if a cold storage facility becomes available at the nearby distance, the farmers can easily store their produce for seed purpose for the next planting season as well as can store the produce for fetching better market price. In addition to these farmers can store their own produce as seed in cold storage which will be of better quality than the seed potato coming from outside of the state which has no assured varietal identity and purity. Supporting findings was made by Dahiya *et al.* (1997; Douches *et al.*, 2009).

Similarly the potato farmers gave third priority in provision of any kind of mechanism for procurement of produce by government agency through minimum support price (76.66%). The reason for this preference was that potato farmers expressed that they did not get reasonable price of their produce because of the non-predictive agricultural marketing system with fluctuating market price. In addition, the potato farmers also suggested they should be trained on

scientific method of potato cultivation (67.50 %) from time to time as majority of the farmers lacked proper knowledge on HYV seed, plant protection measures etc which may be the non-physical factor attributing for the low production and productivity of potato in the state. The farmers gave 5th priority for supply of production inputs like fertilizer, chemical etc on the subsidized rate (57.50 %) which is often too costly to afford by most of the small and marginal farmers. In the same way, the farmers suggested for developing low cost on-farm storage structure (46.66%) so that they can store their produce with minimum cost and even without the facility of cold storage. They also felt for provision of better transport facility (44.17%) for efficient marketing of potato as the farmers had experienced bad road condition due to which transportation cost is usually too high as well as non-availability of easy and cheaper mode of alternate transport facility.

Potato farmers in the study area were facing a number of constraints like unavailability of quality seed, costly irrigation facility, shortage of labour, uncertainty and high fluctuation in potato prices, lack of knowledge about modern technique of potato cultivation (Kumar *et al.*, 2008; Mandloi and Asthama, 1996; Das and Ezekiel, 2007).

Conclusion :

From the findings and experiences of the above study, it may be concluded that the potato farmers of Assam expressed a number of constraints in adoption of scientific cultivation of potato. The analysis of the above categories of constraints as well as farmers suggestions in this direction will be of immense use for the officials of the state department of agriculture, researchers and policy makers to plan the extension programme so as to eliminate these constraints of potato growers in order to achieve increased level of production and thereby reducing the yield gap existing at the farm level.

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