

# Facing Chile's Agricultural Emergency

Chile's Agriculture Ministry has declared more than one third of the country in an agricultural emergency due to drought. With dry conditions and growing competition for water resources playing havoc with fruit production in the central-northern part of the country, Chile's farmers are calling for proactive solutions to the problem of water scarcity.

By Olivia Crellin



Stuck between lush Patagonia in the south and the arid Atacama Desert of the north is central-northern Chile. An area of paradisiacal climatic harmony, the Coquimbo Region north of Santiago is Chile's chief center of pisco production, produces 40% of the country's citrus and over half of its potatoes. In early August, however, it was also one the regions considered worst affected when Chile's Agriculture Minister, Luis Mayol, declared 108 communities, including ten in Coquimbo, in agricultural emergency due to drought.

As a result of the severely dry conditions in Coquimbo, Minister Mayol said at the time that "extraordinary measures" were needed to help farmers and others affected by the drought.

Chile has suffered from drought periodically for many years but it is only recently that the fruitful equilibrium in the central zone, also known as the country's breadbasket, has started to slip out of the hands of those whose livelihoods depend on it. A combination of climate change, population growth and man-made problems have exacerbated a drought that has dragged on for the last four

years, costing the country millions of dollars in damage to Chile's second largest industry – agriculture (mining is its largest).

This year, for example, a combination of frost and lack of water led to a 20-point reduction in the size of the country's avocados and what is projected to be a 30% drop in production for the year, according to Fresh Fruit Portal, an online publication on Latin America's fruit export industry.

Agriculture, especially the type that Chile specializes in – water-needy fruits including citrus, grapes and avocados – is a thirsty business and uses an average 78% of the country's total freshwater annually: a figure that dwarfs Chile's mining industry needs which in comparison uses a measly 6%, according to figures from the Agriculture Ministry.

Some are skeptical about Chile's ability to address the crisis. "Drought is a normal part of our climatic



**"We need to conserve the little water we have left by investing more in infrastructure."**

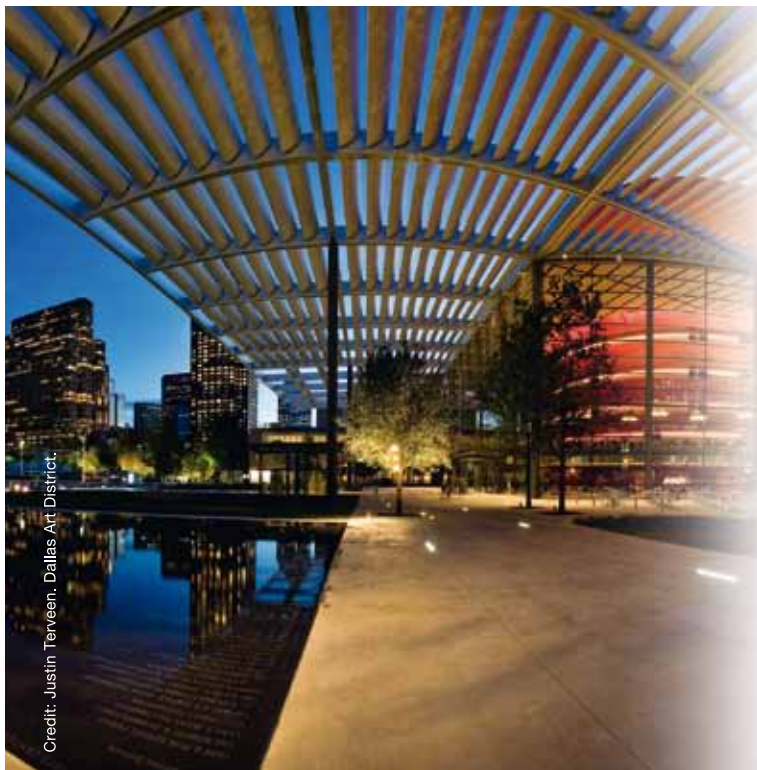
Felipe Martin,  
National Irrigation  
Commission (CNR)

landscape, but this doesn't mean that we know what to do, that we are well prepared for the next drought or that the government is planning ahead," says Professor Alejandro León, chair of the Department of Environmental Sciences and Renewable Natural Resources at the University of Chile.

### Praying for rain

According to Professor León, Chile is about 15 years behind schedule in its plans to address the country's water scarcity issues, repeating age-old methods such as leaving parts of farmland uncultivated to save water.

This year, however, there appears to be concrete and innovative plans in place on a scale never previously realized



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by a Chilean government.

“We have a clear plan, the national irrigation plan, which is also related to user organizations, because we do not get anywhere unless we build infrastructure,” said Felipe Martin, president of the National Irrigation Commission (CNR), an inter-ministerial commission created in 1975 to oversee the modernization of the country’s infrastructure.

This means providing incentives for private investment in irrigation projects in the form of co-financing.



**“Despite the harshness of the land, Copiapó is an example of excellence in Chilean agriculture.”**

**Ronald Bown,**  
Chilean Fruit Exporters  
Association (ASOEX)

The Commission increased its support for irrigation and drainage projects from 29 billion pesos (roughly US\$61 million) in 2010 to 41 billion pesos (US\$86 million) last year. Regional governments have also contributed funds to these projects to help ease the plight of farmers.

Within the next ten years, Chile plans to build ten new reservoirs, four of which should be ready by 2014. “It’s unprecedented for a government in Chile to be building four reservoirs simultaneously,” says Martin.

If there is no water to fill these reservoirs, however, their practical use is limited: in early August, the country’s reservoirs reached their lowest levels in 15 months. In Coquimbo, the average rainfall deficit stood at 90%. Unfortunately for Chile, climate conditions are not on its side. Thanks to the El Niño–Southern Oscillation (ENSO) phenomenon, which involves fluctuating sea surface temperatures in the Pacific Ocean, Chile has to learn to survive with frequent drought conditions.

Drought usually comes in cycles, but thanks to this alternation of dry La Niña years with rainy El Niño periods, they are usually limited to a maximum of six years.

In the zones of Chile which have been declared in agricultural crisis, the Ministry of Agriculture has provided additional funds to support small-scale farmers such as helping them

to dig deeper wells and modernize their irrigation. But this is not enough to combat a climatic phenomenon that is projected to get worse.

Chile’s government needs to prepare for dry conditions and not merely react to them, says Patricio Crespo, president of the National Agriculture Society (SNA). The inability to do this in the past is something he chalks down to Chile’s status as a still-developing country. “We can only think in the short term, not the long-term,” he says.

According to Crespo, Chile has enough water – mainly stored during the winter in the form of snow in the Cordillera – but it has to take care of it better. Currently, most of Chile’s snowmelt is lost in the spring as surface runoff that escapes to the Pacific Ocean. However, man-made canals and wells can be used to capture the water and recharge depleted groundwater supplies so there is enough water for irrigation throughout the spring and summer, says Crespo.

“We are a developing country so it’s not justifiable to invest an enormous amount to build reservoirs in the central zone for water or climate problems that come every 20 years,” he says.

## Water market

Chile’s current market for private water rights, created by the military regime in 1981, has facilitated investments in water sanitation and irrigation, but has not helped small-scale farmers that cannot afford water rights, says León.

“If you have the money you have access to water because you go and buy water rights. If you’re poor then you cannot,” he says.

Many farmers currently use water from aquifers or rivers without owning the rights, effectively stealing it, but they are not much better off since without a permit they cannot apply for loans or

subsidies for irrigation projects.

When it comes to irrigation, Australia has shown that the trading of water rights can help to mitigate the impact of drought on farmers. A Chilean delegation that included the CNR's Martin and Patricio Crespo visited Australia earlier this year to learn about its methods.

"Australia has generated a water market that currently trades over US\$1.2 billion annually," Martin says. "They left the problem of drought and now Australia has a very acceptable water balance."

But it is difficult for Chilean farmers to plan ahead without reliable information about future water supplies. For this reason the CNR has created an online irrigation and drainage tool comprised of 25 years' worth of studies, programs and projects.

Already, since the beginning of the



**"Chile is about 15 years behind schedule in its plans to address the country's water scarcity issues."**

Alejandro León,  
Universidad de Chile



**"What we should do in Chile is conserve water in the winter and invest in projects to replenish groundwater resources."**

Patricio Crespo,  
National Society of Agriculture



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year, the site has had 13,000 visitors, with 2,600 downloads a month. The site aims to save farmers time by providing information that can help them optimize their investments and improve methods of efficient water-use.

## Alternative solutions

Other solutions to increase the availability of water for agriculture, both immediate and long-term, range from the predictable to the slightly sci-fi. The UN's Food and Agriculture Organization (FAO) released a list of recommendations on how to tackle Chile's drought in March this year which contained such simple suggestions as "using recycled water, deepening wells and the collection and storage of rain water."

But there are also more sophisticated ideas such as building an undersea pipeline to bring freshwater from the south to the north of Chile, increasing networks of artificial infiltration, planting genetically modified drought-resistant seeds, investing in desalination and cloud seeding (which involves bombarding clouds with particles to make it rain). With the latter you just have to hope the wind is on your side.

All these options have their critics and with most it is a matter of time, experimentation and private sector interest that will dictate which plans go ahead. Meanwhile, as the problem persists, experts predict that Chilean agriculture will move where it can to find water, with a gradual shift of the industry further south as temperatures rise.

However, the challenges faced by Chile's farmers are not insurmountable, says Ronald Bown, president of the Chilean fruit exporters association (ASOEX). He points to the Copiapó Valley in northern Chile as an example of how agriculture can succeed in arid areas of the country. The valley is the site of an increasing number of copper and other mines, but it also produces large volumes of export crops, particularly table grapes.

"Ultimately, Chile is a fruit country and will not lose its place in the world. With great business vision, the support of science and technology, as well as help from the state, Chile can overcome its problems," he concluded. **bUSIness CHILE**

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