

## Chile's Foundation for Agricultural Innovation

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### SYNOPSIS

Chile's Foundation for Agricultural Innovation has facilitated partnerships, especially between public and private agencies, that promoted technical, organizational, and commercial innovations. The foundation coordinates actors in the public sector, academic institutions, private firms, and other entities to understand and meet the innovation needs of different industries and agricultural activities. The agency operates as an honest broker, free of special interests, and implements programs to generate trust among farmers and other partners. Innovation initiatives are managed responsively, quickly, simply, and not bureaucratically, and as innovation processes move forward, the agency retains organizational flexibility and freedom (for example, to form ad hoc, specialized groups and instruments for solving particular problems).

### BACKGROUND AND CONTEXT

In the 1990s, the Chilean economy was liberalized, the government reduced tariffs, and free trade agreements came into effect. The agricultural sector was at a crossroads; it had to modernize and become more competitive. Support for agricultural research, development, and innovation was stepped up. The government adopted policies to promote technology transfer and raise productivity.

The subsequent rapid transformation of Chilean agriculture into an engine of regional development has become a familiar story. Current exports from the national food and forest industry (fruit, wine, salmon, wood, white meats, and other products) are valued at about US\$13 billion per year and are expected to reach US\$20 billion in coming years.

The transition from a traditional agrarian economy to an export-based economy was not entirely smooth. Unemployment and migration increased as traditional agricultural products such as wheat, corn, milk, and meat were replaced by imports from countries with more competitive agricul-

tural sectors. The challenge was to improve Chilean producers' competitiveness through new technologies and to develop alternative crops for regions and farmers affected by imports. At the time, agricultural research and development focused on basic rather than applied science, and little support was given to business innovation.

### PROGRAM DESCRIPTION

In 1994, Chile's Ministry of Agriculture created the Foundation for Agricultural Innovation (FIA, Fundación para la Innovación Agraria), a public agency to promote and financially support agricultural research, development, and innovation. Initially FIA focused strongly on technology transfer to improve competitiveness. It identified products with high economic or commercial value and significant labor requirements that could be adapted to Chilean agriculture. In 2009, FIA became part of Chile's National System of Innovation for Competitiveness (SNIC, Sistema Nacional de Innovación para la Competitividad). FIA's strategic objective is to promote innovation processes for the agriculture sector and improve the conditions that favor those processes, by cofinancing innovation initiatives, generating strategies, and transferring information and results of innovative programs and projects carried out with Chile's private sector.

The foundation is guided by a seven-member board of directors chaired by the minister of agriculture. It is headed by a chief executive appointed by the minister of agriculture. FIA's annual budget is about US\$18 million, mostly from the Ministry of Agriculture (US\$11 million); other sources of finance include the national Innovation Fund for Competitiveness (FIC, Fondo de Innovación para la Competitividad), which is supported by mining royalties (US\$6 million). The national innovation policy has three pillars: *Science* and *Human Capital* are supported by the National Commission for Scientific and Technological Research,<sup>1</sup> and

*Enterprise Innovation* is supported by Innova-Chile, the multisectoral innovation agency of the Corporation to Promote Production (CORFO).<sup>2</sup> FIA and other small funds focus on specific sectors and complement Innova-Chile. While FIA works mainly with small- and medium-scale enterprises, Innova-Chile works with medium- and large-scale agroindustrial entities and entrepreneurs.

## INNOVATIVE ELEMENT

The efforts of FIA changed the paradigm for agricultural research and development, which had been confined to technology institutions and academia and yielded results that often lacked commercial application. Aside from facilitating partnerships across the public and private sector, including producers and industry, FIA supports innovation in the following ways:

- *Strategic development of information and knowledge* to anticipate future trends and technological developments in global agriculture, through observation, exploration, and analysis of such emerging issues as climate change, agriculture's carbon footprint, water, and bioenergy, among others.

- *Development of mechanisms and instruments* for disseminating projects and programs with commercial potential to agrarian enterprises.
- *Management intervention mechanisms* that support collaborative innovation initiatives submitted by clients (box 1.26).
- *Evaluation of technical, economic, and social results* of projects cofounded by FIA, prior to their transfer and implementation.

Currently FIA works with the World Bank on redesigning the system for agrifood and forestry research, development, and innovation through scenario planning. In this context, FIA plays the role of coordinator and broker, interacting closely with all parts of the system—agricultural producers, financial agencies, companies, technological institutes, or universities.

## BENEFITS, IMPACT, AND EXPERIENCE

Since its creation, FIA has promoted the development of new, high-value agricultural products for the domestic and international markets. Many of these products have improved farmers' incomes and living conditions

### Box 1.26 Mechanisms Used by Chile's Foundation for Agricultural Innovation to Support Innovation

The Foundation for Agricultural Innovation uses several mechanisms to support initiatives and innovation projects, technology transfer, and human resource development. *Territorial innovation programs* are regional initiatives led by stakeholders and representatives of an agrifood chain in a particular region or territory. *Technology consortiums* are joint ventures between technology agencies (including public research institutes and universities) and private enterprises to create a new technology-based company or pursue innovative research on new commercial technologies (for the grape, potato, and dairy industries, for example). On a smaller scale, *technology development programs* promote specific technological development and innovation led by stakeholders and representatives of an agrifood chain. *Innovation in agri-food marketing* supports market integration and market development tools for micro, small-scale, and medium-scale agri-food companies. FIA also conducts numerous *studies* to

Source: Author.

assemble and synthesize technical, economic, and/or commercial information to aid decisions on future innovation initiatives. *Projects* are funded on innovations that improve a company's competitiveness and that of the sector to which it belongs. Projects must show measurable market effects. *Visits to centers of excellence* are sponsored in Chile and abroad to observe and evaluate technological, organizational, and managerial innovations in production systems. Individuals are also sponsored to attend *national and international technical events*, such as seminars, symposiums, congresses, conferences, and technology fairs. FIA also funds *specific events* (seminars and conferences) to disseminate and transfer national and international experiences related to products, processes, and innovative tools for marketing, organization, and management to different actors in the AIS. *Consultants* provide specific skills to enhance competitiveness of specific products, processes, or organizations and their management.

throughout Chile. An impact evaluation in 2005 determined that each million Chilean pesos (Ch\$) spent by the foundation increased sales in the agricultural sector by Ch\$5.14 million, leveraged Ch\$1.89 million in private contributions, and created two permanent jobs in the agricultural sector (FIA 2005). For example, FIA helped to support development of a successful olive oil-processing and export industry (box 1.27), increased sheep meat production by introducing better breeding stocks, extended cranberry cultivation to new areas, introduced new varieties of flowers for the export and domestic market, and expanded peony production area. FIA has also sponsored investments in ICT technologies for rural areas. In organic agriculture, FIA supported the first projects in what has become a growing business, and it advanced the study and commercialization of biological control, using a variety of beneficial insects.

## LESSONS LEARNED AND RECOMMENDATIONS FOR PRACTITIONERS

Lessons and recommendations from FIA's experience may be useful to other agencies that seek to move from a mission

based on technology transfer to one that involves building partnerships (locally, nationally, and internationally) that foster agricultural innovation and access to highly competitive global markets.

A vital role of an innovation agency is to coordinate actors in the public sector, academic institutions, private firms, and other entities to understand and meet the innovation needs of different industries and agricultural activities. The key is to be participatory and create avenues for continuing analysis and discussion in which the experience and opinions of all actors can be considered.

Organizations such as FIA that specialize in promoting innovation should act as facilitators, linking the demand for research and development with the suppliers and strengthening the capacity for research and innovation throughout the AIS. There should be a distinction, understood by all actors in the AIS, between the roles of innovation-promoting agencies and centers for developing or diffusing innovations (whether they are public, private, nongovernmental, or civil society organizations). As facilitators, innovation agencies should not operate research programs. They must remain independent of research and technology institutes,

### Box 1.27 Purposeful Innovation to Expand Chile's Olive Oil Industry

In the mid-1990s, Chile produced olives on a small scale—approximately 3,000 hectares, of which 350 hectares were for oil production. Yields were relatively low, averaging 3–4 tons per hectare and 16–18 percent edible oil. Production relied on outdated practices. The National Olive Development Program, launched in 1995 by the Ministry of Agriculture and coordinated by FIA, addressed problems (agronomic, processing technologies, zoning) that limited the industry's development. It involved all agencies under the ministry, plus producers, private companies, and other entities, including Fundación Chile. The ultimate goal was to make olive production more competitive and stable and improve access to domestic and international markets (mainly the United States, Spain, and Canada). To that end, FIA supported the following:

- Deepening market research and identifying business opportunities.
- Identifying and multiplying new, more appropriate genetic stocks.

Sources: FIA 2009; CHILEOLIVA 2009.

- Expanding area planted to high-yielding cultivars.
- Acquiring international technical expertise for agronomic and processing problems and marketing.
- Training specialists in olive cultivation and industrialization.
- Establishing modern oil-processing plants.
- Developing a brand and marketing Chilean olive oil.
- Conducting international seminars to promote Chilean olives and olive products.

By 2009, planted area reached approximately 21,500 hectares (65 percent of production was destined for oil and the rest for table olives). Investments in the sector remain strong and have reached US\$50 million annually. Exports of extra virgin olive oil from Chile have increased tremendously in recent years. In 2003, Chile exported 53.7 tons, with a free-on-board (FOB) value of US\$158,200; in 2007, Chile exported 562 tons, with an FOB value of US\$3.1 million; and by 2009, it exported 1,933 tons with an FOB value of US\$12.5 million.

universities, the private sector, and agricultural organizations. They must be honest brokers, trusted by all, and not captured by special interests.

Although the private sector is an important force for innovation in agriculture, a public agency that specializes in promoting agricultural innovation, with sufficient human and financial resources, is a vital complement to private investments. In many cases, agricultural innovations may not be easy to patent or otherwise commercialize, but they may be critical to the development of the sector (biological control programs and information and communications technology infrastructure are two examples mentioned in this IAP). It is also likely that the partners involved and the relative levels of public and private investment will vary when innovations are in the developmental stage compared to when they are being commercialized. In other words, as innovation processes move forward, a certain amount of organizational flexibility and freedom are needed (for example, to form ad hoc, specialized groups and instruments for solving particular problems that emerge at a particular stage in the process).

The processes of managing innovation initiatives must be responsive, quick, simple, and not bureaucratic. Otherwise farmers and businesses have little incentive to participate. Innovation programs and the innovation agency itself should be evaluated regularly to verify their effectiveness and impact and make corrections in a timely way, if necessary. The professionals within the agency must receive training in management techniques for innovation and technology management, if they are to be of real support to farmers and entrepreneurs who seek to foster and manage innovation processes.

Needs for innovation (and partners committed to developing them) can be quite location-specific, especially in a highly ecologically diverse country such as Chile. FIA now develops what it calls “territorial innovations” by working with the regions to promote innovation at the local level. The development and adoption of innovations, especially with smaller-scale and more traditional farmers, can be slow. The process benefits from complementary programs that generate trust among farmers and other partners.