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Report Name: The Role of US Innovation in the Chilean Agricultural Boom

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Prepared By: Nelson Ramirez

Approved By: Amanda Hinkle

Report Highlights:

Chile is a powerhouse in global fruit exports, with over $8.2 billion in annual sales. Behind this success lies a key factor: U.S. genetic material. American-developed fruit varieties like grapes, apples, and cherries have helped Chile boost its agricultural productivity and expand its export sector. The exchange of plant and animal genetics and the intellectual property rights associated have played a crucial role in making Chile a leading exporter, showcasing how agricultural related intellectual property can produce up to $100 million in returns in return for services annually.

Chilean Ag Production and U.S.-Developed Genetic Materials

Chile is recognized as one of the world's leading fruit exporters, ranking fifth globally with exports exceeding $8.2 billion. Among its standout products, Chile is a relevant exporter of fresh cherries, fresh blueberries, table grapes, plums, apples, in-shell walnuts, fresh peaches, shelled walnuts, frozen raspberries, and fresh kiwis.

The development of Chile's fruit-growing industry and its exports has been made possible through the continuous effort and work of farmers and government entities over several decades. However, there is another key factor in this success: constant innovation and genetic development, which have played a fundamental role. Behind almost every fruit produced and exported by Chile is the genetic material, much of which has been developed by researchers from centers and universities mainly in the United States.

Let's take the example of grapes. In 2024, Chile exported $938 million of grapes, featuring its most important variety, the Thompson Seedless, which originated in California. Other U.S.-developed varieties grown in Chile include Red Globe, developed at the University of California, Davis; Autumn Royal, created by the Department of Agriculture in Fresno, California; and Cotton Candy, Moon Drops, Sweet Scarlet, Crimson Seedless, Venus, and Flame Seedless, all originating from California.

In the case of apples, the situation is similar. In 2024, Chile exported approximately $582 million of apples that included American varieties such as Red Delicious, from Iowa; Honeycrisp, developed at the University of Minnesota; Jonagold, created by the genetic improvement program at Cornell University; and Cosmic Crisp, developed by Washington State University.

As for cherries, the jewel of Chilean fruits creating a sensation in China, Chile exported $3 billion in 2024. One of the primary varieties, Bing, was developed in Oregon, while another key variety, Rainier, was developed in Washington State.

Blueberries are no exception, with the main exported variety, Legacy, developed by the genetic improvement program at Oregon State University. Other notable varieties include Emerald, Duke, Sussy Blue, and Blue Crisp, which were developed through breeding programs in Florida, New Jersey, Georgia, California, and the U.S. Department of Agriculture, respectively. In 2024, Chile exported blueberries worth $479 million.

This pattern is repeated with other fruits and nuts exported by Chile. Walnuts, with varieties like Chandler, Howard, Serr, Vina, and Tuono; peaches, with varieties like O'Henry, Lady, Zee Lady, Rich Lady, and Early Majestic; and raspberries, with varieties like Heritage, Red River, Meeker, and Autumn Bliss, all developed in the United States.

U.S. genetics are not only present in plants. Although it is on a smaller scale, a wide variety of animal genetic material is also marketed in Chile, primarily in the form of semen and embryos. The United States is the main supplier of bovine semen to Chile, for the dairy and beef industry, with exports

reaching $3.1 million in 2024. Chile also imported $18,000 of bovine embryos from the United States in the same year.

Intellectual Property (IP) Protection

In total, the United States has 395 plant varieties protected in Chile, covering not only fruits but also vegetables such as onions, melons, potatoes, peppers, and watermelons. Within the fruit category, notable species include blueberries, cranberries, cherries, plums, peaches, raspberries, strawberries, figs, pomegranates, mandarins, apples, blackberries, nectarines, walnuts, avocados, grapefruits, and grapes. There are also six protected forest varieties, such as poplar.

The United States is the primary source of protected plant genetics for Chile, accounting for 39 percent of the 1,009 protected varieties. The European Union follows with 34 percent. The most protected species in Chile is the blueberry, with 146 varieties, of which 79 come from the United States. 119 varieties of grapes are also protected, 92 of which originate from the United States.

An aspect little known by the public is that protected plant varieties continue to generate income throughout their productive life, which in the case of fruit trees can extend up to 20 years. Granting exclusive rights to the developers of these new varieties can ensure that they recover the investment made in research and genetic improvement through the payment of royalties. These payments, made by farmers or companies using these protected varieties, constitute a fundamental source of income that enables the funding and expansion of improvement projects, thus promoting the creation of more productive, resilient crops adapted to diverse environmental conditions.

The Chilean fruit industry estimates that royalty payments to the United States currently reach approximately $100 million annually. This amount increases each year, depending on the continuous replacement of varieties, particularly in high-value crops like grapes and cherries. These royalties represent compensation to the developers of the fruit varieties and are considered a form of export of services, as they stem from intellectual property rights licensed across borders. This system of royalty protection and payment not only incentivizes agricultural innovation but also enhances the competitiveness and sustainability of the Chilean fruit sector in the global market.

Improved IP Protections Benefit Both U.S. Researchers and Chilean Farmers

American developers of new plant varieties and Chilean producers would both benefit from improved protections of intellectual property (IP) and the resulting access to new plant varieties that would become available in Chile.

According to current Chilean regulations, based on the 1978 version of the Convention for the Protection of New Varieties of Plants (UPOV-78), protection for fruit trees, vines, and berries lasts 18 years from their development, with the protected subject being the plant itself. An update in Chile to the most recent version of the Convention (UPOV-91) would extend protection to 20 years for berry plants

and 25 years for vines and fruit trees. In addition to protecting the plant itself (as was covered by UPOV-78), UPOV-91 also protects the plant's production (harvest) and the commercialization of the variety.

In practical terms, the longer protection period under UPOV-91 would incentivize seed developers to send more competitive plant varieties in Chile, with better adaptation and higher yields—key factors for maintaining the country's competitiveness as an exporter. According to industry contacts, the survival of Chile's fruit export sector directly depends on its ability to renew its varieties, estimating an average annual renewal of 10 percent of the planted area. Royalty incomes would significantly increase under UPOV-91, as the renewed planted area each year would include the additional varieties developers would send to Chile under these stronger IP protections.

For example, for cherries, which are mainly exported to Asia, farmers are seeking plant varieties that are more resistant to post-harvest conditions. If these varieties are introduced to Chile, farmers will renew (replace) an estimated 1,700 hectares of cherry plants per year, potentially generating $5 million in royalty payments ($2.7 per plant). While U.S. cherry varieties already exist in Chile, these new varieties would replace old plants, generating new royalties for a longer time period and including additional royalty payments for the cherry fruits as well. In the case of grapes, where about 90 percent of plants are grown using U.S. genetics, the updated genetics would lead to a renewal that could reach 1,500 hectares per year with royalties of $2 million ($1 per plant). For blueberries, a renewal of 400 hectares per year could generate $700,00 in royalties ($0.5 per plant).

It is important to note that under UPOV-91 there is also a production royalty, which—depending on the species and varieties is charged per productive hectare, per kilogram produced, or as a percentage of the Free On Board (FOB) return. This royalty can be collected either as a percentage or as a fixed amount. For example, in the case of grapes, a fee of $1,300 is paid per productive hectare. Considering that Chile has approximately 42,000 hectares of table grapes for export, and that 90% of this corresponds to protected U.S. genetic material, table grapes alone would generate around $49 million annually.

The renewal of varieties is a dynamic process determined by consumer preferences, so better intellectual property protection would lead to increasing annual income due to the constant search for better varieties where higher royalties are paid to remain competitive in the market.

Conclusion

Innovation, technology, and scientific knowledge are rapidly transforming global agriculture, with new crop varieties appearing faster than ever to adapt to different climates and meet consumer demands. Universities, research institutions, and governments invest large sums long-term to develop these varieties and protect their investments through intellectual property rights. These rights allow breeders, especially in countries like the United States, to recover costs through royalties, making genetic improvement a strategic industry that drives both domestic production and the export of genetic material.

Chile has boosted its agricultural success by using genetics developed in the United States, improving crop quality and productivity while strengthening its global competitiveness. The intellectual property system grants developers exclusive rights and enables royalty payments, creating a sustainable cycle that funds ongoing innovation. This model fosters a strong partnership between Chile and the United States, demonstrating how genetics, intellectual property, and royalties drive growth and development in global agriculture.

Attachments:

No Attachments.