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Acceso a Mercados y Alivio a la Pobreza
Market Access and Poverty Alleviation

MARKET ACCESS AND POVERTY ALLEVIATION 2

CROP DIVERSIFICATION

CONSULTANCY REPORT - 0605

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CHAPTER 1

BACKGROUND

THE MAPA PROJECT

MAPA 2 is one of the activities managed through USAID´s Office of Economic Opportunities that contributes to the achievement of Strategic Objective N° 2, ¨Increased income for Bolivia's poor".

The activities of the MAPA 2 Project target Intermediate Result N° 2.2 "Increased access to agricultural technology and marketing services". Within this context, the overall objective of the MAPA 2 Project is to "Increase the incomes of a significant number of low income families living in the Valles and Altiplano regions by facilitating their access to technology and marketing services".

The MAPA 2 Project has four general objectives:

- Link public and private sectors to achieve increased profit for actors within the agricultural sector through increased access to technology and agricultural markets.
- Promote and support FDTA Valles as a sustainable, effective, and efficient support and stimulus to the development of agricultural commodities within the Valles region of Bolivia.
- Promote and support, with technical assistance and training, groups within the Altiplano region. Provide technical and financial support to FDTA Altiplano.
- Stimulate and support improvements in the development of policies and regulations within the sector, through the strengthening of SIBTA, SENASAG, RAU, and RITEX.

SCOPE OF WORK

1. Provide technical assistance and review the progress being made in the sweet onion and cut flowers programs – including new work with quinoa – with FDTA's.
2. Advise and supervise the raspberry and blackberry grantees and associated growers for the upcoming marketing season from Bolivia to Brazil and plan initial sample shipments to Europe.
3. Provide technical assistance to newly established trial plots of blueberry material imported from Chile.
4. Participate in planning field visits to the central and northern Altiplano regions to discuss and develop Annual Year Plan that will guide the Altiplano intervention.

5. To develop a sound strategy for consolidating a permanent plant import program of improved plant materials from the US and other South American countries into Bolivia.

The assignment duration for 2006 will be approximately 60 days divided between trips and work days in the continental US for plant and information sourcing. The first trip will take place February 12 to 26 in Bolivia. The second trip dates will be tentatively for the month of August 2006 for the Bolivia trip and other countries in the region as potential sourcing of plant material. A six-day workweek is approved.

This assignment is part of an ongoing series of visits, designed to monitor progress and deliver technical assistance to the berries, spices, sweet onions, cut flowers and new opportunities programs in the Valleys and Altiplano regions.

CHAPTER 2

CONSULTANCY DEVELOPMENT

INITIAL ASSESSMENT

Bolivia is one of the poorest countries in Latin America. Economic growth, averaging 5 percent GDP over the last five years, has been insufficient to increase average incomes, especially for the poor. In rural areas, where agricultural activities are the primary source of income, poverty is basically a phenomenon particularly concentrated in the Valleys and the Altiplano. These regions have never been integrated economically to the market economy. Weak linkages to local markets (e.g. consumer markets and agro industries), lack of road infrastructure and virtually no access to international markets and technology perpetuate the existence of a primitive sub-economy and adversely impacts productivity. Market linkages have been limited, to a large extent, to local market fairs where basically the same product is sold at the same period of the year determined by time of harvest. These regions have traditionally produced low value products using antiquated production technologies in a relatively hostile environment, including lack of irrigation. Further, there is a lack of a coherent policy, supportive institutional frameworks and financial intermediation for the poor in rural areas.

USAID/Bolivia and the GOB with the implementation of the MAPA new phase or MAPA 2 Project, jointly seek to increase the incomes of the rural poor through a demand driven strategy by improving producer access to markets and by stimulating new market demand in the Valleys and Altiplano areas of Bolivia. The MAPA 2 Project also seeks to establish and strengthen the *Fundación para el Desarrollo de Tecnología Agropecuaria de los Valles* (FDTA-Valles) and Altiplano (FDTA-Altiplano). The FDTA's are non-profit organization as contemplated under the *Sistema Boliviano de Tecnología Agropecuaria* (SIBTA) that will contribute to decrease rural poverty, increase power income, increase the competitiveness in the Ag sector and promote sustainable use of natural resources.

The strategic approach to poverty alleviation under this activity is linking markets with the rural poor. The objective is to increase their income. Since income is realized once production is sold, all activity components are aimed at increasing effective demand and/or satisfying market demand.

To this end, this market-driven activity will begin at finding markets for high-value products that can be produced in rural areas. The activity will then make sure that production responds to market requirements through appropriate research and technology transfer activities and support to rural producers/producer associations to improve production and marketing mechanisms.

The small fruit (raspberry, blackberry and blueberry) commodity chain has been identified by the MAPA teams as crops/products with potential for expanded production and marketing in traditional Bolivian domestic markets and also with potential for export to neighboring MERCOSUR countries (e.g. Brazil) and trial shipments to Europe.

Flowers and onions are being prepared for export to MERCOSUR neighbors and the continental US. Specific interventions are being funded through grant agreements with existing fruit growing organizations. The interventions being funded will target not only production, post harvest and marketing technical assistance in the small fruit commodity chain in the Cochabamba valleys and the Altiplano areas of Bolivia, but also introducing new varieties of fruits, nuts, vegetables, flowers and spices for evaluation in coordination with Benson Institute and other Agencies, mostly from the Title II section in Bolivia. Finally, continuation of MAPA's plant propagation program designed to introduce, amongst other things, new varieties of cut flowers and dehydrated quinoa flowers into local and export markets.

The overall program of specific interventions in the FDTA's will be discussed and outlined during this visit. An approach will be supported with sourcing of plant materials from Chile, Argentina and US nurseries sources as appropriate, and then follow up visits will provide opportunity for continuing technical advice and adjustments in the program as needed for our intervention in FDTA's regions.

MAIN ACTIVITIES

This consultancy was conducted to provide technical guidance for new and existing projects underway as part efforts by the *Fundación para el Desarrollo Tecnológico Agropecuario de los Valles* (FDTA-Valles) and the MAPA 2 project. Over the life of the initial MAPA project, multiple crops have been introduced as alternative new crops for the highland valleys. These products have included but not been limited to raspberries and blackberries in the Tarija and Cochabamba areas and several ornamental cut flower crops in the Cochabamba area. These new products are in various stages of commercial development and growers are experiencing success or varying levels of problems depending upon the crop and the production and market conditions.

Several new crops have been identified as potential products for growers in the Bolivian Altiplano as part of phase 2 of the MAPA project. This consultancy also served to review key production sites and existing institutions and infrastructure in the Altiplano area to support these new crop development efforts.

FINDINGS AND SIGNIFICANT ISSUES

DAILY ACTIVITIES

February 13, 2006 I arrived in La Paz in the early a.m. and remained there until mid afternoon when I took the flight to Tarija arriving in the early evening.

February 14, 2006. I visited the AFRUTAR processing plant with FDTA-Valles berry program coordinator Juan Carlos Claure. I met with 25-30 raspberry growers at the AFRUTAR processing plant where we visited the demonstration plots established by AFRUTAR technical field staff over the past 3-4 seasons for a field exercise. This field instructional exercise provided the opportunity to review key aspects of raspberry and blackberry production management with this group of growers and with AFRUTAR technical staff. There was time also for a question and answer period where growers could ask questions and share the experiences and observations on the different caneberry varieties. It also provided an opportunity for me to check on plant availability of promising caneberry varieties that could be established at the different sites being contemplated for the Altiplano caneberry trials.

During the visit to AFRUTAR, we had an opportunity to review the fruit arriving at the plant for packing and the fruit that was in the cold room awaiting shipment. There had been reported fruit quality problems on arrival in Sao

Paulo, Brazil. Many of these problems had been attributed to excessive rain and cloudy weather over the previous 10-14 days. These weather problems no doubt where a factor with the fruit quality problems, but there were also serious postharvest management problems at the plant. The fruit was not been adequately pre-cooled with forced air and the marketing of the fruit was taking too long, causing fruit to back up into the coolers beyond even seven days. The inconsistent efforts at forced air removal of field heat, coupled with the slow fruit movement and slow packing were also contributing to breaks in the cold chain. There had been inconsistent air service and strikes within Lloyds Aero Boliviano which also exacerbated the situation further and contributed to inconsistent fruit movement to the export markets.

February 15, 2006. We visited a group of new raspberry growers and prospective growers who are affiliated with the new caneberry project financed by the Municipality of Tarija. We had another meeting session where I reviewed field production practices with the growers, as well as common pest problems, and again provided a period for questions and answers and information interchange with the growers. We also visited a couple of fields but heavy rain limited our field activity. I returned to Cochabamba on the early evening flight.

February 16, 2006. In Cochabamba, I met with key MAPA and FDTA-Valles technical staff including Enrique Rivas, Javier Siliézar, Lily Alvéstegui, Juan Carlos Claure, and Osvaldo Urquidi. We reviewed the status of the berry program in Tarija and possibilities of extending berry trial plantings to the Altiplano and other potential Altiplano crops, sites, and cooperators.

On February 16, in the afternoon, we visited the Four Seasons Nursery and their farm site where new cut flower and caneberry and blueberry introductions are in various stages of development. We encountered problems with some of the field establish Leucadendron plants which I attributed to poor drainage. The plants had been established on high beds to avoid the drainage problems but the plantings need to removed and reestablished at a site with better drainage, once the plants have recovered.

February 17, 2006. I flew to Sucre on the early AM flight with Javier Siliézar where we were met by a car and driver from Sucre with FHI a NGO working in the Altiplano in the Tomoyo Valley, north of Potosi, about 4 hours from Sucre. We visited the small experiment station the group operates in the valley and several of their on-farm trial sites. We discussed their interest in collaborating with the MAPA 2 / FDTA-Altiplano project and possible crops for inclusion in the trials. This site seems well adapted to trials with peas – snowpeas, shelled peas, and sugar peas and we discussed possible collaborative projects with the project agronomists. Siliézar will meet with the group and the farm near Oruro to show them the pea trials underway and to discuss specific possible projects.

February 18, 2006. We returned to Cochabamba on the morning flight from Sucre. In the afternoon, I worked on compilation of a low-chill database for fruit cultivars for possible evaluation at Altiplano trial sites.

February 19, 2006 (Sunday). Off

February 20, 2006. I traveled with Javier Siliézar, Paul Meruvia, and Claudia Sáinz by vehicle to Oruro to begin a few days of visits to possible project focus sites for trials in the Altiplano. We began with a visit to the farm site of the on-going field trials with organic sweet onions, sugar peas, and snow peas – all destined for export trial shipments. There had been a succession of frosts and defoliation had set onions back to some extent. Later onion plantings looked better than earlier plantings. The onions were still several weeks from harvest and the ultimate success of these trials will depend upon subsequent frost or hail events as well as the timing of harvest relative the market window as

perceived by prospective U.S. importers. The sugar peas and snow peas looked beautiful and the first harvest was beginning. Arrangements were made to ship initial small sample amounts to Cochabamba for MAPA marketing specialist, Enrique Rivas to distribute to potential buyers in key urban markets in Bolivia.

Siliézar and Rivas had made contact with potential organic sweet onion marketing agents in the US and plans were underway for trial shipments. Initial contacts had also been made for trial export shipments of the snow peas and sugar peas to buyers in Sao Paulo, Brazil who were currently marketing raspberries and had earlier expressed interest in the peas.

February 21, 2006. We visited the field station of the Agronomy Faculty of the Oruro University near Oruro and were led on a tour of the facilities by the station manager. We were interested in reviewing what facilities might be available there for collaborative projects involving the introduction of perennial fruit or nut crops. The station was largely devoted to animal science and included facilities for rearing cattle and llamas and maintenance of a llama germ plasm bank. There were also facilities devoted to milking and processing of milk products including cheese and yogurt. The station manager had recently been changed and the old long standing manager had taken a staff position. Nevertheless, both old and new station managers expressed interest in collaborating with the MAPA 2 / FDTA-Altiplano project. There appear to be adequate land and water facilities to establish and maintain trial plantings for diverse tree species. Facilities are also available that could be converted to cooling or packing facilities for horticultural crops if needed. It may be necessary for the project to hire its own laborers and field technician to oversee the plots and to ensure things are done in a timely manner.

We later visited the Oruro University campus site and spoke with one of the administrators from the Biotechnology Program who also expressed interest in collaboration on behalf of the university. We as a group agreed that the field station offered better possibilities for collaborative projects than the campus site.

February 22, 2006. We visited ongoing field trials with Save The Children, an NGO evaluating alternative forages for the Altiplano and that had also planted a trial with onion production. The onion trial had not been well tended and the plot did not justify harvesting. Problems appeared to be due primarily to poor weed and water management and otherwise poor agronomic management in general. The field technician from the NGO visits the area only every 30 days due to a heavy workload and this NGO and group of growers do not appear to be able to offer the minimum requirements to adequately tend field plots.

We later visited the facilities of QuinoaBol, (quinoa@entelnet.bo tel. (591) 2-213-36628), an established exporter of organic quinoa enroute to La Paz. The owner Raul Veliz, was out of the country at the time of our visit. We discussed some of the Fundamentals of the established quinoa grain exporting companies. Paul Meruvia suggested that a fundamental economic inefficiency of this industry is that the processing facilities lie distant from the areas of production and thus are forced to carry the unprocessed grain long distances. When the grain is processed it loses a considerable fraction of its mass and this is discarded as waste. This means the cost of shipping the grain "chaff" is an expense that could be converted to revenue if the processors were located closer to the grain production areas. The MAPA 2/ Altiplano Project should clearly establish a process budget for quinoa production, processing and export and evaluate opportunities such as this for improving efficiency in the current system.

We also visited a working Maca (Lepidium meyenii) production farm with an agronomist from Save the Children - an NGO working in the area. Maca is a traditional Andean root crop with a reputation as a nutraceutical crop –especially to improve male stamina and libido. There is a gold rush of Maca production, processing, and export as processors

have established high prices for growers to rapidly take advantage of growing markets in North America US and Europe. Maca is a long season crop but appears well adapted to the Altiplano. Current prices ($1.25/kg) make it extremely attractive as a cash crop but it is likely that new plantings and future harvests volumes will crash the market abruptly. The Project should monitor the Maca situation and especially evaluate demand projections and any anticipated growth in the market.

February 23, 2006. We visited the research farm and laboratory facilities of PROINPA and the contiguous farm facilities of the Benson Institute outside of La Paz. PROINPA has laboratory facilities to support their quinoa breeding and germ plasm collection and field trials. They also have a staff research nutritionist who works with nutritional evaluations of quinoa – pre and post processing. They also have on-going programs evaluating several forage species adapted to the Altiplano. They also are evaluating several designs of solar greenhouses for family and small-scale commercial production of horticultural cash crops in Altiplano conditions during periods of potential frost or hail.

Benson Institute and PROINPA collaborate on a number of projects involving Altiplano forages, llamas and quinoa and their farm facilities are side be side. I had the impression that PROINPA offers more stability and experience with respect to their capability to offer collaboration for long term trials with perennial fruit or nut crops. PROINPA's quinoa nutrition program could also be valuable if the MAPA project chooses to work with the development of quinoa "power bars" or nutritional bars for use in school lunch programs. We visited PROINPA's quinoa germ plasm collection and wide ranging field trials with quinoa demonstrating multiple varieties with potential for use in the R&D program looking at quinoa as a dried cut flower.

February 24, 2006. I met with Javier Siliézar and Enrique Rivas at the FDTA-Valles offices to discuss possible focus areas for the Altiplano project. I traveled with Javier Siliézar, Paul Meruvia, and Claudia Sáinz to visit on-going trials at a farm near Cochabamba with dried quinoa flower panicles and evaluations of different dyeing techniques that could produce a marketable dried flower product for export to Europe and North America.

February 25, 2006. I worked on preparation of reports and recommendations and traveled to Santa Cruz de la Sierra to catch an early AM flight to the US the following morning.

CONCLUSIONS AND RECOMMENDATIONS

There are multiple foundations and other institutions in Bolivia with large, well funded and well staffed programs in quinoa development and improvement. The MAPA project should only attempt very targeted and narrowly defined work with quinoa. Appropriate examples could be projects such as:
development of quinoa growing and processing practices for dried flowers, or work with growers, processors and municipalities to develop quinoa nutrition bars for low income school breakfast or lunch programs, crops.

Further research with organic or conventional sweet onion production in the Altiplano should all be consolidated under the FDTA-Valles onion program. There are still serious questions that need to be addressed especially concerning the ability of Bolivian sweet onions to consistently hit the target US market window. That window could be expanded some by producing organic sweet onions but that option presents other production and marketing challenges. All of the work with onions should be under one narrow, carefully dimensioned management program until there is sufficient data and experience to clarify these questions.

The research and development effort with shelling peas, snowpeas, and sugar peas should be emphasized and

expanded. These crops offer and important potential export industry opportunity for the Bolivian Altiplano. Growing trials are underway and have already demonstrated that these crops are well adapted to the Altiplano. Export marketing trials should begin as soon as possible, working with receivers in Brazil and other MERCOSUR and South American cities with direct air service from Bolivia. Edamame vegetable soybean varieties could also be added to the pea trials once a clear target market is identified for the edamame. Use FDTA-Valles field sites near Oruro, or at PROINPA's farms near La Paz for continuous production over a long season.

Continue with plans for importation and establishment of diverse low chill deciduous fruit and nut crops – including but not limited to cherries and other stone fruits, almonds, walnuts, pistachios, etc. Use the PROINPA farm near La Paz and the Oruro University farm near Oruro to establish long term trial orchards to evaluate promising fruit and nut crops for eventual sales in domestic markets or for regional exports.

Establish field trials at multiple sites to continue evaluations of oregano and add diverse varieties of lavender, capers, saffron, thyme and other culinary or medicinal herbs as appropriate for domestic, regional or international markets.

Continue importing and multiplying the cut flower planting material – particularly from the Protea family and other South African and Australian native species. Evaluate these species in open field production and in the field tunnels that are used for vegetable production around La Paz. Cooperative trials with cut flower species should also be established with the PROINPA greenhouse project. These small greenhouses could be used for intensive production of cut flowers on a small scale for cash income for small farmers in the Altiplano.

A memorandum of understanding should be established with PROINPA and the Oruro University that would allow long term collaboration with each of these perennial species that will require longer term research and development. PROINPA offers better field and laboratory facilities and a broader institutional base for long term collaboration than Benson Institute.

ANNEXES

Annex 1 Plant introductions for 2006~2007

ANNEX 1
PLANT INTRODUCTIONS FOR 2006 ~ 2007

Vegetables: Sugar Snap & Snow Peas varieties, French Beans, Edomame (edible vegetable soybean), Sweet Onion varieties, Garlic, among others.

Fruits: Diverse varieties of Raspberry, Blackberries, Gooseberry, Currants, Sweet and Sour Cherries, improved varieties of peaches, among others

Specialty Flowers: diverse varieties of Kangaroo Paw, Proteas, Leucospermum, Banksias, Leucospermun, etc.

Nuts: diverse varieties of Pistachios, Almonds, Walnuts and Chestnuts, among others.

Spices: diverse varieties of Oreganos, Lavenders, Saffron, Thyme, among others.