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FONTAGRO funding potato projects in Central America and Andean countries

Carolina Ruiz¹

Potatoes are one of the most nutritional and versatile foods and potato cultivation is among the most adaptable to adverse climate conditions. Potatoes were domesticated in the Andes thousands of years before the arrival of Christopher Columbus and, today, the potato is a proven and interesting alternative for Latin American countries that face vulnerability and uncertainty as a result of the food crisis and climate change.

FONTAGRO is funding four technological innovation projects related to this nutritional and versatile tuber, in the amount of US\$1, 950, 000.

¹ Journalist, Public Information and Institutional Image Office, Inter-American Institute for Cooperation on Agriculture (IICA), carolina.ruiz@iica.int



The potato is a prime quality food and is the fourth most important food crop worldwide.

In this International Year of the Potato, the Regional Fund for Agricultural Technology (FONTAGRO) is funding four technological innovation projects related to this crop in the amount of close to two million dollars (US\$1, 950, 000).

The initiatives took off between 2006 and 2008 in a number of Latin American countries considered by the experts to be among the most vulnerable to the current food crisis: Ecuador, Bolivia, Peru, Venezuela, Nicaragua, Costa Rica, Honduras, Guatemala, Panama and El Salvador.

The initial results of these initiatives were made known during the Third Workshop on Technical Follow-up to FONTAGRO Projects for the Andean, Southern Cone, Central American and Caribbean regions. That workshop, held from June 25-27 last at IICA Headquarters in Costa Rica, was attended by 50 representatives from institutions and organizations in 20 countries.

During the workshop, 23 projects financed by the Fund were the subject of technical follow-up. Diseases, soil health, good agricultural practices in integrated pest management, reducing the use of agrochemicals, sustainable production, improving the quality of life of rural communities and production chains were

some of the thematic areas addressed in the initiatives that were reviewed during the workshop.

FONTAGRO, which is co-sponsored by the Inter-American Institute for Cooperation on Agriculture (IICA) and the Inter-American Development Bank (IDB), funds scientific and technological research and innovation projects that promote competitiveness in the agricultural and rural sectors, poverty reduction and the sustainable management of natural resources. To date, the 15 countries that make up FONTAGRO have invested US\$52.3 million.

After chronicling the history of IICA support for the Fund, IICA's Director General, Chelston Brathwaite, said that this type of partnership to promote hemispheric cooperation and integration in the area of technology has become now more than ever a high value added strategy for the countries.

In a context of vulnerability in the face of climate change, the limited availability of soil and water resources for production and the rising costs of inputs and transport resulting from rising oil prices, increasing agricultural productivity is a must and, for this, technological paradigms that are environmentally more favorable and more inclusive of the various production sectors are required, he said.

The representative from the IDB in Costa Rica, Fernando Quevedo, echoed these sentiments. He said that the tenth anniversary of FONTAGRO in 2008 coincides with a particularly difficult period for agriculture and the overall situation facing our countries.



More and better potatoes

Two of the projects are intended to improve potato production and the quality of potatoes in Central America and the Andean Region. The two projects started in January 2008 and are scheduled to conclude in 2011.

Specifically, the initiative for Central America aims at selecting and disseminating potato genotypes that are suitable for Nicaragua, Costa Rica, Honduras, Guatemala, Panama and El Salvador. In addition, through technological innovation, not only will the seed be improved, but also national systems that produce it will be strengthened by achieving appropriate phytosanitary levels.

According to Arnulfo Gutiérrez, from Panama, the lead researcher for the Central American project, the varieties used in this region are old, require many inputs and are susceptible to pests. The expectation is that the project will increase the availability of varieties that are of superior quality, cut production costs by 50 per cent and increase crop areas by five per cent.

“The potato is a prime quality food and is the fourth most important food crop worldwide. If we train our producers and give them the necessary facilities to be competitive, we will impact food security for our people, the researcher said.

Another project that seeks to improve production and the quality of this tuber is the Latin American Potato Network. With

funding from FONTAGRO, the Network facilitates technology for small-scale producers in Peru, Bolivia, Colombia, Ecuador and Argentina to enable them to produce productive varieties that are disease-resistant and nutritive and thereby increase competitiveness and the profitability of these crops.

“We are working to develop resistance to biotic factors in germplasm, such as viruses and other potato diseases, and abiotic factors, such as stress caused by drought. We are also improving their nutritional value by adding zinc, iron and vitamin C and are facilitating access to these technologies for small-scale producers, Stef de Haan, coordinator of the Network, said.

The project seeks to benefit five per cent of potato producers in each country. For this, they will avail themselves of a range of channels for information and learning on the understanding that as good as a technology may be, if it is not used, it is of no use to society.

Looking for new niches

Developing technological and commercial innovations to enable small-scale Andean producers to take advantage of the biodiversity of native potatoes and generate products that can be placed on differentiated markets is the goal of another project being funded by FONTAGRO in Ecuador, Bolivia, Colombia, Peru and Venezuela.

The initiative seeks to characterize the diversity of native potatoes according to their special attributes and potential uses, classify them and prepare recipes based on these varieties. It further proposes to identify a market niche in each country, develop industrial and culinary products and prepare a business plan and promotional program.

“We will thereby improve the income of the producers and, at the same time, conserve Andean biodiversity,” explained Cecilia Monteros, project researcher, who reckons that the direct beneficiaries of the initiative total some 200 producers. Indirect beneficiaries total some 1,000 people in each country.

According to Monteros, in these regions, there are thousands of varieties of native potatoes with unique colors, shapes, tastes, textures and aromas; only roughly five percent of these varieties reach the market. “So we have made chips with bright colors and gourmet potatoes to find another niche...And we have had good responses so far”, she said.

To promote these products, the project seeks strategic partners in professional

chefs and gastronomy schools, participates in gastronomic festivals and agricultural fairs. It further upgrades producer organizations with a commercial and entrepreneurial vision and trains them in market development, business plans and marketing.

Research is also intended to improve the production and productivity of this crop. For this, it is developing and circulating technological innovations among small-scale producers. According to Monteros, as of June 2008, several technological innovations related to the production and post-harvesting of native potatoes had been developed, validated and shared at the regional level.

Bio-control of pests

The fourth FONTAGRO project, aimed at improving potato cultivation, develops and applies ecological practices in pest management in Bolivia, Ecuador and Peru.

The initiative seeks to reduce the economic losses of small-scale producers through environmentally sound Integrated Pest Management (IPM) strategies. “We wish to understand all of the factors, from the biological to the cultural, that impact the emergence of pests and then launch strategies accordingly,” the lead project researcher, Jürgen Kroschel, said.

The research, which started in July of 2007, has worked on mechanisms for improving the biological control of pests. For example, it has developed cropping systems and strategies for weed management to conserve and increase

the natural enemies of certain pests that infest the seeds of this tuber.

Another physical pest control method investigated was to install plastic barriers as fences around the potato fields. In Kroschel's view, this practice is very effective when the barrier is installed before the sowing and its cost is lower than the cost of applying insecticides twice to four times in the fields.

"The weevil (one of the potato pests in the Andean region) cannot fly and is incapable of climbing more than 20 cm. With barriers of this size, the white grub can only move from one side to the other around the plastic and cannot reach the potato on the other side", he explained.

Another technique tested by this project to reduce pests is the use of attracticides. These substances are chemically prepared and contain sex pheromones that attract the males of pests to kill them. According to the researcher, this method does not have an effect on other factors of the agro-system.

"Farmers must understand that the market has changed. Now, consumers do not wish to buy potatoes on which pesticides have been used. They need to change their farming practices to be able to sell their



The weevil

The potato weevil is a pest that threatens potato crops in the Andean region.

produce and doing so has a dual benefit: the consumer usually is prepared to pay more for these chemical-free products and thus they help improve the environment," Kroschel said.

Looking to food security

Though different in terms of the proposals and specific objectives, the four projects have in common a set of circumstances they are attempting to address: the challenge of climate change and food security.

"Whereas the prices of rice, wheat and barley have doubled and even tripled, the price of potato has risen less than 30 per cent. Potatoes continue to be an affordable staple for low-income people", Haan said. Furthermore, according to Gutierrez, "this



Attracticides are substances that contain sex pheromones to attract the males of pests to kill them.

tuber produces more food on one hectare than any other crop”.

What is more, potatoes can be sown over 3,800 metros above sea level, where other crops no longer survive. At this altitude, the rays of the sun and the high content of organic soil matter provide the conditions that are conducive to growing potato crops without the use of chemical fertilizers.

“If these projects succeed in improving production conditions, with appropriate and environmentally friendly pest management, they will be poised to contribute to food security in those countries and face the challenges of climate change”, the Executive Secretary of PROCITROPICOS, Jamil Macedo, said. Mr. Macedo participated as rapporteur at the FONTAGRO workshop at which the four initiatives were presented.

Potatoes are a great source of energy and have protein, fiber, anti-oxidant properties, iron, copper and a high vitamin value. “With these projects, we are therefore not only helping the cause of food security for our countries at a period when climate conditions are adverse, but also we are contributing to nutrition for our people”, Monteros said.



Because they are highly adaptable to adverse climatic conditions, potatoes provide an alternative for responding to the challenges posed by climate change.



Table 1. It's all about potatoes



Jürgen Kroschel
Development and
application of ecological
practices in pest
management in Bolivia,
Ecuador, Peru

"Our idea is to understand the ecology, to understand why a pest is a pest, how the human factor contributes to the emergence and spread of pests and how natural enemies can eradicate them".



Cecilia Monteros
Differentiated markets
for producers of native
potato in Ecuador,
Bolivia, Colombia, Peru
and Venezuela

"In addition to improving the living conditions of farmers, we help in preserving these natural resources so that they are not lost, and we contribute to food security in our countries"



Arnulfo Gutiérrez
Competitiveness in
cultivating potato in
Central America and
the Caribbean

"With the current food crisis, we must help producers produce their own food and make their production more competitive".



Stef de Haan
Latin American
Potato Network

"Potato continues to be an affordable food for low-income people and has high potential for dealing with the issues of food security and climate change".



Jamil Macedo,
Executive Secretary
of PROCITROPICOS

"The focus of most of the projects is on small-scale producers. They are certainly linked to the issue of food security and we have high expectations."



Table 2. From A to Z

Name of the project	Period	Where is it being carried out?	Who is it benefiting?	How much is being invested?
Network for innovation in research and development: towards the development of mechanisms that impact the poor favorably through the dissemination of new varieties of potato in the Andean region.	January 2008 -2011	Peru Bolivia Colombia Ecuador Argentina	"5% of producers in each country".	\$1, 123, 594 (\$500, 000 allocated by FONTAGRO)
Development and application of ecological practices in pest management to increase the sustainable production of potatoes for low-income farmers in the Andean regions of Bolivia, Ecuador, Peru.	September 2007 - May 2010	Ecuador Bolivia Peru	"Thousands".	\$900, 000 (\$450, 000 allocated by FONTAGRO)
Technological research and innovation in potato cultivation to contribute to the competitiveness of potatoes and food security in Central America and the Caribbean.	January 2008-2011	Nicaragua Costa Rica Honduras Guatemala Panama El Salvador Chile	"Thousands".	\$1, 460, 500 (\$500, 000 allocated by FONTAGRO)
Technological innovations and differentiated markets for producers of native potato.	September 2006 - December 2009	Ecuador Bolivia Colombia Peru Venezuela	"Between 100 and 200 direct beneficiaries; there are 1 000 indirect beneficiaries in each country".	\$1, 066, 405 (\$500, 000 allocated by FONTAGRO)

What is FONTAGRO?

FONTAGRO is an alliance of countries that was established to finance scientific and technological research in the agricultural sector. The Fund contributes to poverty reduction, increased competitiveness and the sustainable management of natural resources in Latin America and the Caribbean.

Member countries: Argentina, Bolivia, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Nicaragua, Panama, Paraguay, Peru, Spain Uruguay and Venezuela.

Structure: a Board representing member countries and a Technical Administrative Secretariat (TAS)

Sponsoring organizations: the IDB and IICA.

Member country capital investments: US\$52.3 million invested by member countries to date. The Fund generates counterpart resources and organizes requests

for proposals along with their sponsors and other research and development organizations.

The Fund: A competitive and transparent mechanism. With minimum participation by member countries, projects are funded with interest generated by the capital and other organizations sharing the Fund's mission. Experts external to the Fund judge profiles and proposals on the basis of established socio-economic and environmental criteria, technical competence and institutional capacity.

Research projects financed by the Fund. In its ten years in existence, the Fund has financed a total of 56 projects dealing with topics such as improving production efficiency, genetic resources, technology in agrifood chains, competitiveness, agricultural health and food safety, etc. As of 2007, FONTAGRO had provided US\$15.7 million. It has mobilized more than US\$32 million in counterpart funding and has received over 330 proposals in response to eight requests for proposals.

Source: FONTAGRO