

## **Adoption of Cotton ICM Practices by FFS and Non FFS Farmers in Andhra Pradesh**

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### **ABSTRACT**

*The agriculture services in the country are in the process of reorientation of their development strategies towards supporting farmer empowerment. One method of empowering farmers and their capacity building is through Farmers Field School [FFS]. Participatory extension approaches such as farmer to farmer extension and FFS encourage farmers to utilize their resources, own knowledge, skills while integrating new expertise, enhance farmers position as manager of their own land and resources. FFS empowered to build up their self confidence and self reliance. It also ensures empowering the farmers to take up economical decisions in adopting practices of integrated crop management (ICM). The study revealed that 55.55 per cent of FFS farmers were in the medium adoption category about cotton I.C.M practices followed by 23.88 per cent high and 20.55 low. In case of Non FFS farmers' majority (46.11%) were in the medium adoption category followed by low (32.77%) and high (21.11%) adoption of cotton ICM practices respectively.*

**Keywords:** Farmers Field School (FFS), Adoption, Integrated Crop Management (ICM)

In Andhra Pradesh agriculture education has moved from farmer training centres to villages by establishing a state wide net work of Farmer Field Schools. FFS offers practical demonstrations and training on field for 14 weeks. The Department of Agriculture, Government of A.P has taken up promotion of FFS in large scale since Rabi-2004 to reduce cost of cultivation, increase the productivity, and reduce pesticide usage by adopting eco friendly alternatives to pesticides and also creating awareness among farmers about the pesticides hazards. It also ensures empowering the farmers to take up economical decisions in adopting practices of integrated crop management (ICM). Keeping in view of the importance, the study was conducted to know the adoption of cotton ICM practices by FFS and non FFS farmers in Andhra Pradesh.

### **METHODOLOGY**

Ex-post-facto research design was followed for carrying out the study. The study was conducted in Warangal, Guntur and Kadapa districts of Andhra Pradesh. Two mandals from each district were selected purposively based on no. of cotton FFS organized. From each mandal two villages were selected where FFS were conducted on cotton crop. A total of 180 FFS and 180 non FFS were selected for the purpose of data collection. Data were collected from FFS and non FFS farmers on cotton ICM through an index of extent of adoption FFS cotton constructed based on extensive review of literature and in consultation with FFS experts. The index consists of 4 parts i.e experiments adopted (13 items), adoption

of principles of IPM package (13 items) general management practices of cotton (9 items) and farmer expert (15 items). The adoption was measured on two point continuum i.e fully adopted and not adopted by assigning 2 and 1 weightage respectively. Thus the total score for each respondent was obtained by summing up the scores on all items, which ranged from 0-50. Then adoption index for each individual was worked out by using the formula used by Sengupta (1967)

$$\text{Adoption Index} = \frac{\text{No. of practices adopted}}{\text{No. of practices recommended}} \times 100$$

Based on the adoption index obtained, farmers were then grouped into three categories i.e low, medium and high adopters using mean and Standard deviation.

### **RESULTS AND DISCUSSIONS**

**Adoption :** It could be observed from the Table 1 that 55.55 percent of FFS farmers were in the medium adoption category about cotton I.C.M practices followed by 23.88 percent high and 20.55 low. In case of non FFS farmers' majority (46.11%) were in the medium adoption category followed by low (32.77%) and high (21.11%) adoption of cotton ICM practices respectively. The probable reason might be that FFS farmers after observing the field results in experimental plot might have adopted the same in their field condition. The interaction with experts and FFS master trainees also might have contributed to adoption of cotton FFS practices. This finding is in consistent with Thyagarajan (2000), Madhavi Latha (2002) and Natarajan (2004).

**Table 1**  
**Categorization of FFS and Non FFS farmers based on their adoption of cotton KM practices**

S.No	Category	FFS	%	Non FFS	%
1	Low	37	20.55	59	32.77
2	Medium	100	55.55	83	46.11
3	High	43	23.88	38	21.11
	<b>Total</b>	<b>180</b>		<b>180</b>	

Mean 71.16 32.35

S.D 16.07 6.29

**Adoption of ICM Practices :** It could be seen from Table 2 that most of FFS farmers were adopting

practices recommended seed rate(91%), deep summer ploughing (88%), sowing time (87%), crop residue destruction (82%), agro ecosystem analysis (81%), peer group communication(79%), participation in field day (77%), daily monitoring (77%), Long term experiments like no. of plants / hole, new hybrids, de topping, removal of fruiting bodies (76%), analysis of crop condition(73%), collection and destruction of larvae(72%), effect of pesticide spray on defenders(71%), risk management (71%) and installation of bird perches(70%). But they were not adopting release of Trichogramma eggs, seed treatment with *Trichoderma viridae*, PTD and documentation of experiences. In case of non FFS farmers they were adopting timely sowing, new hybrids, recommended seed rate, daily monitoring.

**Table 2**  
**Distribution of FFS and Non FFS farmers based on adoption cotton ICM practices**

S.No	Management practice	FFS farmers				Non FFS farmers			
		Fully adopted		Not adopted		Fully adopted		Not adopted	
		F	%	F	%	F	%	F	%
1	<b>Short term</b>								
	a. Soil test	125	69	55	31	38	21	142	79
	b. Seed treatment	108	60	72	40	42	23	138	77
	c. Seed germination test	116	64	64	36	53	29	127	71
	d. Sowing time	156	87	34	13	85	47	95	53
	e. Pit fall trap method	75	42	105	68	-	---	180	100
	f. Establishment of delta sticky for white fly	125	69	55	31	29	16	151	84
	g. Cage study [Defender exclusion]	93	52	87	48	12		180	100
	h. Effect of pesticide spray on defenders	128	71	52	29	38	21	142	79
	<b>Long term</b>								
	a. No. of plants / hole	138	77	42	23	54	30	136	70
	b. New hybrids	145	81	35	19	85	47	95	53
	c. De topping	132	73	48	27	36	20	144	80
	d. Removal of fruiting bodies	128	71	52	29	53	29	127	71
2	<b>Adoption of principles of IPM package</b>								
	a. Use of Pheromone traps	118	66	62	34	42	23	138	77
	b. Installation of yellow sticky traps	105	58	75	42	63	35	117	65
	c. Installation of bird perches	126	70	54	30	48	27	134	73
	d. Release of Trichogramma eggs	38	21	142	79	5	3	145	97
	e. Seed treatment with <i>Trichoderma viridae</i>	65	36	115	64	8	4	142	96
	f. Use of NSKE	112	62	68	38	38	21	142	79
	g. Use of NPV	105	58	75	42	25	14	155	86
	h. Collection and destruction of larvae	128	71	52	29	18	10	162	90
	i. Crop residue destruction	148	82	32	18	56	31	124	69
	j. Destroying fallen squares to reduce pink boll worm incidence	98	54	82	46	54	30	126	70
	k. Use of bio pesticides [Bt]	95	53	85	47	32	18	148	82
	l. Trap cropping	86	48	114	52	23	13	157	87

3	<b>General management practices</b>								
a.	Method of cultivation [Mono/Inter cropping]	96	53	84	47	42	23	138	77
b.	Deep summer ploughing	158	88	22	12	75	42	105	58
c.	Recommended seed rate	163	91	17	9	83	46	97	54
d.	Optimum plant density	116	64	64	36	49	27	131	73
e.	Time of sowing	125	69	55	31	63	35	117	65
f.	Adoption of soil test based fertilizer application	113	63	67	27	48	27	132	73

*F = Frequency, % = Percentages*

**Rational analysis :** In order to study the nature of relationship between selected independent variables and adoption of FFS and non FFS farmers towards Cotton FFS Practices, correlation coefficients (r) were computed and the values presented in the Table.3

**Table 3**  
**Relationship of independent variables of the FFS and non FFS farmers with their adoption**

S.No	Independent variables	'r' values	
		FFS	Non FFS
X <sub>1</sub>	Age	-0.221**	0.155*
X <sub>2</sub>	Education	0.476**	0.235**
X <sub>3</sub>	Experience in farming	-0.192**	0.171*
X <sub>4</sub>	Farm size	-0.080	0.059
X <sub>5</sub>	Mass Media exposure	0.182*	0.045
X <sub>6</sub>	Extension contact	0.055	0.019
X <sub>7</sub>	Group orientation	0.041	0.059
X <sub>8</sub>	Market intelligence	-0.009	0.118
X <sub>9</sub>	Risk orientation	0.009	0.011
X <sub>10</sub>	Innovativeness	0.147*	0.070
X <sub>11</sub>	Management orientation	-0.057	0.095

\*\* Significant at 0.01 probability level, \* Significant at 0.05 probability level, NS-Non significant

It is clear from the Table 3 that computed 'r' values of independent variables namely Education, Mass media exposure and Innovativeness were positively significant whereas Age and Experience in farming found be negatively significant with Knowledge level of FFS farmers on Cotton ICM practices. Whereas incase of non FFS farmers age, education and experience were found to be positively significant relationship with adoption of cotton ICM practices.

Age was negatively significant with Adoption of FFS farmers towards cotton ICM. The probable reason might be that over aged individuals ability to understand and analyse the new concept like FFS will be less and also the affinity in old farm practices make them to reject new ideas. This finding was in agreement with results of Raju (1999).

Age has significant relationship with Adoption of Cotton ICM practices in case of non FFS farmers. The probable reason might be that more experience in

Cotton cultivation, education levels, sharing of ideas with experts etc contributed. This result is accordance with results of Avinash Kumar Singh *et al.* (2003).

Education had positive and significant relationship with adoption of cotton ICM practices by FFS and non FFS farmers. With increase in education, farmers have more information seeking habits resulting better access to farm information sources to know latest recommendations. Another fact that educated farmers had better understanding of new innovations which might have made them to accept and adopt cotton ICM practices. Hence the above relationship was noticed. This finding was in agreement with results of Avinash Kumar Singh *et al.* (2003) Satish (2003).

There was negative and significant relationship between experience of FFS farmers on cotton ICM practices. The probable reason might be that with increased farming experience, farmers will have negative attitude to adopt new practices particularly which involve risk. They have confidence

in their age old practices with which they could get good yields. This finding was in agreement with results of Natarajan (2004)

Where as incase of non FFS farmers experience had positive relationship with adoption. A farmer who had more experience might be knowing the potentiality, applicability and utility of taking up more practices and aware of relevant remedial measures incase of ill effects. This finding was in agreement with results of Baswarajaiah (2001))

Mass media exposure had significant relationship with adoption of FFS farmers. Increased mass media exposure by different sources provide enormous opportunity for repeated exposure to new technologies, which in turn will lead to more adoption and lessen the gap in use of technology. This might be the probable reason for this kind of relationship. High level of mass media exposure enhances the respondents knowledge level on several aspects of the Cotton ICM practices. This result is line with the results of Madhavalatha (2002).

Market intelligence had negatively non significant relationship with adoption of FFs practices

.It is natural that market intelligence facilities was not available and useful to small and marginal farmers .

Positive and significant relationship between innovativeness and adoption level of Cotton ICM by FFS farmers. Innovators are early adopters of new ideas, information related to Cotton ICM. When convinced of new technology, they were at a considerable advantage over others because of the experience already gained which results in the continuous use over considerable period of time. This result is line with the results of Ravishankar (2005).

## CONCLUSION

Farmers field school [FFS] is an innovative participatory extension approach available to Extension officers. It provides a platform to discuss and arrive at conclusion about new technology and ultimately to take appropriate decisions for adopting the technology. FFS increases adoption rate of new technology by the farming community as the farmers themselves discuss and take decisions based on field performance.

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