

## IMPACTS Papa Andina: A decade of pro-poor innovations for development

"Selling native potatoes to the industry has changed our lives" says Victoriano Meza, a farmer from Peru's central Andes. It has meant additional income to build a house for his family and equip it with satellite internet "so that my children can learn quickly and get a better future." Mr. Meza is one of thousands of small-scale Andean farmers benefitting from a new boom in the market for native potatoes, and from pro-poor innovations to link them to the native potato market chain, spearheaded by CIP's Papa Andina program.



Papa Andina is a CIP partnership program. For over 10 years, it has functioned as a regional innovation broker, working with strategic and operational partners (research organizations, service providers, and social and economic entrepreneurs in the public and private sectors) to promote pro-poor innovation in value chains in the Andean potato sectors of Peru, Bolivia, and Ecuador.

Product innovations from Papa Andina have opened new market niches and brought higher prices for farmers. Examples include award-winning T'ikapapa (bagged native potatoes), packaged traditional dehydrated chuño, and native potato chips originally pioneered through Papa Andina's Participatory Market Chain Approach (PMCA) and taken up by large, fair trade and multi-national companies. By promoting the integration of corporate social responsibility, Papa Andina has helped ensure that the benefits of corporate involvement reach small farmers and are socially and environmentally sustainable.

Other Papa Andina results include new public policies and practices to invest in the sector, regulate product quality, and raise the profile of native potatoes as a high-value product and cultural asset. The establishment of an annual national potato day in Peru has elevated the native potato from poor man's food to a point of national pride. Technological innovations spearheaded by Papa Andina range from improved seed systems for native potatoes to the application of integrated crop management techniques and improved post-harvest management using simple processing equipment.

The direct impacts of its projects and methods have benefitted thousands of small-scale farmers and their families. With over 700,000 farming families working in the Andean potato sector, the indirect impacts are likely to be far greater, not only in terms of increased incomes but also improved cultural, social, and personal assets. As notes farmer Nolberta Inostroza, "Now I produce and sell with less work, earn more, and take pride in sharing the native potatoes that I take care of, as my ancestors did before me." Added to these are further collateral benefits to farming communities and parallel sectors stemming from the boom in demand, which in spite of increasing supplies is leading to a rise in prices for fresh and processed native potato products.

Perhaps more important than the new potato products and short-term benefits is the strengthened capacity for innovation that has been developed in the Andean potato sector. CIP's traditional partners – the national agricultural research organizations – now see the value of working in partnership with the other stakeholders in innovation systems, and possess new approaches and tools for brokering innovation processes – approaches that they themselves have developed within the framework on Papa Andina. The work has triggered innovation processes in Andean potato value chains in all three countries, which will continue to expand the benefits for small holders and others into the future.

Designed for the Andean context, the Papa Andina tools and methods also have been applied successfully elsewhere. For example, the Participatory Market Chain Approach has been used to train and connect farmers to sweetpotato or potato market chains in Africa and Asia, and to vegetable, milk, and coffee value chains in Latin America.

The legacies of Papa Andina are particularly important as it faces its next decade. June 2011 marks the close of the original Papa Andina, with a new iteration beginning in a broader context of food security and CIP's Highland Potato Program. Its reach will include Peru, Ecuador, Bolivia, Colombia, and Venezuela.



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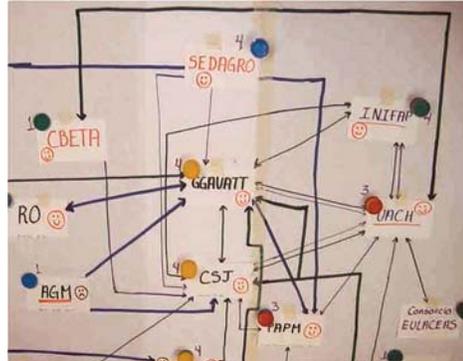
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Further information on Papa Andina approaches and results is available at: [www.papandina.org](http://www.papandina.org)

## Putting the people back into planning

CIP is spearheading a practical, people-centered approach to help researchers plan, monitor, and evaluate projects more effectively. Called the Participatory Impact Pathway Approach (PIPA), this method brings together a wide range of stakeholders to integrate the complex human relationships and attitudes that have a crucial bearing on achieving program results.

Current agricultural research is guided by impact pathways, which are linear causal models that link project outputs to outcomes, and eventually to impacts.



Mapping out stakeholders and how they are linked

However, as Graham Thiele, leader of the Social and Health Science Division at CIP and co-author of a recent article on PIPA explains, "Change occurs through complex linkages between people and not through some sort of straight, logical sequence."

PIPA uses participatory workshops, which bring together diverse stakeholders (e.g., project implementers, partners from national research institutes, NGO's, farmer representatives, policymakers, and more) to identify all the actors associated with the impact pathway process. They map out how those actors must link with each other to achieve the desired results.

Participants detail the changes in attitudes, knowledge, skills, and practices that will have to occur, and who needs to do what to make them happen. They are encouraged to identify specific expected impacts in ways that are measurable, attributable, realistic, and time-bound so that project results can be monitored and evaluated.

Another benefit of the PIPA approach is that it exposes a more nuanced understanding of the change process. As an illustration, Thiele points out, "To say we want adoption of new varieties of crops is not enough. We also have to ask: what are the steps along the way? What about the availability of seed, or the varietal release system? People realize that what they thought was relatively straightforward, actually isn't. They identify things they hadn't thought of before."

Previous research has shown that information and technology are more likely to be applied when they are co-developed with the people who will use them. PIPA workshops are building the essential common understanding and commitment with stakeholders, which make for effective impacts.

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### PIPA workshops help participants to:

- reach mutual understanding, and communicate their project's intervention logic and its potential for achieving impact
- understand other projects working in the same program, and identify areas for collaboration
- generate a feeling of common purpose
- produce a narrative describing the project's intervention logic and possible future impacts
- produce a framework for subsequent monitoring and evaluation

Related article: Alvarez S, Douthwaite B, Thiele G, Mackay R, Cordoba D, Tehelen K. (2010). Participatory Impact Pathways Analysis: a practical method for project planning and evaluation. *Development in Practice* 20 (8): 946-958.

## RESEARCH Pioneering technology works for better nutrition

**N**ear-Infrared Reflectance Spectroscopy may sound like a mouthful, but actually represents a very useful and low-cost method for estimating concentrations of nutritional components in crops. Known as NIRS, it is one of the key tools pioneered and applied successfully in CIP's Quality and Nutrition Laboratory (QNLAB) as part of its biofortification program arsenal.

Biofortification research aims to increase levels of important micronutrients (e.g., iron, zinc, and pro-vitamin A carotenoids) in staple food crops such as potato, sweetpotato, maize, millet, rice, wheat, beans, and cassava to enhance their impact and reduce malnutrition. "NIRS was traditionally used to analyze macronutrients such as protein, starch and fat," says NIRS specialist Thomas zum Felde. Arriving at CIP in 2006, Zum Felde adapted the technology for evaluating micronutrients like pro-vitamin A carotenoids, iron, and zinc in those crops.

The low cost and short time required for NIRS analysis makes it an ideal tool for evaluating the large numbers of samples needed for breeding programs – and revolutionizing biofortification efforts. With NIRS, CIP scientists can analyze micronutrients like pro-vitamin A carotenoids, iron, and zinc along with protein, starch, glucose, fructose, and sucrose in potato and sweetpotato in less than 2 minutes for a cost of only US\$5. In comparison, chemical analysis of pro-vitamin A carotenoids using High Performance Liquid Chromatography (HPLC) takes 1 hour at a cost of US\$45 per sample. Similarly, chemical analysis of mineral content with Inductively Coupled Plasma spectrometry (ICP) requires 20 minutes and costs US\$12 per sample.

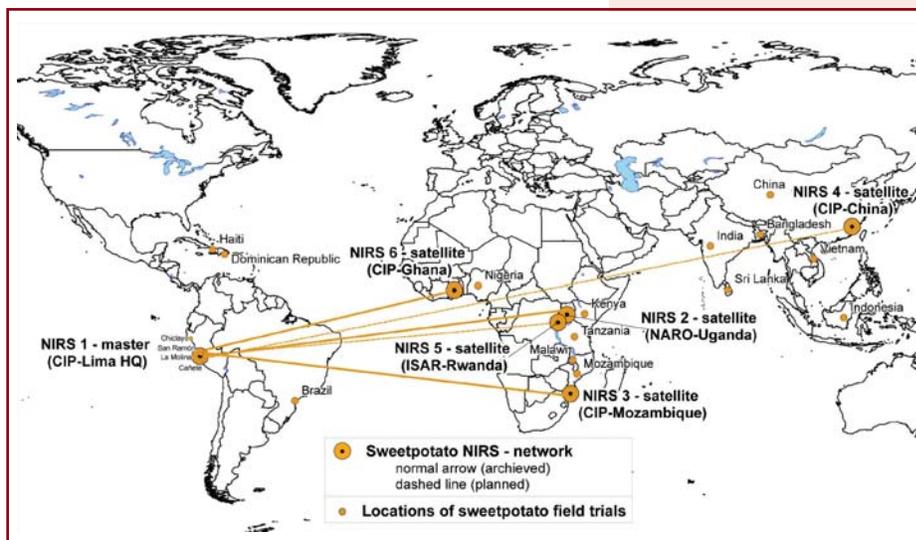
NIRS sample preparation is also much simpler than for chemical analysis and does not require the use of chemical solvents. "Imagine the cost and time savings for analyzing up to 40,000 samples annually that breeding programs at CIP require," points out zum Felde. "In the last four years, CIP's QNLAB has evaluated more than 130,000 sweetpotato samples from the sweetpotato breeding program," he adds. A NIRS analytical network was established to facilitate the analysis of sweetpotato samples in African target regions (Uganda, Mozambique, and Ghana), based on NIRS calibration models developed and maintained in Lima."

In addition, CIP's QNLAB has evaluated more than 6000 potato samples from the potato breeding program and plans a NIRS network for potato breeding programs in the Andean region. "We are putting together our experiences in evaluating the nutritional composition of root and tuber crops, to tap the potential of CIP's QNLAB for becoming the leading reference analysis laboratory and NIRS analysis center for micro- and macronutrients in potato," says zum Felde.

Under the umbrella of a NIRS feasibility study in collaboration with HarvestPlus, the QNLAB has supported the evaluation of pro-vitamin A carotenoids, iron, and zinc in other crops, such as maize, wheat, rice, cassava, millet, and beans from other CGIAR centers (CIAT, CIMMYT, ICRISAT, IRRI, and IITA).

Future applications for NIRS may likely include the ability to evaluate different stress tolerances in crops, since NIRS can detect and evaluate the metabolites that plants produce when subjected to stress condition.

"We still have a lot of ideas to implement for meeting the needs of research," concludes Gabriela Burgos, who leads CIP's QNLAB. "Our vision is to be a worldwide reference laboratory for micronutrient analysis of root and tuber and other crops with a view to improving human health, reducing poverty, and alleviating hidden hunger."



## MEETINGS & EVENTS Participatory varietal selection in potato's heartland

CIP and its partners from the National Agricultural Research Institute (INIA) Agricultural Experiment Station in Illpa, Peru conducted a field day on 11 May with local farmers. The purpose was to solicit their preferences and priorities regarding improved native potato varieties adapted to the unique conditions of the Peruvian Altiplano. Farmers identified and prioritized key characteristics they would like to see in improved varieties ranging from shape and color for producing chuno (freeze-dried potato) to issues such as taste, texture, and resistance to frost, flooding, or late blight disease. They also assessed and selected preferred characteristics (size, shape, color, quality, texture, taste, and more) among improved potato clones from native varieties planted last year and freshly harvested for this activity. Voting was anonymous and captured gender differences in preferences and priorities. Led by, CIP's Manuel Gastelo and INIA's Jesus Arcos, the event was an activity of CIP's ALTAGRO program. The program has worked in the Peru-Bolivia Altiplano to promote the use of agricultural technologies to reverse the degradation of natural resources, improve productivity, increase revenue generation, ensure food security, and promote greater recognition and participation of women.



## National consultation and farmer's day in Modipuram, India

A National Consultation on "Production of Disease Free Quality Planting Material Propagated through Tubers and Rhizomes," brought together nearly 2000 farmers and researchers along with public and private sector partners to explore common interests in Modipuram, India, on 4-5 March 2011. CIP was a co-sponsor of the event, along with PepsiCo, Jain Irrigation, Horticulture Board, and the India Council for Agricultural Research (ICAR). The meeting included technical sessions, with presentations by CIP's Mohinder Kadian and Sreekanth Attaluri. Neeraj Sharma, Shahid Ali, and Vikraman Surjit presented posters. An exhibition for a "Kisan Mela" (Farmer's Day), featured live samples of orange fleshed sweetpotato and of early bulking, heat-tolerant, late blight-resistant, and processing quality potatoes.



## CIP-Mozambique receives visit from US Deputy Secretary of State

Thomas R. Nides, US Deputy-Secretary of State, toured CIP and other International Agricultural Research Centers in Mozambique during a visit on 4 May. CIP was a center of focus regarding the sweetpotato and potato breeding programs, agro-processing, marketing activities, and health promotion efforts that have been carried out in the last 10 years. Samples of the 15 new varieties of sweetpotato recently pre-released in Mozambique were displayed. CIP's Maria Andrade described the breeding programs, along with the role of orange-fleshed sweetpotato (OFSP) in combating vitamin A deficiency. Mr. Niles also saw processed products, visited the tissue culture lab and greenhouses, and received some of CIP's OFSP promotion materials. He concluded the visit with congratulations to CIP for its work in the fight against hunger and poverty in Africa.



## Knowledge Fair

**A** Root & Tuber Crops for Food, Nutrition, and Livelihood Knowledge Fair was held on 17 June 2011, in Manila, the Philippines. It showcased commercial food products and traditional RTC dishes from over 30 commercial companies, community producers/processors' groups, and small-scale entrepreneurs from various Asian countries. Samples ranged from traditional fermented cassava and orange-sweetpotato breads from Indonesia, elephant-foot yam curries and tapioca chips from India, sweetpotato noodles and potato grates from China, and yacon wine and purple-yam snackfood products from the Philippines. The purpose was to showcase innovative uses of these often undervalued crops and to stimulate



Bakery products from mashed sweetpotato, produced by Rumah Ubi (House of Sweetpotato) food company in Indonesia

knowledge exchange among those engaged in RTC research, extension, and business development. The event was co-organized by CIP and the Philippine Rootcrop Research and Training Center (PhilRootcrops). It was developed to respond to growing interest in harnessing the potentials of RTCs for improving food security, nutrition, health, and livelihoods. Along with the exhibits and taste tests of RTC products were presentations by a panel of international experts and the official launching of a regional Asia-Pacific partnership initiative on RTC research-for-development, sponsored by the UN International Fund for Agricultural Development (IFAD). The event generated strong participation from the private sector, government, NGOs, and the media.

## National Potato Day

**C**IP hosted Peru's National Potato Day celebration on 27 May, highlighting research and development impacts that have led to increased demand for native potato and improvements in the potato market chain in Peru, including greater inclusion of small-scale farmers. The event was co-hosted with the Ministry of Agriculture and organized by CIP's Papa Andina and INCOPA. It showcased CIP success stories over the past 10 years through the re-creation of the potato market chain, from breeding and improved varieties to the marketplace, collaboration with small and big



businesses, and major inroads into the gastronomic sector. Innovations such as the introduction of 60 native potato varieties in the official potato variety catalogue, seed production techniques, standardizations of technical norms for fresh and processed potatoes and the development of new products with native potatoes, were featured as contributing to an increase in local potato consumption from 60 to 83 kilos per capita. The event brought participation from all the diverse partners of the market value chain, along with Ministry of Agriculture officials, funding partners from the Swiss Agency for Development and Cooperation, and members of the media.

This was Peru's seventh consecutive National Potato Day. Now a well-recognized and highly celebrated event across the country, it represents a Papa Andina public policy success story.

## AWARDS & HONORS CIP wins communications award



Valerie Gwinner, Head of CIP's Communications and Public Awareness Department and Reinhard Simon, Head of the Research Informatics Unit, won the 2nd annual Atlassian Do-Gooder Award, along with its \$10,000 prize. The award was announced at Atlassian's annual meeting on 7 June in San Francisco, CA, which Simon attended thanks to funding from the award. Their winning piece was a communication "story" describing how CIP uses Atlassian's free community software license to apply the most rigorous international standards for distributing germplasm (planting material) to help combat hunger and poverty. A video produced by Atlassian can be viewed at: <http://www.youtube.com/watch?v=KGBnua4WVc8>

## Corporate Social Responsibility rewarded

One of Papa Andina's partnership projects to promote Corporate Social Responsibility (CSR) was recognized on 3 June. The company INALPROCES received a \$25,000 award from the German-Ecuadoran Chamber of Commerce and Industry for its use of CSR in the development of chips and fresh produce made from colorful native potatoes. Papa Andina partnered with INALPROCES and the Consortium of Small Potato Producers (CONPAPA) in Ecuador to link small producers with the development and benefits of the new products. The company originally approached Papa Andina to help develop this product, having learned about its activities via the web.

## Scientific excellence award

A further Papa Andina-InnovAndes partnership project was recognized for its scientific excellence on 15 June. The Bolivian Regional Fund for Agricultural Technology (Fondo Regional de Tecnología Agropecuaria) certified their FLG-353/05 Project as the Best of 2011 for its execution, management, and potential impacts.

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