

Better livestock management in Guatemala

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Cattle production in Central America is a source of stable income for livestock farmers. But in the eyes of environmentalists it is responsible for increasing deforestation. This contradictory picture emerged in the 1970s, when land allocated to agricultural production increased dramatically because of the increasing demand for meat, milk and other products. As a consequence of this huge demand, along with cattle production under unfavourable farm management conditions, serious environmental problems evolved. These included land degradation, and in particular, the degradation of pastures. In the region, more than 50 percent of pasture land is now degraded.

In 2003, the *Centro Agronómico Tropical de Investigación y Enseñanza* (CATIE) and organisations in three countries (Guatemala, Honduras and Nicaragua) began a project aiming to work with cattle farmers to find solutions to low productivity and environmental degradation. Partnerships were created between key stakeholders -farm families, local leaders and some crucial institutions- who have been involved in designing and testing alternative ecological, social, economic and political approaches for improved land use. By using a participatory approach, the project aimed to go beyond “local participation”, because a livestock production system is much more complex than a crop production system.

The case of El Petén, Guatemala

The region of El Petén in Guatemala is known not only for its tourist attractions -the Mayan cultural sites- but also because it is a very important agricultural region. Located in the north of the country, the population of this region has been expanding rapidly for some time now, due to a high natural population growth and increasing numbers of migrants coming in from other areas of the country. This region started to become an important production area in the late 1960s, when the national government promoted colonization to reduce the social conflicts in areas with less potential. More and more immigrants became involved in crop and animal production, using forest lands, and currently, more than 50 percent of the agricultural land is used for cattle production.

Most farmers in this region have long-standing experience in cattle production, but because of changing environmental and social conditions, some of the practices used are no longer appropriate. Farmers used to practice slash-and-burn methods of farming, but due to the population increase, such extensive production practices are no longer viable, fallow periods have been reduced, and more forest area is being cleared for agricultural purposes as well.

In 2003, the project team identified local partners in El Petén who were affected by these ecological and production problems and who were interested in participating in the project. After initial visits to the pilot area, the team identified two farmer groups: PETENLAC, a farmer cooperative founded in the early 1990s, and an informal farmer group, that we referred to as *Ejido*. The members of PETENLAC own their land while members of the *Ejido* group are farmers who rent land from the municipal government. The cooperative used to process milk

into products such as cheese and cream, but now only functions as a milk collection centre. For the project, we regarded members of PETENLAC as medium-scale and those from the *Ejido* group as small-scale livestock producers. PETENLAC farmers have, on average, about 84 hectares of land and own between 14 to 340 animals; the average land area allocated to animal production in three *Ejido* communities, El Zapote, La Sardina and La Pita, is 33 hectares, while animal ownership ranges from 7 to 98 animals. It was important to work with two different groups in order to be able to observe possible differences in group dynamics for participatory learning and experimentation. Aside from that, the focus of the project was on rehabilitation of degraded pastureland, hence working with farmers who own larger farms would give the project more chance to assess any impacts on the natural surroundings.

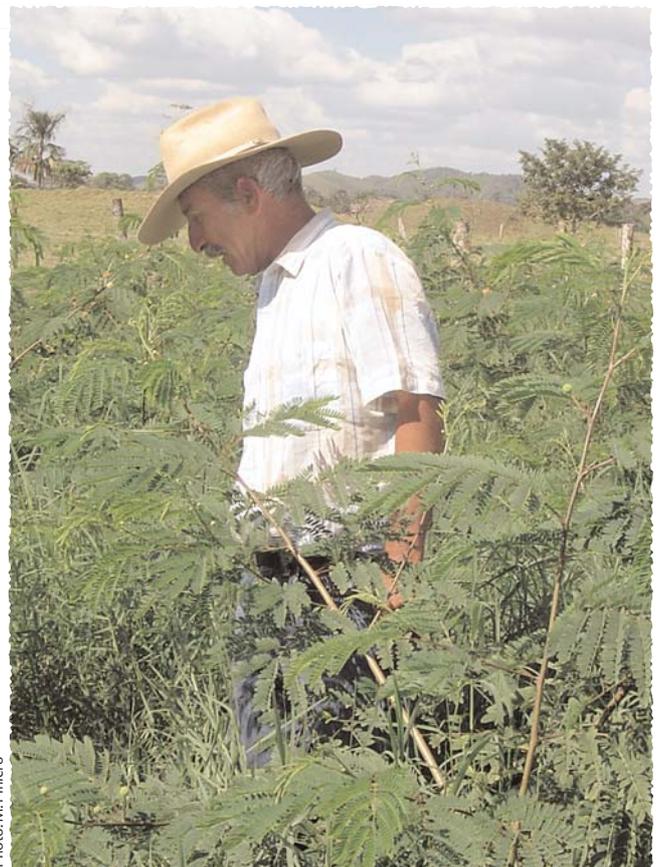


Photo: M. Piniero

Don Alvaro, who started the on-farm trials with a *Leucaena* fodder bank, monitoring his experimental plot.

The members of PETENLAC and the *Ejido* group who finally participated in project activities were the result of a “natural” selection process. First, all members of the different communities were invited to a presentation of the project, where it was emphasised that the focus would be on research and training, requiring active participation by the farmers. The intentions of the project were explained in more detail during a follow-up meeting, when only those who were really interested attended. This was followed by a series of discussions and meetings where farmers were involved in diagnostic activities, including a problem identification exercise related to their farms.

Our approach

A participatory approach to learning and capacity building is the heart of this project. This entails programming a number of events and activities in accordance with farmers' needs, their interest to learn from technical people and other farmers, and their willingness to share knowledge. Although the project's aim is to look for alternative land use options in degraded pasture areas, it did not start by introducing solutions and/or possible technologies that could alleviate the existing problems. Instead, it began with a prioritisation exercise of problems related to livestock production system. Using a "problem tree" analysis, farmers examined their own situation and identified factors causing the problem, as well as their short and long term impacts. In doing this, participating farmers got a broader perspective of the problems experienced, which helped in the identification of various research activities that could be implemented in farmers' fields.

After the identification and prioritisation of problems faced by farmers, different activities were implemented by the project in collaboration with farmers. The Farmer Field School (FFS) approach was used; this implies that farmers do not simply listen to lecturers, but they are encouraged to experiment, discover and try to understand the different aspects of a problem through practical work and good observation. For example, the presence of spittle bugs (*Prosapia* and *Aeneolamia* species), a common pest found in pastures, was identified by farmers as a major difficulty. This was the first problem that the project focused on. Through a number of trainings, farmers learned about the pest's life cycle, and about ways of controlling it. They made observations in their farms and learned how to monitor the pest population and then how to control it using a fungus, *Metarhizium*, as a biological agent. After all these activities, another meeting was held with the farmers, and possible causes of the problems with spittle bugs were discussed. One cause identified by the farmers was lack of knowledge about other types of fodder plants that could be grown on farms and that were less susceptible to spittle bugs. As a result training activities related to pasture adaptation to different constraints were also carried out by the project.

Unlike conventional on-farm trials, where farmers' role is often restricted to providing farmland for experimentation, FFS promotes full participation of all actors in implementing the activities. This means that farmers and technicians are involved in designing the experiments. Based on their rich local knowledge and experiences, farmers identified the types of technologies to be tested, and the plot size to be used for the experiments. Certain technologies were suggested to farmers by the project team, but the farmers were not always interested in experimenting with those ideas. In such cases, the project would establish a demonstration plot with the consent of one or more farmers. This was the case with a leucaena fodder bank which was tried by one farmer. Only after this technology was proved successful, did other farmers become interested in testing it on their farms as well.

Participatory processes

The farms became "learning places" where farmers, along with researchers and field technicians, discover and learn how technologies work in the area. Again, not all farmers participating in the project are directly involved in on-farm trials. Only those who volunteered, and that we referred to as "experimenters" or "innovators", were the ones testing some technologies on their farms. However, all farmers who are taking part in the project are involved in the evaluation of the experiments. This is particularly important since this approach allows for the incorporation of local knowledge in the interpretation of experimental results. For example, in the evaluation of the different improved pastures, the

criteria used were determined by local farmers. These evaluation criteria were decided upon after asking the farmers, through focused group discussion, how they select pasture for their animals. Through these criteria set by farmers, participating farmers could easily relate to the experiments, and the feeling of ownership of the experiment was increased. Using farmers "language" or terminology, and including local knowledge, combined with technicians knowledge, played an important part in the projects' success.

The learning process included regular visits to other on-farm trials where farmers could share their experiences and the problems encountered during the experiment. Each farmer-experimenter can compare his plot with that of other farmers and appraise his own performance. In one such case, a farmer-experimenter considered his experiments to be "failing", after observing the "progress" made by a colleague. He decided to do his own trial again, taking into consideration what he had observed on the other farm, as well as what other farmers had mentioned as key elements for success, i.e., timing of planting and weeding practices. Finally, this farmer managed to conclude a successful experiment and he was pleased with the results.

Another interesting aspect of the participatory approach to experimentation in this project was that many participating farmers involved some of their children in the activities. Most of the local farmers are illiterate, and they were often accompanied in workshops and meetings by one of their older children. Such a son or daughter would then take notes for their parents, and can read and fill the evaluation forms during monitoring activities in the field. A lot of discussion between the parent and the child occurs during such type of activities, and this facilitates the transfer of knowledge between the older and the younger generation.

Important questions

While the implementation of this project has been successful, there are still some critical questions related to collaborating with farmers on the rehabilitation of degraded pasture land. For example, are we helping farmers to improve their pastures in a sustainable way with the methodology that we are using? Are we increasing their knowledge to allow them to make better decisions for their farms? Are we using an appropriate approach for sharing lessons learned among our local partners? And can we also influence policy makers based on the current project approach? Although further analysis is necessary, we believe we have made a good start and are on the right track.

The methodology that we are using is not new, nor is an end in itself. Instead of offering farmers solutions to problems they face, we persuade them to present their ideas on how these problems could be resolved. We encourage them to be innovative in finding alternative practices that could be tried in their fields. We do not provide them with recipes, but, where relevant, we suggest some technologies that could also be of interest in confronting their problems. In the end, it is the farmer who makes the final decisions. ■

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Acknowledgements

This paper presents some of the results obtained by the project "Multi-stakeholder participatory development of sustainable land use alternatives for degraded pasture lands in Central America" which is funded by the Norwegian Ministry of Foreign Affairs.