GAU Research Journal **45** (2) : 98-102 (April 2020)

Knowledge and adoption level of potato production technology among the farmers of Sabarkantha district

R. R. PRAJAPATI[1*], B. K. PATEL[2] AND ARNAB BISWAS[3]

Directorate of Extension Education, S D Agricultural University, Sardarkrushinagar

Received: 23 March, 2020 Accepted: 22 June, 2020

ABSTRACT

The study was purposively conducted in the Dhansura and Bayad taluka of Banaskantha district of the Gujarat state. For selection of 6 villages and 120 respondents, multistage sampling technique was employed. A majority (61.67%) of the potato growers had medium level of knowledge regarding recommended practices of potato. Sowing time and method, irrigation management, land preparation, earthing up, recommended variety, harvesting, spacing, seed rate and basal application of chemical fertilizers were the practices in which potato growers had higher knowledge. While in case of adoption, majority (70.83 per cent) of the potato growers had medium extent of adoption of recommended production technology of potato. The important practices having higher adoption were: irrigation management (86.57 mean score), earthing up (85.23 mean score), spacing (81.19 mean score), sowing time and method (80.17 mean score), recommended variety (76.15 mean score), harvesting (75 51 mean score), seed rate (75.17 mean score), basal fertilizers (73.15 mean score) and seed treatment (72.27mean score). The independent variables viz., age, education, annual income, extension participation, method of irrigation, innovative proneness, risk orientation and level of knowledge were found having positive and significant association with adoption of recommended potato production technology by potato growers.

Key words: adoption, potato, technology, farmers

India is an important potato producing country in the world. It ranks fourth in area after China, Russia and Ukraine and ranks third in production after China and Russia. India has highest potato productivity than three largest potato producers *viz*. China, Russia and Ukraine. FAO identified potato as Food of Future as it has great potential of fighting hunger and poverty in large part of the world. In this context, year 2008-09 was celebrated as "International Potato Year" throughout the world.

Potato is an important vegetable crop of the Sabarkantha district of the Gujarat state occupying about 18.46% of total potato cropped area of the state. It ranks second in area and production of potato after Banaskantha district. Therefore, there is a wide gap between the highest productivity in the state and productivity of Sabarkantha. The low productivity of potato in Sabarkantha district could be attributed to the fact that the farmers have not still adopted the recommended production technology of the crop up to the extent. The knowledge about the new production technology plays vital role in their adoption by farmers. Taking all this in view, the present study was under taken with following specific objectives.

1. To study the personal, socio-economic, situational and psychological characteristics of the potato growers

[1]Associate Professor, Directorate of Extension Education,
[2&3]Assistant Professor, C P College of Agriculture, S D Agricultural University, Sardarkrushinagar
*Email: rrprajapati.sdau@gmail.com

2. To find out knowledge level of the potato growers about potato production technology
3. To find out the extent of adoption of potato production technology by the potato growers
4. To ascertain the association between the extent of adoption of recommended potato production technology by the potato growers and their selected characteristics

MATERIALS AND METHODOS

The present study was undertaken in Sabarkantha district of Gujarat state. Using purposive random sampling, two talukas *viz.*, Dhansura and Bayad were selected as these talukas are having high area under potato sampling technique. From each selected village, twenty respondents were selected randomly for making a sample of 120 respondents.

The present study was confined to ex-post facto research design, the independent variables were measured by using suitable scale and procedure adopted by various researchers in past with due modification. Practice wise adoption index was worked out and then ranks were given to each practice on the basis of its adoption index.

The data were collected with the help of structured pre-tested interview schedule. The data collected were analyzed, tabulated and interpreted in the light of objectives for arriving at meaningful interpretation.

RESULTS AND DISCUSSION

Personal characteristics

The results regarding personal characteristics of the potato growers are presented in Table 1.

Table 1 Distribution of the respondents according to their personal characteristics

No	Characteristics	Group		Frequency	%
1	Age	1	Young (up to 35 years)	29	24.17
		2	Middle (36 to 50 years)	68	56.67
		3	Old (above 50 years)	23	19.17
2	Education	1	Illiterate	05	4.17
		2	Primary (up to VII std)	27	22.50
		3	Secondary (VIII to X std)	29	24.17
		4	Higher secondary (XI & XII std/diploma)	43	35.83
		5	Graduation	16	13.33
		6	Post-graduation	00	0.00
3	Size of family		Small	34	28.33
			Medium	65	54.17
			Large	21	17.50
4	Social participation	1	No membership	20	16.67
		2	Membership in one organisation	73	60.83
		3	Membership in more than one organisation	19	15.83
		4	Holding position	08	6.67
5	Land holding	1	Marginal (up to 1.00 ha)	19	15.83
		2	Small (1.01 to 2.00 ha)	35	29.17
		3	Semi-medium (2.01 to 4.00 ha)	51	42.50
		4	Medium (4.01 to 10.00 ha)	15	12.50
		5	Big (above 10.00 ha)	00	0.00
6	Annual income	1	Low (upto Rs. 42509/-)	24	20.00
		2	Medium (Rs.42510/- to 104224/-)	81	67.50
		3	High (above Rs. 104224/-)	15	12.50
7	Extension participation	1	Low (upto 7.64 score)	16	13.33
		2	Medium (7.64 to 15.00 score)	86	71.67
		3	High (above 15.00 score)	18	15.00
8	Method of irrigation	1	Furrow irrigation (Traditional method)	25	20.83
		2	Sprinkler irrigation	21	17.50
		3	Drip irrigation	74	61.67
9	Cropping pattern	1	— - —	76	63.33
		2	Groundnut - Potato-Cluster bean	65	54.17
		3	Cluster bean - Potato - Pearl millet	52	43.33
		4	Pulses-Potato-Fallow	47	39.17
		5	Groundnut – Potato - Watermelon	32	26.67
10	Innovative proneness	1	Low (upto 20.95 score)	12	10.00
		2	Medium (20.96 to 29.46 score)	91	75.83
		3	High (above 29.46 score)	17	14.17
11	Risk orientation	1	Low (upto 15.48 score)	24	20.00
		2	Medium (15.49 to 28.17 score)	72	60.00
		3	High (above 28.17 score)	24	20.00

A perusal of the data in Table 1 reveal that majority of the potato growers were middle aged (56.67 %), had secondary and above education (73.33 %) and small to semi-medium landholding (71.67 %). More than half (54.17%) of the potato growers were belonged to medium family. Majority of the potato growers had medium annual income (67.50 %), membership in one organization (60.83%) and medium extension participation (71.67%).

Majority of the potato growers had adopted drip system (61.67%) as a method of irrigation and followed Groundnut-Potato-Fodder sorghum cropping pattern (63.33%). More than three-fourths (75.83%) of the potato growers had medium innovative proneness. Nearly three-fifths (60.00%) of the potato growers had medium risk orientation.

Knowledge level

The information regarding knowledge level of the potato growers about potato production technology is depicted in Table 2.

Table 2 Distribution of the respondents according to their level of knowledge about potato production technology

Sr. No.	Level of knowledge	Frequency	Percent
1.	Low	19	15.83
2.	Medium	74	61.67
3.	High	27	22.50
	Total	120	100.00

Mean= 79.10 S D =6.05

Data presented in Table 2 portray that majority (61.67%) of the potato growers had medium level of knowledge about potato production technology, while 22.50 per cent and 15.83 per cent of the potato growers had high and low level of knowledge, respectively.

Thus, it can be concluded that majority of the respondents had medium level of knowledge regarding potato production technology. The probable reason might be that majority of the potato growers had medium level of social participation and extension participation.

This finding is in the line with the findings of Kadu and Saiyad (2009) and Rathod (2009).

Table 3 reveals that among the different recommended potato production technologies, 'sowing time and method' and 'irrigation management' were the practices of potato cultivation in which potato growers had highest knowledge (93.33 mean score each) and ranked first. The other practices in which potato growers had higher knowledge (mean score greater than overall knowledge mean score) were: land preparation (91.43 mean score), earthing up (87.17 mean score), recommended variety (86.67 mean score), harvesting (85.00 mean score), spacing (82.50 mean score), seed rate (81.67 mean score), basal application of chemical fertilizers (80.00 mean score) and were ranked second, third, fourth, fifth, sixth, seventh and eighth, respectively.

Table 3 Practice-wise knowledge of potato growers about improved potato production technology (n=120)

Sr. No	Potato production technology	Mean score	Rank
1.	Recommended variety	86.67	IV
2.	Land preparation	91.43	II
3.	Seed rate	81.67	VII
4.	Seed treatment	75.00	X
5.	Sowing time and method	93.33	I
6.	Spacing	82.50	VI
7.	FYM	76.67	IX
8.	Basal application of chemical fertilizers	80.00	VIII
9.	Top dressing of chemical fertilizers	74.00	XI
10.	Earthing up	87.17	III
11.	Weed control	68.33	XIII
12.	Irrigation management	93.33	I
13.	Insect -pest control	72.50	XII
14.	Disease control	66.00	XIV
15.	Crop rotation	60.00	XV
16.	Harvesting	85.00	V
	Overall Knowledge Mean Score	79.10	

The remaining potato cultivation practices which received knowledge mean score below the overall knowledge score (79.10 mean score) were: FYM (76.67 mean score), seed treatment (75.00 mean score), top dressing of chemical fertilizers (74.00 mean score), insect-pest control (72.50 mean score), weed control (68.33 mean score), disease control (66.00 mean score) and crop rotation (60.00 mean score) and ranked

ninth, tenth, eleventh, twelfth, thirteenth, fourteenth, fifteenth, respectively.

From the above discussion, it can be concluded that sowing time and method, irrigation management, land preparation, earthing up, recommended variety, harvesting, spacing, seed rate and basal application of chemical fertilizers were the practices in which potato growers had higher knowledge.

Adoption level

The details regarding extent of adoption of recommended potato production technology is presented in Table- 4.

It is clear from Table 4 that majority (70.83 %) of the potato growers had medium extent of overall adoption of recommended potato production technology followed by 15.83 per cent and 13.44 per cent of the potato growers who had low and high extent of overall adoption, respectively

Table 4 Distribution of the potato growers according to their extent of adoption regarding recommended potato production technology

Sr. No.	Extent of adoption	Frequency	Percent
1.	Low	19	15.83
2.	Medium	85	70.83
3.	High	16	13.44
	Total	120	100.00

Mean= 70.97 SD = 5.99

From the above table, it is clear that majority of the potato growers had medium extent of adoption regarding recommended potato production technology. The possible reason for medium adoption by the majority of potato growers might be their medium knowledge. Further, majority of the potato growers had small to semi-medium landholding hence they might have faced constraints in adopting recommended potato cultivation technology.

This finding is in the line with the findings reported by Parakash *et al.* (2003).

Table 5 The practice-wise adoption of recommended potato production technology by potato growers

(n=120)

Sr. No.	Recommended practices	Mean Score	Rank
1	Recommended variety	76.15	V
2	Land preparation	69.27	X
3	Seed rate	75.17	VII
4	Seed treatment	72.27	IX
5	Sowing time and method	80.17	IV
6	Spacing	81.19	III
7	FYM	66.24	XI
8	Basal application of chemical fertilizers	73.15	VIII
9.	Top dressing of chemical fertilizers	64.23	XII
10.	Earthing up	85.23	II
11.	Weed management	60.10	XIV
12.	Irrigation management	86.57	I
13.	Insect-pest control	61.19	XIII
14.	Disease control	56.80	XV
15.	Crop rotation	52.19	XVI
16.	Harvesting	75.51	VI
	Overall mean score	70.97	

Table 5 shows that among the different recommended potato production technologies, irrigation management technology had the highest adoption (86.57mean score) among the potato growers and ranked first. The other potato production practices in which potato growers had higher adoption (mean score greater than overall mean score) were: earthing up (85.23 mean score), spacing (81.19 mean score), sowing time and method (80.17 mean score), recommended variety (76.15 mean score), harvesting (75 51 mean score), seed rate (75.17 mean score), basal fertilizers (73.15 mean score) and seed treatment (72.27 mean score) and were ranked second, third, fourth, fifth, sixth, seventh, eighth, and ninth, respectively.

While, low extent of adoption of technology was observed in remaining practices having score below overall mean score (70.97 mean score). These practices in descending order were: land preparation (69.27 mean score), FYM (66.24 mean score), top dressing of fertilizers (64.23 mean score), insect-pest control (61.19 mean score), weed management (60.19 mean score), disease control (56.80 mean score) and crop rotation (52.19 mean score)

Relational Analysis

The correlation analysis was carried out to find out whether the selected characteristics of potato growers had any association with their

extents of adoption of recommended production technology.

Table 6 Association between the extents of adoption of recommended Production technology by the potato growers and their selected characteristics

(n=120)

Sr. No.	Independent Variable	Correlation Coefficient ('r' value)
1	Age	0.2149*
2	Education	0.2091*
3	Size of family	0.1498
4	Social participation	0.1433
5	Land holding	0.1004
6	Annual income	0.2166*
7	Extension participation	0.2435**
8	Method of irrigation	0.1868*
9	Cropping pattern	0.1009
10	Innovative proneness	0.2483**
11	Risk orientation	0.2041*
12	Level of knowledge	0.8476**

It is apparent from the Table 6 that the independent variables *viz.*, age, education, annual income, extension participation, method of irrigation, innovative proneness, risk orientation and level of knowledge had positive and significant correlation with adoption of recommended crop production technology by potato growers. While, the variables like size of family, social participation, land holding and cropping pattern positive and not-significant relationship with adoption of recommended crop production technology by the farmers.

CONCLUSION

From the aforesaid discussion, it can be concluded that majority (61.67%) of the potato growers had medium level of knowledge regarding recommended practices of potato. With regards to practice-wise knowledge, sowing time and method, irrigation management, land preparation, earthing up, recommended variety, harvesting, spacing, seed rate and basal application of chemical fertilizers were the practices in which potato growers had higher knowledge. While in case of adoption, majority (70.83 per cent) of the potato growers had medium extent of adoption of recommended production technology of potato. The important practices having higher adoption were: irrigation management (86.57 mean score), earthing up (85.23 mean score), spacing (81.19 mean score), sowing time and method (80.17 mean score), recommended variety (76.15 mean score), harvesting (75 51 mean score), seed rate (75.17 mean score), basal fertilizers (73.15 mean score) and seed treatment (72.27 mean score). The variables *viz.*, age, education, annual income, extension participation, method of irrigation, innovative proneness, risk orientation and level of knowledge were having positive and significant association with adoption of recommended crop production technology by potato growers.

REFERENCES

Kadu, B. D. and Saiyad, A. S. 2009. A study on adoption of recommended production technology of brinjal by brinjal growers in Anand district of Gujarat state. M.Sc. (Agri.) Thesis, Gujarat Agricultural University, Anand.

Mate, P. S. 2005. Study of knowledge and adoption of recommended potato cultivation practices by the farmers in Pune district. M.Sc. (Agri.) thesis, M.P.K.V., Rahuri.

Parakash, V., Harish Chandra Singh and Prajapati M. K. 2003. Adoption extent of rice glowers regarding rice production technology. *Raj. J. Extn. Edu.* **11**: 55-58.

Patel, V. A., Prajapati, M. R., Joshi K. M., Chaudhari, N. V. and Soni, M. C. 2000. Adoption of recommended dry farming technology of Cotton in North Gujarat. *Guj. J. Ext. Edu.* X&XI: 32-36.

Rathod, J. J. 2009. A study on adoption of recommended plant protection measures by chilli growers in Anand district of Gujarat state. M.Sc. (Agri.) Thesis, Gujarat Agricultural University, Anand.

Singh, S. K. and Lal, S. S. 2012. Effect of potassium nutrition on potato yield, quality and nutrient use efficiency under varied levels of nitrogen application. *Potato. J.*, **39** (2):155-65.

Verma, R. B., Kumar, A. and Pathak, S. P. 2013. Studies on nutrient management in potato. *Potato. J.*, **40** (1): 72-75.