SCALING UP, AND SCALING FURTHER UP:

An ongoing experience of participatory development in Brazil

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em Agricultura Alternativa

August, 2000

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1- Context and public

The program is located in the southern part of Brazil, at the border between the states of Paraná and Sta. Catarina. Twenty-two municipalities are included in the program, covering 13,000 square kilometers and a population of 55,000 family farmers (roughly 250,000 people).

The area is part of the Atlantic Forest bioma, a very biodiversily rich mixed rainforest. The climate is classified as subtropical, cool and humid, with average yearly rainfalls varying between 1,300 and 1,700 mm.

The area is hilly to mountainous, with small flat valleys at the river bottoms with acid soils and poor phosphorous content. Family farms are small, occupying 1/3 of the farmland even if they represent 90% of all farms.

Crops are diversified, but monetary income is mostly based on beans and tobacco production, followed by onions, potatoes and erva mate (a kind of native tea highly praised in southern Brazil, Argentina, Uruguay and Paraguay). Corn is grown by virtually all farmers, mainly for on farm consumption. Horses play an important role as draft animals and nearly all family farms have a few heads of cattle as well as pigs and poultry mainly for self consumption.

The farming systems mix traditional and modern features. Fallows are short for lack of enough land and fertilization is either chemical or organic but depends on farmer's resources. Biocides are used in certain crops like tobacco and potatoes, also depending on farmer's resources. Average yields are low: 16,760 kg/ha for potatoes; 7,828 kg/ha for onions; 472kg/ha for beans and 2,306kg/ha for corn. Overall outputs per hectare can be, however, quite significant. Average family incomes vary from US$660 to 1,020 per year.

2- Major problems and technical proposals

Natural conditions, like soil acidity and low phosphorous availability associated with small farmland and reduced fallows combine with little financial resources for organic or chemical fertilization to produce a tendency to soil nutrient depletion and decreasing yields. Steep slopes combined with heavy rainfalls and "down the hill" tillage practices produce significant erosion and soil losses. Replacement of traditional bean and corn varieties by improved ones had also devastating effects in the systems' efficiency in the context of the current agronomic practices. Last but not least, indiscriminate biocide use have produced toxic contamination of both farmers and the environment without significant reduction of pests or crop diseases. Difficulties in access to credit and monopsonic markets also contribute to low income patterns in the region.

AS-PTA initiated it's development work with three communities and around 160 farmers six years ago. It now works with 5,000 family farmers and some 150 communities. The approach adopted was to identify major constraints in agroecosystems through participatory methods and to develop technical solutions through participatory research involving all farmers. Agoecological alternatives were presented by AS-PTA's technical team and by the farmers. These proposals were adapted and tried by the farmers in their fields in small-scale experimental plots designed by them.

Dozens of technical proposals were tested either in isolated or in combined way according to each farmer's decision. Results were presented and discussed by farmers at community and regional meetings with a lot of field visits to illustrate the more performing practices. New experiences were undertaken by farmers in the light of these results, multiplying the experimental process in more complex and adapted solutions. New participants engaged in the experimentation dynamics as information on the first group results spread through communication initiatives undertaken by AS-PTA.

Technical alternatives introduced may be classified in three major categories: improved management of genetic resources, ecological soil management and agroforestry. The first implied the reintroduction and improvement of traditional seed varieties of beans on corn. The second group of technologies includes a wide range of practices, from improved fallows, use of various organic fertilizers and rock phosphate, no till soil management combined with green manuring and cover crops (without herbicides) and crop residue management without the use of fire. Agroforestry practices imply in the management of the Atlantic Forest through the acceleration of species succession for the benefit of the erva mate trees growth and production.

3- Agronomic and economic impacts

On farm seed production of traditional varieties of beans and corn has grown exponentially. 112 varieties of corn, 98 of beans, 10 of potatoes and 16 of rice have been reintroduced in the region. Rice is a secondary crop in the region which has not been the object of specific attention by AS-PTA but the farmers extended the knowledge acquired in other crops experiments to this one.

The simple reintroduction of the best performing traditional varieties resulted in increases of about 50% in yields above the region's averages, reaching 3,600 kg/ha for corn and 1,800 kg/ha for beans. Farms that adopted other agroecological techniques as well, in addition of selecting and breeding traditional varieties, have attained yields of 5,000 kg/ha for corn and 3,000 kg/ha for beans.

Quantitative economic evaluations are scarce. The only calculations made indicate that the introduction of no till, no herbicide practices result in a net gain of over US$100/ha, just for corn and beans. However, qualitative evaluations made trough interviews with farmers indicate the agroecological practices have represented a "significant" improvement both at yield and income levels. Massive adoption of dozens of technical alternatives by more then five thousand farmers tend to confirm these assertions even though AS-PTA can't, for the moment, identify how much "improvement" was achieved.

4- Obstacles and limitations identified

Three major limitations have been identified both by AS-PTA and farmer leaders. The first one relates to the costs of technical innovation. The agroecological proposals being disseminated in the region are quite inexpensive but still they mean a minimum of investment that the poor farmers can't make. This means that the speed of adoption by each farmer is dependent on how much he can invest with his own resources because credit is, for the moment, almost impossible to obtain. The second problem relates to access to markets. Farmers are discouraged to invest in production improvements for much of the benefits are appropriated by the middlemen. This is particularly the case for tobacco and beans, the major cash crops in the area. The third problem relates to the costs of the social dynamics involved in the technological generation and dissemination. Demands for AS-PTA expansion of it's program to involve many more communities can't be satisfied for lack of resources.

5- Proposals for a further scaling up in the program

Preliminary calculations indicate that an average US$500 loan for each farmer is enough to permit financing the costs of converting his agricultural system to an agroecological pattern. Official credit is not so scarce; this year's public credit availability for family farmers amounts to US$2,7 billion. The main problem is related to the conditions for access and the stern resistance of the public credit agents to accept working with small loans. Supposing we can find an alternative source of credit the program would need US$27,75 million to finance agroecological conversion of all the 55,000 family farmers in the region.

Credit is not enough to permit the conversion process. Technological innovation and adaptation is a permanent and generalized venture for agroecological alternatives don't work like packages and need to be designed specifically for each situation. This is done through an intensive process of education, experimentation and exchanges between farmers which have a cost which AS-PTA calls the social dynamics cost. Extrapolating from the costs of the previous scaling up experience, US$8 million would be needed in a five year period to facilitate agroecological dissemination to the 55,000 farmers in the region. This amounts to US$30 per family farmer per year.

To face the monopsonic market conditions the proposal is to enlarge and unite the several small family farmer cooperatives in existence. This will ask for investments of US$2 million in equipments, infrastructures and vehicles. Projections indicate that some 20,000 family farmers will engage in the processing/marketing venture which means an average of US$100 in credits per farmer. Operational costs are assumed to be covered by the farmers own resources as is the case now in the small scale experiences in the region.

Last but not least, AS-PTA costs in this new scaling up process would amount to some US$1,7 million in a five year period.

6- Conclusions

Our experience in central-southern Paraná shows how the work done by one NGO with just 3 technicians as local staff, allied with intensive social participation brought a five year leap in scale of over 3,000% in the number of beneficiaries.

The project budget to increase the scale of this program to benefit the region's 55,000 farmers may appear expensive but on a per capita basis the US$9,7 million in grants means only approximately US$175 per farmer over five years, or just US$35 per farmer per year.

If we compare this budget with government yearly expenditures in research and extension on a per capita basis of farmer (of all categories) beneficiaries we will find a cost of US$1,000. Otherwise, the performance of government research and extension services is very much criticized for not being appropriate for family farmer development whereas AS-PTA's experience in Paraná and other places in Brazil show a high degree of adoption by farmers.

AS-PTA is right now negotiating with donors the financing of this big scaling up venture. We expect that it will represent a very visible example of how already available State funds could be used in a more rational and efficient way for the benefit of the 5 million family farmers in Brazil.