

System Wide Program on Integrated Pest Management

Task force meeting

Workshop on assessing the impact of participatory research and extension methods in IPM

**Nairobi
15-17 March 2001**

Report of working groups *(First draft, comments are welcome)*

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I. Background.

The System Wide Program on Integrated Pest Management has one task force related to the impact of participatory research and extension methods in IPM. This task force organized a workshop oriented to exchange ideas and approaches about impact evaluation of IPM. In addition, the workshop aimed at developing a common framework and mechanisms for system wide IPM impact assessment considering economic, environmental, human and social capital aspects of IPM. During this workshop, three working groups were formed to look at specific topics. The first group dealt with assessing the impact of biophysical research. The second group discussed assessing the impact of IPM pilot implementation programs. The third group discussed the impact of large-scale IPM programs. This report summarizes the main ideas that resulted from each of the working groups.

II. Working group 1: Assessing the impact of biophysical research.

This working group discussed the issue of assessing impact of new IPM components generated and disseminated by agricultural research. At this level, most of the key information needed for the assessment comes from research managed trials and components that are quickly taken to farmer fields. For obtaining appropriate information, the validation of IPM research on station should be efficient in terms of generating useful information for impact evaluation.

a. Objectives of impact assessment.

- Reinforce and enhance the research base (stability of funding).
- Provide feedback for designing appropriate technology and make decisions for resource allocation for research.
- Provide information to research managers for priority setting.

- Strengthen NARS collaboration (Cuban example¹).

b. Clients.

The results and methods for impact evaluation could be utilized by researchers, donors, NGOs, GOs (national research institutes), private sector and farming organizations such as cooperatives.

c. Phases and indicators for IPM impact assessment.

The working group identified four phases that are needed for evaluating impact of IPM. More information about indicators and methods are presented in Appendix 1.

Diagnostic phase: This implies to conduct a diagnostic of the current situation and involves identifying a profile of practices and the importance of the crop and the pest. It is important here to define the indicators to be monitored and evaluated.

Component research phase: It involves determining a profile of feasible components, and conduct basic research on their performance.

Pilot site phase: This is an important phase where the site should be selected based on the economic importance of the crop and the pest, the ecosystem, the costs for running the site and the evaluation and the partners that could be involved. The implementation and evaluation of the pilot site should start with the definition of a menu of options, exposing farmers to these options with all the available information and training materials or approaches, looking at the uptake of IPM practices based on trials that are run by farmers, and studying the diffusion at a later stage.

Impact assessment phase: In this phase, the key information is the per unit benefit of IPM utilization. This can be expressed in \$/ha

¹ INIVIT (Cuban research institute on tropical “viandas”) with CIP support conducted impact evaluation of the IPM program for controlling *Cylas formicarius*.

or \$/farmer. It is also important to know if the additional benefit represents a significant part of the household income, and also to estimate the fate of practice so that projections about diffusion and adoption can be made.

III. Working group 2: Assessing the impact of IPM pilot implementation programs.

The working group exchanged ideas about assessing the impact of IPM pilot programs, which is related to research adaptation and implementation. This means a process through which technology developed by researchers becomes farmer strategies for pest control at pilot areas.

a. Objectives of impact assessment.

At the level of adaptive management of the project, the objective is to assess whether the technological approach works at farm(er) level and whether the promotional approach that is being used also works at farmer level.

At the level of advocacy, the objective is to assess whether the overall approach is worth scaling up.

b. Clients.

The clients of this type of impact assessment can be identified at different levels:

- Research team: researchers, farmers, development workers and extension officers related to the pilot programs.
- Organizations: research managers.
- Key stakeholders: farmer groups, national and local policy makers, district research and extension officers, and the private sector.
- Donors: multi-lateral, bi-lateral, national and local.

c. Phases and indicators for IPM impact assessment.

The working group exchanged ideas about the process of IPM development and dissemination. Figure 1 shows the different stages of the process and the way in which farming communities and the research team interact to find suitable pest control solutions that can be incorporated into crop management. This figure shows that it is important that the ownership of IPM technology passes from the research team to the users; for this to occur, there should be a demand on the part of the users (indicated as “consultation” in the graph). When demand and supply meet, there is a collaboration process between farmers and researchers, and they identify a “plausible promise” and as a result the roles are exchanged and IPM is “own” by farmers and researchers monitor the process through consultation. At this stage is when impact can be achieved at farmer level.

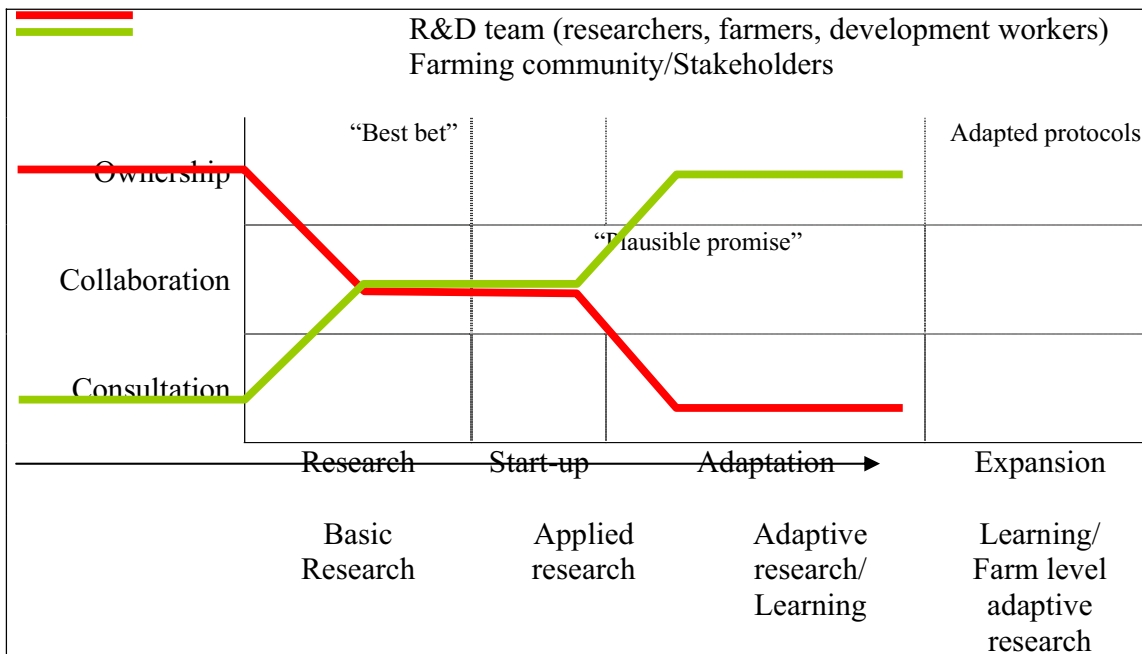


Figure 1: Research phases and processes by which IPM ownership passes from researchers to users.

Appendix 2 shows the phases of the evaluation process that include a diagnostic stage, the assessment of the biophysical problem and the identification of the hard components of the technology. After that, the socio-economic context should be assessed and soft components of the technology identified. There are two additional phases that are related to working towards meeting the objectives of external and internal clients. For the former, it is important to draw attention to the problem and attract resources for research and implementation, while for the latter, it is important to quantify the extent of the problem and making decisions among options.

Appendix 3 presents the type of assessment and indicators that should be used to assess impact. Regarding types of assessment, there are a number of approaches that could be used such as participatory rural appraisal, baseline studies, geographical information systems and modeling. The indicators should be defined at the level of the natural, human and social capital, and also include financial and economic aspects.

IV. Working group 3: The impact of large-scale IPM programs.

This working group discussed concepts and methods for evaluating the impact of programs that are implemented to disseminate IPM information widely. This type of evaluation goes beyond evaluating the impact of research per se and IPM implementation at pilot areas. It involves ways to measure effects at farm household level, at community level and also at institutional and policy level, when a program has reached a large-scale implementation phase.

a. Objectives of impact assessment.

This type of assessment provides a service to the client to assist monitoring and evaluating impact, and enable the client to make appropriate decisions to increase desired impact.

b. Clients.

The main client of this assessment is the coordinating body of a large-scale IPM training program to improve the management of the agro-ecosystem.

The coordinating body of this type of program should consist of farmers, extension workers, researchers, policy makers, providers of inputs, market chain, and also emerging and future generations.

c. Impact areas and assessment levels.

Three main areas can be identified for direct impact. First the economic area which includes food security, economic viability and the soundness of the technology. Second, the social area that involves empowering rural poor, social equity and healthy and safety issues. And third, the ecological area that takes into consideration environmental integrity and the relationship of the technology to agro-ecological principles.

There is also a long-term determinant that is the sustainability of the IPM effects, which involves equity, productivity and stability.

The assessment levels include measuring changes at farm household level, at community level and at institutional and policy level.

At farm household level, there are four types of indicators:

- Economic: includes net income (yield, input costs, market access, product price and diversification).
- Ecological: takes into consideration soil health, biodiversity, non-human poisoning and human health.
- Social (intra-family), involves collective decision-making and action, and movement of learning within the family.

- Human: includes observation and reliance on anticipation, innovative capacity, knowledge and understanding of the agro-ecosystem, linking knowledge and practice and confidence.

At community level, there are three main types of indicators:

- Economic, which includes market impact (inputs, sales and diversification of shops), multiplier effect (more wealthy community) and employment generation.
- Social, takes into consideration for example, spread of knowledge (farmer activism in diffusion, farmer training activities), farmer-led experimentation, social classes, gender, leadership roles, role of FFS and graduates, level of interaction, farmer organization (democracy), collective action (awareness) and formal education.
- Ecological, includes human health (exposure, poisoning, nutrition), non-human poisoning, biodiversity, water quality and stability of the agro-ecosystem.

At institutional and policy level (district and national) there are also three main types of indicators:

- Economic, which takes into consideration the investment needed, for example, for farmer-led FFS, and the use of government funds for IPM activity. It also includes indicators such as the inclusion of IPM into formal budget lines, green commodity markets and certification, new markets or contracts to produce, national and international quality standards and credit schemes and subsidies.
- Social, takes into consideration aspects such as awareness, formal IPM programs, institutionalization of IPM (movement beyond PPD, wider extension programs, change of job description, incentives and assessments), interaction among

actors (e.g. health, research and irrigation agriculture), emerge of farmer organizations and local participation in larger networks (tiered farmer organizations), responsiveness of officials to IPM activities, involvement of IPM farmers in institutional decision-making, functional relationships between IPM activities and researchers (curriculum development and research agendas), and also corruption.

- Ecological, which includes water quality, habitat modification (e.g. for natural enemies), food monitoring and safety, certification schemes for organic produce and introducing IPM curricula in schools.

V. Concluding remarks.

Evaluating the impact of agricultural technologies is a challenge, and evaluating the impact of an information-knowledge intensive technology such as IPM is even more challenging. The working groups discussed three types of evaluating IPM impact: evaluating the impact of IPM research, evaluating the impact of IPM implementation at pilot areas and evaluating the impact of large-scale implementation of this technology. For each of them, objectives, indicators and phases were proposed. However, these general ideas should become practical guidelines for IPM practitioners to use. Therefore, the task force should work on defining such practical guidelines and select case studies where those guidelines should be used, adapted and evaluated. Taking into consideration that CG centers work more on the side of research and implementation at pilot areas, evaluating the impact of these activities should be emphasized.

VI. Appendixes

Appendix 1: Phases, indicators and methods for assessing the impact of biophysical research (results of Working group 1).

Type of Information needed	Indicators	Methods
1. Diagnostic Phase	<ul style="list-style-type: none"> • Profile of practices • Importance of the crop • Importance of the pest 	<ul style="list-style-type: none"> • Survey (surveys) • Importance of the crop • Farmers' perception of the pest • Intensive field studies: (Infestation levels, damage and potential loss) <p>*****BASELINE*****</p>
2. Component research Phase	<ul style="list-style-type: none"> • Profile of feasible components • Basic research • How much research? 	<ul style="list-style-type: none"> • Survey, inventory, • Study Interactions (plant/pest/natural enemies, weather...) • This is a dynamic process (Research is a continuous process)
3. Pilot Site Phase *	<p>The choice of pilot site is Contextual</p> <ul style="list-style-type: none"> • Pest (economic importance) • Crop (Importance) • Ecosystem • Cost • Partners <p>*****HOT SPOT*****</p>	<ul style="list-style-type: none"> • Surveys, field studies and secondary data • Surveys • Population densities (counts), Biodiversity and natural enemies • Surveys • Networks
4. Impact assessment Phase (Economic/Financial)	1. Per Unit Benefit (\$/ha)	<ul style="list-style-type: none"> • Level of infestation • Percent damage • Damage over time • Profile of farmer practices • Pesticide and toxicity profile
	2. Percent of Household income	Survey on sources of income
	3. Fate of practice	<ul style="list-style-type: none"> • Early acceptance • Modification • Reject <p>QUESTION: Would the farmers have adopted the practice/technology without the project?</p> <ul style="list-style-type: none"> • Diffusion Study at a later stage (4-5 years)

Appendix 2: Results of Working group 2 regarding phases of impact assessment.

Phase	Needs and opportunity assessment	Technological options	Learning model for, and integration, adaptation of options	Implementation of protocols (pilot scale)
Typology of research	Diagnostic	Basic – Applied	Applied – Adaptive	Farmer adaptive
Hard components	Bio-physical problem	Technologies	Integrated technologies and Appropriateness in context Learning model	Integrated technologies and Appropriateness in context Learning model
Soft components	Socio-economic context	Appropriateness in context	Appropriateness in context Learning model	Appropriateness in context Learning model
Objective of impact assessment for external clients	Draw attention to problem and attract resources for R&D	Show comparative advantage of “best bets” and attract resources for pilot implementation	Show comparative advantage of integrative approaches, demonstrate potential impact, and attract resources for pilot scale expansion	Demonstrate potential impact, and attract resources for large scale expansion
Objective of impact assessment for internal clients	Quantify the extent of the problem	Help to decide among options	Provide feedback for adaptive R&D process and guide choice of up-scaling mechanisms	Guide to determine up-scaling mechanism

Appendix 3: Results of Working Group 2 regarding phases and indicators for impact assessment.

Phase	Needs and opportunity assessment	Technological options	Learning model for, and integration, adaptation of options	Implementation of protocols (pilot scale)
Type of assessment	PRA Baseline GIS Modeling	Technology evaluation Modeling	Technology evaluation Process evaluation Impact evaluation Modeling	Process evaluation Impact evaluation GIS Modeling (?)
Indicators: Natural	Yield Pest levels NE activity Pesticide load Soil health	Yield Pest levels NE activity Indicators of performance	Yield Pest levels NE activity	Yield Pest levels NE activity Pesticide load Soil health
Human	Participation IPM knowledge IPM skills IPM practice Health Gender Poverty	Participation Farmer perception	Participation IPM knowledge IPM skills IPM practice	Participation IPM knowledge IPM skills IPM practice (adaptation, adoption, rejection) Health Gender Poverty
Social	Collectivity Awareness Regulatory framework	Collectivity	Collectivity Dissemination Awareness	Collectivity Dissemination Awareness Regulatory framework
Financial/ physical	Farm economic analysis Supporting infrastructure	Farm economic analysis	Farm economic analysis	Farm economic analysis Supporting infrastructure Cost-benefit analysis