



Impact of interventions on knowledge and adoption of improved technologies in Ber cultivation in western Rajasthan

B.R. Morwal*, P. Pagaria**, H.D. Choudhary** and S. Das*

*Krishi Vigyan Kendra, Barmer-I, (Rajasthan) 344001

**Krishi Vigyan Kendra, Barmer-II, (Rajasthan) 344031

E-mail- haridayal.choudhary@gmail.com

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Abstract

Barmer district of Rajasthan has the potential of growing Ber in an area of more than 450 ha under open/tube well irrigation system and rainfed. The farmers were lacking in technical knowhow about improved technologies in Ber cultivation. The present study was conducted during 2017 to ascertain the knowledge gain and adoption level of thirteen specific technologies demonstrated through various interventions by the KVK during earlier years. Barmer, Chohatan, Baytoo, Balotra, and Gudamalani blocks of Barmer District were taken for study and the respondents were randomly selected at the rate of 20 beneficiary farmers per block. The data were collected through personal contacts (interview) with well-designed questionnaire. The data revealed that the gain in knowledge was more than 50 per cent for technologies viz., time and method of pruning in (training & pruning) of ber (72 %), use of micronutrient (68%), plant protection techniques (spray of insecticide to manage fruit fly), time of planting (65%), method of manure and fertilizer application (58%), drip irrigation (54%) and recommended dose of fertilizer (51%). Similarly, time and method of pruning, plant protection techniques and recommended dose of fertilizer recorded the highest extent of adoption, 63, 56 and 19 per cent, respectively. This could be due to the easiness and effectiveness of technologies in field application and yield enhancement. Though the acquisition of knowledge for the technologies like value addition (58%), Use of micronutrient (68%) and drip irrigation (62 %), was high, the number of farmers adopting these technologies were very low i.e. 31, 25 and 13 percent respectively due to the various reasons.

Key words: Adoption, Ber, knowledge, technology dissemination, time & method of pruning

Introduction

Barmer district of Rajasthan is located in extreme arid zone of Thar Desert in western part of Rajasthan which has the potential of cultivating green gram, moth bean, pearl millet and cluster bean are the major rainfed crops raised in sandy loam soils during monsoon season. Cumim and isbgol are the major irrigated crops while ber, pomegranate, date palm and lasora (Gunda) are the important arid fruit crops. The literacy level of farmers and the technical know-how on advanced crop production practices was poor.

Indian ber or jujube (*Ziziphus mauritiana* Lam.) a member of family Rhamnaceae is one of the most ancient cultivated fruit tree grown in north Indian. Particularly, Punjab, Haryana and Rajasthan. The total area under ber in India is more than 49,000 ha with an annual production of 4, 81,000 tons fruits (Horticulture data base, 2017). However, over the year, ber trees start giving diminished yield and smaller fruits of inferior quality after bearing normal crops of 25-30 years. Besides, a large number of seedling plantations of *Ziziphus rotundifolia* also exist in western arid region of Rajasthan and other regions. Three varieties, viz., Seb, Gola and Mundia have been recommended for the arid areas of

western part of Rajasthan.

Ber is mainly cultivated in 5 blocks of Barmer district viz., Barmer, Chohata, Baytoo, Sindhari and Gudamalani under open or bore wells and same area in canal irrigation under drip Irrigation. The important varieties under cultivation are Gola, CAZRI Gola, Seb, Umran, Tikadi, Illaichi, Chuhara, Mundia, Aliganj and Jogiya etc. for domestic use and also for export purposes. Therefore farmers were less assured of their crop due to the socio economic factors viz., less affordability towards high cost of inputs, biotic and abiotic stresses.

The KVK focused its extension activities in the five ber growing blocks of Barmer district from 2014-15 to 2017-18 to improve the knowledge level of farmers and adoption of advanced production technologies pertaining to ber cultivation. The KVK demonstrated various technologies through series of interventions in the form of trainings, front line demonstrations, on farm trials, exposure visits, etc. The present study was undertaken to ascertain the gain in knowledge level among the respondents and to study the adoption level of various interventions on ber cultivation and also to find out the reasons for non-adoption of certain

technologies and to suggest suitable alternatives to enhance the income level out of ber cultivation.

Materials and Methods

Most of the interventions were carried out in 15 blocks of Barmer district, but only five blocks viz., Barmer, Chohtan, Baytoo, Sindhari and Gudamalani were selected for the study, as these block consider hub of ber cultivation in Barmer district. For the selection of respondents, a list of beneficiaries of various programmes of KVK during last three years (2014-15 to 2017-18) was prepared. Out of 245 beneficiaries, randomly 20 farmers were selected each block from Barmer, Chohatan, Baytoo, Sindhari and Gudamalani taking sample of 100 farmers. A questionnaire was prepared and the data were collected through personal interviews with the respondents. The data were processed, tabulated, classified and analyzed in terms of percentage. Total ten package practices were selected to evaluate the farmers' extent of knowledge gained and adoption of ber production technologies as results of various intervention viz., trainings, method demonstrations, front line demonstrations (FLDs), diagnostic visits, advisory services, exposure visits etc..

Results and Discussion

Gain in knowledge

The data presented in table 1 reveals that gain in knowledge on various technologies is based on the series of KVK intervention. The highest gain of 72 per cent was observed in pruning time & method of pruning to improve the yield and quality of ber fruit. This could be due to the frequent trainings and demonstrations conducted by the KVK and because of the easiness of technology in field application. This is in consonance with the findings of Singh *et al.* (2014). Use of micronutrient recorded the knowledge gain to the tune of 68 per cent. Sixty five per cent gain in knowledge was observed towards use of plant protection techniques (spray of insecticide to manage fruit fly) to improve the quality of fruit

by avoiding insect pest mainly fruit fly in ber this was in agreement of De Groote *et al.* (2004) and Alagukannan *et al.*, (2015). Method of fertilizer application along with FYM to the ber plants recorded the knowledge gain of 58 per cent, as it is very effective, cheaper and easily available. Drip irrigation, recommended dose of fertilizers, value addition (grading), selection of variety and planning and layout of orchard gain in knowledge was observed towards 54%, 51%, 48%, 42% and 38%, respectively. The least gain in knowledge was observed for time of planting as the 61 per cent of the farmers knew the best planting season (July-August) and rest of the 23 per cent of the respondents alone understand the need of July-August this finding of study were in agreement with Alagukannan *et al.*, (2015). These findings were in agreement with Joseph (2008) who reported that the knowledge levels were found to be increased for weeding, fertilizer application, plant protection measures and harvesting practices of maize after attending the training programmes. This might be due to the fact that they were convinced through training programmes about ber production technology by KVK which were designed to import latest knowledge through work experience.

Knowledge with Adoption of Technologies

Extent of adoption

The data (Table 2) revealed that 63 per cent of the farmers adopted time and method of pruning in ber followed by 56 per cent of the farmers adopt the integrated pest management approach for management of fruit fly, 52 per cent of the farmers adopted recommended dose of fertilizer, 45 per cent farmer adopt the selection of improve cultivars of ber, 41% respondent adopt the method of fertilizer and manure application, 36% farmers adopt planning and layout of orchard, 26 percent famers were adopted time of planting season, 23% farmer adopt the value addition and least adoption of drip irrigation was only by 9% of farmers. These

Table 1. Gain in knowledge with respect to ber cultivation due to the intervention of KVK

(n=100)			
No. of Technology	Knowledge level (%)		
	Before KVK intervention	After KVK intervention	Gain in Knowledge
Planning and layout of orchard (selection of site method of planting)	30	68	38
Selection of varieties viz., Gola, Seb, Umran, etc.	38	80	42
Time of planting (June-July)	61	84	23
Method of manure fertilizer application	18	76	58
Recommended dose of fertilizer	20	71	51
Use of micronutrients	00	68	68
Time & method of pruning (training & pruning)	08	80	72
Drip irrigation	08	62	54
Plant protection (spraying of insecticide to manage Fruit Fly)	26	91	65
Value addition (grading)	10	58	48

findings were in agreement of Meena and Gupta, (2016), Tandel *et al.*, (2015) and Borate *et al.*, (2012).

Knowledge Acquisition Vs Extent of adoption

The gain in knowledge depends on various factors like easiness of technologies, educational background of the participating farmers, extension approaches handled in technology transfer, farmers' attitude, ability of extension personnel, teaching and learning situation etc. Likewise the extent of adoption of a particular technology relies mainly on easiness and usefulness of the technology besides the socio-economic status, access to the technological inputs etc. Fig.1 reveals the percentage of respondents acquired knowledge on different technologies after KVK intervention and percentage of adoption of ten specific technologies taken for the present study. The present study on percentage gain in knowledge and percentage adoption could certainly generate some useful information for future line of study or the changes needed in existing system of cultivation of ber techniques. About plant protection, 91 per cent of the respondents gained knowledge on advantage of management of fruit fly it was adopted by 77 per cent of the respondents. The similar trend was also noticed in the case of proper time of planting the knowledge gain and extent of adoption was 84 and 77 per cent, respectively. From the data it was evident that the farmers realize the importance of plant protection and time of planting. Present study also

supported by Algukannan *et al* (2014).

In contrary to that selection of varieties of knowledge gain and extent of adoption was 80 and 72 percent it was clear that, they acquire knowledge on first generation selection of varieties tools like varieties Gola, Seb and Umran. Similarly the gain in Knowledge in respect time & method of pruning was high (80%) but only 68 per cent of farmers used time and method of pruning in ber orchard. From the interviews made with the respondents, and its practical utilities but they could not adopt it because of their fodder requirement for sheep and goat as sheep and goat rearing is the backbone of agriculture in Barmer district.

The other technologies like application of use of method of manure and fertilizer application, recommended dose of fertilizer, use of micro nutrient, drip irrigation and value addition also adoption among the participating farmers by the various interventions of KVK. In contrary to that the knowledge acquired by the beneficiary farmers was high but its adoption was less for the technologies. This implies that still more awareness on this technology has to be imparted to the farmers and the easy availability of the fruit over in right time should be ensured. This kind of technology would be of promising in getting premium prices for their quality clean fruits as it is being exported directly.

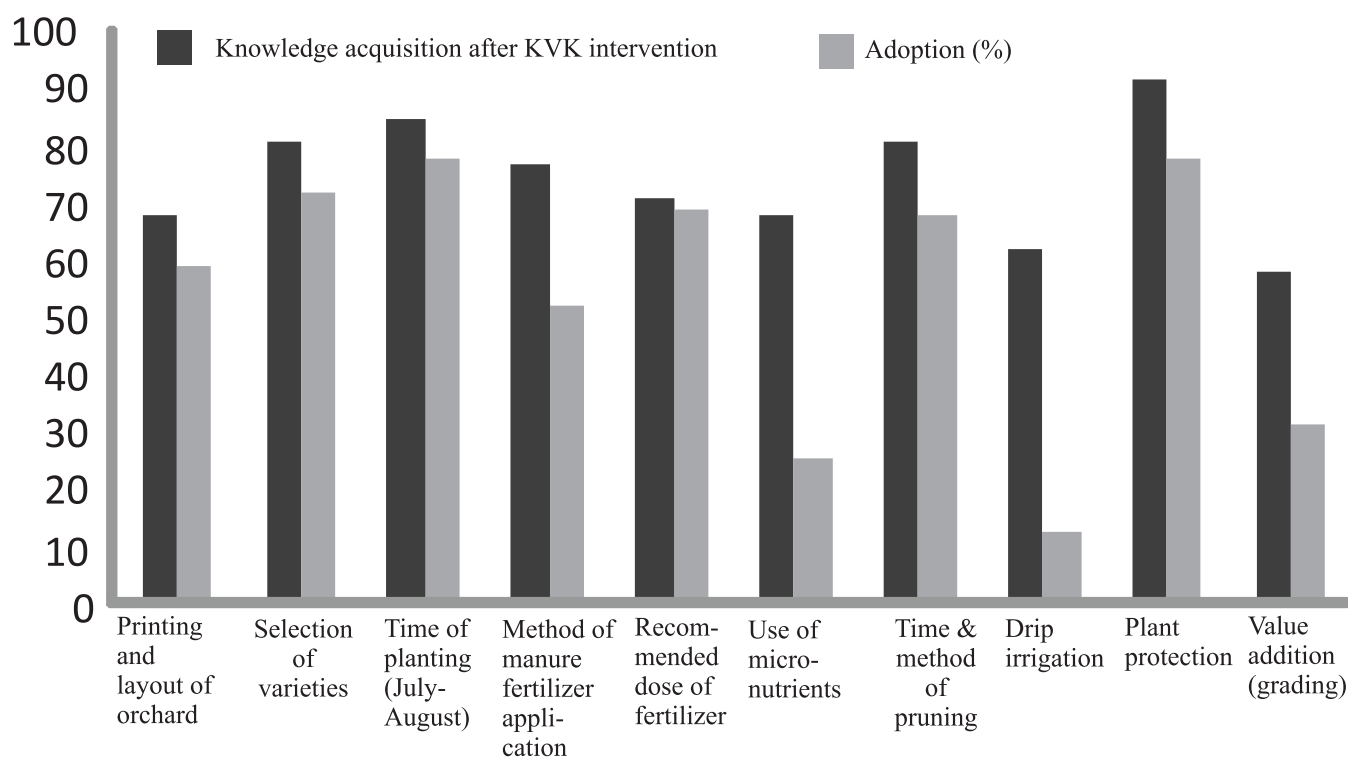


Fig. 1: Knowledge with Adoption of Technologies in ber Cultivation

The findings of the present study reveals that the interventions of KVK, certainly facilitated the knowledge acquisition by the farmers and adoption at higher level in ber cultivation with respect to the technologies viz., proper time of planting, selection of planting material such as varieties viz. Seb, Gola and Umran, time of fertilizer application method of manure and fertilizer application, recommended doses of fertilizer, use of micro nutrient application, time & method of training pruning, drip irrigation, plant protection (spraying of insecticide to manage fruit fly) and value addition (grading) in ber orchard, The present study also suggests the need of alternatives or further refinement for the technologies like time & method of pruning and use of micronutrient some more awareness is required on use of ber production techniques.

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