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Impact Assessment of KVK's Interventions on Groundnut Cultivation with special reference to IPDM practices in Ariyalur District of TamilNadu

Agricultural Science

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ABSTRACT

Ariyalur district of Tamil Nadu has the potential of growing Groundnut in area of more than 28,500 ha. The farmers were lacking in technical know how about Integrated Pest and Disease Management (IPDM) in Groundnut cultivation. The present study was conducted to ascertain the knowledge gain and adoption level of twelve specific technologies demonstrated through various interventions of Krishi Vigyan Kendra. Two blocks in Ariyalur district were taken for study with 100 respondents by personal interview with questionnaire. The study revealed that the gain in knowledge was more than 50 per cent for seed treatment with Trichoderma viride @ 10g/ha of seed (54%). Similarly, seed treatment with T.viride recorded the highest extent of adoption (56%). This could be due to the easiness and effectiveness of technologies. The adoption percentage was lower for some of the technologies for that it is suggested to improve the extension approaches to teach the farmers. Besides the non-availability of inputs is also a reason for its non-adoption. Availability of inputs have to be ensured to improve its adoption and thereby the improved livelihood of farmers.

Introduction

Ariyalur district of Tamil Nadu is located in North eastern part of Tamil Nadu which has the potential of cultivating wet land, garden land and rainfed crops. Paddy is the major wet land cop while groundnut and blackgram are the important garden land crops. Pearlmillet, maize, cashew and cotton are the rainfed crops raised in red sandy loam and black cotton soils during north east monsoon season. The literacy level of farmers and the technical know-how on advanced crop production practices was poor due to the lack of resource centres like KVK or Regional Agricultural Stations sd yhr District has been recently bifurcated from Perambalur District during 2008. The Krishi Vigyan Kendra was established by the reputed NGO – Centre for Rural Education and Economic Development (CREED) under the guidance and financial support of Indian Council of Agricultural Research, New Delhi during the year 2009 to cater the needs of farmers of Ariyalur district.

Groundnut is an important oilseed crop cultivated in an area of more than 17,500 ha in rabi season (November-December) under garden land condition mainly in five blocks of Ariyalur district viz., T.Palur, Jayankondam, Andimadam, Ariyalur and Sendurai with borewell irrigation. The important varieties under cultivation are Gujarat, VRI2, JL24 for domestic use and also for local marketing. The groundnut farmers were less assured of their crop due to the socio factors viz., less affordability towards high cost of inputs, biotic and abiotic stresses, improper marketing structure etc.

The CREED KVK focused its extension activities in the five blocks of Ariyalur from 2009-10 to 215-16 to improve the knowledge level of farmers and adoption of advanced Integrated pest and disease management technologies pertaining to groundnut cultivation. The KVK demonstrated various IPM technologies through series of interventions in the farm 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 groundnut 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 Groundnut cultivation.

Materials and Methods

Though most of the interventions were carried out in five blocks, but only two blocks viz., T.Palur and Andimadam were selected for the study. For the selection of respondents, list of beneficiaries if various programmes of KVK during last six years (2009-10 to 215-16) was prepared. Out of 1200 beneficiaries, only 100 farmers were selected by simple random sampling procedure from T.Palur and Andimadam with 50 farmers from each block. A questionnaire was prepared and the data were collected through personal interviews with the respondents. The data collected were processed. Tabulated, classified and analysed interms of percentage, Totally 11 practices were selected as criteria to evaluate the farmers for extent of knowledge gained and adoption of groundnut integrated pest and disease management technologies as results of various intervention viz., trainings, method demonstrations, Front Line Demonstrations (FLDs), On Farm Trials (OFTs), diagnostic visits, advisory services, exposure visits, radio talks and popular articles.

Results and Discussion

Gain in knowledge

Most of the farmers were traditional in nature and has less access to resource centres like KVK before the inception of CREED KVK during 2009. It is presumed that the knowledge of a farmers to a larger degree relies upon the extent of exposure given to them through tools like trainings, demonstrations, exposure visits, etc.

The data presented in Table 1 reveals the increased knowledge gain on various technologies of IPM due to the series of intervention of KVK. The highest gain of 54 percent was observed in knowledge on seed treatment with *Trichoderma viride* @ 10g/kg. of seed to control the seed borne disease like root rot and stem rot. This could be due to the frequent trainings and demonstrations conducted by the KVK and because of the easiness of technology in seed treatment. This is in consonance with the findings of Changadeya et al., (2012).

Installation of pheromone traps @5/ha for monitoring and trapping of *Sopdoptera .litura* and *Helicoverpa armigera* recorded the knowledge gain to the tune of 46 per cent and it could be due to the trainings and method demonstration organized by KVK at the

farmer's field under Farm Field School programme. This also support the findings of Dubey *et al.* (2008). The beneficiary farmers realized the usefulness of the technology by seeing the performance of groundnut crop under IPM measures followed filed and by interaction with the successful farmers. Forty percent gain in knowledge was observed towards soil application of *Trichoderma viride* 10kh/ha. to avoid the soil borne diseases like dry root rot, stem rot, leaf spot and rust.

Need based application of Imidacloprid 17.8% SL @120 ml/kg to groundnut field recorded the knowledge gain of 38 percent as it is very effective, cheaper and easily available. The least gain in knowledge was observed for crop rotation as the 32 percent of the farmers knew the crop rotation and the rest of the 20 percent of the respondents alone understand the need of crop rotation after KVK's intervention. The technologies viz., Installation of light trap @1 No./5 ha, collection and destruction of egg masses and spraying of Hexaconazole 5% EC in 15 days interval revealed 30 percent of knowledge of gain due to the interventions of KVK as the exposure to these technologies might be less.

Extent of Adoption

The data (Table 2) revealed that 56 percent of the farmers adopted seed treatment with *Trichoderma viride* @10g/kg of seed, 44 percent of the farmer installation of each pheromone traps @5/ha and 42 percent of the farmers adopted spraying of Hexaconazole 5% EC. The reason for higher adoption of these technologies could be the beneficial effect of these technologies to control seed borne diseases and pests and thereby increased level of income. Seed treatment, installation of pheromone trap and spraying of Hexaconazole technologies to control the pest and diseases resulted in high yield and hence the farmers is impressed upon this technology and its adoption was also high. Likewise, the sucking pest and leaf defoliated are the major pest in groundnut cultivation and by series of intervention of KVK the spray of Imidacloprid @ 125ml/ha and spraying of chloripyriphos 20% EC recorded higher adoption percentage of 30.

Though the deep ploughing in summer is essential technique, 55 percent of the farmers were adopting this technology even before the KVK's intervention. It was noted that gain in knowledge about soil application of *T.viride* among the farmers was to an extent of 34 percent and its effects on control of soil borne disease like root rot, leaf spot and rust. Besides, it is effective, low cost and available throughout the year in KVK itself and it facilitated the farmers to use it regularly (Alagukannan and Srinivasan, 2014).

About 12 percent of the farmers were taking collection and destruction of egg masses before KVK's influence as it was effective and easy for control of leaf eating caterpillar. The farmers used to take the samples like pest and disease to the nearby agro centre and the shopkeeper recommends chemicals but after KVK's intervention, the farmers were familiar in handling the IPM in groundnut.

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 and its low cost. This is in accordance with the findings of Alagukannan *et al.* (2015) in Banana cultivation at Tuticorin District. The present study on percentage gain in knowledge and percentage adoption could certainly generate some useful information for future line of study or the charges needed in existing system of cultivation of groundnut.

About deep ploughing in summer season, 88 percent of the respondents gained knowledge on summer ploughing and it was adopted by 78 percent of the respondents. The similar trend was also noticed in the case of soil application of neem cake @ 250kg/ha. In contrary to that, crop rotation was known to the farmers to an extent of 52 percent after KVK trainings but its adoption was less (18 %). This could be due to preference of the farmers to the groundnut in terms of income over the other crops. Similarly the gain in knowledge in respect of installation of light traps was 42% but only 12 percent of farmers used installation of light trap due to non availability of light traps in local and high cost.

The other technologies like installation of pheromone trap, seed treatment with *Trichoderma viride*, spraying of Hexaconazole, Imidacloprid and Chloripyriphos exhibited the similar trend of comparatively higher level of acquisition of knowledge and 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 viz., collection and destruction of egg masses of leaf eating caterpillar and soil application of *T.viride*. This implies that still more awareness on this technology has to be imparted to the farmers and easy availability of *T.viride* in right time should be ensured.

Conclusion and Recommendation

The findings of the present study reveals that the interventions of CREED KVK, certainly facilitated the knowledge acquisition by the farmers and adoption at higher level in groundnut cultivation with respect to the technologies viz., summer ploughing, soil application of neem cake, installation of pheromone trap, seed treatment with *T.viride*, soil application of *T.viride*, spraying of Hexaconazole, Imidacloprid and Chloripyriphus to control various pests and diseases and to get higher yield. The present study also suggests the need of alternatives or timely availability of critical inputs like light traps could be ensured and some more awareness is required on use of light trap, crop rotation and collection and destruction of egg masses techniques. The extension system should be further invigorated using ICT tools to improve the knowledge acquisition and adoption of technologies in Groundnut cultivation at Ariyalur District.

Table 1. Gain in knowledge level with respect to IPDM practices in Groundnut cultivation due to the intervention of CREED KVK at Ariyalur District of Tamilnadu

Sl. No.	IPM Technology	Knowledge Level		
		Before KVK intervention	After KVK intervention	Gain in knowledge (%)
	a. Cultural practices			
1	Deep ploughing in summer to expose soil	60	88	28
2	Soil application of neem cake @200kg/ha	25	60	35
3	Crop rotation	32	52	20
	b. Mechanical practices			
4	Installation of light traps 1 No./5 ha.	12	42	30
5	Installation of each pheromone traps @5No./ha. for monitoring and trapping of *S.litura* and *H.armigera*	20	66	46
6	Collection and destruction of egg masses of leaf eating caterpillar	8	38	30
	c. Biological control of pest and diseases			
7	Seed treatment with *T.viride*10g/kg of seed	24	78	54

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8	Soil application of *T.viride* @10 kg/ha	20	60	40
	d. Chemical control			
9	Two spray Hexzaconazole 5% EC @1500 ml/500 lit. of water at 15 days interval	45	75	30
10	Need based application of Imidacloprid 17.8@ SL @125ml/ha. for managing sucking pest of Groundnut	32	70	38
11	Spraying of chloripyriphus 20%EC @1500ml/500 lit. of water for managing defoliators	48	80	32

Table 2. Change in adoption level with respect to IPDM practices in Groundnut cultivation due to the intervention of CREED KVK at Ariyalur District of Tamilnadu

Sl. No.	IPM Technology	Adoption Level		
		Before KVK intervention	After KVK intervention	Gain knowledge (%)
	a. Cultural practices			
1	Deep ploughing in summer to expose soil	55	78	23
2	Soil application of neem cake @200kg/ha	22	40	18
3	Crop rotation	3	56	18
	b. Mechanical practices			
4	Installation of light traps 1 No./5 ha.	10	22	12
5	Installation of each pheromone traps @5No./ha. for monitoring and trapping of *S.litura* and *H.armigera*	18	62	44
6	Collection and destruction of egg masses of leaf eating caterpillar	12	32	20
	c. Biological control of pest and diseases			
7	Seed treatment with *T.viride*10g/kg of seed	16	72	56
8	Soil application of *T.viride* @10 kg/ha	22	56	34
	d. Chemical control			
9	Two spray Hexzaconazole 5% EC @1500 ml/500 lit. of water at 15 days interval	38	80	42
10	Need based application of Imidacloprid 17.8@ SL @125ml/ha. for managing sucking pest of Groundnut	35	65	30
11	Spraying of chloripyriphus 20%EC @1500ml/500 lit. of water for managing defoliators	44	74	30

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