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Farmers preferences for selected attributes of potato in Seoni district of Madhya Pradesh

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Abstract
Farmers' perception of the attributes of any agricultural technology is the key determinant to its final adoption. Potato (*Solanum tuberosum* L.) is the third most essential sustenance harvest of the world after rice and wheat. The study was conducted in the year 2017-18 in Seoni district of Madhya Pradesh. Potato was the most preferred crop among majority of the respondents. Short duration, good storability of the harvest combined with good level of production were the reason cited by more than 37 percent potato farmers for preferring potato crop. cv Kufri Sindhuri was the most preferred cultivar. Among the six major attributes, disease resistance was ranked as the most important attribute in improved cultivar, followed by higher yield and sustainability of yield. Better keeping quality followed by short duration of maturity were perceived as least important attributes.

Keywords: Potato growers, potato varieties, Farmers preferences, varietal attributes

Introduction
India is second largest producer of potatoes in the world after China. India showed tremendous growth in potato production during last one and half decade, however, this growth is led more by the area expansion than the yield enhancement. Significance of potato crop was rightly assessed by FAO (2008) before declaring 2008 as the International Year of Potato and indicating potato as future crop for fighting hunger and poverty. Being the second largest producer, India occupies a prominent position on global potato map (Scott and Suarez 2011, Rana 2015). India produced 51.31 million t potato against 99.12 million t by China while Russian Federation, third largest producer of potatoes, produced 31.11 million t in 2016.Hence, nearly 45% of global potato production took place in these three largest potatoes producing countries. The major potato producing States in India are Uttar Pradesh, West Bengal, Bihar, Gujarat, Madhya Pradesh, Punjab, Haryana and Assam. Madhya Pradesh has emerged as the fastest growing potato state in India during recent years. Madhya Pradesh covering 0.136 million ha area with 3.14 million t production and 23.07 mt/ha productivity (Anonymous 2017-18) [1]. Most of the potato is grown in the Malwa plateau and Kymore plateau of the state. Farmer's preferences, perception and needs with regard to any agricultural technology are the key determinants of its final adoption or rejection. The same holds true in case of potato crop also. An understanding of these attributes not only helps in a better execution of extension activities but also leads to effective results/impact of the research and development efforts. Potato cultivation are helpful in diversification of agriculture, providing ample opportunities to conserve soil and moisture depletion. A farmer can fetch more prices for his produce in comparison to cereal crops from the small unit area of land, he can take more produce than other crops.

Nowadays potato cultivation is highly commercialized, but there is still a wide gap between production realized and potential production. So, efforts have to be made by researchers, extension workers and policy makers to bridge this gap (George and Singh, 2006). By adopting improved techniques and high yielding varieties, production and productivity can be increased (Sahu *et al.*, 2009). In potato cultivation, a number of technologies have been developed, but farmers do not show keen interest in adopting this technology. So, to enhance the production and adoption of new farming technology it is imperative to know, why farmers are reluctant in adaptation of this technology. So, to know that what are the constraints faced by farmers in adoption of modern practice of potato cultivation this study was undertaken.

The agricultural technologies have certain attributes, which are instrumental in their adoption by the farmers. However, it is the farmers' perception of the attributes of a technology, not the attributes as classified by experts and change agents, which affects its rate of adoption.

Materials and Methods

In order to ascertain the farmer's preferences with regard to various aspects of potato crop. The study was conducted during the year 2017-18 in Seoni district of Madhya Pradesh state. A total of 12 villages were selected randomly from the four major potato producing block namely Seoni, Kurai, Kevlari and Lakhnadaun of the district (3 villages from each block) and 10 farmers were randomly selected from each selected village. Thus, a total of 120 potato farmers were sampled. Farmers preferences were studied on aspects like cultivating potato crop, the varieties and various other attributes related to a variety.

Results and Discussion

Potato was distinctively the most preferred crop among the sampled farmers (71.66%) followed by Brinjal (65.83%) and tomato (62.50%) (Table 1). The least preferred crop was cauliflower (40.83%) followed by cowpea (43.33%). An investigating into the reasons for preferring potato crop showed that 75.83% farmers felt that potato crop is well adjusted to their existing cropping sequence of maize-potato and potato-vegetables (Table 2). Better storability of potato as compared to other vegetables and good profit margin along with yield sustainability were the other important reasons cited by 73.33 and 67.50 percent sampled farmers, respectively. Cv Kufri Sindhuri was assigned first rank by about 55.00 percent of the respondents, followed by Kufri Lauvkar (26.66%) and cv Kyfri Jyoti (10.00%) (Table 3) The least preferred among the four studied cultivars was cv Kufri Chipsona-1. Out of the six attributes related to four identified potato cultivars, high yield was the most preferred attribute (49.16% respondents) for c.v. Kufri Sindhuri followed by good storability (32.50%), while late blight resistance (11.66%) was the least preferred attribute for this variety. With regard to cv Kufri Chipsona-1 late blight resistance was ranked the most preferred attribute (55.83% respondents) followed by better storability (38.33%) and taste (35.88%). Yield sustainability (10.00% respondents) followed by high yield (10.00%) were the least preferred attributes of Kufri Lauvkar. Late blight resistance was revealed as the most preferred attribute of cv Kufri Jyoti (24.16% respondents) while storability was the least preferred one (13.33%). Kufri Sindhuri were preferred most for their taste (42.50% respondents) followed by good market price (51.66%) However, the Kufri Lauvkar variety were preferred least on yield sustainability followed by good storability. It could be, hence, inferred that farmers preferred the improved varieties mostly for higher yield, better keeping quality and relatively better market price. The similar reasons for adoption of improved potato cultivates by farmers were reported by Patel *et al*. (2004) [2].

Table 1: Differential preferences of farmers towards various crops grown in Seoni district of Madhya Pradesh (N = 120).

Crop	Frequency	Percentage	Ranking
Potato	86	71.66	I
Brinjal	79	65.83	II
Tomato	75	62.50	III
Okra	69	57.50	IV
Pea	65	54.16	V
Cowpea	52	43.33	VI
Cauliflower	49	40.83	VII

Table 2: Reasons for giving first preference to potato (N = 120).

Reasons	Frequency	Percentage	Rank
Well-adjusted to the existing cropping sequence.	91	75.83	I
Better storability of potato as compared to other vegetables.	88	73.33	II
Good profit margin and yield sustainability.	81	67.50	III
Cultivation practices are simple.	76	63.33	IV
Same land could be utilized for potato continuously.	55	45.83	V

Table 3: Differential preferences of potato growers towards various potato varieties (N = 120).

Potato varieties	Frequency	Percentage	Ranking
Kufri Sindhuri	66	55.00	I
Kufri Lauvkar	32	26.66	II
Kufri Jyoti	12	10.00	III
Kufri Chipsona-1	10	8.33	IV

Table 4: Attribute preference ranking of various potato cultivars (N = 120).

Attributes	Kufri Sindhuri		Kufri Lauvkar		Kufri Jyoti		Kufri Chipsona-1	
	% Age of farmers	Rank	% Age of farmers	Rank	% Age of farmers	Rank	% Age of farmers	Rank
High yield	49.16	I	10.00	IV	11.66	III	29.16	II
Yield sustainability	40.00	I	10.00	IV	17.5	III	32.50	II
Late blight resistance	11.66	III	8.33	IV	24.16	II	55.83	I
Good market price	51.66	I	16.66	III	10.00	IV	21.66	II
Taste	42.50	I	12.50	III	9.16	IV	35.83	II
Good storability	32.50	II	15.83	III	13.33	IV	38.33	I

Conclusion

Based on the findings presented above it could be concluded that potato was the most preferred crop among the sampled farmers due to its qualities such as short duration crop, good storability of the produce and good production level along with yield sustainability Kufri Sindhuri was the most preferred cultivar by the farmers and high yield followed by good market price and good storability were the preferred attributes of the improved cultivars. Therefore, it is recommended that the preferences expressed by the farmers be kept in view while breeding introducing a new potato cultivar in the state. In addition, potato being the most preferred crop in the state, efforts need to concentrate on enhancing the production and productivity level through need-based extension programmes. Supporting general rural infrastructure directly or indirectly influences growth of agriculture including the potato cultivation. In order to make potato cultivation and general agriculture more efficient and profitable, rural development initiatives of the current union government in India needs to be proficiently implemented in all states in the study area. Future of Indian agriculture or potato cultivation depends, to a very large extent, on general

development programs like irrigation infrastructure, assured supply of quality electricity, quality and magnitude of rail and road transport etc. Concerted efforts of agencies involved in potato research and development in India are required to develop and deliver more potent potato technologies. The technologies should be developed specific to the farmers' needs and preferences. Such technologies need to be efficiently delivered as large proportion of small and medium potato farmers in the country generally don't adopt improved technologies at their own.

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