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Different families Different IPM

Analysis of different groups of farm households involved with
• CATIE IPM/AF (NORAD) Program in Nicaragua
and the changes that occurred as result of the interactions.

The Regional CATIE IPM/AF (NORAD) Program

The Regional CATIE IPM/AF (NORAD) Program is an initiative which began in 1989 to strengthen national Integrated Pest Management (IPM) capacity in Nicaragua. The Program consisted of three phases. In the third phase, which began in 1999, the Program worked in IPM and agroforestry with around 7000 farm families, 300 extensionists, 60 specialists and 70 decision-makers from about 70 Nicaraguan organisations.

The Program's methodology consisted of simultaneous linked cycles of workshops for groups of specialists, extensionists and farmers, who participated in training based on crop growth stages, aimed at improving their decision-making capacity in pest, crop and tree management.

In order to carry out and coordinate the training activities at a national level, the Program encouraged the formation of regional groups organised by theme or by crop, which were made up of members of organisations working in each region, and of groups of national-level specialists. These groups formed the central pillar of the Program's work, and were in their turn coordinated by a committee known as the National IPM Committee (CN-MIP).





What is this leaflet about?

This leaflet presents a brief analysis of the differences between the farmers who worked with the Program, and how these differences have led to different changes in their pest management as a result of the Program's work.

What was the objective of this study?

In development, we often talk about farmers, or the beneficiaries of development programmes, as if all the members of these groups were same. We try here to describe the different groups of farmers who, because of their own particular options and interests, experienced very different changes as a result of participating in the Program's work. We hope that this focus will help us to see how we can better direct our effort in development work, and we hope that you will continue the discussion with your colleagues and friends.

How was this study conducted?

We visited about a hundred farmers, with whom we went to the field as helpers. We got to know their families, and spent time talking to each family member, over a period of about three days for each family. We noted farmers' long-term objectives, how they produced their crops and what they thought about the extensionists who visited them, putting these different definitions together to make coherent pictures of the farmers we met. We were able to distinguish three different groups of farmers from the mass of fieldwork data gathered: each group had different objectives and different ideas about the most appropriate way for them to grow their crops.

As a result of this analysis, we concluded that each of these farmer groups had benefited differently from their participation in the Program's work. This helped us to put the Program's results into context, as well as supplying detailed information to guide future work and contributing to other analyses of the Program's work.

What were the different farmer groups that we found?

We found three groups of farmers, referred to by the farmers themselves and their families as the *learning* farmers, the *persevering* farmers and the *risk-taking* farmers.

The learning farmers

The majority of these farmers belonged to organised farmer groups and had their own land, which they cultivated themselves. Most sold better quality products, at a premium, to alternative markets, through the medium of their farmer organisation. They used on-farm resources as far as possible, and local, specialised labour. The most common crop amongst this group of farmers was organic coffee.

The persevering farmers

These farmers did not, in general, belong to farmers' organisations. They owned their own land and cultivated it themselves. They sold their crops to mainstream markets via intermediaries at very variable prices. They took out credit in order to farm, but tried to use on-farm resources as far as possible. Labour was supplied by family members and by exchange with other farmers. Most of these farmers grew vegetables commercially, farming small areas intensively to do so.

The risk-taking farmers

These farmers did not belong to farmers' organisations. They had their own land, which they farmed themselves. They sold to the mainstream market at very variable prices. They depended upon credit as well as external inputs in order to farm, and they used hired labour. The commonest crop within this group of farmers was vegetables, cultivated commercially and intensively on a medium or large scale.



What were the *learning farmers'* objectives and what was their perception of the extensionists?

The *learning farmers'* objectives were:

- ◆ To be more independent of purchased fertilizers and pesticides, of credit and of technical assistance.
- ◆ To achieve a higher degree of control of the price they could achieve for their products at market.
- ◆ To increase their yields and the quality of their crops and to use specialised labour.

"They [the coffee fields] have not fallen into dis-use here because organic fertilizer is different. But now we sell organic coffee better than the big [coffee] farmers and we don't need to buy pesticides. We try to spend less so that we don't need to ask for loans. What we do need, though, is to do a lot of experimenting."

The term the *learning farmers* (*agricultores educados* in Spanish) came from a farmer who explained that *"to farm organically you need to learn both to do things and to think in a new way"*. By this he was referring to the need to have both the knowledge and the attitude needed to change over to a farming system based on understanding agroecological relationships, for example, to be able to manage pests using effective cultural practices.

The role which development agencies played seemed to be less important for *learning farmers*. These farmers viewed a good extensionist as someone who had the ability to relate to the farmer and understand things from his point of view.

"A good extensionist was one who didn't hassle me. He thought well of me, he was a good guy, and I took him to see my coffee... Good extensionists are interested in what goes on in the field, they are patient and they spend quite a lot of time with farmers."

What were the *perservering farmers'* objectives and what was their perception of the extensionists?

The *perservering farmers'* objectives were:

- To reduce the risks associated with using pesticides (in part because several had had experiences of pesticide poisoning within their families)
- To reduce production costs
- To achieve better, more stable prices for their products
- To obtain access to credit at low levels of interest.

Farmers in this group produced a range of crops on small areas of land, which contributed to reducing risk and also made it easier to manage a meticulous degree of pest monitoring on their crops. They also used both soil conservation and agroforestry techniques. They were potential intermediate users of IPM, the lack of more stable markets for their products made them dependent on credit and on chemical inputs, though their use of the latter was often minimal.

The name *perservering farmers* (*agricultores empeñosos* in Spanish) came from a farmer from this group who mentioned that success depended on perservering in the quest to learn and experiment with new things.

Organisations offering technical assistance had contributed to the improvement of the agricultural systems of these farmers, but in a fairly precise way. They viewed extensionists as "*experts*" whose job was "*to go into farmers' fields and make recommendations.*"

"A good extensionist does not say to a farmer 'This crop is finished, it's no good for anything.' Instead he says 'Do this and this, and that will work: that's the thing to do.' He can tell us what we can do. I can tell him: 'I've got such and such a pest' and he will come to our field and see."

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What were the *risk-taking farmers'* objectives and what was their perception of the extensionists?

The *risk-taking farmers'* objectives were:

- ◆ To use external inputs to ensure they achieved their yields.
- ◆ To recuperate lost capital by repeatedly sowing the same crop, hoping that prices "will go up".

The yields of *risk-taking farmers* in the crop in which they received training were extremely variable, and had dropped over time. This was due to increasingly serious pest outbreaks, encouraged by monocropping and very infrequent crop rotation. *Risk-taking farmers* used pesticides on a calendar basis, although they recognised that "*sometimes they [pesticides] control pests well, and other times they seem not to work at all, and almost seem to increase the numbers of pests.*"

Risk-taking farmers depended on almost all the external institutions (those offering credit, agrochemicals, technical recommendations, etc.) and as a result these farmers had little control over how they grew their crops. Since they sold their crops to fixed intermediaries who offered immediate credit in the form of money or inputs (principally chemicals), neither did they have any control over the prices they received.

Various *risk-taking farmers* worked with others to produce their crops in a system of share-cropping. Within this, one farmer mentioned that *risk-taking* in the sense that he meant it (he used the term "*agricultores legales*" in Spanish) was the opposite of 'holding back' [not investing large amounts of money] or "being difficult to shift" [opposing the other share-cropper's decisions to spend money on the crop]. Thus, *risk-taking* meant that a person was willing to take the risk of investing large amounts of capital.

Organisations offering technical assistance played an important role for *risk-taking farmers* as providers of inputs, services and capital. In this context, *risk-taking farmers* viewed a good extensionist as one "*who knows what you can put on a crop so that we get a harvest*".

How did farmers change after the Program's training?

The *learning* farmers

The *learning* farmers learned how to relate pest populations in their fields to micro-environmental conditions in their crops, and to their own ability to manage these conditions. Their biological and ecological knowledge, which was reinforced by the Program (especially with regard to managing crops by phenological crop stages), to a large extent formed the basis of their pest management strategies. They realised that their cultural practices as well as their agronomic and soil and forest conservation practices all had an impact on pest management. The *learning* farmers therefore moved from non-integrated pest management to pest management based on ecological and social reasoning.

A *learning* farmer explained how they managed coffee berry borer using cultural practices and shade management:

"We used not to have any coffee berry borer, and now we do ... Now, in August and September, we try harvest, harvesting all the berries which have ripened early. In December, we glean: this is when we collect all the berries which have fallen to the ground since the last cut. In January, we make the final harvest, when we collect all the berries left on the tree as well as those on the ground. Doing this means that we stop the coffee berry borer from reproducing. Another important thing is that the coffee berry borer does not like the sun – it hides in the big weeds. That's why we have to cut down the weeds. With the weeds controlled, the bushes well-pruned to control low-level shade and heavy shade, we control the coffee berry borer."

The *perservering* farmers

After training, the *perservering* farmers still associated the source of pests with climatic conditions and with the continual use of pesticides. Their knowledge in this area was not sufficient for them to be able to draw an agroecological relationship between the crop, pest levels and the local environment. Various *perservering* farmers had had experiences of pesticide poisoning and so avoided using these products. After training they came up with alternatives, principally botanical pesticides, 'stews' and the use of repellent crops.



A persevering farmer explained how he managed his pests by using substitutes for pesticides and associated practices:

"For sprays I have used madero negro and zorrillo... Madero negro and zorrillo work as a foliar fertilizer and as a repellent... As we work in the field ourselves, we check the crop each day."

"We have sown gandul, frijol terciopelo, mung beans, cowpeas, runavilla, frijol de vara. These crops improve the soil because they protect the topsoil from the sun. To protect the land I have planted these trees (described as we walked across his farm) manzano, genicero, guabano, laurel, mango, leucosia, neem, madero negro, guachipilí. Some also provide me with good, valuable wood."

The risk-taking farmers

After training, the *risk-taking* farmers generally said that they did not know where pests came from. Farmers variously related their presence to climatic changes, to the soil, and/or to the presence of vectors. Their lack of biological and ecological insect knowledge (life cycles, predators, etc.) limited these farmers' confidence in experimenting with other pest management methods. Nonetheless, crop monitoring contributed to a relative reduction in the use of pesticides due to farmers' improved decision-making capacity.

Reduction in pesticide use was also influenced by extensionists' explanations of the effects of pesticides on human health and on the environment.

A *risk-taking* farmer explained how he managed pests with pesticides and by monitoring pest populations:

"Pests are like a child which you have to keep an eye on all the time... Right now in the morning I didn't see anything. If in the afternoon I go along and I see a pest, I make a note of the points [where I was looking] to see if tomorrow there are more and I need to spray. In the training sessions they told us that we had to know how our plants were doing all the time. We have reduced our costs. Before the workshops we sprayed with things that weren't even recommended for that pest. Now we know when we need something. Before we spent 10,000 colónes [about US \$ 665] and now we spend about 6,000 colónes [about US \$ 395]; we care in fungicide because we apply more prevention [fungicide] than curative [fungicide]."

What factors encouraged the changes the Program was trying to bring about?

For the *learning farmers*

Factors promoting

changes in knowledge

- Monitoring of pests, diseases and weeds, pruning, pest counts etc. take place on a continual basis
- Understanding of the principles of IPM/AF practices which were already being used
- New sources of information

Factors promoting

changes in the use of IPM techniques

- Continuous follow-up of extensionists after training
- Techniques tailored to crop phases
- Experimenting with new techniques associated with IPM

For the *perservering farmers*

Factors promoting

changes in knowledge

- Systematic collection and classification of insects
- Relation of farmer's practices with IPM
- Learning about how to do experiments
- Discussion of techniques whilst in the experimental plots
- Recognition of new pests

Factors promoting

changes in the use of IPM techniques

- Farmers understand the risks associated with using pesticides
- Use of botanical pesticides and of 'stes
- Farmers do not have money to buy external inputs
- Incorporation of organic material into the soil
- Extensionists focus on techniques which can be used instead of pesticides

For the risk-taking farmers

Factors promoting changes in knowledge

- ◆ Growing experimental plots
- ◆ Explanations of the techniques used are given by other farmers
- ◆ Knowledge of pest management options: pesticide substitution and cultural practices

Factors promoting changes in the use of IPM techniques

- ◆ Other farmers in the community use the techniques
- ◆ The practice worked in the demonstrations
- ◆ The practice is easy to implement
- ◆ The resources needed can be found on-farm or within the community
- ◆ Use of botanical pesticides and 'stews'
- ◆ Incorporation of organic material into the soil

Factors promoting change in all of the groups of farmers

- ◆ Program design

The way in which the training sessions were designed encouraged farmers to experiment, and reinforced the use of green manures and agroforestry practices. Exchanges with other farmers were especially important. Another important element was the Program's system of monitoring extensionists, which gave them more confidence in the process of offering training to farmers.

- ◆ Collaborating organisations

Extensionists with a more open attitude, who visited farmers and their families, as well as going into crops in the fields, encouraged farmer participation in the training sessions as a result of closer extensionist-farmer relationships. The promotion of IPM as a central element in the collaborating organisation's work was important factor in enabling extensionists to achieve greater change.



What factors limited the changes the Program was trying to bring about?

There were various factors which limited the changes:

- Organisations which promoted packets of technology, or which subsidised pesticides, greatly limited the changes occurring after the training.
- The lack of alternative markets for products in transition (that is, those which could not yet be certified as organic) meant that many farmers were unable to make the first step towards changing their farming systems.
- Access to credit limited experimentation since this enabled many farmers to apply chemicals, this being a known option which provided emotional and visual security.
- Providing farmers with credit partially in the form of inputs did not facilitate change to a more agroecological approach to pest management.



What does this study tell us?

In this study we found three distinct farming styles. Farmers with different farming styles had different objectives as well as different levels of IPM knowledge and experience before becoming involved in the Program's work. These different groups of farmers changed in different ways as a result of the Program.

The *learning farmers*, for example, began to relate shade management practices with the management of the coffee berry borer, partly due to the participative and applied nature of the Program's training, and in part because they were in a position to benefit from IPM technologies since they had access to markets paying a premium for organic products.

The *risk-taking farmers*, on the other hand, were not able to make these connections. However, they made important progress in this direction, motivated by effective practical demonstrations of simple and applicable technologies which were conducted during the Program's training sessions. The impact of the Program on this latter group of farmers, who started off with a much lower level of IPM knowledge, is as important as the impact on the *learning farmers*, since the Program started the *risk-taking farmers* on the road to IPM.

Although the crops and the geographical areas defined the initial conditions for the Program to a large extent, we found farmers from all three groups in the same community, growing the same crops. We can therefore conclude that farmers have different intentions even under similar crop conditions. This helps us understand two things. Firstly, farmers' intentions are something we can try to comprehend and to clarify with them, before initiating work (i.e. 'What are different farmers in the same community looking to achieve in terms of their agricultural production?'). Secondly, we can adjust the way in which we work depending on the groups we are aiming to work with (i.e. 'How can we diversify in order to reach the groups we wish to work with?').

Additionally, whilst farmers' different intentions are not necessarily entirely determined by market or political conditions, they are nonetheless limited or enhanced by these. For example, if a farmer cannot find a market which will pay a good price for coffee in transition (to organic status), it is possible that this will constrain his decision to farm organically over a large area.



Why gather this sort of information?

Studies of social diversity would not be necessary if we all lived in the same reality (that is to say, in the same culture, motivated by the same things). Because this is not the case, development organisations' activities mean that the different realities of the different actors involved come into contact, and end up in dialogue with each other. Once we understand the knowledge, experience and goals – the social diversity – of the different actors involved, we are better able to understand the changes that take place. We also get a better idea of which factors encouraged or constrained the process of change.

This means that we can get a clearer picture of the Program's impacts than we would achieve through qualitative studies alone, as well as obtaining information which can be a valuable guide to future work.

So among other things, social diversity studies, allow us to:

- Conduct baseline studies at the beginning of a programme, so that the actors involved can try to understand, value and learn about their initial differences (different knowledge, experience, expectations, power, etc.).
- Design programmes that can benefit different social groups within the same community.
 - Conduct impact studies to provide information about the nature and potential duration of the impacts which have been achieved. This helps us to avoid falling into the trap of *only* referring to actors, after an intervention, in terms of the project's hoped-for results. (For example, the terms 'innovative farmers' or 'non-innovative farmers' vary according to the programmes' objectives or also those of the farmers.)
 - Take into account that whilst the conditions under which farmers farm influence their farming, so does farmers' social diversity: their personal experience, their values, their dreams and their goals. We cannot, therefore limit ourselves to evaluating the technical and political aspects of farming, but must include social diversity as well.

The Wider Lessons Studies

This leaflet forms part of the Wider Lessons Studies (WLS) which consist of:

- A qualitative study on how and why the CATIE IPM/AF (NORAD) Regional Program has had an impact on the different levels of participants who were involved in the Program's work and
- An economic analysis of the costs and benefits of the Program.

The main focus of the research into the process of change has been on explaining and understanding why the changes observed have taken place, and so the research has been qualitative, not quantitative, in nature. This depth of understanding has also fed important information into the assumptions made in connection with the calculations of economic efficiency, since economic efficiency is only one of the indicators of the impact of IPM projects. The WLS were conducted by CABI Bioscience and the University of Hannover in collaboration with Program members.

The following publications are available in connection with the WLS:

The following short illustrated leaflets are available in hardcopy:

- Different families: different IPM
- Not all extensionists are the same
- Decision-makers: a factor in the change to IPM
- Economic cost-effectiveness: an important criterion in IPM

The following longer documents are also available in electronic form by e-mail:

- Social diversity and differentiated impacts on stakeholders of CATIE IPM/AF (NORAD) Program
- An economic cost benefit analysis of CATIE IPM/AF (NORAD) Program.

To obtain copies of these please contact

CABI Bioscience (glopez@cabi.org) or

CATIE (catienic@mipafcatie.org.ni)

A version of the economic cost-benefit study will also be available in English, as a Pesticide Policy Project publication, from the **University of Hannover**.
(contact: waibel@ifgb.uni-hannover.de)