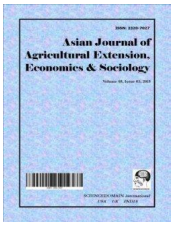

Asian Journal of Agricultural Extension, Economics & Sociology

24(4): 1-5, 2018; Article no.AJAEES.41018
ISSN: 2320-7027

Adoption of Precision Technologies in Bitter Gourd (*Momordica charantia* L.) Cultivation at Thottiyam Block of Tiruchirappalli District

V. Dhanushkodi[1*], K. Padmadevi[1] and M. Ravi[1]

[1]ICAR-Krishi Vigyan Kendra, Sirugamani, Tirchirappalli -639 115, Tamil Nadu, India.

Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJAEES/2018/41018
Editor(s):
(1) Fotios Chatzitheodoridis, Professor, Department of Agricultural Technology-Division of Agricultural Economics, Technological Education Institute of Western Macedonia, Greece.
Reviewers:
(1) Raúl Leonel Grijalva Contreras, Instituto Nacional de Investigaciones Forestales, México.
(2) Kunu Etornam Kwame, Ho Technical University, Ghana.
Complete Peer review History: http://www.sciencedomain.org/review-history/24367

Original Research Article

Received 12th February 2018
Accepted 21st April 2018
Published 28th April 2018

ABSTRACT

Available agricultural technology does not serve its purpose till it reaches and adopted by it ultimate users, the farmers. The present study was conducted in Thottiyam block of Tiruchirappalli district to assess the adoption of precision technologies in bitter gourd cultivation. Totally 90 farmers were selected for the study. A schedule was developed to know the adoption level of the bitter gourd cultivation through precision technologies and the adoption level was ranked based on the adoption status. From this study high extent of adoption of precision technologies viz., field preparation specified farm implements, recommended spacing, neem cake application at last ploughing, stakes to reach the pandal, growth regulators (ethrel 100 ppm) spray to increase fruit setting and marketing through integrated approach (Rank I) in bitter gourd cultivation was observed among the Krishi Vigyan Kendra adopted farmers compared to the non adopted farmers. It was concluded that the technology transformation tools like farmers field school, demonstration, training and exposure visit are effective to enhance the production and productivity of crops.

Keywords: Adoption; farmers; bitter gourd; precision technologies.

**Corresponding author: E-mail: dhanushselgi@yahoo.com.au;*

1. INTRODUCTION

The progress and prosperity of a nation to a very great extend depends on how for its agriculture sector is advanced and modernized. The goal of extension is to ensure that increased agricultural productivity is achieved by stimulating farmers to use modern and scientific production technologies developed through research and is to facilitate farmers' acceptance of innovative practices from research which should lead to increased output, productivity and income. The objective of any extension system is to be effective in communicating information that helps people in decision-making [1]. It is recognized as the main link between the farmers and research and crucial in communicating improved practices needed in agricultural development [2]. Research and extension should be closely linked in order to contribute appreciable and sustainable increase in food production. This agrees to which states that improved agricultural extension management system is recognized as a central mechanism to achieving increased food productivity through technology transfer [1].

Adoption of improved and innovative technology by the majority of agriculturist is a pre-requisite to agriculture development in the developing countries like India, where the economy is mainly based on agriculture sector [3]. The full scale application of technologies is considered as adoption. A farmer is to understand, analyze and satisfy before implement of technologies. Technology adoption is a graded process in which a farmer has to pass through different stages like awareness, interest, evaluation, training and adoption. Adoption is a holistic process wherein farmer has to understand the intrinsic as well as extrinsic factors effecting the technology adoption[4]. This agrees to which states that improved agricultural extension management system is recognized as a central mechanism to achieving increased food productivity through technology transfer [1].

Precision technology is a location specific, field specific and crop specific approach and being one of the important noval technique for horticultural crops. The objective is optimization of inputs use to facilitate optimal output resulting in saving of valuable resources like water and energy. Bitter gourd (*Momordica charantia* L.) is one of the important vegetable crops cultivated in more than 25ha of Thottiyam block of Tiruchirappalli district. The study was undertaken to know the adoption level of precision production technologies in bitter gourd cultivation by the Krishi Vigyan Kendra (KVK) adopted farmers.

2. MATERIALS AND METHODS

Ex-post facto research design combined with exploratory type of research design was used as the selected phenomena have already occurred and the researcher had no control over the same. Krishi Vigyan Kendra, Sirugamani, Tiruchirapppalli along with its adopted farmers under demonstration, training and exposure visit programme in Thottiyam block was selected for the study. A sample of 60 vegetable growing KVK adopted farmers under various demonstration, training and exposure visit programme, who were adopting recommended precision technologies and 60 vegetable farmers who did not adopt precision technologies were selected from the KVK operational villages. Apart from that under Tamil Nadu Agricultural University (TNAU), National Agricultural Development Projects (NADP) and Indian Council of Agricultural Research (ICAR) programmes etc., were implemented on precision technology. A schedule was developed to know the adoption level of the bitter gourd production technologies by the farmers which were measured on 3 point continuum i.e. fully adopted, partially adopted and non adopted with the scores of 3, 2, 1 respectively and ranked from I to X to express their adoption levels. Accordingly, the respondents were grouped on the basis of percentage.

3. RESULTS AND DISCUSSION

Figures in Tables 1 and 2 shows that majority (80%) of the adopted farmers had high extent of adoption, whereas majority (36%) of the non-adopted farmers had a low extent of adoption. Data in Table 2 indicated that ranks were assigned to all the technologies based on the total score obtained on each technology. The technologies on which the respondents had high extent of adoption were field preparation with chisel plough, cultivator and leveling, recommended seed rate with spacing, neem cake application, growth regulator spray, staking and marketing through integrated approach were ranked 1st followed by the seed treatment and soil test based fertilizer application, respectively, whereas, most of the non adopted KVK farmers opt for practices like growth regulator spray 1st followed by timely weeding (2nd), staking, (3rd), respectively. KVK adopted farmers in bitter gourd cultivation had high adoption of tillage practices,

Table 1. Extent of adoption level of precision technologies

Category KVK	KVK adopted farmers (n=60)			KVK Non adopted farmers (n=60)		
	Low (33-55)	Medium (56-78)	High (79-100)	Low (33-55)	Medium (56-78)	High (79-100)
Frequency	7.0	4.2	48	10.8	5.4	13.8
Percentage	12	8	80	36	18	46

Table 2. Extent of adoption of precision technology in bitter gourd cultivation by KVK adopted farmers (AF) and non adopted farmers (NAF

S. No	Production technology	Extent of adoption (AF) %			Mean score	Rank	Extend of adoption (NAF) %			Mean score	Rank
		FA[a]	PA[b]	NA[c]			FA[a]	PA[b]	NA[c]		
1.	Field preparation: Ploughing with chisel, disc, rotovator and cultivator and leveling	95	2	3	2.85	I	76	15	9	2.28	III
2.	Polythene bag nursery with 1.8 kg/ha of seed rate	7	15	78	0.21	X	47	24	30	1.41	VI
3.	Seed treatment with *Pseudomonas fluorescens* @ 10 g or carbendazim @ 2 g/kg	85	12	3	2.55	II	9	25	66	0.27	X
4.	Spacing : Pits with 30 cm x 30 cm x 30 cm size at 2 x 1.5 m spacing	98	2	0	2.94	I	19	55	26	0.57	IX
5.	Man field : Application of *Azospirillum* and *Phosphobacteria* 2 kg/ha and *Pseudomonas* @ 2.5 kg/ha	75	13	12	2.25	III	7	13	80	0.21	X
6.	Neem cake: FYM 50 kg and neem cake @ 100 kg before last ploughing	95	5	0	2.85	I	28	15	57	0.84	VIII
7.	Fertilizer application: Based on soil te*sting through drip*	86	14	0	2.58	II	21	13	76	0.63	VIII
8.	Weeding: Hoe and weed thrice.	65	8	27	1.95	IV	59	24	27	1.77	V
9.	Stakes: For the plants to reach the pandal (2 m).	100	0	0	3.00	I	65	12	23	1.95	IV
10	Growth regulators Ethrel 100 ppm (four times from 15th DAS)	100	0	0	3.00	I	99	1	0	2.97	I
11	Integrated Pest Management:	76	18	6	2.28	III	13	9	78	0.39	IX
12	Integrated Disease Management :	74	10	16	2.22	III	5	18	77	0.15	X
13	Marketing: Integrated approach	91	4	5	2.73	I	19	21	60	0.57	IX
	Average	80.54	7.92	11.54	2.42	II	35.92	18.85	46.85	1.08	IX

[a] *fully adopted* [b] *partially adopted* [c] *non adopted*

fertilizer management, staking and growth regulator application at critical stages, marketing their produce through integrated approach etc. The results were in tune with the finding of [5].

The reasons for high extent of adoption on the above technologies is KVK scientists envisaged the bitter gourd farmers by conducting series of training, demonstrations by practically involving in the operation area to farmers. KVK scientists also conducted farmer–scientist interactions, field days and group discussions programmes which facilitate the high extent of adoption of the above technologies. In fertilizer application through fertigation technique, Integrated Pest Management (IPM) and Integrated Disease Management (IDM), KVK conducted many demonstration training and exposure visit on this technology for five years under TNAU and NADP projects etc., for spreading this doable technology in vegetable cultivation for the benefit of the farming community. Given wide publicity through electronic and print media, publishing booklets, which helped the farmers for high extent of adoption in fertigation with IPM and IDM practices. [6] also expressed the same views that education, extension contact, motivation, innovativeness and understanding of technologies were also influenced the adoption.

Most of the farmers in the non adopted area had high extent of adoption on fertilizer management with over dose of inorganic fertilizers, over usage of inorganic pesticides for pest management etc. The reasons for high extent of adoption on above technologies might be that fellow adopted farmers influenced and motivated the non adopted farmers. Some of the non adopted farmers were also participated in various extension activities, electronic and print media also facilitated the non adopted farmers to adopt the above technologies. The non adopted farmers had the lowest extent of adoption on soil test based fertilizer application, IPM and IDM due to lack of awareness, motivation and inspiration. Similar views were expressed by [4]. The reasons for high extent of adoption of precision technologies envisaged the farmers by conducting series of awareness programmes for the benefit of farming community, which facilitated high extent of adoption of precision technology. The finding of the present study is in accordance with the findings reported by [7].

4. CONCLUSION

On the basis of the above findings, it can be concluded that the Technology transformation plays a central role in gain in knowledge and skill of farmers. The investigation has revealed that KVK intervention in conducting training, technology assessment and conduction of demonstration in the farmer's field, exposure visit related to seed to seed helped them in overall knowledge of crop production practices. High extent of adoption of precision technology in bitter gourd cultivation was seen among the farmers adopted by the KVK Sirugamani compared to the non adopted farmers. This could be due to the multiplicity of the transfer of technology mechanisms followed by the KVK scientists in the operational areas especially for the benefit of farmers and adoption of such précised technologies in vegetable cultivation calls for the conduct of such awareness programmes under the transfer of technology by KVKs or extension centers.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Abiola Matthew Oladipupo, Omoregbee Friday Egbenayabuwa, Caroline Sede. Effect of T&V innovation on income and farmers performance in Edo State Nigeria. American Journal of Agriculture and Forestry. 2014;2(4):159-167.
2. Rivera WM, Cary JW. Privatizing agricultural extension. In Swanson, B. E., Bentz, R. P., & Sofranko, A.J. (Eds). Improving Agricultural Extension: A Reference Manual. FAO, Rome. 1997; 203-211.
3. Manoj A, Vijayaragavan K. Impact of farmers field school on farmer's knowledge of integrated crop management practices in paddy. Indian Res. J. Ext. Edu. 2014; 14(1):5-10.
4. Venkateshwar Rao N, Jain PKN, Kishor Kumar, Jagan Mohan Reddy M. Adoption of maize *(Zea mays L)* production technologies in Karimnagar District of Telangana. J Krishi Vigyan. 2017;5(2):1-4.
5. Kharatmol. Impact of trainings conducted on vermicompost by Krishi Vigyan Kendra, Bijapur. M. Sc. (Ag.) Thesis, Univ. Agric. Sci., Dharwad; 2006.

6. Sali JR, Mokhale SU, Padekarand DG, Rajput HK. Adoption of soil test recommendations by the farmers. An Asian Journal of Soil Science. 2016;11(2): 358-360.

7. Yadav VP, Raman RS, Kumar R. Knowledge and attitude of farmers towards soil testing practices. Indian Res. J. Extn. Edu. 2006; 6(3):1-3.

Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sciencedomain.org/review-history/24367