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Monitoring and Evaluation Protocol for Follow up and Practicing Farmer Field School Activities in Pakistan

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Introduction

Monitoring and evaluation of ongoing project activities are important pre-request for the effective implementation and sustainability of the program. In many FFS program, all over the world, monitoring and evaluation is usually based on assessing the knowledge by asking simple multiple choice questions. Although, these simple tests provide raw data of strength of farmer memory but hardly useful in determining the real impacts of the training. Stephanie (1999) stated that crucial information needed is regarding change in the practices and for this role of facilitator, change in attitude and change in agriculture practices should also be monitored and evaluated. Similarly, Azeem et al (2001) recommended that evaluation and monitoring should also involve criteria such as health hazards, environmental pollution, attitude and behavioral aspects of the pest management, residues in food chain and management of pest resistance.

In Pakistan, Farmer Participatory Training and Research activities initiated under three years ADB funded regional cotton IPM project. Under this project assistance was provided to CABI Regional Bioscience Centre Pakistan to do a pilot study and test suitability of TOT/FFS approach to IPM implementation on cotton crop in Punjab province during 1997. Later on, similar activities were initiated under FAO Global IPM Facility and Catholic Relief Services (CRS) in collaboration with the local Non-Government Organizations (NGO). The impacts of these program were evaluated at the end of the activities mainly focusing on reduction in input use and cost benefit ratio). Data was gathered on pest management aspects like identification of various pests and beneficial, yield, confidence level and state of IPM concept to farmers (Poswal & Stephenie, 1998).

In majority of the cases, monitoring and evaluation is carried out at the end of the season which provides information on strengths and weaknesses of the planning and activities. These information provide a base line, useful to plan effectively for the next season. However, continuous systematic monitoring and evaluation of project activities ensure the capacity to make adjustments before it is too late, to learn from experiences and to justify the investment. Rapid feed back is critical when farmers are presented with new variable such as integrated innovation approach like FFS. Monitoring and evaluation of clearly

defined indicators generate valuable feed back for adjusting correct project methodology and improving activities.

In Pakistan, The farmer participatory training and research activities resumed in 2001 under EU/FAO Regional Project on “IPM for Cotton in Asia” and applicability of monitoring and evaluation of on-going activities is being tested in the field. The result of these are presented in the paper.

Farmer Participatory Training and Research Activities

During 2001, two Training of Facilitator (ToF), one each at Sakrand and Khairpur in the province of Sindh were organized. In both ToF, A total of 57 participants including three females from Agri. Extension and Research Departments, Govt. of Sindh, National Agriculture Research Centre, Islamabad, Nat-IPM and Non-Government Organization (NGO) participated in the season long programs and were trained in conducting FFS. In both the ToF, 460 cotton farmers underwent season long training in 20 practicing FFS. These season long participatory training empowered the farmers to make decisions best suited for their crop management. Under Sakrand ToF, the net-economic benefit was higher (ranged from 13.3% to 74%) in the IPM plots in nine FFS where decisions were made by the participating farmers compared with the farmer practice plots (where conventional decisions were made by the plot owner). At one FFS, net-economic benefit was lower in the IPM plot (13.5%). Similarly, under Khairpur ToF, net-economic benefit was higher in majority of the IPM plots compared with the FP plots in different FFS.

During 2002, around 96 follow up FFS activities were established by the facilitators trained during 2001. Each facilitator was required to set up two FFS with at least 25 practicing farmers. A contract (letter of agreement (LoA) was awarded to CABI RBC Pakistan for monitoring/evaluation and to provide backstopping to these follow up FFS activities.

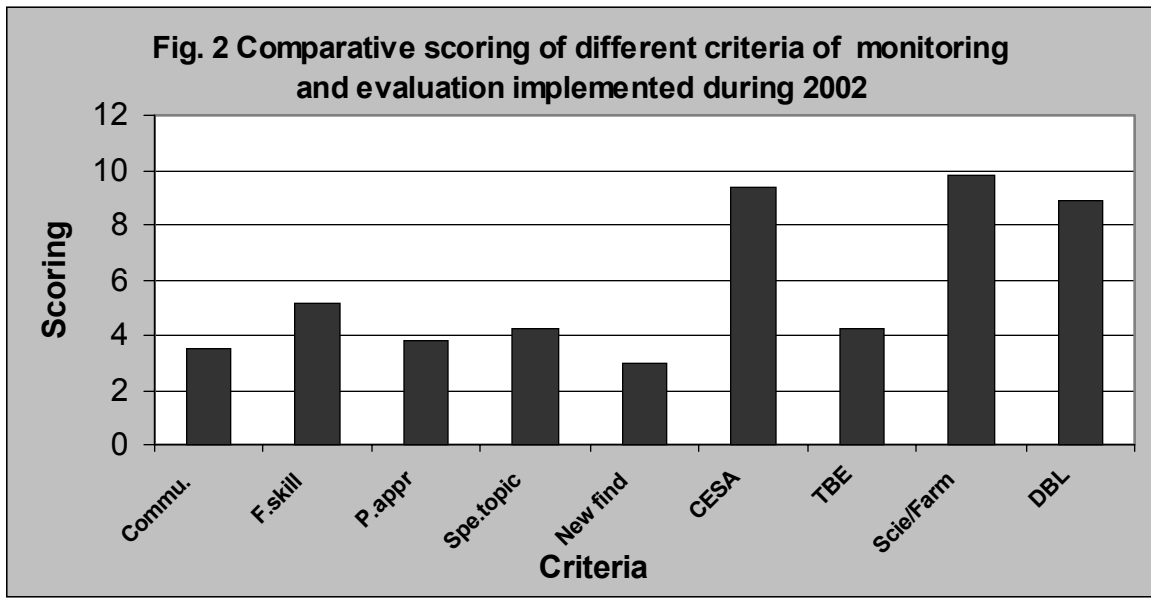
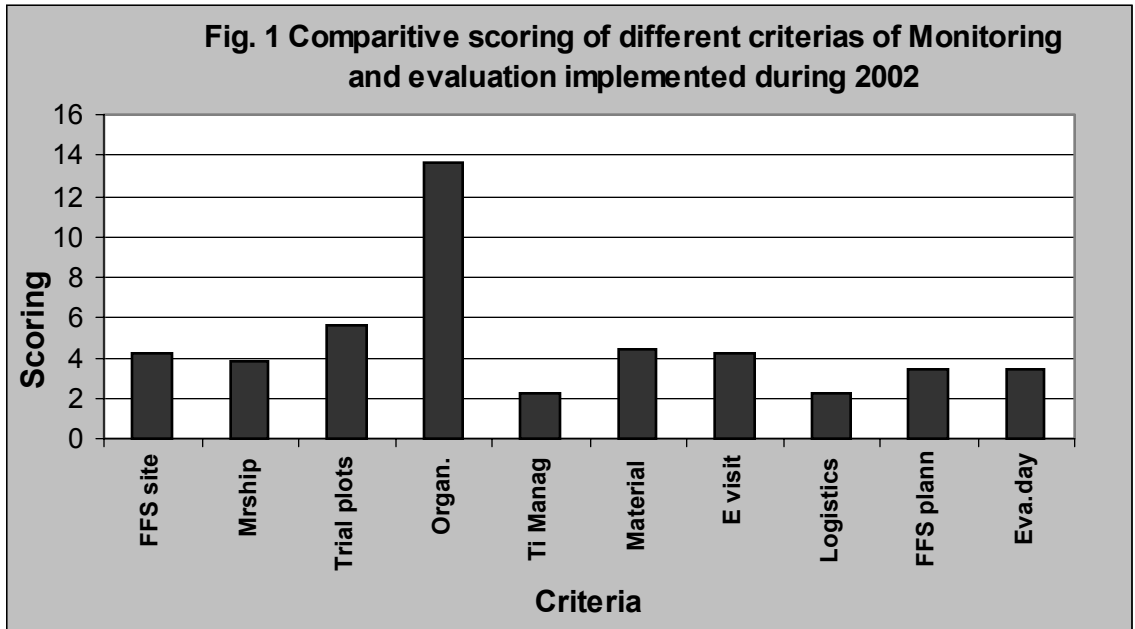
Monitoring and Evaluation of Follow up FFS Activities

For effective implementation of monitoring and evaluation of ongoing activities, a comprehensive indicator protocol is a pre-request. A consultative process initiated in CABI RBC Pakistan by the Farmer Participatory Training and Research (FPTR) team and a workshop was organized to develop criteria for assessing the quality of the FFS. Major emphasis was given to quantify the number of important indicators which were further sub-divided into four categories:

- Establishment of FFS
- FFS organization
- Activities
- Process

Under the establishment category, emphasis was laid on FFS location, FFS site selection, membership of the FFS, site of trial plots. Whereas, under the FFS organization,

indicators such as nature of the FFS membership, group formation, group coherency, division of responsibilities etc. were incorporated. Under the category activities, Science and Farmers, Cotton Ecosystem Analyses, Team building exercises, Discovery based learning and special topics were incorporated. The process of all the activities were evaluated with emphasis on facilitation skills and participatory approach. These categories were rated according to their relative importance for a quality FFS (Fig. 1 & 2).



The protocol developed was tested in a real situation in the field to determine its strengths, weaknesses and effectiveness. Based on the results of initial testing, the protocol was further strengthened by including more indicators. As per participatory decision during the workshop, three visits of an FFS were decided for monitoring and evaluation purposes viz. one during the beginning stage, secondly preferably in the middle stage and thirdly around the concluding stage. A joint monthly meeting of all the facilitators was held to discuss the strengths and weaknesses of follow up FFS activities and measures for improvement using a common group exercise (what was good, what was not good, things need improvement and how to improve) was conducted. The finalized protocol is attached at Annex 1.

Results and Discussion.

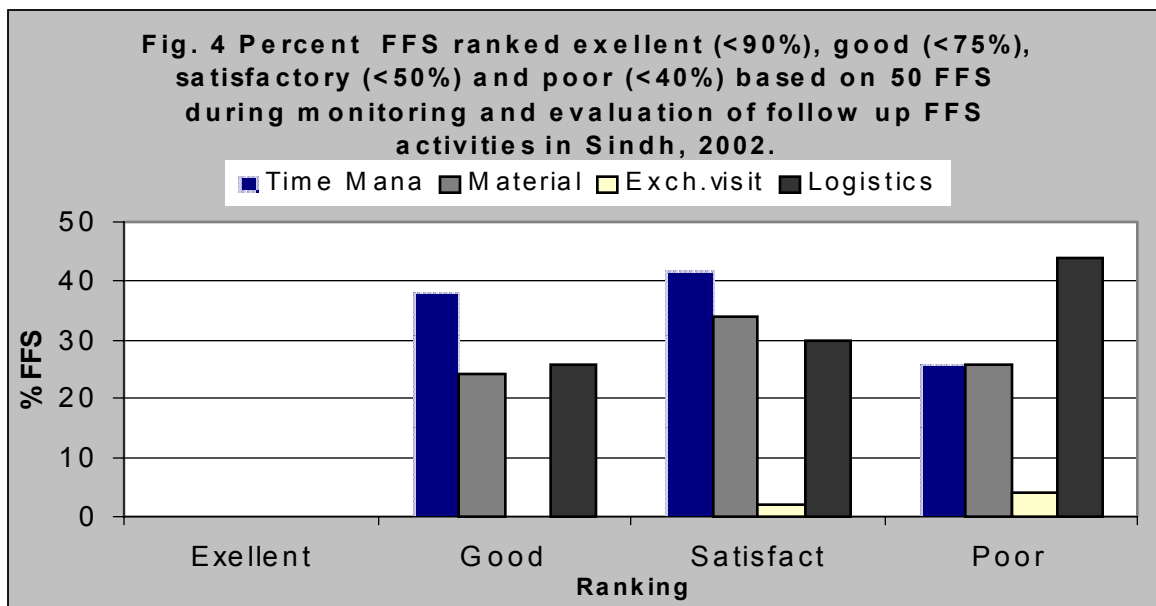
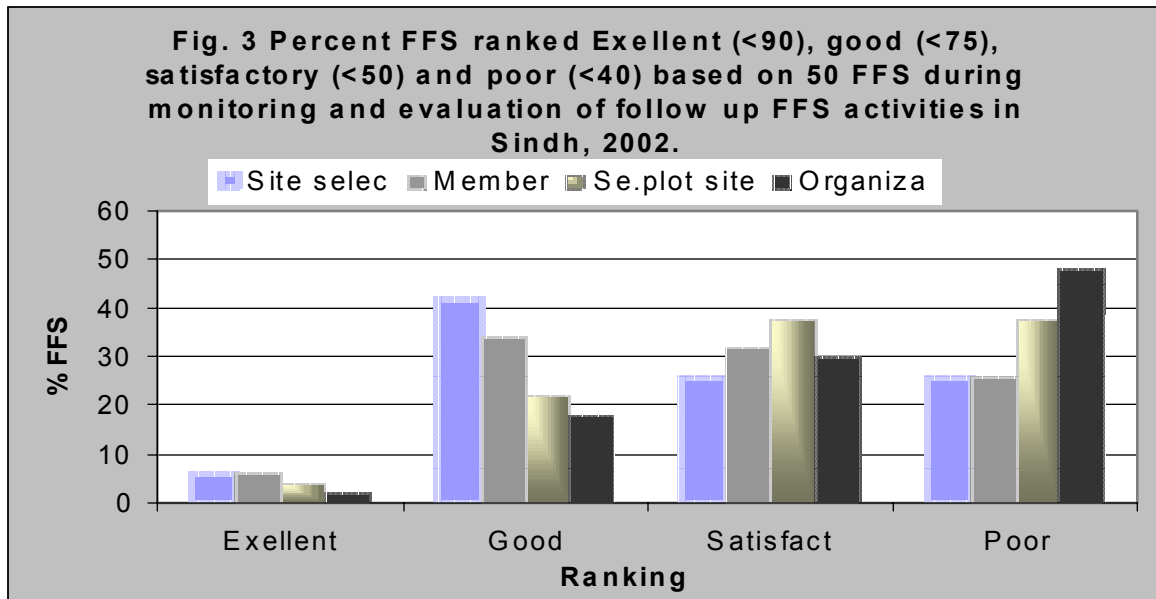
Out of 96 FFS, results of 50 FFS based on three visits have been finalized and being presented. Based on the criteria, these FFS are ranked excellent if scoring more than 90% in different categories, good if scoring more than 75%, satisfactory if scoring more than 50% and poor if score more than 40%.

In case of site selection, less than 50% FFS were found good and 26% under satisfactory ranking. Whereas more than 28% ranked poor. In case of FFS membership, more than 32% ranked good, 30% satisfactory and 24% poor. For trial plot selection, less than 40% ranked satisfactory, 38% poor and only 20% ranked good. In FFS organization, 48% FFS ranked poor, 30% satisfactory and less than 20% good (Fig. 3). Site selection and membership of the FFS have been important criteria contributing significantly towards the establishment of a quality FFS and both the factors are inter-related. In the area where cotton was a 2nd or 3rd major crop, majority of the farmers were not interested in the FFS activities. Similarly, the FFS with more practicing farmers were better compared with the FFS with only tenant/labor. Moreover, in case of organization, The FFS with heterogeneous participation were better than the FFS with homogeneous participants (belong to one cast). As a result, element of competition was lacking.

Time management was satisfactory in more than 40% FFS, good in 38% and poor in 28% FFS. While availability of material required for FFS was satisfactory in more than 30% FFS, good in 24% FFS and was poor in 28% FFS. Logistic arrangements were poor in majority of the FFS and there was no concept of exchange visits between the FFS (Fig. 4). Time management was poor firstly due to the engagement of the participants in other agricultural activities and secondly due to the role of the facilitators. In majority of the FFS where time management was the problem, the time was either fixed by the facilitator without consulting the participants or facilitators himself arrived late. In case of material, in majority of the cases it was due to mismanagement in financial matters. Logistically, more FFS were rated poor because the FFS were kept either in the house of a big landlord or due to lack of division of responsibilities.

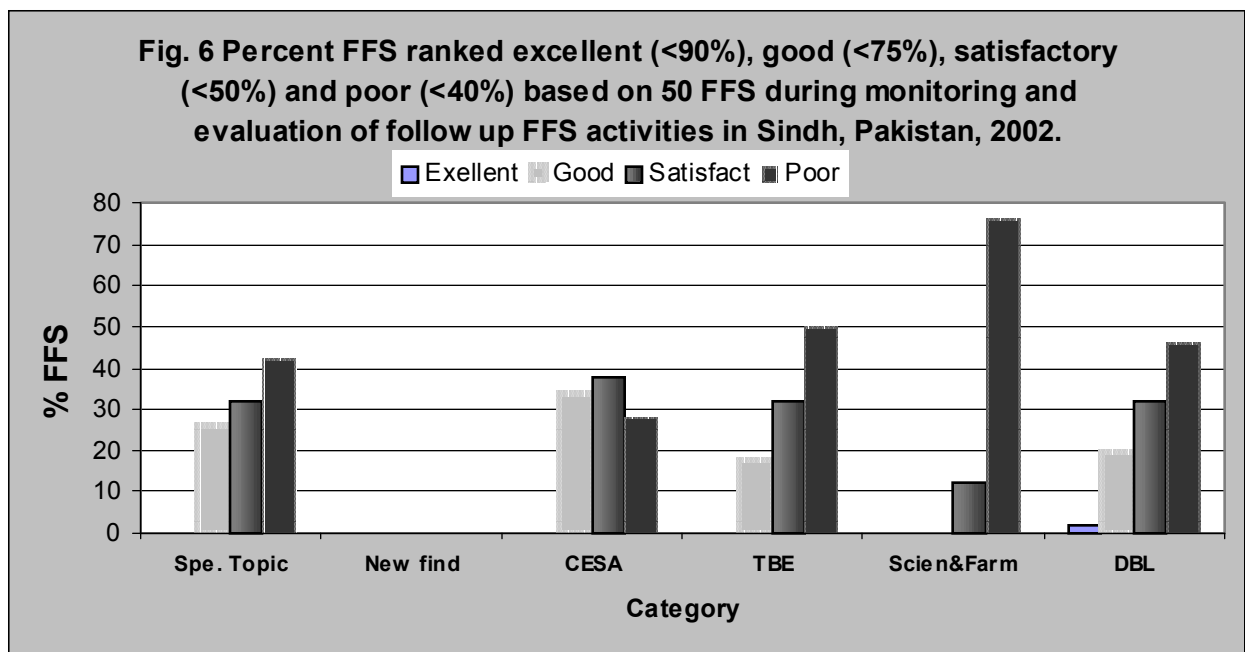
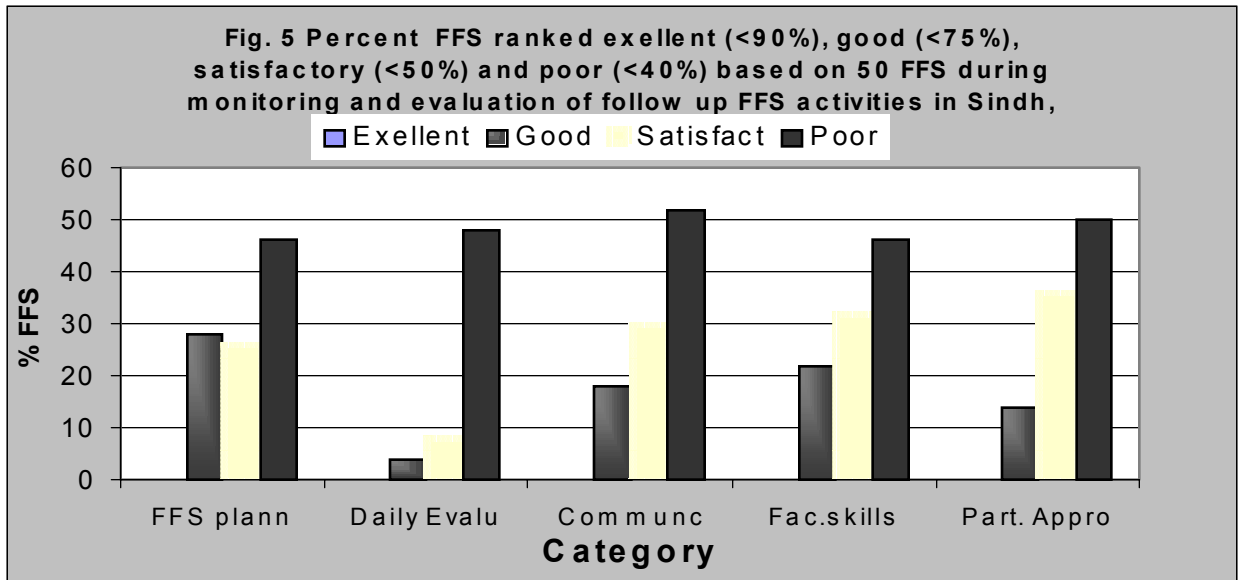
FFS planning has a major role in the success of the program. FFS planning was good in less than 30% FFS, satisfactory in 23% and poor in more than 48% FFS. While, evaluation of daily activities was poor in majority of the FFS (88%). In Case of

communication more than 50% FFS fall into the category of poor, 18% good and 30% were satisfactory. Facilitation skill was poor in 48% FFS, satisfactory in 32% FFS and good in 22% FFS. Participatory approach was poor in majority of the FFS (50%) and good in 34% FFS (Fig. 5).



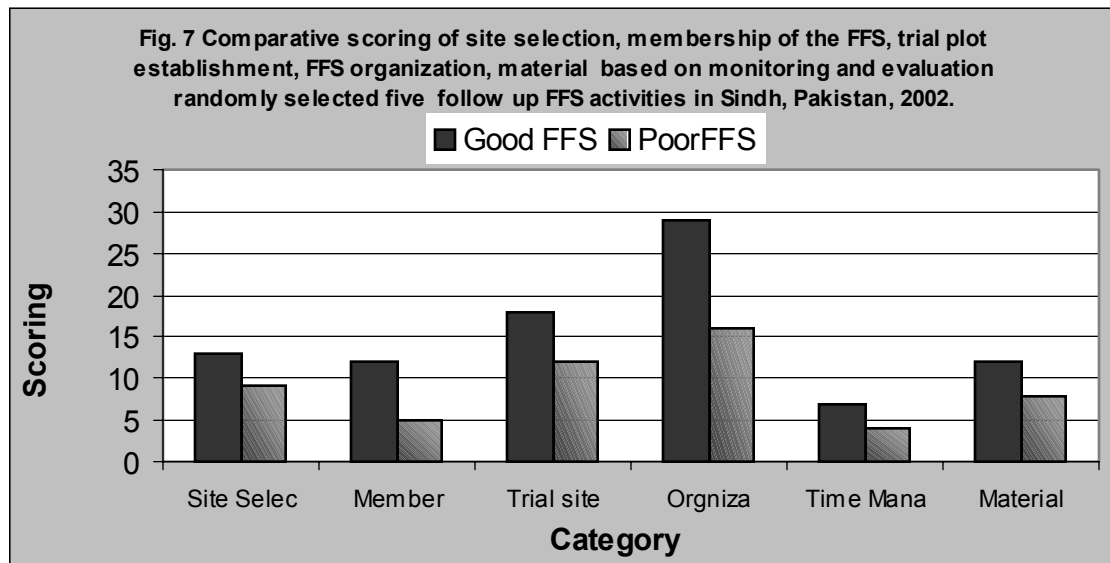
In case of Cotton Ecosystem Analyses (CESA), almost 34% FFS ranked good, 38% were satisfactory and 28% were poor. Similarly, in Science and Farmer category, 88% FFS ranked poor and only 12% were satisfactory. Discovery based learning was excellent in 2% FFS, 20% good, 30% satisfactory and 48% poor. In case of team building exercises

majority of the FFS ranked poor (50%) and 32% satisfactory. While there was no concept of new findings (Fig. 6).

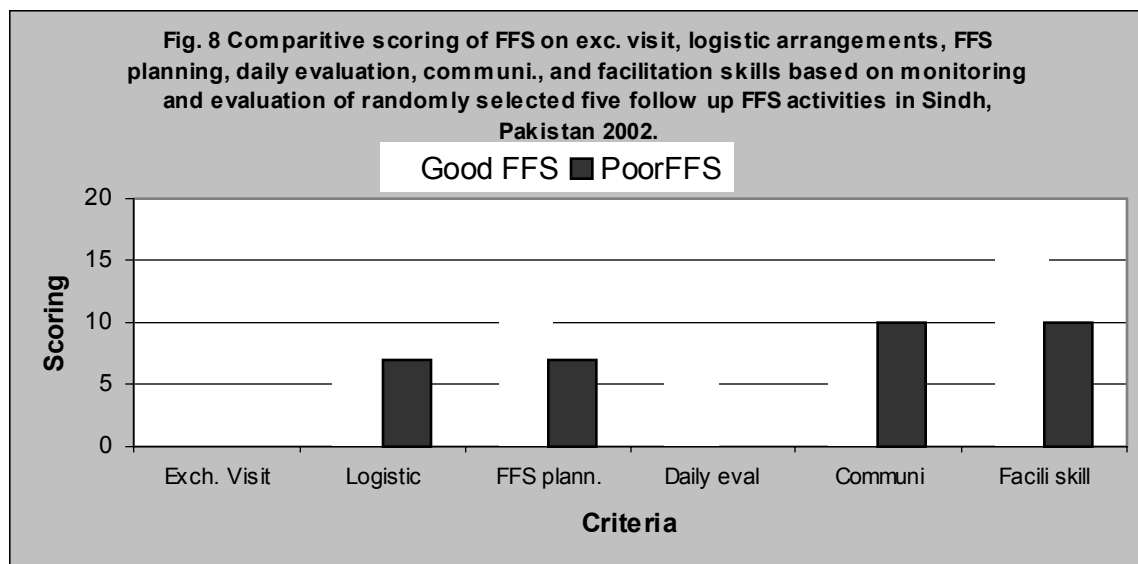


Based on the monitoring and evaluation results, FFS were further evaluated and categorized “good” (overall scoring <75%) and “poor” (overall scoring <40%). Five FFS each, selected randomly from good and poor categories of the same area were evaluated. In the good FFS, almost all the parameters such as site selection, membership, trial plots

selection, organization, time management and material were better than the poor FFS (Fig.7).



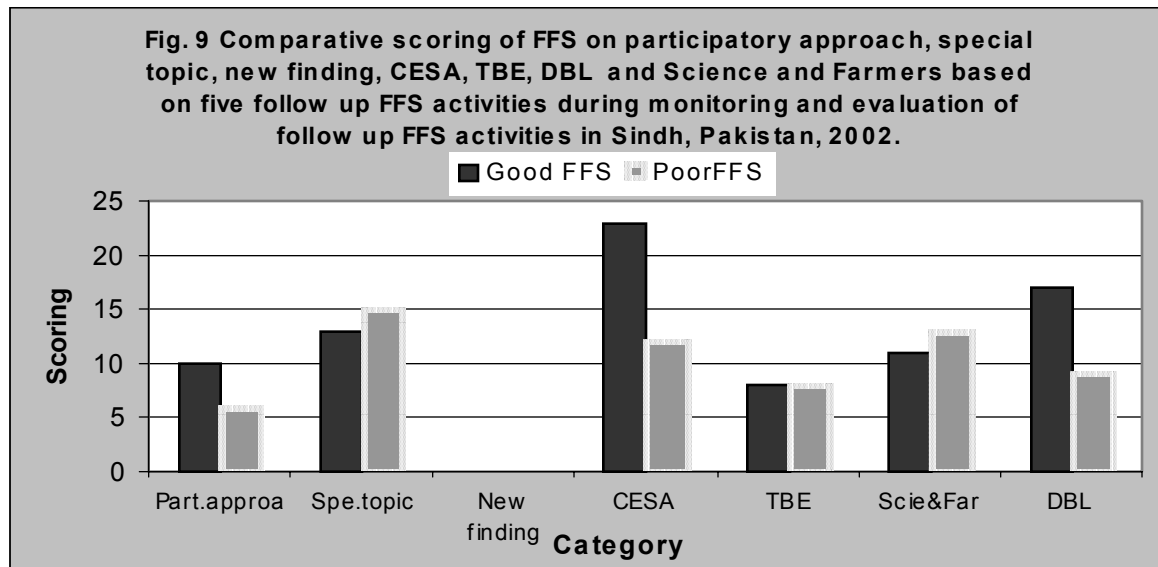
In the good FFS, facilitation skills and FFS planning was much better than the poor FFS. While, logistic arrangements and communication were better in the poor FFS. One striking result was that in the good FFS, evaluation of daily activities was carried out regularly. In both categories of the FFS, there was no concept of exchange visit between the two FFS (Fig. 8).



The data revealed that facilitators with good planning and facilitation skills contributed significantly in improving the quality of the FFS.

Similarly, in the good FFS, participatory approach, CESA and discover based learning were much better as compared with the poor FFS. While, science and farmer and special topic were better in the poor FFS than the good ones and there was no concept of new findings in both types of the FFS (Fig. 9).

It appears, that role of facilitator plays an important role in improving the quality of the FFS. In the good FFS, organization, planning, facilitation skills, participatory approach, and technical knowledge (CESA, DBL (insect zoo)) were scored more as compared with the poor FFS.



As the FPTR activities are usually season long and therefore, there are always possibilities of improvement in the process and activities. To determine how an FFS grow from poor to quality FFS, a single FFS (Amin Solangi) was evaluated. Organization score improved gradually from 24 during the first visit (CESA 3) to 48 in the third visit (CESA 15). Similarly, score in facilitation skills improved from 10 to 16, participatory approach from 8 to 14 and communication from 3 to 10 indicating steady improvement (Fig. 10 & 11).

Scoring in CESA improved significantly from 18 during the first visit (CESA 3) to 34 in the third visit (CESA 15). Similarly, discovery based learning also improved from 6 to 20 (Fig. 12). On the other hand, science and farmer and team building exercises remained stagnant. While, in case of special topic, score further reduced.

Fig. 10 Monitoring and evaluation of single FFS (Amin Solangi) based on three visit during follow up FFS activities in Sindh, Pakistan 2002.

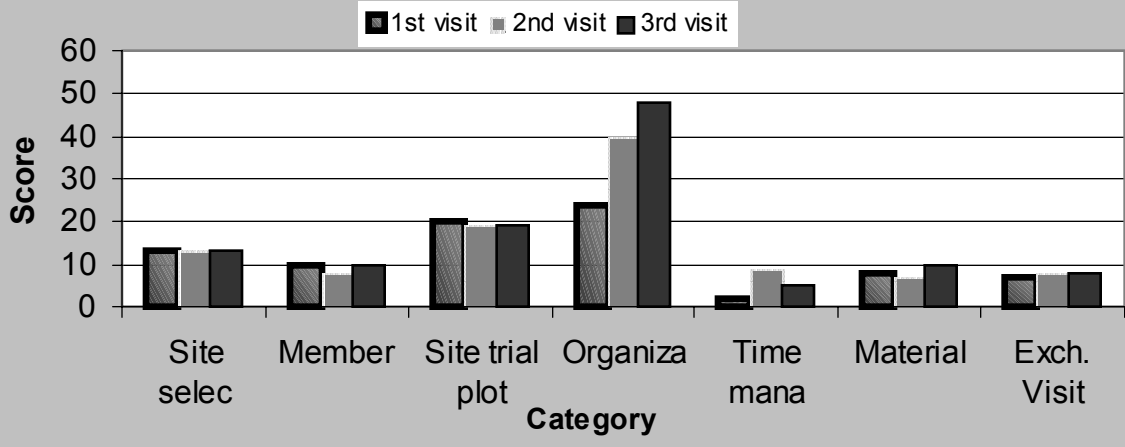
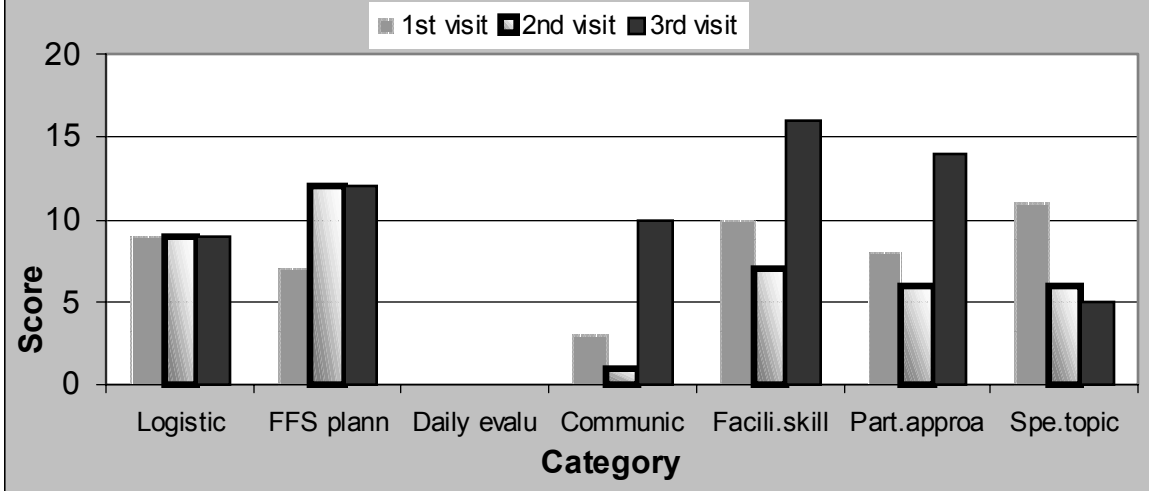
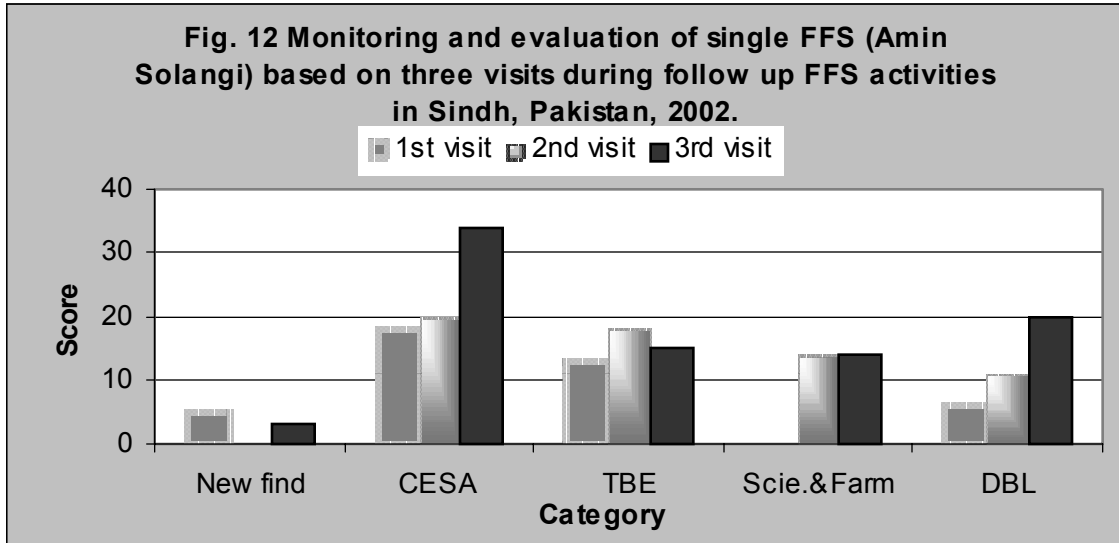
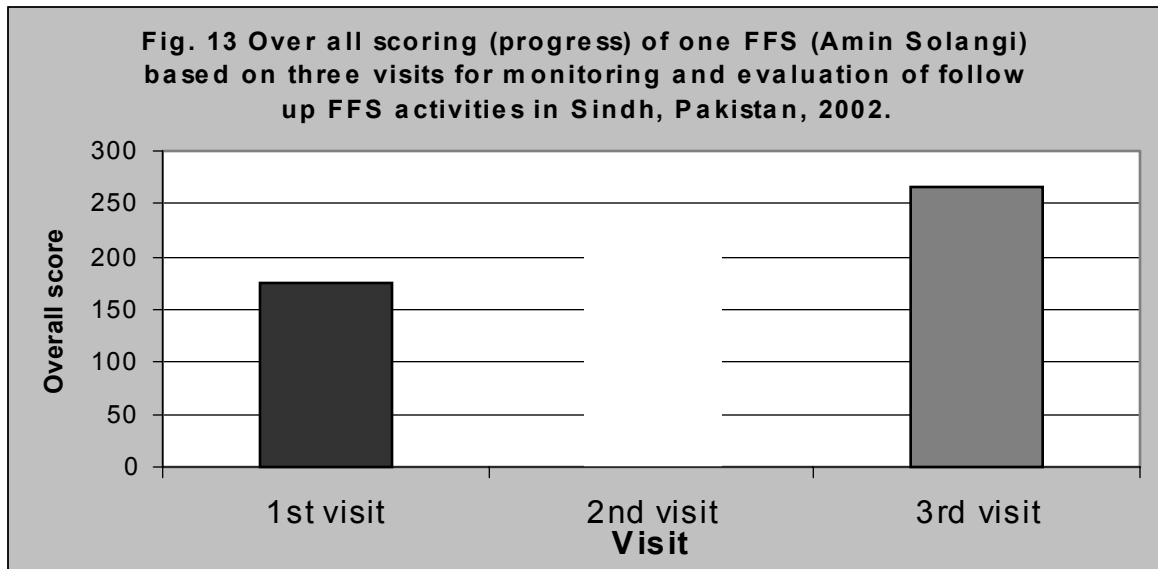


Fig. 11 Monitoring and evaluation of single FFS (Amin Solangi) based on three visits during follow up FFS activities in Sindh, Pakistan 2002.





When the score of three visits were compared, the results show a gradual improvement in the activities and the process (Fig. 13).



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**Monitoring and evaluation of follow up FFS activities during 2002 in
Sindh under FAO-EU IPM Program for cotton in Asia
GCP/RAS/164/EC**

Name of the FFS-----

Date-----

Location of FFS----- Name of the Facilitators-----

A. Establishment of FFS (Once in the season)

Selection of FFS site

Indicators	Maximum Rating	Criteria				
Was it a major cotton area? 1 st major crop Excellent 2 nd major crop Good 3 rd major crop Satisfact. Minor crop Poor	5	Excellent	Good	Satisfactory	Poor	
		5	3	2	1	
Was it easily accessible ? (select one or more)	4	Near village/ central place/Common place		Transport available	Distance from the plot	
		2	0	0.75	1.25	
		Hujra	0.5	0	1 Km./more	0
		Dera	0.5		0.6-0.9 Km	0.5
		House	0.0		0.3-0.5 Km	1.0
		Hospital	0.75		Adjacent-0.2	1.25
		Mosque	0.75			
		Tree	2.0			
		School	2.0			
		E.Office	2.0			
Was it low seed cotton yield area ? Less than 800 kg./ha. Excellent Less than 1500 Kg./ha. Good Less than 2000 Kg./ha. Poor	2	Excellent	Good	Poor		
		2	1	0		

Was it the area with a trend of extensive input ? More than 12 bags of fertilizer/ha., 7 sprays of pesticide & 10-12 irrigation in case of furrow cultivation & 8-9 in flat bed cultivation Excellent More than 8-12 bags of fertilizer/ha., more than 5 sprays of pesticide 8-10 irrigation in furrow 6-7 in flat bed cultivation. Good More than 7 bags of fertilizer/ha., less than three sprays of pesticide & less than 8 irrigation in case of furrow and less than 6 in case of flat bed cultivation Satisfactory	3	Excellent	Good	Satisfactory
		3	2	1
Was sufficient irrigation water available ? Weekly supply Excellent Fortnightly supply good Monthly supply Poor	3	Excellent	Good	Poor
		3	2	1
Over all scoring for site selection Excellent 15-17 Good 10-14 Satisfactory 5- 09 Poor 0-04		Results/Remarks		

Note: If more than one village involve, the FFS should be at the central place

Membership of farmers for FFS

Were farmers poor/ resource deficient ?	2	Yes		No	
		2		1	
Were all participants practicing farmer ?	8	Excellent	Good	Satisfactory	Poor

Cultivate more than 90% of landholding themselves Excellent Cultivate more than 70% of landholding themselves Good Cultivate more than 50% of landholding themselves Satisfactory Less than 30% cultivation Poor		8	6	4	2
Were all practicing farmers decision makers as well ?	2	Yes	No		
		2	0		
Were all farmers under suitable age group (20-40 years)?	3	75%	50%	30%	
		3	2	1	
Overall scoring for farmer selection Excellent 13-15 Good 9-12 Satisfactory 5-8 Poor 0-4		Results/Remarks Education Homogenized group (farmers belong to different cast & sect?)			

Selection of sites for IPM/FP Trial plots under FFS

What was the criteria for the plot selection?	4	Brain storming	Somebody offered the plot (without brain storming)	Selected by the facilitator
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		4	2	1
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What were the sources of irrigation water ?	3	Tube well	Canal	Both	
		1	1	3	
What was the irrigation schedule ?	3	Weekly	Fortnightly	Monthly	
		3	2	1	
Were the trial plots reasonably isolated ? Away from the residential area. Should be in the middle place.	2	Away from the residential area.		Should be in the middle place.	
		Yes	No	Yes	No
		1	0	1	0

Was agreement with the plot owner carried out ?			8	Excellent	Good	Satisfactory	Poor
Items	Yes	No					
Input supply	2	0					
Destructive sampling	2	0		8	6	4	3
Field operation	2	0					
Commercial variety	2	0					

Was general condition of the plot analyzed ?	4	Soil condition		Safety	
		Yes	No	Yes	No
		2	0	2	0
Over all scoring for IPM/FP		Results/Remarks			
Trial plots selection					
Excellent 25-28					
Good 19-24					
Satisfactory 12-18					
Poor 0-11					

Organization

Was proper group formation carried out ?	4	Excellent	Poor
Group formation based on some prescribed method (using picture, using No.)			
Excellent		4	0
Group formation based on previous relationship Poor.			
Group formation based on cost, sect etc. Poor			

Were farmers able to explain the methodology/process of group formation and philosophy behind it ? (based on interview)	2	80-90%	60-70%	50-60%
		2	1	0

Was Inter and intera group coherency existed ?	10	Excellent	Good	Satisfactory	Poor
Sharing of ideas with in the group and with other groups	2				
Extend help to everyone	1	10	8	5	3
To involve all the members in all the activities	2				
Accept all ideas	1				
Healthy competition	2				
Consensus building	1				
Was proper division of responsibilities existed among the group/groups ?	10	Excellent	Good	Satisfactory	Poor
Division of responsibility with in group members	2				
Division of responsibility between groups	2	10	7	5	3
Division of responsibilities was carried out with consensus	2				
Implementation of the responsibilities	4				

Were participating farmers familiar with the concept of the program ?	10	More than 90% Excellent	70-80% Good	60-70% Satisfactory	40-50% Poor
		10	7	5	3
What was the farmer's concept about the expected outcome of the program (Relevance with project objectives e.g. decision making, self reliance/empowerment, problem solving, increase profit margin & community development)	10	80-90% Excellent	70-80% Good	60-70% Satisfactory	50-60% Poor
Were farmer's really interested in the activities ?	12	90 % Excellent	70-80% Good	60-70% Satisfactory	40-50% Poor
Active participation in the activities with enthusiasm	3				
Discussion Q & A	2	12	10	7	4
Attendance register	2				
Mood meters	5				
Overall scoring of the Organization skills		Results/Remarks			
Excellent	51-58				
Good	40-50				
Satisfactory	25-39				
Poor	12-24				

B. Implementation of FFS activities (Season long)

Time management

Were farmers arrived on time?	3	Excellent (90% farm)	Good (80% farm)	Satisfactory (70% farm)	Poor (50% farm)
		3	2	1	0
Was facilitator arrived 15 minutes before the start of the activities?	3	15 MBST	5 MBST	On Time	10 ML
		3	2	1	0
Was daily planning done?	2	Yes		No	

			2	0
Was time being observed keenly while conducting activities ?			2	0
			Excellent	Good
			2	1
			0	
Activities	Start time	Finish time	Excellent 75% activities completed on time Good 60% activities completed on time Poor 50% activities completed on time	
1				
2				
3				
4				
5				
6				
Over all scoring for time management			Results/Remarks	
Excellent 9-10 Good 7- 8 Satisfactory 5- 6 Poor 0- 4				

MBST: Minutes before scheduled time, ML Minutes late

Availability of materials

Was all the material relevant with the daily activities available with each participants/group ?			6	(100%)	(80%)	(60-70%)	(50%)
			6	5	4	3	
List	Relevant	Avail	100% Yes Excellent 80% Yes Good 60-70% Yes Satisfactory 50% Yes Poor				
Masking tape							
Crayons							
Foot role							
Measuring tape							
Rubber band							
Plastic vials							
Plastic jars							
Paper sheet							
Hard board with clip							
Data book							
Colored marker							
Lens							
Scissors							
Brown paper collection bags							
Field bags							
Was the list of materials to be used in the activities prepared and displayed ?			2	Yes	No		
			2	0			
If some material was not available, was innovation made using indigenous material ?			2	Yes	No		
			2	0			
Was some one made responsible for the			2	Yes	No		

material ?		1		0	
Was farmers using material as intended ?	3	80-90%	60-70%	50%	30-40%
		Excellent	Good	Satisfactory	Poor
Was briefing given to the participating farmers for the proper utilization of the material ?	2	Yes		No	
		1		0	
Was the material collected and kept in the safe custody after the completion of activities ?	2	Yes		No	
		2		1	
Over all scoring for material and logistic		Results/Remarks			
Excellent	17-19				
Good	12-16				
Satisfactory	8-11				
Poor	0-7				

Arrangements for exchange visits between FFS
(Minimum sample size = 5 farmers/FFS)

Was exchange visit planed in FFS schedule ?	1	Yes	No		
		1	0		
Was visit program/activity schedule was prepared and discussed with the farmers ?	1	Yes	No		
		1	0		
Was visit objectives clear to the farmers ?	2	Yes	No		
		2	0		
Was list of the objectives documented and available ?	1	Yes	No		
		1	0		
Was visit program/schedule prepared in consultation with the FFS to be visited ?	1	Yes	No		
		1	0		
Were lunch & refreshment arrangements finalized and shared with the farmers ?	1	Yes	No		
		1	0		
Were visiting farmers actively participated in all the activities ?	1	Yes	No		
		1	0		
Did active sharing of ideas between visiting and host farmers carried out ?	1	Yes	No		
		1	0		
Was the exercise "What was learnt" conducted after the visit ?	4	Yes	No		
		4	0		
Were sheets of exercise "What was learnt" were available ?	2	Yes	No		
		2	0		
How many farmers participated in the visit ?	3	90%	70%	60%	50%
		3	2	1	0

Over all score for FFS planning		Results/Remarks	
Excellent 14-15			
Good 11-13			
Satisfactory 7-10			
Poor 0-6			

Evaluation of activities of the day

Was evaluation of daily activities carried out ?	2	Yes	No
		2	0
Did evaluation chart (what was good, what was not good, things need improvement & how to improve them) prepared ?	4	Yes	No
		4	0
Did each group participated in the evaluation process and prepared chart and later on consolidated chart prepared?	2	Yes	No
		2	0
Was last week evaluation chart available for comparison ?	2	Yes	No
		2	0
Were the suggestions given under “how to improve” implemented ?	2	Yes	No
		2	0
Was there any improvement in the things which were not good last week ?	3	Yes	No
		3	0
Over all scoring for evaluation of daily activities		Results/Remarks	
Excellent 14-15			
Good 9-13			
Satisfactory 5-8			
Poor 0-4			

Communication

Was two way communication process exist between farmers & facilitator ?	2	Yes	No	
		2	0	
Was active communication exist between farmers evident from frequent exchange/sharing of ideas ?	2	Yes	No	
		2	0	
Were all the farmers understanding every thing correctly ? Level of inquiry Correct method of doing activities. Performance in the activity.	4	Level of inquiry	Correct method of doing activity	Performance in activity
		1	3	4
Was any exercise carried out to improve communication skill or to check it ?	2	Yes	No	
		2	0	
Were the farmers passive or active recipient evident from their level of participation in discussion ?	2	Yes	No	
		2	0	

What was farmers performance in communication exercise and their understanding of exercise?	3	80-90%	60-70%	40-50%
		3	2	1
Over all scoring for communication Excellent 14-15 Good 10-13 Satisfactory 6-9 Poor 0-5		Results/Remarks		

Facilitation skills

Was the facilitator facilitated the process or imposed ideas ? Did the facilitator accept all ideas ?	2	Yes	No	
		2	0	
Was the facilitator able to kept the interest of the farmers and their moral high ?	2	Yes	No	
		2	0	
Was each Q followed by another Q ? Were leading questions asked ?	2	Yes	No	
		2	0	
Was the facilitator able to communicate in local language ?	1	Yes	No	
		1	0	
Were following qualities exist in the facilitator ? - Patience - Relaxed - Flexible	3	All three	Only two	Only one
		3	2	1
Was the facilitator frequently allowed the farmers to ask Q and to share ideas ?	2	Yes	No	
		2	0	
Was the facilitator accepted criticism ?	2	Yes	No	
		2	0	
Was the facilitator able to understood the feelings of farmers and changed the level/focus of activities ?	2	Yes	No	
		2	0	
Did the facilitator utilize mood meters to conduct FFS ?	2	Yes	No	
		2	0	
Was the facilitator able to handle the difficult situation effectively?	2	Yes	No	
		2	0	
Was the facilitator act effectively in case of trouble shooting ?	2	Yes	No	
		2	0	
Over all scoring for Facilitation skills Excellent 20-22 Good 15-19 Satisfactory 10-14 Poor 0-9		Results/Remarks		

Participatory Approach

Was the facilitator understood the concept of participatory approach ?	2	Yes	No
		2	0
Were the farmers understood the concept of participatory approach?	2	Yes	No
		2	0
Was each Q followed by another Q?	2	Yes	No
		2	0
Were team building exercises were conducted to improve/check the participatory approach ?	2	Yes	No
		2	0
Was every member of the group encouraged to participate in the activities?	2	Yes	No
		2	0
Was discussion made leading to decision ?	2	Yes	No
		2	0
Was facilitator participated in all the activities ?	2	Yes	No
		2	0
Was there division of responsibilities based on consensus with in group ?	2	Yes	No
		2	0
Over all scoring of participatory approach Excellent 15-16 Good 11-14 Satisfactory 7-10 Poor 0-6		Results/Remarks	

Special Topics

Was the topic selected by the farmers/ was the topic come out of discussion during previous FFS session ?	2	Yes	No
		2	0
Was the topic has any relevance with the local situation ?	1	Yes	No
		2	0
Was time of special topic relevant to the crop stage/situation ?	2	Yes	No
		2	0

Were proper field exercises incorporated with special topic ?	2	Yes		No	
		2		0	
Was the Resource Person able to change the level of activities with relation to the mood of the farmers ?	2	Yes		No	
		2		0	
Was non-formal participatory method was used for special topic ?	2	Yes		No	
		2		0	
Were the farmers understood/satisfied with the special topic ?	4	80-90% Excellent	70-80% Good	50-60% Satisfactory	30-40% Poor
		4	3	2	1
How many special topics delivered so for ?	3	More than 4/month	3/month	2/month	One/month
		3	2	1	0
Overall scoring for special topic		Results/Remarks			
Excellent	16-18				
Good	11-15				
Satisfactory	6-10				
Poor	0-5				

New Finding/Interesting Observation of the day

Were farmers actively involved/making efforts to find new things ?	3	Yes		No	
		2		0	
Was list of previous new findings prepared and available ?	1	Yes		No	
		1		0	
Was competitive environment created/exist among groups/farmers for new finding ?	2	Yes		No	
		2		0	
Was facilitator encouraging farmers or groups for new finding ?	2	Yes		No	
		2		0	
Was new finding shared with all the participants ?	3	By using actual specimens	By drawing	Verbally	
		3	2	1	
Was new finding highlighted with the name of the farmer/group ?	2	Yes		No	
		2		0	
Overall scoring for new finding		Results/Remarks			
Excellent	12-13				
Good	9-11				
Satisfactory	6-8				
Poor	0-5				

Cotton ecosystem analyses

Were farmers properly briefed before the field activities ?	2	Yes	No
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the field activities ?		2	0
Were all the farmers actively busy in the field ?	2	Yes	No
		2	0
Was the same methodology used by each group for sampling ?	2	Yes	No
		2	0
Were the farmers working in groups for data collection ?	2	Yes	No
		2	0
Was division of responsibility exist among the groups and among the group members for data collection ?	2	Yes	No
		2	0
Were observations depict the real situation (mirror image) of the field ?	2	Yes	No
		2	0
Were specimens collected from the field for analyzing their relationship ?	2	Yes	No
		2	0
Was curiosity developed among farmers after collection of specimen from the field ?	2	Yes	No
		2	0
<i>Was field activities finished on time ?</i>	2	Yes	No
		2	0
Was drawing made from live specimens ?	2	Yes	No
		2	0
Were all the members of the group involved in data tabulation and sheet preparation ?	2	Yes	No
		2	0
Were farmers able to recognize different stages of insects ?	2	Yes	No
		2	0
Were farmers able to draw correctly different stages of insects and plants ?	2	Yes	No
		2	0
Was there a tendency of sharing of resources by the group ?	2	Yes	No
		2	0
Were all the groups able to make presentation and make decision based on the observations ?	2	Yes	No
		2	0
Was farmer imposing or posing Q ?	2	Yes	No
		2	0
Was facilitator imposing or posing questions ?	2	Yes	No
		2	0
Was previous week chart available and consulted for decision making ?	2	Yes	No
		2	0
Was the progress on decisions to be implemented last week discussed ?	2	Yes	No
		2	0

Was any exercise conducted to improve the observation power ?	2	Yes	No
		2	0
Overall scoring for CAES Excellent 34-38 Good 28-33 Satisfactory 18-27 Poor 0-17		Results/Remarks	

Team building exercises

Was the exercise properly explained to the farmers?	2	Yes	No		
		2	0		
Were all the participants actively involved in the exercise ?	2	Yes	No		
		2	0		
Was facilitator facilitated the farmers about the lesson they learnt from the exercise ?	2	Yes	No		
		2	0		
Were farmers able to state what they have learnt from the exercise ?	2	Yes	No		
		2	0		
Was the facilitator helped farmers in identifying key learning points of the exercise and ask questions that they seek answers ?	2	Yes	No		
		2	0		
Were the farmers learnt the lesson and the objectives of the exercise	4	80-90%	60-70%	50-60%	30-40%
		4	3	2	1
Were farmers able to name different exercises, their objectives and able to performed them ?	4	80-90%	60-70%	50-60%	30-40%
		4	3	2	1
Over all scoring for team building exercises Excellent 16-18 Good 11-15 Satisfactory 7- 10 Poor 0-9		Results/Remarks			

Science & Farmers

Was the concept of science & farmers made clear to the farmers ?	2	Yes	No		
		2	0		
What methodology used to identified the issues ? Lecture Briefing Discussion Facilitation	4	Lecture	Briefing	Discussion	Facilitation
		1	2	3	4

Was the experiment topic selected by the farmers ?	2	Yes		No	
		2		0	
Was the experiment based on the existing problems of the area ?	2	Yes		No	
		2		0	
Was the design/layout of the experimentation done by the farmers after facilitation by the facilitator ?	2	Yes		No	
		2		0	
Was experiment being conducted in three replicates ?	2	Yes		No	
		2		0	
Were the farmers clear about the objectives of the experimentation ?	4	80-90%	60-70%	50%	30-40%
		4	3	2	1
Were all the farmers clear about the methodology/sampling of the experimentation ?	4	80-90%	60-70%	50%	30-40%
		4	3	2	1
Were the resources needed for experimentation identify by the farmers ?	2	Yes		No	
		2		0	
Was experiment with proper control plots ?	2	Yes		No	
		2		0	
Was the experiment being conducted in the field and by the farmers ?	2	Yes		No	
		2		0	
Were farmers involved in the analyses of the results and know the methodology	4	80-90%	60-70%	50%	30-40%
		4	3	2	1
Were farmers able to state the objectives, layout and sampling methodology of experimentation ?	4	80-90%	60-70%	50%	30-40%
		4	3	2	1
Did the farmers share the results of the experimentation with other farmers ?	2	Yes		No	
		2		0	
Was there any apparent change in the level of confidence of the farmers ?	4	80-90%	60-70%	50%	30-40%
		4	3	2	1
Overall scoring for Science & Farmers		Results/Remarks			
Excellent	39-42				
Good	30-38				
Satisfactory	19-29				
Poor	10-19				

Discovery based learning (Insect Zoo)

Were objectives of discovery based learning clear to all the farmers ?	3	80-90%	60-70%	50%	30-40%
		3	2	1	0
Was same methodology used by different groups of the farmers for	2	Yes		No	

different groups of the farmers for insect zoo ?		2		0	
Were farmers able to identify correctly at least three beneficial at the end of 5th CESA ?	3	80-90%	60-70%	50%	30-40%
		3	2	1	0
Were farmers familiar with the exact function/interaction of at least three beneficial with their pests at the end of 6th CESA ?	3	80-90%	60-70%	50%	30-40%
		3	2	1	0
Were farmers able to recognize correctly different immature stages of important sucking pests at the end of 6th CESA ?	3	80-90%	60-70%	50%	30-40%
		3	2	1	0
Were farmers familiar with life cycle of bollworms at the end of 8th CESA ?	3	80-90%	60-70%	50%	30-40%
		3	2	1	0
Were farmers familiar with most of the important beneficial at the 8th CESA ?	3	80-90%	60-70%	50%	30-40%
		3	2	1	0
Were farmers familiar with the function of most of the important beneficial at the end of 10th CESA ?	3	80-90%	60-70%	50%	30-40%
		3	2	1	0
Were farmers familiar with the life cycle of most of the important beneficial at the end of 12th CESA ?	3	80-90%	60-70%	50%	30-40%
		3	2	1	0
Were farmer able to draw correctly picture of at least three beneficial at the end 8TH CESA ?	3	80-90%	60-70%	50%	30-40%
		3	2	1	0
Were farmers able to explain the methodology of studying pest-beneficial interaction at the end of 12th CESA ?	3	80-90%	60-70%	50%	30-40%
		3	2	1	0
Were farmers able to explain the praying habit of most of the important beneficial at the end of 12th CESA?	3	80-90%	60-70%	50%	30-40%
		3	2	1	0
Were farmers familiar with feeding rate/habit of important beneficial at the end of 15th CESA ?	3	80-90%	60-70%	50%	30-40%
		3	2	1	0
Overall scoring for discovery based learning (insect zoo)		Results/Remarks			
Excellent	35-38				
Good	29-34				
Satisfactory	19-28				
Poor	10- 18				