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A study on knowledge and adoption level of integrated crop management practices by the participants of farmers field school on maize*

The Farmer Field School (FFS) is a form of adult education, which evolved from the concept that farmers learn optimally from field observation and experimentation. It was developed to help farmers tailor their Integrated Pest Management (IPM) practices to diverse and dynamic ecological conditions. In regular sessions from planting till harvest , groups of neighboring farmers observe and discuss dynamics of the crop's ecosystems. Simple experimentation helps farmers to improve their understanding of functional relationship (e.g. pests-natural enemy population, dynamics and crop damage-yield relationship). In this clinical learning process, farmers develop the expertise that enables them to make their own crop management decisions. Special group activities encourage learning from peers, and strengthen communicative skills and group building. Maize is one of the important crops grown in different agro- climatic conditions. India ranks fifth position in the world with respect to area (66 mha) and seventh with respect to production (120 m tons) and Karnataka ranks fifth position in India in term of yield with 2.79 tons/ha (Vijay kumar 2008). Keeping this point in mind, an experimental study was conducted with the specific objectives i] to study the knowledge level of integrated crop management (ICM) practices by maize FFS participants ii] to study the adoption level of integrated crop management (ICM) practices by maize FFS participants

The present research study was conducted in Ballary district of Karnataka during the year 2007-08. Because Farmer Field School (FFS) on 'Integrated Crop Management (ICM) practices' was conducted by UAS, Dharwad under Karnataka Community Based Tank Management (KCBTM) Project during the period 2002 to 2008 in six districts of Karnataka State. Out of six districts, Bellary district was purposively selected for investigation, because highest number of FFS on maize and groundnut were conducted. Bellary district contains seven taluks of which only those taluks covered under the KCBTMP project were selected. Accordingly, Kudlagi , H.B.Halli and Hadagali taluks were considered for the study. Based on the highest number of FFS conducted, three villages from Kudlagi, one village in H.B.Halli and two villages in Hadagali taluk were selected with a sample size of 50 maize FFS participants.

Based on the total score, the respondents were classified in to three categories namely low, medium, and high, using mean and slandered deviation as a measure of check.

The results presented in table 1 depicted that knowledge level of Maize FFS participants about selected integrated crop management (ICM) practices in maize cultivation.

With regard to integrated nutrient management practices, majority of the maize FFS participants (68%) possessed correct knowledge about 'benefit of soil test' 'places should be avoided for soil sampling', 'depth of soil sampling' and 'care to be taken before sending soil sample to the lab' followed by 'size of vermicompost pit '(62.00%). The reasons could be simplicity of the practices, low cost and the respondents might have convinced about advantages of the INM practices.

In case of the seed management practices, majority of maize FFS participants had correct knowledge of 'vascular arbuscular mycorrhiza [VAM] available in the form of culture and powder'[86%] followed by 'seed spacing' (82.00%).

Among water management practices, majority of respondents (94/00%) had correct knowledge of 'methods of irrigation' (Alternate furrow irrigation) followed by 'advantage of land leveling' (84.00%).

With regard to Integrated Pest Management, all the participants had correct knowledge about 'benefit' of summer ploughing' and 'weeding' [100 %]. Further 85 per cent of the respondents had correct knowledge about 'correct date of sowing'.

With regard to the mechanical control, majority (72.00%) of the participants had correct knowledge about 'physical distribution of insects', followed by benefit of net swapping' (66.00%) and 'advantage of insect trap' (64.00 %). The possible reason may be, in FFS sessions 'agro ecosystem analysis' was carried out in which the participants has to identify the beneficiary insects and the harmful insect by establishing insect zoo and high' extension participation', 'innovativeness ' of the respondents might have convinced by the demonstrations conducted to show the 'importance of the IPM practices' during FFS sessions.

Majority of respondents (66.00%) had correct knowledge about 'components and advantage of panchagavya' followed by 'neem seed kernel extract' (NSKE) (56.00%) 'components of bio digester' (56.00%). Least knowledge was observed in case of 'honge cake'(32.00%) in biological control. During FFS session, utilization of locally available resources was given more stress and advocated to reduce application of chemical pesticides. So extension participation is major contributory factor on theses aspects towards gaining correct knowledge

In case of chemical pest management, only twenty six percent of the maize FFS participants had correct knowledge towards chemical 'pest control' and 'disease management' (22%) respectively. The reason could be less importance was given to application of chemical fertilizer in FSS.

The above findings are supported by the findings of Yamini and Rajendran (2007).

The results of Fig 1 indicated the extent of adoption of various ICM practices by maize growers. In case of seed management practice, nearly half of the maize FFS participants (48.00%) have adopted 'spacing ' because farmers were of the

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opinion that 25 per cent of the seed can be saved by adopting 2 feet spacing which is advocated in FFS, followed by 'recommenced variety'. (16.00%). Only four respondents (2%) had fully adopted seed treatment'. A very less percentage of the respondents fully adopted recommended variety and seed treatment practices. The probable reason may be that private sector network is much stronger them public sector. Hence, FFS participants using more private seed variety than the recommended variety. The non-availability of recommended variety and ignorance towards seed treatment were other reasons for low adoption. (Table 2)

Table 1. Knowledge level of maize farmer field school participants about recommended integrated crop management practices n = 50

Sl. No.	Practices	Correct knowledge	
		Frequency	Percentage
I	Integrated nutrient management		
1	Benefit of soil test	34	68.00
2	Place we should avoide for soil sampling	34	68.00
3	Depth of soil sampling	24	68.00
4.	Care to be taken before sending the sample to the lab	24	68.00
5	Vermicompost pit size	31	62.00
6	Vermicompost pit filling materials	25	60.00
7	Required vermicompost for one acre?	29	58.00
8	How to manage ant in vermicompost pit	26	52.00
9	Application of chemical fertilizer	22	44.00
10	Zn application	18	36.00
11	Vermicompost is ready for harvesting	11	22.00
II	Seed management		
1	VAM in the form of culture and powder	43	86.00
2	Seed spacing	41	82.00
3	No. of seeds used for testing	26	52.00
4	Duration of shade drying of soaking seed	23	46.00
5	Soaking of seed in water	20	40.00
6	Seed rate	17	34.00
III	Water management		
1	Method of irrigation	47	94.00
2	Advantage of land leveling	42	84.00
3	Weeding in irrigation channel	7	74.00
4	Furrow Width	30	60.00
5	Water is stopped when water reaches 75 %	31	62.00
VI	Integrated pest management		
A	Cultural		
1	Summer ploughing	50	100.00
2	Weeding	50	100.00
3	Sowing on correct date	42	84.00
4	Recommended varieties	30	60.00
5	Conservation of beneficiary insect	24	48.00
B	Mechanical		
1	Physical destruction of insect	36	72.00
2	Net swapping benefits	33	66.00
3	Insect trap advantages	32	64.00
C	Biological		
1	Components of punchagavya	33	66.00
2	Components of bio-digester	28	56.00
4	Neem seed kernel extract	28	56.00
5	Honge hinde	16	32.00
D	Chemical		
1	Pest control	13	26.00
2	Disease management	11	22.00

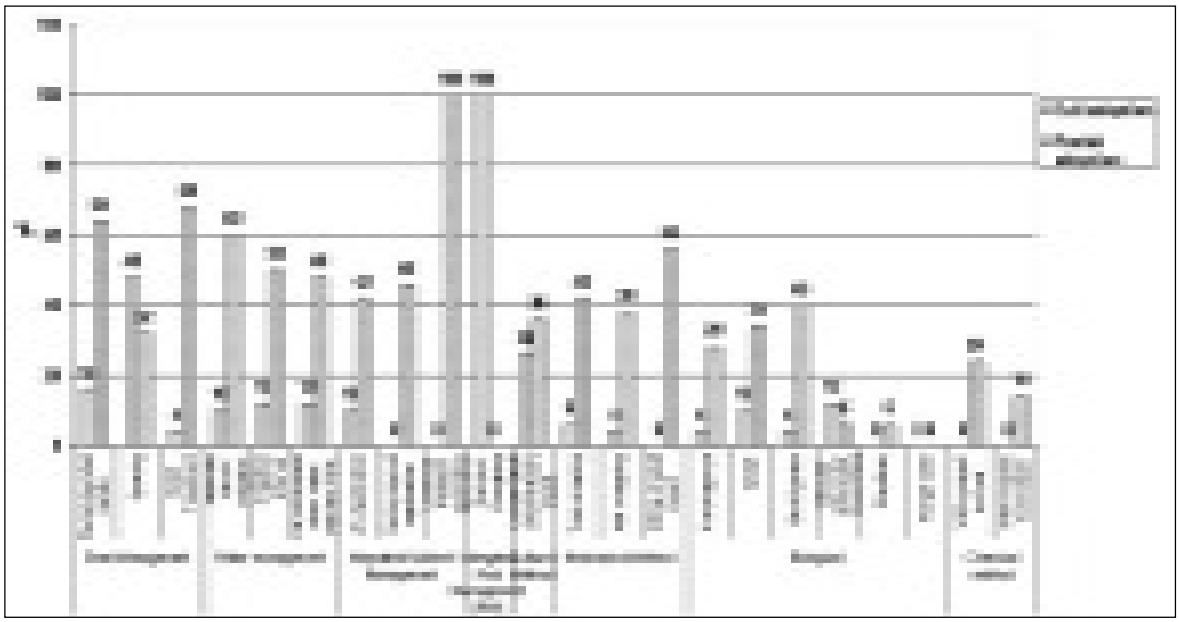

Fig 1. Extent adoption of ICM practices by maize FFS participants

Table 2. Extent of adoption of recommended integrated crop management practicesby maize farmer field school participants

n = 50

Sl. No.	Practices	Full adoption		Partial adoption		No adoption
	Frequency	Percetage	Frequency	Percentage	Frequency	Percentage
I	Seed management					
1	Recommended variety	8	16.00	32	64.00	10	20.00
2	Spacing	24	48.00	16	32.00	10	20.00
3	Seed treatment	2	4.00	34	68.00	14	28.00
II	Water management					
1	Alternate furrow irrigation	5	10.00	30	60.00	15	30.00
2	Irrigation interval	6	12.00	25	50.00	19	38.00
3	Cut off channel when water reaches 75%	6	12.00	24	48.00	20	40.00
III	Integrated nutrient management					
1	Zn application	5	10.00	21	42.00	24	48.00
2	Vermicompost application	0	0.00	23	46.00	27	54.00
3	Chemical fertilizer application (Urea, DAP, SSP)	0	0.00	50	100.00	0	0.00
IV	Intergated pest management					
A.	Cultural method					
1	Summer ploughing	50	100.00	0	0.00	0	0.00
2	Conservation of beneficiary insect	13	26.00	18	36.00	19	38.00
B.	Mechanical method					
1	Trap cropping	3	6.00	21	42.00	26	52.00
2	Net swapping	2	4.00	19	38.00	29	58.00
3	Killing of adult insect	0	0.00	28	56.00	22	44.00
C.	Biological					
1	Panchagavya	2	4.00	14	28.00	34	68.00
2	NSKE	5	10.00	17	34.00	28	56.00
3	Bio-digester	2	4.00	20	40.00	28	56.00
4	Vascular arbuscular mycorrhiza [VAM] application	6	12.00	3	6.00	41	82.00
5	Rhizobium	0	0.00	3	6.00	41	82.00
6	Honge cake	0	0.00	0	0.00	50	100.00
D.	Chemical method					
1	With respect to pest	0	0.00	12	24.00	38	76.00
2	With respect to disease	0	0.00	7	14.00	43	86.00

In case of water management practices, only 12 per cent of the respondents had fully adopted practices like 'irrigation interval' and 'cut off irrigation channel when water reaches 75 per cent' (12.00%). The respondents whose field is near to irrigation tank were fully adopted water management practices, because of regular and sufficient availability of water for irrigation. Those fields which are far from tank have partially adopted the water management practices.

With regard to integrate nutrient management, none of the respondents had fully adopted the 'vermicompost preparation and application',. All the participant farmers have partially applied 'chemical fertilizer (100 %). It is interesting to note that none of the farmers have fully adopted recommended dose of chemical fertilizers. The possible reason may be lack of knowledge about dosage of chemical fertilizer and high cost of fertilizers. The similar trend was observed in case of application if vermicompost due to non-availability of sufficient quantity of dung and worms.

In case of Integrated pest management, cent per cent of maize FFS participants fully adopted 'summer ploughing', whereas, one-fourth (26.00%) of the participants had fully adopted 'conservation of beneficiary insect'. With regard to mechanical control, only six per cent of participants fully adopted 'trap cropping' and 42 per cent had partially adopted. In case of biological control practices, panchagavya (4.00%), neem seed kernel extract (NSKE) (10.00%) and bio-digester (4.00%) were fully adopted by the maize FFS participants.

With respect to adoption of IPM practices, summer ploughing was fully adopted by cent per cent maize FFS participants. This may be due to simplicity of the IPM practice, high awareness about summer ploughing. The other IPM practices such as mechanical control, biological and chemical control have fully adopted by very less number of respondents. However, some of the IPM practices were partially adopted by the respondents.

The above findings are supported by the findings of Vasantha and Reddy (2007).

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