

Linking smallholders to the new agricultural economy:

Evaluation of the Plataformas program in Ecuador

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IMPACT BRIEF

S E R I E S

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Abstract

This document analyzes the effects of participation in multistakeholder platforms (Plataformas) designed to link smallholder potato farmers to the market in Ecuador. The results suggest that the Plataformas were successful in improving the welfare of the beneficiaries, and that potential negative impacts on the environment and agrobiodiversity are not significant.

Background

Potatoes are one of the most important market crops in the Sierra or mountain region of Ecuador. The area harvested in the country totals 51,408 hectares per year. There are 88,130 potato producers in Ecuador, of whom approximately 75% are smallholders with less than 5 hectares of land.

It is difficult for many smallholders to gain access to the market. To make them more competitive, it is necessary to improve market access, reduce transaction costs and provide them with the information they need to meet market demands. However, agricultural intensification linked with market-orientation can lead to the planting of fewer varieties, to the increased use of agrochemicals, and intensified land use, all conducive to potential negative environmental and health consequences.

Multistakeholder Platforms (Plataformas de Concertación)

The Plataformas are alliances between farmers and suppliers of agricultural services, including research institutes, NGOs, universities, and local governments. In Ecuador, Plataformas have been implemented in the Sierra Centro region (provinces of Cotopaxi, Tungurahua, Chimborazo and Bolívar) since 2003 by the National Institute for Agricultural Research (INIAP), through the Strengthening of Potato Seed Research and Production (FORTIPAPA) project, with funding from the Swiss Agency for Development and Cooperation (SDC) and the advice of the Papa Andina Project of the International Potato Center (CIP). Papa Andina contributed to the process of development and improvement of the Plataformas methodology, and facilitated key knowledge-sharing and learning events with other similar programs in Bolivia and Peru. CIP also supplied the potato variety INIAP-Fripapa, which was selected by INIAP from a CIP breeding population.

The Plataformas, subsequently the Consortium of Smallholder Potato Producers (CONPAPA), have directly linked smallholders' organizations to higher value markets for their products, such as local fast food restaurants and a company that produces potato chips. They have displaced the traditional intermediaries and provided small-scale producers with greater opportunities to obtain marketing benefits.

An important component of the Plataformas was the training provided at the Farmer Field Schools (FFS),

where farmers were trained in production technologies and techniques for Integrated Pest and Disease Management (IPDM). They were taught to recognize the toxicity level of pesticides and the symptoms of intoxication, as well as how to protect the environment and themselves from the risks associated with using pesticides.

Through the Plataformas, INIAP supplied farmers with the newly-introduced INIAP-Fripapa variety, and trained a group of smallholders in the production of good quality seed for Plataforma participants.

Objective

The objective of this study was to evaluate the Plataformas' program (between 2003 and 2007, in the provinces of Tungurahua and Chimborazo) to determine whether they had been successful in linking small farmers to higher-value markets and the effects that this has had in terms of yield, gross margins, use of agricultural chemicals, and agro-biodiversity level with relation to potato varieties grown.

Methodology

Comparison groups (control groups) were set up, similar to the group of farmers who had benefited from the intervention (treatment). The final sample included 1,007 farmer households, divided into three groups: i) participants in the Plataformas; ii) non-participants in the treatment communities; and iii) non-eligible households in the control communities¹.

Primary indicators

- Yield: tons / ha
- Profits: US\$ / ha; total value of harvest minus the total of all variable costs.

Mechanisms:

- Cost of inputs (US \$ / ha)
- Selling price (US \$ / kg)

Secondary indicators:

- Use of agro-chemicals (the Environmental Impact Quotient – EIQ – indicates the toxicity of the active ingredient and its quantity).
- Precautions when applying pesticides (use of gloves, plastic poncho and face mask, and identification of toxicity level by the color of the label).
- Level of agro-biodiversity (using four diversity indexes).

¹All the non-participants (both in the treatment communities and in the non-eligible group) make up the control group once it has been verified that there are no spillover effects.

The data were gathered from June to August 2007, through a household survey which included, among other data, information on potato production, varietal use, use of agro-chemicals, and social capital.

Primary and secondary indicators were analyzed, as well as the mechanisms through which the effects measured



Romina Cavatassi¹, Mario González-Flores², Paul Winters³, Jorge Andrade-Piedra⁴, Patricio Espinosa⁵, and Graham Thiele⁶

¹FAO, Rome, Italy (romina.cavatassi@fao.org) and Wageningen University and Research Centre, The Netherlands; ²Inter-American Development Bank, Washington, USA; ³American University, Washington, USA; ⁴Papa Andina Partnership Program, International Potato Center (CIP), Quito, Ecuador; ⁵CIP, Quito, Ecuador; ⁶CIP, Lima, Peru.

Impact brief prepared by Gabriela Chacón, Jorge Andrade-Piedra, Guy Hareau

by the primary indicators were reached. The data were analyzed and compared among the different groups of farming households, using econometric procedures.

Results and discussion

The results show that the participants in the Plataformas had higher yields and profits in potato production than the non-participants. The participants obtained an average yield 33.3% higher than the average yield of the non-participants (Figure 1A) and an average 40% higher selling price (Figure 1B). However, participants spent more on inputs (Figure 1C). As result, the profits obtained by participants were approximately six times greater than those obtained by the non-participants (Figure 1C).

The secondary indicators suggest that the linking to the Plataformas did not lead to negative consequences from the intensification of agricultural production (Table 1). Participants used less fungicides than the non-participants, although differences are not significant, but they used significantly more insecticides and spent more on chemical fertilizers. Despite this, the comparison of the means of the Environmental Impact Quotient (EIQ) for participants and non-participants

showed no significant differences. This indicates that, even though the participants used more chemicals in terms of quantity and number of applications than the non-participants, the products they used were less toxic. The participants were better able to identify toxic products than the non-participants and tended to use more protection equipment (gloves, plastic poncho, and face mask). These results could be explained by the FFS and the IPDM approach used by the Plataformas. Although the participants had a better understanding of the toxicity level in the pesticides, the use of protection equipment is still very low, and the transition towards IPDM calls for yet more efforts.

The linking of the farmers to the market appears not to have any effect on agro-biodiversity on potato varieties used, because there are no differences in these indicators between participants and non-participants (Table 1). What seems to have happened is that the farmers replaced the INIAP-Gabriela improved variety, launched in 1980, with the INIAP-Fripapa variety, released in 1995.

The existence of social capital proved fundamental in the implementation of the Plataformas, which have strengthened the social network and improved farmers' ability to become successfully linked to the market (data not shown).

Figure 1. A: Yield; **B:** selling price; and **C:** Input costs and profits, obtained by participants in the Plataformas and non-participants. Differences are significant at the level of * = 10%; *** = 1%.

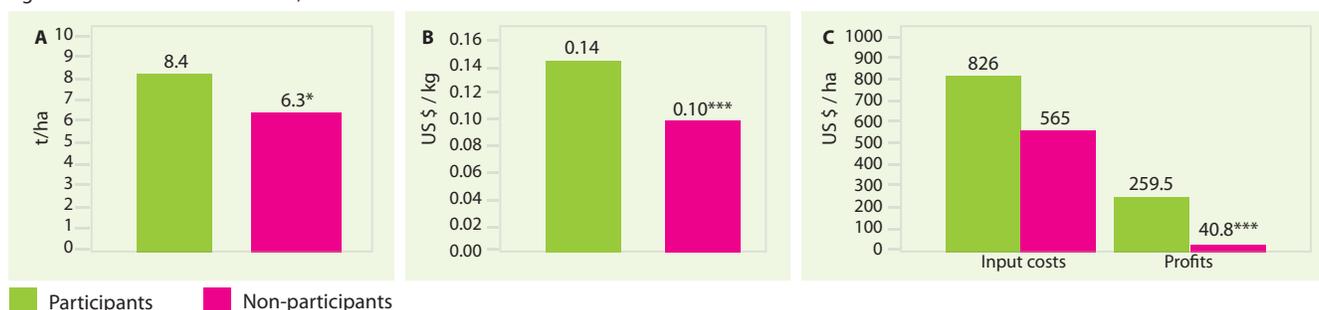


Table 1. Secondary indicators obtained by participants in the Plataformas and non-participants.

Secondary indicators	Participants	Non-participants
Agro-chemicals		
Application of preventive fungicides (kg or l/ha)	2.79	3.33
Application of curative fungicides (kg or l/ha)	3.61	4.43
Application of insecticides (kg or l/ha)	2.95	1.86** ¹
Total EIQ ²	75.6	104.9
Cost of chemical fertilizer (\$/ha)	153.7	110.4***
Precaution in the use of agro-chemicals		
Always wears gloves (%)	24.0	16.7**
Always wears plastic poncho (%)	18.4	10.4**
Always wears face mask (%)	10.1	4.5***
Identifies the most toxic products	59.4	21.7***
Agro-biodiversity		
Number of varieties sown	1.66	1.65
Shannon Diversity Index	0.37	0.35

¹ Differences are significant at the level of ** = 5%, *** = 1%

² Environmental Impact Quotient.

Conclusions

The results show that the Plataformas successfully increased the welfare of the participating farmers and suggest that they are an effective way of linking smallholder potato producers to the market. The success of the Plataformas can be explained firstly by their intervention along the whole value chain and the removing of unnecessary transaction costs; secondly by the introduction of technological innovations to increase yields; and thirdly by an improvement in social capital that is expressed, among other things, as greater trust among the actors in the production chain, and which enables small-scale producers to overcome the obstacles to entering more demanding markets.

The full version of this study is available at <ftp://ftp.fao.org/docrep/fao/011/ak231e/ak231e00.pdf> (Cavatassi et al., 2009).

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Members of the Plataforma in Chimborazo in 2004. Photo: Graham Thiele