

Participatory and demand-driven land evaluation: an on-going experience in Lontras, Santa Catarina, Brazil

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Abstract

Results of soil and land evaluation survey and mapping, which were expected to be essential to land use and management planning, most of the time are not adequately used by their potential users and rarely reach the decision makers. In this context, the objective was to test a participatory land evaluation methodology to make the information more useful and consequently more used by the decision makers. The work is being developed in three municipalities in different regions of Santa Catarina State, Brazil: Lontras (Upper Itajaí River Valley), Luzerna (Mid-West) and Barra Bonita (West). However, the experience described here refers only to Lontras. The study started with meetings, interviews and questionnaires with farmers, local professionals and leaders, and the following main demands were raised: (1) irregular and low production of cucumber; (2) need for area expansion and management improvement of the pastures; and (3) information about the actual environment regulation and its implications to the farmers. Lately other meetings were prepared to present and assess the relevance and quality of the demanded information, and to re-evaluate the priorities. The expected following steps were presented, but changes may occur, considering that rural activities are dynamic and other priorities may appear.

Key Words

Land inventory, participatory research, land use and management planning.

Introduction

Land evaluation is the process of predicting land performance over time according to specific land use types (Van Diepen *et al.* 1991; Rossiter 1996). These predictions are then used to guide strategic land use and management decisions. So, one would expect that land use planners and other decision-makers who influence rural land use would be eager to use the results of land evaluation. However, the results from land inventories and soil and land evaluation surveys and mapping, most of the time are not use by the decision maker, be it farmers, planners or politicians themselves (Rossiter 1996; Bouma 1999; Bacic 2003; Bacic *et al.* 2003). Land users and planners have systematically ignored this works, reflecting the low relevance of many land evaluation and soil survey reports, as well as the poor communication with the potential users of the information. Bacic (2003) suggests that the process should begin with a careful analysis of the environment where the stakeholders live, and consequently, where decisions are made, following a participatory and demand-driven methodology. Therefore, it is expected that the decision makers will be given the information they consider more relevant and with more appropriate language. The information will probably be more realistic and consequently more useful not only to the final decision makers (farmers), but also to the rural land use planning agencies, which strongly influence the decisions.

In this context, the use of participatory research methodologies and tools, come out as an important alternative to reach better results to make available information that fulfill the rural families needs. According to Brandão (1984), participatory research refers to the focus on social investigation, searching for the complete community participation on the analysis of their own problems, to promote social participation to benefit all the participants with possible collective solutions. Thus, the general objective of the experience was to test a participatory and demand-driven land evaluation methodology as proposed by Bacic (2003), in

order to optimize the use of the existing information, to drive the search for new information and to generate realistic land use and management options from which the decision-makers could choose, considering social, economic and environmental aspects.

Methods

The experience is part of the project “Demand-driven land evaluation”, that is being developed in three municipalities in Santa Catarina State, Brazil, by the “Empresa de Pesquisa Agropecuária e Extensão Rural de Santa Catarina – EPAGRI”, with financial support from the “Conselho Nacional de Desenvolvimento Científico e Tecnológico – CNPq”, the “Ministério do Desenvolvimento Agrário/Secretaria de Agricultura Familiar – MDA/SAF” and the “Ministério do Desenvolvimento Social e Combate a Fome/Secretaria Nacional de Segurança Alimentar e Nutricional – MDS/SESAN”. The project started on December/2007 and will last for 30 months. Three municipalities were selected according to the following main criteria: (1) location on three different regions in Santa Catarina State; and (2) acceptance and support of local teams (extensionists), local government and primarily the communities. Following these criteria and after several meetings, the following municipalities were selected: Lontras (Upper Itajaí River Valley), Luzerna (Mid-West) and Barra Bonita (West).

This work shows the results obtained up to now in Lontras municipality. The study area, “Concórdia Microcatchment”, was selected in a meeting with local leaders. The first step was to raise the demands for interpreted information (e.g. land evaluation, climatic risks, production systems, economic information, amongst others), according to the local decision makers (farmers, extensionists and local leaders) needs. The demands were raised in meetings, after a presentation, questionnaire application and interviews. At this time, in order to understand better the local conditions, the farmers also answered general questions about farm size, number of people working in the farm, main rural activities, if they wanted to improve or even abandon these activities, as well as if they had the intension to start a new activity and which information would be necessary to make this decision. The demanded information was then organized and ordered following the priorities, according to the urgency and frequency.

Next, other meetings were organized, to present the demanded information, as well as to assess the relevance and quality of the demanded information, to evaluate the tools and methods used, and to re-evaluate the priorities according to the participants’ opinions. The methodology is based on several negotiation rounds, and up to the end of the project it is expected to find in a collective way, different land use and management techniques, new options to increase incomes without environmental damages, improving the rural families social inclusion and their life quality.

Results

The present work shows the results obtained up to now in Lontras municipality. The study area, “Concórdia Microcatchment”, is one of the seven monitored microcatchments (water quality, socio-economical aspects, etc.), through the “Microcatchment 2 Project” with support from the World Bank. Besides the factors already mentioned above, other important aspect used to choose the study area, was the existence of information about the environment, as soil, climate, land use, socio-economical information, amongst others. This previous knowledge is important for the understanding of the local conditions where farmers make their decisions, how the environment affects their decisions related to land use and management and what is the implication to the existing land evaluation methods.

The first meeting had the participation of 14 families. According to their information, 56 people live in these farms, but only 39 are working there. All the farms are classified as “small family farms”, as all of them are less than 20 ha size and most of the labor is from family members. Currently, the main use is with maize/beans (13 out of 14 farms), followed by milk production (7 farms), tobacco and potatoes (5 farms) and cucumber (4 farms). Six out of 14 families declared to be satisfied with their current activities, 7 stated to be slightly satisfied and 1 family mentioned they are unhappy. Nine families declared the intention to improve their current activity or even change for new activities. Five families stated they are not willing to make any changes. The main results of the experience up to now are shown in Table 1. The table shows the demanded information, some already carried out actions, and suggestions for possible actions to be developed in the following project stages. Due to the particular characteristics of the horticulture in Lontras, and the urgency for the problems solution, this demand was the first to be addressed. The first measure was to organize a meeting between the cucumber farmers and the horticulture researcher of the Epagri’s Itajaí Experimental

Station. At the meeting the group discussed the current primary difficulties, methodologies to produce cucumber, crop management, fertilization and plant health. Then, because of the recent changes in the cucumber production system, a course was prepared to the extensionists not only from Lontras, but also to the whole Ibirama, Rio do Sul and Ituporanga regions.

Table 1. Raised demands and actions to deal with them.

	Raised Demands	Performed Actions	Suggested Actions
Horticulture (Cucumber)	<ul style="list-style-type: none"> Plants health; High prices of inputs (agrochemicals, fertilizer); Irregular production; Low yield. 	<ul style="list-style-type: none"> Meeting between farmers and horticulture researcher; Horticulture course to extensionists in the region; Soil sampling for chemical analysis; Farmers visit to the Experimental Station. 	<ul style="list-style-type: none"> Wait for the soil analysis results and organize a meeting with farmers, local extensionists, project group, agro-industry technicians and researchers to discuss possible solutions to the raised problems; To implement an experimental unity to compare the results of the production system currently used by the farmers with the system recommended by research.
Milk Production	<ul style="list-style-type: none"> Added value in milk activity; Area expansion for pasture; Increase production and yield. 	<ul style="list-style-type: none"> Presentation made by milk production and pasture management regional specialist; Soil sampling for chemical analysis. 	<ul style="list-style-type: none"> To contact researchers to get more information mainly related to appropriate pasture management; To take information and encourage local technicians to organize courses to the farmers about on-farm milk industry; Organize a farmers' visit to Experimental Station and to other farmers that already have improved their pasture and are following research recommendations.
Environmental regulation	<ul style="list-style-type: none"> Lack of knowledge about current environmental regulation; Difficulties to adequate the farms to the environmental regulation. 		<ul style="list-style-type: none"> Presentation made by environmental regulation regional specialist. To use GIS tools to spacialize and quantify existing environmental conflicts in the area; To search for alternatives to adequate the farms to the environmental regulation in order to minimize existing conflicts.
Tobacco	<ul style="list-style-type: none"> Health problems. 	<ul style="list-style-type: none"> Presentation of written material about production system and the crop management. 	<ul style="list-style-type: none"> To use the soil mapping and other existing information to recommend management practices more specific and appropriated to the region.
Maize and beans	<ul style="list-style-type: none"> Improve maize and beans yield. 	<ul style="list-style-type: none"> Soil sampling for chemical analysis. 	<ul style="list-style-type: none"> To make efforts to aware farmers about the importance of the soil analysis and to follow the research and extension recommendations.
Potato	<ul style="list-style-type: none"> Health problems. 	<ul style="list-style-type: none"> Local team (extensionists) is working the problem. 	<ul style="list-style-type: none"> To take more information to the local team to help them to find solutions.

The second priority, established due to the frequency of farmers demanding on this subject, refers to milk production. It was organized a presentation to the farmers made by a regional specialist about milk cattle and pasture management. Soil samples were sent to laboratory to perform chemical analysis in order to check fertilization needs. The extensionists and farmers are organizing visits to the Experimental Station and to other farmers that have better yields and incomes, as they already have improved their pasture and are following research recommendations. It is expected that after these visits, experimental unities will be implemented in the study area, to compare with the system currently in use. The third demand refers to the environmental regulation. The meetings participants and respondents to the questionnaires mentioned their worries about the increasing pressure to preserve the environment and follow the regulations and their lack of knowledge on this subject. Presentations will be performed by specialists from the "Santa Catarina State Environmental Foundation (Fatma)". The main points to be presented are those relevant to the farmers in the region, as for instance the legal compulsory reserve, permanent preservation areas, and the flexibility in the regulations considering the particularities and difficulties of the small farmers. Then, pilot studies will be

carried out using GIS tools and techniques to specialize and quantify environmental conflicts in at least 5 farms, in order to search cooperatively with the local community, alternatives to reduce the conflicts with the minimum of economical losses to the rural families. Another demand, common to several activities was related to soil fertility and fertilizer recommendations. Forty composite soil samples were collected with auger up to 20cm deep, in 26 farms. At this stage, the farmers were asked to answer a questionnaire about the management practices performed in their farms (e.g. fertilizer and lime application), as a complementary information to help the soil analysis interpretation and fertilizer recommendations. The expected following steps are also presented in Table 1, but changes may occur, considering that rural activities are dynamic and other priorities may appear. Finally, an important indirect result of the methodology was the approach between extension and research in the region. It became very clear that the researchers have knowledge and information which were not reaching the extensionists and farmers, and in the other hand extensionists and farmers needed that information and did not know where to find it.

Conclusion

Even before the end of the project, it was already possible to observe several advances in comparison with traditional methodologies currently in use. The participants in the project evaluated positively all the stages performed up till now. Most of the raised demands were for existing information that were not reaching the decision makers, or were reaching them in an inappropriate manner or inadequate language. Even the previously-ignored information they received about three years ago is considered important now, but with a different approach and language. An example is the physical land evaluation and soil information, which were not used when presented in traditional way (maps and reports with specific technical language). This information will be used now as an important support to identify expansion areas to milk production, to recommend the most appropriate pasture according to the different physiographic units, and to the pilot studies to adequate the farms to the environmental regulations. It is expected that with the sequence of this participatory approach for land evaluation, the decision makers will be presented with more relevant information, that really help them to make better decisions. And in case they demand for non-existing information, they can even influence a new direction to future research projects and extension works. The methodology, which was considered promising by Bacic (2003), showed in this experience several sound results, confirming its great potential.

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