

5-Year Report





The meaning of this report

UC Davis Chile Innovation Center presents a compilation of the main results obtained since the inauguration in Chile in 2015.

Our arrival responds to a close bond of more than five decades between Chile and the state of California. A relationship that materializes in a Center whose focus is to contribute from applied science, research, and development to the growth and productivity of the country, mainly in the field of agribusiness. A priority sector for Chile and one in which the University of California, Davis (UC Davis) is one of the leaders worldwide.

Although in the beginning we focused on the wine sector, over the years we have incorporated new competencies and addressed broader necessities of the agri-food sector, to later move towards initiatives in environmental affairs, water resources, sustainability, extensions, circular economy, quality, energy efficiency and lighting, telemedicine, among others. This has allowed us to strengthen the link between science and industry in areas of great relevance, both for Chile and for California.

Our purpose, since the inauguration of UC Davis Chile in 2015, has been to provide technological solutions, based on science, to the market and society. This has allowed us to be protagonists and witnesses of the impact of our work in communities and especially in people. Sharing the California experience in Chile in these five years has been inspiring for those who are part of the projects and for the beneficiaries. Not only for the learning experience and skills acquired but also for the opportunity to put them at the service of Chile, from Chile.

In this way, we want to share our experience with you while also inviting you to be part of the challenges that we intend to address from now on to continue being an institution whose contributions are at the service of the country.

AT THE SERVICE OF CHILE



“This document is a pause for us to reflect on our achievements and way of working, to continue supporting innovation in Chilean industry and society.”

UC Davis Chile is one of the International Excellence Centers that has been invited by the State of Chile to be part of a Research, Development, and Innovation system through CORFO's (an agency from the Ministry of Economy) Attraction Program. Therefore, the north of our Center has always been clear "to provide science-based technological solutions to the market and society."

At the beginning of 2015, our activities started a close relationship with the country's wine industry. For this, a multidisciplinary group (State, academia, and industry) travel to California to shape our first technical roadmap. It was an immersion into the research work done by the University of California, Davis to support viticulture and enology development in the state. Biotechnology and intelligent agriculture, applied methodically and systematically to face real challenges of the Californian industry were the first windows of the science-industry relationship opened as a model to be observed and cautiously adapted to Chile. An experience open to all, whether part of the original project or not, from industry to academia, including state institutions.

After almost six years, we see how there are three fundamental pillars for UC Davis Chile's work:

- Close collaboration with Chilean R&D institutions.
- Active incorporation of companies receiving solutions in our activities.
- Effective transfer of our University's experiences acting as a technological bridge from California to Chile.

Although we started with a relatively simple model, which assumes a quick incorporation of technology development in the industry, this was adapted in our early years to fit the requirements of Chile and its culture, institutions, needs, and shortcomings. From the wine industry, we expanded our research areas to agriculture, food, and environmental affairs. We acknowledged that technology adoption is a slow process that requires more than just R&D, so we worked hard to strengthen Technology Transfer processes and Extensions, especially the latter.

We have grown in our academic, business, and public collaboration networks, which shows our commitment to UC Davis Chile's strategic partners.

This document is a compilation of activities done during our almost six years in Chile. It also intends to show through facts and actions our work's evolution and become a milestone of reflection for future challenges. These, as always, require joint work between academia, the public sector, and industry. For this, UC Davis Chile continues to work on sharing the experience of California and its international networks, strengthening the processes of R&D, Technology Transfer, and Extension.

We hope this document becomes a sample of what we can achieve collaboratively to promote Chile's economic and social development.

Mauricio Cañoles PhD.

*/General Manager
/UC Davis Chile*

COLLABORATION AS A DRIVING FORCE

The University of California, Davis, is one of the great public universities in the United States, dedicated to delivering education, research, and superior services to society.

UC Davis has a long and fruitful history of collaboration with Chilean institutions. For example, many Chilean agronomy scientists studied at UC Davis in the 1960s. Upon returning to Chile, they played a crucial role in the Chilean fresh fruit industry's development, making it the powerhouse it is today. The connections that the Chilean agricultural sector forged with UC Davis at that time remain in place and are still increasingly active today.

With the assistance of CORFO, in 2015, UC Davis created the Life Sciences Innovation Center (also known as the UC Davis Chile Innovation Center) to conduct innovative research and achieve technology transfer along with academic and industry partners in Chile. The Center facilitates access to expertise and knowledge from California, which is highly relevant to Chile due to their similarities in terms of geography, climate, industries, society, and universities. Often scientific discoveries and new technologies developed in California apply to Chile with relatively few adjustments, and vice versa. We

learn and benefit from each other.

UC Davis Chile seeks solutions that benefit Chilean producers and consumers by creating new technologies and better public policies. We work closely with Chilean government agencies and collaborate with Chilean university partners to focus on agriculture and the environment and contribute to Chile's well-being through many projects. For example, some related to genomics and plant disease control, as well as improved irrigation management in vineyards, the development of a successful extension program for small and medium wine producers, and the creation of a comprehensive wine extension website. In another project, the Center developed a website to inform about water availability in the Aconcagua River basin. We are also developing mathematical models to demonstrate the impact of pollutants and climate change on lake water quality, providing the information needed by policymakers to design public policies that will sustain these lake environments over time.

More recently, working with different

government agencies and close connections with Chilean universities have expanded our areas of collaboration. Some include air quality management, public infrastructure to support the adoption of electric and hydrogen vehicles, increased benefits from telemedicine, use of improved lighting technology, and increased savings through a focus on the circular economy.

UC Davis Chile is developing academic-scientific collaborations that contribute to the economic and social development of the country. We are delighted to be in Chile. We look forward to expanding our collaborative work and mutually beneficial contributions in the coming years.

Sincerely yours,

Lovell "Tu" Jarvis

Executive Director

UC Davis Chile



“With a focus on agriculture and the environment, the Center has contributed to Chile's well-being, and we look forward to expanding our collaborations and mutually beneficial contributions.”



Historic relationship between Chile and UC Davis

The decision to install the *UC Davis Chile Innovation Center* in Chile is part of a 50-year collaboration and academic exchange history between Chile and California.

In the mid-1960s, the respective governments signed an agreement to send students and professors from Universidad de Chile to the University of California, Davis.

The value of this relationship was based on climatic and geographic similarities and akin challenges in the care of biodiversity, watershed management, and energy use. The seasonal gap also allowed trade in the agricultural sector throughout the year.

Today, this link has significantly contributed to grape growth, stone fruit exports, and the development of the wine industry, one where Chile is an important world player.

Collaboration agreements have been in place for decades and have strengthened with the formation of

committees, concrete plans, institutionalization of work, and cooperation networks between academia and the public and private sectors of both countries.

In this framework, UC Davis and Chile's partnership remains with dozens of Chilean graduate students and postdoctoral researchers working at the campuses in California.

While in Chile, thanks to the UC Davis Chile Innovation Center and the expertise of UC Davis, agricultural research has moved its frontiers. Different projects have been carried out by using advanced genomic techniques and by expanding our research work fields. For example, projects on climate change monitoring and mitigation, water resource management for agriculture, sustainable crop management, conservation and sustainable development, atmospheric pollution and air quality, circular economy, telemedicine, electromobility, energy efficiency, and lighting, among others.

#03

UC Davis Chile

OUR PURPOSE OF INSTALLATION

The UC Davis Chile Innovation Center, a private non-profit foundation, has established itself as a center of excellence with a priority focus on the challenges of the agri-food sector and environmental issues.



This long-standing relationship between Chile and California was consolidated with CORFO'S Attraction of International Centers of Excellence program, starting in 2013 with the application and acceptance offer and in 2015 with its launch.

Some of the University of California, Davis' desires and work ethic are related to collaborative work between academia, industry, and the public sector. In this sense, Chile was a place where it was possible to enhance research, contribute to UC Davis' capabilities, and thus obtain a valuable exchange of knowledge and innovation in a global network.

With five years of life, UC Davis Chile Innovation Center has become a bridge for research, technological development, and innovations with concrete applications that create public, private, academic, and business value.

A COLLABORATIVE PLATFORM AT THE SERVICE OF THE COUNTRY

To be a bridge that connects research, technological development, and innovations from California with Chile and the region.

Considering the capabilities and strengths of the University of California and the need of the Chilean economy to increase its R&D and innovation activities, UC Davis Chile seeks to be a catalyst for projects and initiatives, positioning itself as a bridge in the transfer of knowledge, developments, and technologies from California to Chile.

For this purpose, UC Davis Chile not only leverages the strengths of the California Campus but acts in collaboration with local academic partners and business actors.

Our academic partners are institutions that have technical capabilities that integrate to the center's value to carry out collaborative activities in applied research and to develop initiatives focused on innovation: Universidad de Talca, Universidad Andrés Bello, Universidad de Tarapacá, Universidad Federico Santa María, Instituto de Investigaciones Agropecuarias (INIA) and Universidad del Desarrollo.



Our business partners are companies that require improvements or technological development but attempt to also support UC Davis Chile in accelerating technology transfer processes for the national industry from currently available developments in California (licenses and patents, start-ups). They stand out for their contribution during these years:



#04

Our mission

OBJECTIVES

UC Davis Chile wants to be a strategic partner to the Chilean agri-food and environmental sector to transform its research into solutions for industry and society with an economic and social impact at national, regional, and global levels. This spirit is reflected in our objectives:



To create a platform to develop collaborative research between Chile and California capable of generating innovations that impact the competitiveness of the Chilean agri-food sector



To start effective technology transfer processes from UC Davis to the Chilean industry, either from developments currently available in California and the United States or from the R&D generated results with Chilean partners.



Link Chilean institutions with training and capacity-building programs to develop applied research to deliver value and innovation to the agri-food sector.



Contribute to develop and strengthen the agri-food extension system in Chile.



#04

Our mission

VALUES

In our work, the UC Davis Chile team imprints the institutional values, making them alive in each project or program carried out:



We strive to do our daily work outstandingly.



We respect the environment, recognize ourselves as part of it, and are committed to its sustainable development.



We value people and their social environment for what they are and promote their development.



We help and serve others spontaneously even in the smallest details.

#04

Our mission

MISSION

To deliver science-based technological solutions to the market and society through collaborative research, development, and transfer of technologies that generate economic impact and social development.



VISION

To be a leader in applied research and transfer of technological solutions in the agri-food and environmental fields in Latin America.





Who we are

MANAGEMENT TEAM

The team responsible for the management and direction of UC Davis Chile is currently led by:



Mauricio Cañoles
General Manager



Dario Cantu
Academic Director

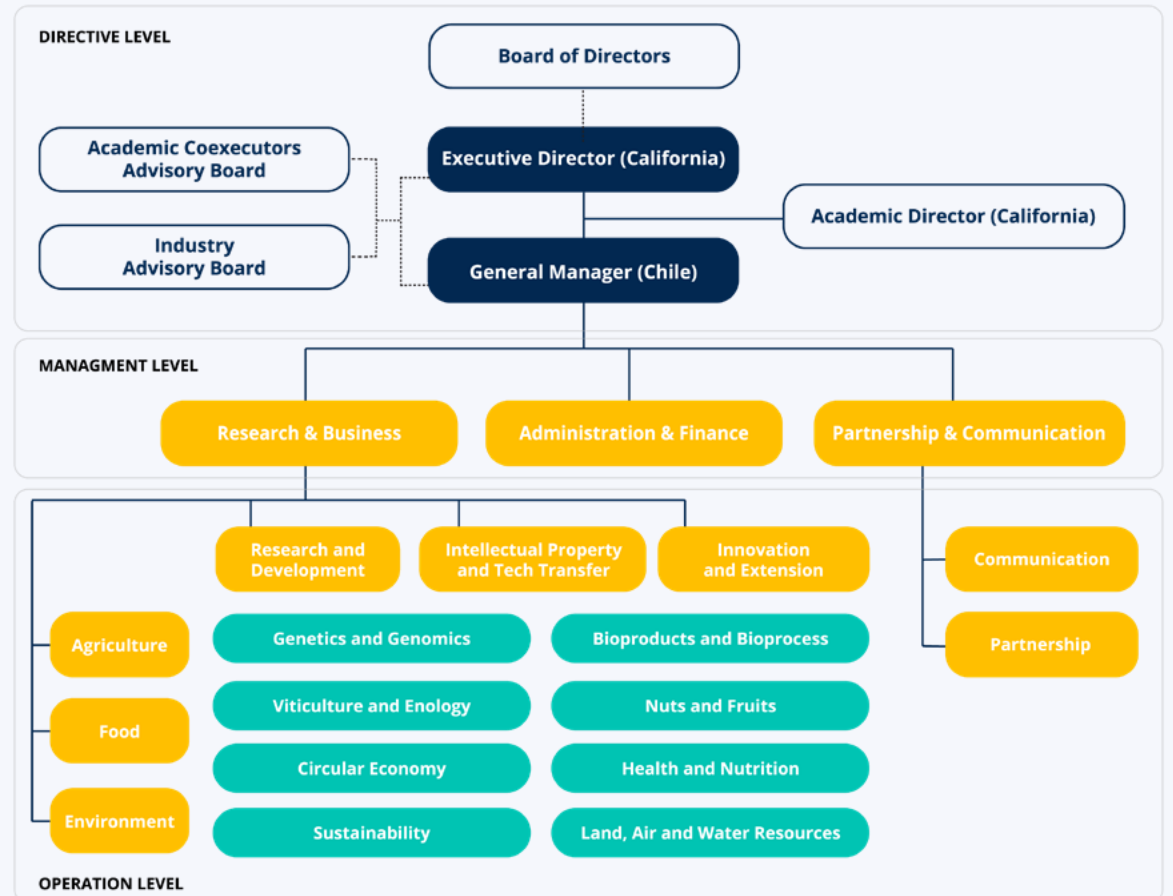


Lovell "Tu" Jarvis
Former Executive Director



Alan Bennett
Former Executive Director and founder of the Center

The organizational and operational structure of our Center can be graphed as the following:










BOARD

UC Davis Chile's management is backed and supported by a Board of Directors and highest authorities of the Davis campus and by representatives of the Chilean universities that work directly with our Center. Quarterly meetings are held to address challenges and projections and to know the status of the projects develop in the country.

Our Board of Directors is currently composed of

 <p>PRESIDENT Cindy M. Kiel Executive Associate Vice Chancellor of Research Administration</p>	 <p>VICE-PRESIDENT Joanna Regulska Vice Provost and Dean of Global Affairs</p>	 <p>SECRETARY Kristen C. Stevenson Associate Campus Counsel of Research Administration</p>	 <p>DIRECTOR William Tucker Associate Vice Chancellor for Innovation and Technology Commercialization</p>	 <p>DIRECTOR Prasant Mohapatra Vice Chancellor for Research of Research Administration</p>	 <p>DIRECTOR Ermias Kebreab Associate Vice Provost of Academic Programs in Global Affairs</p>
 <p>DIRECTOR Michael Lazzara Associate Vice Provost of Academic Programs</p>	 <p>DIRECTOR Paul Dodd Associate Vice Chancellor for Interdisciplinary Research and Strategic Initiatives, UC Davis</p>	 <p>DIRECTOR Pedro Bustos Director Nacional del Instituto de Investigaciones Agropecuarias (INIA), en representación del Ministerio de Agricultura</p>	 <p>DIRECTOR Pablo Villalobos Vicerrector de Innovación y Transferencia Tecnológica, Universidad de Talca</p>	 <p>DIRECTOR Eugenio Doussoulin Director de Asuntos Internacionales (s), Universidad de Tarapacá</p>	 <p>DIRECTOR Ariel Orellana Vicerrector de Investigación y Doctorado, Universidad Andrés Bello</p>

Former Directors

 <p>Cameron Carter Presidential Chair in Neuroscience</p>	 <p>James Hill Associate Dean for International Programs in the College of Agricultural and Environmental Sciences</p>	 <p>Dushyant Pathak Former Associate Vice Chancellor of Technology Management and Corporate Relations</p>	 <p>Harris Lewin Former Vice Chancellor for Research</p>	 <p>Lovell "Tu" Jarvis Professor Emeritus, Agricultural and Resource Economics</p>	 <p>Gonzalo Herrera Ex Vicerrector de Innovación, representante Universidad de Talca 2015-2017</p>	 <p>Julio Kalazich Director de INIA 2014- 2018</p>
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SPECIALISTS AND RESEARCHERS

The UC Davis Chile Innovation Center is composed of specialists and researchers from the different areas that make up the agri-food sector. Its objective is to develop collaborative research between Chile and California, transfer technologies developed in the United States to the Chilean industry, and install UC Davis capabilities in Chile.

Professional researchers and specialists in agronomy, sustainability, food science, viticulture and enology, extension and innovation are part of our team of excellence which is currently composed of:



Álvaro Castro

Research & Development
Coordinator



Patricia Anguita

Intellectual Property &
Technology Transfer
Coordinator



Leticia Rojas

Innovation & Extension
Coordinator



Alejandra Acuña

Agronomy Coordinator



Fernando Coz

Environment &
Sustainability Coordinator



Olivia Valdés

Food Science Coordinator



Patricio Román

Project Management



Jessica Alvarado

Innovation & Extension
Specialist



Juan Carlos Galaz

Innovation & Extension
Specialist



Víctor González

Innovation & Extension
Specialist



Natalia Díaz

Innovation & Extension
Specialist



Camila Saavedra

Viticulture & Enology
Specialist

SPECIALISTS AND RESEARCHERS

The UC Davis Chile Innovation Center is composed of specialists and researchers from the different areas that make up the agri-food sector. Its objective is to develop collaborative research between Chile and California, transfer technologies developed in the United States to the Chilean industry, and install UC Davis capabilities in Chile. Professional researchers and specialists in agronomy, sustainability, food science, viticulture and enology, extension and innovation are part of our team of excellence which is currently composed of:



Denise Cifuentes
Bioprocess Researcher



Patricio Muñoz
Bioproduct Researcher



Catalina Pavez
Molecular Researcher



Isidora Silva
Junior Researcher



Roberto Fuentes
Developer Engineer



Catalina Montalvo
Extension & Innovation
Advisor

They are joined, for each project, by researchers and specialists from UC Davis, who bring all their experience, knowledge, and excellence.

Some of the main UC Davis researchers who collaborate or have collaborated in the Center's projects are:

- Alan Bennett
- Lovell "Tu" Jarvis
- Dario Cantu
- Daniele Zaccaria
- Sam Sandoval
- Susan Ebeler
- Edward Spang
- Kenneth A. Shackel
- Andrew Walker
- Graham Fogg
- David E. Block
- Daniel Sumner
- Louise Ferguson
- Anita Oberholster
- Mark Bell
- Allan Fulton
- Kendra Baumgartner
- Kaan Kurtural
- Mark Battany
- Michael Lairmore
- Rodrigo Gallardo
- Michael Wilkes
- Andrés Sciolla
- James Marcin
- Heather Young
- Camille Kirk
- Patricia Conrad
- Helen Dahlke
- Daniel Sperling
- Geoffrey Schladow
- Jay Lund
- Anthony Wexler
- Michael Siminovitch

APPENDIX

UC Davis researchers, academics and staff

More than **85 UC Davis researchers**, academics, and staff are actively collaborating in R&D and technology extension projects:

COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
Agricultural and Resource Economics Department	Daniel Sumner, Ph.D.	Director Agricultural Issues Center Frank H. Buck, Jr. Distinguished Professor Agricultural and Resource Economics
Food Science and Technology Department	Bruce German Ph.D.	Professor and Chemist Department Food Science and Technology Director, Foods For Health Institute
Food Science and Technology Department	Christopher Simmons Ph.D	Associate Professor Food Science and Technology Department
Food Science and Technology Department	Edward (Ned) Spang Ph.D.	Food Science and Technology; Faculty lead Food Loss and Waste Collaborative
Food Science and Technology Department	Linda Harris, Ph. D.	Chair Department of Food Science and Technology, College of Agricultural and Environmental Sciences, UC Davis
Food Science and Technology Department	Moshe Rosenberg, Ph.D.	Professor and Specialist, Dairy Engineering and Technology, Food Science and Technology Department
Human Ecology Department	David de la Peña Ph.D.	Program Director Landscape Architecture + Environmental Design; Human Ecology Department, College of Agricultural & Environmental Sciences
Land, air and water resources Department	Ben Houlton Ph.D.	Professor and Chancellor's Fellow at Department of Land, Air and Water Resources, Director: UC Davis John Muir Institute of the Environment
Land, air and water resources Department	Graham Fogg, Ph.D.	Professor of Hydrogeology in the Department of Land, Air and Water Resources.

Land, air and water resources Department	Rick Snyder Ph.D.	Biometeorology Specialist, Department of Land, Air and Water Resources.
Land, air and water resources Department	Sam Sandoval, Ph.D.	Associate Professor Department of Land, Air and Water Resources; Cooperative Extension Specialist in Water Management
Nutrition Department	Robert Hackman Ph.D.	Research Nutritionist, Department of Nutrition
Plant Pathology Department	Bryce Falk, Ph.D.	Distinguished Professor of Plant Pathology, Department of Plant Pathology
Plant Pathology Department	David Rizzo Ph.D.	Chair Department of Plant Pathology
Plant Science Department	Alan Bennett Ph.D.	Distinguished Professor of Plant Sciences
Plant Science Department	Bruce Lampinen Ph D.	Integrated Orchard Management Walnut and Almond Specialist. Department of Plant Sciences, Division of Agriculture and Natural Resources, University of California
Plant Science Department	Mohsen Mesgaran, Ph.D.	Assistant Professor of the Department of Plant Sciences, College of Agricultural and Environmental Sciences of UC Davis
Viticulture and Enology Department	Andrew Walker, PhD.	Professor (Geneticist), Viticulture and Enology
Viticulture and Enology Department	Dario Cantu, Ph. D.	Associate Professor (Plant Biologist), Viticulture and Enology; UC Davis Chile Academic Director (2019)
Viticulture and Enology Department	David E. Block, Ph. D.	Professor and Marvin Sands Department Chair Unit, Viticulture and Enology

COLLEGE OF ENGINEERING

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
Civil & Environmental Engineering Department	Jay Lund Ph.D.	Director Center for Watershed Sciences and Distinguished Professor of Civil and Environmental Engineering Department of Civil and Environmental Engineering
Biological and Agricultural Engineering Department & Viticultural and Enology Department	Mason Earles Ph.D.	Assistant Professor, Viticulture and Enology; Assistant Professor, Plant AI and Biophysics Lab, Assistant Agricultural Engineer.
Biological and Agricultural Engineering Department	Shrinivasa Upadhyaya Ph.D.	Department of Biological and Agricultural Engineering.
Biomedical Engineering Department	Eduardo Silva, Ph.D.	Associate Professor, Biomedical Engineering, College of Engineering
Tahoe Environmental Research Center (TERC) & Civil and Environmental Engineering Department	Geoffrey Schladow Ph.D	Director of the UC Davis Tahoe Environmental Research Center, Professor Civil and Environmental Engineering

COLLEGE OF LETTERS AND SCIENCE

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
Psychology Department Center for Mind and Brain	Paul Hastings, Ph.D.	Professor Department of Psychology at UC Davis and Professor Center for Mind and Brain

OFFICE OF RESEARCH

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
Innovation Access	William Tucker, Ph.D. MBA	Executive Director Innovation Access
Venture Catalyst, Innovation and entrepreneurship	Zane Starkewolfe Ph.D.	Former Associate Director – Venture Catalyst, Current Director of Corporate Development WuXi Biologics
Venture Catalyst, Innovation and entrepreneurship	Mike Lemcke B.S.	Analyst, New Venture Resources, Venture Catalyst
Venture Catalyst, Innovation and entrepreneurship	Dushyant Patak Ph.D.	FORMER Associate Vice Chancellor, Innovation & Technology Commercialization
Venture Catalyst, Innovation and entrepreneurship	Cleveland Justis, MBA, Ph.D.	FORMER- Executive Director of the University of California, Davis, Child Family Institute for Innovation and Entrepreneurship

SCHOOL OF EDUCATION

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
School of Education	Megan Welsh Ph.D.	Associate Professor and Chancellor's Fellow in educational assessment and measurement, School of Education
Teacher Education and Preparation	Margarita Jiménez-Silva Ph.D.	Associate Professor and Director of Teacher Education, School of Education, UC Davis

SCHOOL OF VETERINARY MEDICINE

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
School of Veterinary Medicine	Michael Lairmore Ph.D.	Dean UC Davis School of Veterinary Medicine

School of Veterinary Medicine & One Health Institute in Veterinary Medicine	Woutrina Smith, Ph.D.	Professor Medicine & Epidemiology, Veterinary Medicine. Associate Director, One Health Institute Veterinary Medicine; School of Veterinary Medicine
School of Veterinary Medicine	Rodrigo Gallardo Ph.D.	Associate Professor and Associate Professor in Residence, Population Health & Reproduction, School of Veterinary Medicine

UC DAVIS GRADUATE SCHOOL OF MANAGEMENT

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
UC Davis Graduate School of Management	Angela Stopper, Ph.D.	FORMER - Director of Program Innovations and Executive Education at the UC Davis Graduate School of Management; Current Director, Learning & Development, UC Berkeley
UC Davis Graduate School of Management	James Stevens, MBA	Lecturer, Graduate School of Management de UC Davis
UC Davis Graduate School of Management	Keisha Liggett-Nichols and 6 part-time MBA students	FORMER Lecturer, Faculty Advisor, UC Davis Graduate School of Management

UC DAVIS HEALTH

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
The Betty Irene Moore School of Nursing	Heather Young, Ph.D.	Dean emerita for the Betty Irene Moore School of Nursing & associate vice chancellor for nursing for UC Davis Health
School of Medicine, Cell Biology and Human Anatomy Department	Fernando Fierro Ph.D.,	Assistant Adjunct Professor, Stem Cell Program, School of Medicine.
School of Medicine, Center for Health and Technology	James P. Marcin, M.D., M.P.H.	Director, UC Davis Center for Health and Technology, Vice Chair for Pediatric Clinical Research, Professor, Department of Pediatrics
School of Medicine, Global Health	Michael Wilkes, M.D., Ph.D.	Director of Global Health, School of Medicine, Professor Department of Internal Medicine
School of Medicine, Otolaryngology Department	Lisa Evangelista, CScD, CCCN/ASLP, BCSN/AS	Director of Speech Pathology in the Department of Otolaryngology; Head and Neck Surgery, UC Davis Medical Center.
School of Medicine, Psychiatry and Behavioral Sciences Department	Andrés Sciolla, MD.	Associate Professor of Clinical Psychiatry, Department of Psychiatry & Behavioral Sciences

UC DIVISION OF AGRICULTURE AND NATURAL RESOURCES (UC ANR)

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
UC ANR, California Institute for Water Resources	Doug Parker Ph.D.	Director, California Institute for Water Resources Water Strategic Initiative Leader, UC ANR
UC ANR, Biological and Agricultural Engineering Department, UC Davis	Alireza Pourreza Ph.D.	Assistant CE Specialist of Agricultural Mechanization
UC ANR, Fruits and Nut Research & Information Center.	Julia Stover	Director Fruit & Nut Research & Information Center, UC ANR
UC ANR, Plant Science Department, UC Davis	Louise Ferguson Ph.D.	CE Pomologist; Department of Plant Sciences
UC ANR, Land, air and water resources Department, UC Davis	Daniele Zaccaria Ph.D.	Assistant Agricultural Water Management Specialist in Cooperative Extension UC ANR
UC ANR, Viticulture y Enology Department, UC Davis	Anita Oberholster Ph.D.	Associate Specialist in Cooperative Extension in Enology: Viticulture y Enology.
UC ANR, Viticulture y Enology Department, UC Davis	Carmen Gispert, Ph.D.	Area Viticulture Advisor, UC Cooperative Extension
UC ANR, Viticulture y Enology Department, UC Davis	Kaan Kurtural Ph.D.	Associate Specialist in Cooperative Extension in Viticulture
UC ANR	Alejandro Castillo Ph.D.	Farm Advisor Dairy Science Emeritus, Cooperative Extension Merced County.
UC ANR	Allan Fulton M.S.	Irrigation and Water Resources Advisor, Cooperative Extension Tehama County
UC ANR	Ben Faber Ph.D.	Soils/water/subtropical crops advisor, Cooperative Extension Ventura and Santa Barbara County
UC ANR	Eugene (Gene) Miyao M.Sc.	Emeritus Farm Advisor, Vegetable Crops, Woodland Administrative Office
UC ANR	Glenn McGourty M.S.	County Director /Viticulture & Plant Science Advisor UCCEN/AMendocino County
UC ANR	James Downer Ph.D.	Advisor in Pathology of landscape ornamentals , Phytophthora Root Rot, Mulches, Potting soils, Palm horticulture, climate ready trees, arboriculture, Master Gardener Advisor, Cooperative Extension Ventura County
UC ANR	James Farrar Ph.D.	Director Statewide Integrated Pest Management Program UC ANR
UC ANR	Janine Hasey, M.S.	Tree Crop Farm Advisor, County Director, Master Gardener Advisor, Cooperative Extension Sutter-Yuba Counties (Retired on 2019)

UC ANR	Kendra Baumgartner Ph.D.	USDA and ARS research plant pathologist
UC ANR	Larry Bettiga M.S.	Viticulture Farm Advisor, Cooperative Extension Monterey County
UC ANR	Lynn Wunderlich M.S.	Farm Advisor in viticulture production and IPM, Central Sierra Cooperative Extension
UC ANR	Mark Battany M.S.	Water Management and Biometeorology Advisor, Cooperative Extension San Luis Obispo County
UC ANR	Mark Bell Ph.D	Vice Provost of Strategic Initiatives and Statewide Programs UC ANR
UC ANR	Monica Cooper Ph.D.	Farm Viticulture advisor, UC Cooperative Extension Napa County

GLOBAL AFFAIRS

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
Vice Provost and Associate Chancellor	Johanna Regulska, Ph.D.	Vice Provost and Associate Chancellor
Office of the Vice Provost and Associate Chancellor	Jim Rix, Ph.D.	FORMER - Chief of Staff Global Affairs
Office of the Vice Provost and Associate Chancellor	Michael Lazzara, Ph.D.	Associate Vice Provost of Academic Programs

AIR QUALITY RESEARCH CENTER (AQRC)

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
Air Quality Research Center (AQRC) Departments of: Mechanical and Aerospace Engineering, Civil and Environmental Engineering Land, Air and Water Resources	Anthony Wexler Ph.D.	Director Air Quality Research Center (AQRC), UC Davis, Distinguished Professor at Mechanical and Aerospace Engineering, Civil and Environmental Engineering Land, Air and Water Resources
Air Quality Research Center (AQRC) & Land, Air and Water Resources Department	Ajith P Kaduwela Ph.D.	Associate Agricultural Experiment Station, Land, Air and Water Resources Associate AQRC
Air Quality Research Center (AQRC)	Nicole Hyslop Ph.D.	Operations Manager & Principal Investigator, AQRC
Air Quality Research Center (AQRC) & Mechanical and Aerospace Engineering Department	Zhaodan Kong Ph.D.	Assistant Professor, Department of Mechanical and Aerospace Engineering AQRC

CALIFORNIA LIGHTING TECHNOLOGY CENTER (CLTC)

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
CLTC	Michael Siminovitch Ph.D.	Director, California Lighting Technology Center / Associate Director, Energy Efficiency Center
CLTC	Nicole Hathaway, LC	Sr. Development Engineer and Communications Director – California Lighting Technology Center

INSTITUTE OF TRANSPORTATION STUDIES (ITS)

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
ITS & Civil and Environmental Engineering Department	Daniel Sperling, Ph.D.	Founding Director Institute of Transportation Studies Professor, Department of Civil and Environmental Engineering Distinguished Blue Planet Prize Professor of Civil and Environmental Engineering, and Environmental Science
ITS	Gil Tal, Ph.D.	Director, The Plug-in Hybrid & Electric Vehicle (PH&EV) Research Center Transportation Research Director, The China Center for Energy and Transportation Admission Graduate Advisor, Graduate Groups in Transportation Technology, and Policy (TTP)

CENTER FOR EDUCATIONAL EFFECTIVENESS (CEE)

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
Center for Educational Effectiveness	Cecilia Gomez, Ph.D.	Especialist, Center for Educational Efectiveness (CEE)
Center for Educational Effectiveness	Marco Molinaro Ph.D.	Assistant Vice Provost for Educational Effectiveness, Director Center for Educational Effectiveness (CEE)
Center for Educational Effectiveness	Kem Saichaie, Ph.D.	Associate Director for Learning and Teaching Support (CEE)

PIPRA

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
PIPRA	David Jefferson Ph.D.	FORMER- Law & Policy Analyst, PIPRA.
PIPRA	Monica Alandete Ph.D.	FORMER- Director of Analyses & Outreach Current Open Innovation Scientist -Science The Climate Corporation

OFFICE OF SUSTAINABILITY

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
Office of Sustainability	Camille Kirk M.Sc.	Director of Sustainability and Campus Sustainability Planner, UC Davis

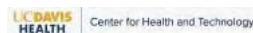
CENTER FOR REGIONAL CHANGE

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
Center for Regional Change	Bernadette Austin M.Sc.	Acting Director UC Davis Center for Regional Change

UC DAVIS GIVING

UC Davis Unit	Faculty/Staff Name	Position at UC Davis
International Development. UC Davis	Juan Losada	Assistant Director of Development (Latin America), International development

DEPARTMENTS AND CENTERS THAT COLLABORATE MOST CLOSELY WITH UC DAVIS CHILE





#06

Impact

IN FIVE YEARS, OUR CONTRIBUTIONS TO THE COUNTRY TRANSLATE TO:

55 Projects

R&D, technology transfer, and extension projects carried out

6 Million dollars

in technological and service contracts, with companies and public institutions.

28

Companies, trade associations, and public institutions from different productive sectors

3 Patent applications filed

to PCT related to bioproducts

4 Reference genomes

of wine grapevines developed

- Merlot
- Chardonnay
- Sauvignon Blanc
- Carménère

2 Biotech licensed technologies

+85

Researchers, academics, and staff from the University of California Davis actively collaborating in R&D and technology extension projects

30 Technical articles published

specialized in national agri-food sector journal

+70

National researchers have been part of the Center's staff

29 Clonal genomes

of wine grapevines used by the Chilean industry



#06

Impact

IN FIVE YEARS, OUR CONTRIBUTIONS TO THE COUNTRY TRANSLATE TO:

8 Universities and research institutions

national and international universities and research institutions associated with the Center for the development of research projects

- Universidad Andrés Bello (UNAB)
- Universidad de Talca (UTalca)
- Universidad de Tarapacá (UTA)
- Universidad del Desarrollo (UDD)
- Universidad Técnica Federico Santa María (USM)
- Universidad de Concepción (UdeC)
- Instituto de Investigaciones Agropecuarias (INIA)
- Instituto Volcani de Investigación Agrícola (Ministerio de Agricultura de Israel)

4

Postgraduate thesis
based on R&D projects

8

Publications
Indexed scientific publications

93 Outreach event

to present the Center's results and share California's knowledge and experience on topics of interest to the productive, academic and public sectors.



UC Davis Chile's work areas

The focus of our work consists of articulating researchers' efforts from different disciplines to provide diagnoses and integral solutions to the raising needs of the local industry. Under this model, the areas in which UC Davis Chile is organized are:

Area 01

RESEARCH AND DEVELOPMENT

Research objectives in this area have in common to solve specific industries problems or national or international strategic issues, which generate value to society.

At UC Davis, we have a long tradition of research and work in all areas of knowledge ranging from biological sciences and engineering to law and human ecology. Our presence in Chile has allowed us to research along with advanced studies in solving current problems in the country, install laboratories in Chile, and use world-class laboratories in California, in addition to the participation of researchers recognized as leaders in their fields.


During these years, and in response to the country's specific needs, we have developed topics such as:





#07

UC Davis Chile's work areas



Applied genomic tools

Currently, in agricultural production, efficient and sustainable management is necessary to optimize and improve production quality and for environmental protection. With massive DNA sequencing technologies, we seek to respond to a series of needs for characterization and individualization of organisms and genes with an industrial potential to identify diseases and pests that affect plants and trees.

Together with our institution's partners, we are efficiently integrating technologies to meet the yield, plant health, safety, and quality requirements demanded by markets.



Viticulture and Enology

Chile and California have considerable similarities in their climate and crops. These parallels are an opportunity to exchange information and adapt already developed solutions to the same problem.

For Chile and California, the wine industry is a relevant sector, which continually grows in volume and premium wine production. What determines the wine quality and price is a complex interaction among different factors like vine genetics, soil conditions, climate, maturity, fermentation, and aging. Thanks to the application of genetic studies, we have worked on science-based solutions at every stage of the wine production process to improve the final product and its economic value.



Bioprocesses and Bioproducts

Sustainable crop management and safe pest control are a necessity in today's agriculture. Our work in this area has led to the development of bioproducts and bioprocesses that replace or complement the chemical products that have been used in agriculture for decades. Chile, due to the enormous variety of its ecological systems, ranging from the aridest desert in the world to Antarctica, has innumerable microorganisms -particularly bacteria and fungi. These have been found to help plants and crops to protect themselves against insects or pathogens (bio-controllers), stimulate their growth (bio-stimulants), or directly or indirectly facilitate the availability of nutrients such as nitrogen, phosphorus, and water (bio-fertilizers).



Smart Agro

Water use efficiency and adapting crops and soil to climate change are crucial challenges that require worldwide solutions. At UC Davis Chile, we generate technological solutions and transfer practices that facilitate the development of agricultural production in conditions of high climatic and productive variability. We consider and integrate production systems, varieties, water resources, pests, diseases, and weeds.

#07

UC Davis Chile's work areas

Area 02

INTELLECTUAL PROPERTY AND TECHNOLOGY TRANSFER

At UC Davis Chile, we understand that a substantial part of research is its capacity to obtain practical applications that solve concrete problems and, in this way, improve people's quality of life. Therefore, we must safeguard these technological advances and developments insofar they produce value and are a heritage of the institutions and scientists behind them.

The objective of this area is to advise the entities that work in partnership with our Center to protect and value the results of the research and development generated.

Thanks to UC Davis' extensive experience in this area, we support, both in Chile and Latin America, the conceptual and practical advancements of intellectual property management and the design of technology transfer strategies.

Additionally, we pursue research and development opportunities that generate a tangible impact on industries or society, accompany researchers in assets protection, support innovation in companies of any size, and strengthen technology transfer offices in universities and research centers in Chile and Latin America.



#07

UC Davis Chile's work areas

Area 03



EXTENSION AND INNOVATION

University of California's UC Cooperative Extension System has been crucial in making it possible for research to translate into concrete benefits for agriculture in that state, building a bridge between the needs and problems of producers and the academia's knowledge and research.



UC DAVIS
Chile Life Sciences
Innovation Center
A part of Global Affairs

In this way, productive problems are the driving force to generate value and provide competitiveness and sustainably to industries that work accordingly with governmental, state, county agencies, and the general community.

Following the best practices of the UC Cooperative Extension, UC Davis Chile aims to reduce the barriers of adaptation and adoption of solutions that respond to real problems, generating transformative processes within the industries and people involved, which promotes innovation and creates economic, environmental, and social value.

1

WHAT DO WE DO?

Identify and prioritize problems together with industry stakeholders.

WHAT DO WE OFFER?

Co-creation diagnostics development with industry stakeholders, using methodologies and tools that facilitate their identification and prioritization.

2

WHAT DO WE DO?

Facilitate interaction among research, education, agribusiness, and relevant institutions.

WHAT DO WE OFFER?

Creation of collaborative networks with researchers (national and from California), consultants, producers, suppliers, among others., to implement solutions according to the needs of the industry.

3

WHAT DO WE DO?

Develop capabilities for the improvement of practices and adoption of solutions.

WHAT DO WE OFFER?

Development of extension activities: Courses, workshops, field days, etc.

4

WHAT DO WE DO?

Facilitate access to knowledge, information, technologies, and best practices.

WHAT DO WE OFFER?

UC Davis Chile Extension Platform, with validated science-based content, and information from national and UC Davis work. Development of extension materials: fact sheets, manuals, videos, etc.

5

WHAT DO WE DO?

Validate and adapt technologies and/or practices to the national context.

WHAT DO WE OFFER?

Validation of practices and technologies in California that can be adapted in Chile, implementing pilots in real production conditions.

#08

Symmetrical contribution for Chile and California

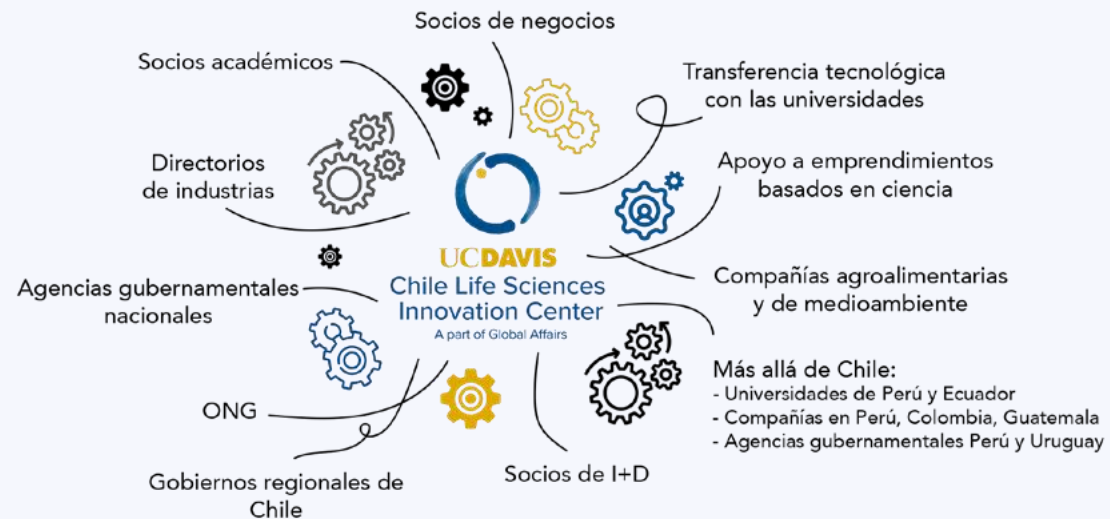
UC Davis Chile Innovation Center carries out its work in conjunction with UC Davis and the rest of the campuses of the UC System in California, generating a flow and exchange of research and knowledge relevant to Chile and California.

In Chile, we have articulated new forms of collaborative work, having access to laboratories and cutting-edge research worldwide, creating bridges for business development, and obtaining resources with California.

In turn, for UC Davis, new opportunities have arisen for its researchers and students. Possibilities for technology transfer and a platform installation that acts as an international hub for Latin America.

COLLABORATIVE AND INNOVATION ECOSYSTEM

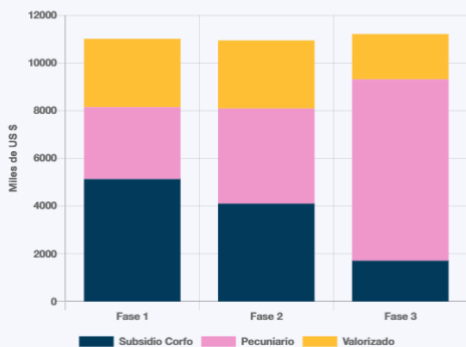
Another contribution of our center is creating an ecosystem that seeks to generate visible impacts on public policies and companies through the coordination of various actors.





Figures of our management

PRESUPUESTO PROYECTO CENTRO DE EXCELENCIA INTERNACIONAL



The installation of the UC Davis Chile Center was financially supported by CORFO's "Attraction of International R&D Centers of Excellence for Competitiveness 2.0 Program". This program defined subsidy conditions for an 8-year decreasing term in 3 Phases:

Phase 1: Installation; subsidy of up to 50% of the total cost (3 years).

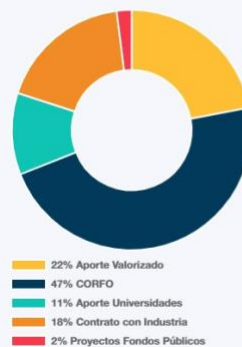
Phase 2: Operation; subsidy of up to 40% of the total cost (3 years).

Phase 3: Consolidation; subsidy of up to 25% of the total cost (2 years).

The total investment in the UC Davis Chile International Center of Excellence Project is approximately **US\$ 33 million**.

INGRESOS DEL CENTRO

FASE INSTALACIÓN 3 AÑOS (2015-2017)



FASE OPERACIÓN 3 AÑOS (2018-2020)

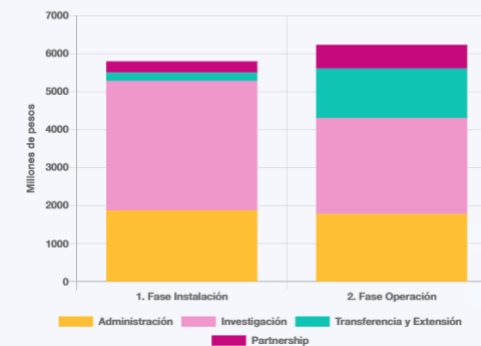


During the first two phases of the project, the Center generated additional income through other sources. In the first three years of installation, these resources were 2% of the total operation. The project is currently in Phase 2 of Operation, in which 15% of the activity has been financed by projects outside the CORFO Center Attraction Program.

From the Center's actions point of view and reflected in the expenditure of resources, we have had an evolution from the Implementation Phase to the Operation Phase, where the following stand out:

- Increased efficiency in Administration
- Increased outreach for the application of Science and Knowledge in industry and society through Technology Transfer and Extension.
- Strengthening of R&D and Innovation capabilities of Chilean strategic partners (Partnership).

GASTOS DEL CENTRO





LOOKING TOWARDS **THE FINANCIAL SUSTAINABILITY OF THE CENTER**

As international experience dictates, universities' basal funds and individual university projects usually finance fundamental research. That is how the University of California's scientific production is generated (in 2019, of the USD 845.5 million obtained by UC Davis for R&D, more than 81% comes from the federal government and the State of California).

Different is the case of specific themes centers, with a clear focus on applied research and the development of technology or knowledge intended for productive application or public good. That is the case of the International Centers of Excellence currently operating in Chile and other Technology Centers. In this case, the model aims at a three-thirds financing system: a basal one provided by the State, another one from competitive public funds, and the last one from specific contracts with the industry.

UC Davis Chile seeks to move towards this model using the University of California's knowledge and experience generated by the State of California and U.S. federal funds investment and our academic partners' knowledge in Chile.



#10

Main Projects

Below is information regarding our main projects to highlight.
If you wish to review the total portfolio of 55 projects go to the end of this section.

Extension and technological outreach program in wiring and structures protection for fruit trees



EXECUTION DATE

January 2017 to March 2020

CLIENT

Inchalam S.A.

TOTAL INVESTMENT

CLP \$288.400.000

TECHNICAL TEAM

- Víctor González Morales.
Industrial Civil Engineer, UC Davis Chile
- Edwin Moore S.
Agronomist Engineer, Inchalam
- Catalina Montalvo A.
Agronomist Engineer, UC Davis Chile
- María Paz Santibáñez A
Agronomist Engineer, MS UC Davis UC Davis Chile
- Jessica Alvarado V.
Agronomist Engineer, MS Fruticultura UC Davis Chile

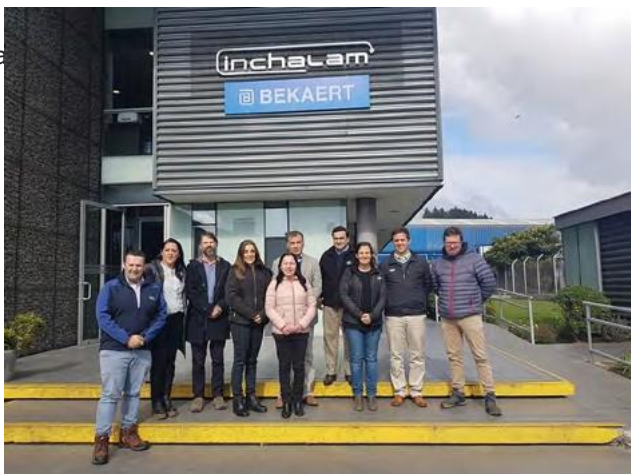
NATIONAL AND INTERNATIONAL TECHNICAL ADVISORS

- Cecilia Peppi
(INIA)
- Martin Silva
- Marlene Ayala
(PUC)
- Oscar Aliaga
- Oscar Carrasco
- Jordi Casas
- Richard Bastías
(UdeC)
- Mark De Kleine
(USA)

PROJECT DESCRIPTION

The national fruit-growing industry has gradually incorporated technologies to compete internationally and respond to consumer preferences. With this, we have incorporated new production systems in which we carried out operations in high-density planting orchards with trees coming from dwarfing rootstocks that allow pedestrian and homogeneous orchards, among others.

The a



That's how fruit tree training systems have progressed and, depending on their vigor, new wire structures have been introduced (trellis system), allowing the training and shaping of the fruit tree and providing additional support against external events when they are in production.

In addition to these challenges, climate variability and change have required roof usage to minimize the effects and extreme conditions, allowing extending fruit growing to other locations in more complex soil and climate conditions, taking advantage of a larger commercial window.

Faced with this scenario, the different actors, including those associated with these new orchards, have gone from a trial and error scheme to incorporating technical criteria to meet expectations in quality and functionality terms.

From this perspective, the company sought to identify, define, and implement a closer approach to customers and end-users, to understand their needs in the use of these structures, and in the delivery of knowledge and technologies with which to respond to the current and future demands of farmers.

HOW THE PROJECT WAS CARRIED OUT

The project was carried out in stages to support the company's decision-making, according to its degree of knowledge and technical capabilities, and to implement the partnership model with key actors.

Identification of key and enabling technologies in prioritized fruit trees.

- Construction of a roadmap for the company.
- Technology tour to the U.S. to learn about the innovation environments in California, Oregon, and Washington.
- Development and execution of an outreach and outreach program.

CONTRIBUTION

The program contributed to implementing a bridge between academia and research with the private sector to address the gaps in information access in this area through an outreach process.

In addition, it linked different actors for the knowledge transfer and adoption of technologies with a practical and fundamental sense.

For Inchalam, and one of the project's results, the contribution was the Agroinchalam creation, a spin-off company that allows to meet the needs of the industry actors and better define the supply of products and solutions for its customers.

PARTNERSHIPS

- Centro de Extensión Vitivinícola del Sur.
- Washington State University.
- California Cooperative Extension.

"Circular economy in the agri-food sector" Study



EXECUTION DATE

September 2019 to January 2020

CLIENTS

Office of Agricultural Studies and Policies (ODEPA),
Ministerio de Agricultura de Chile

TOTAL INVESTMENT

CLP \$15.000.000

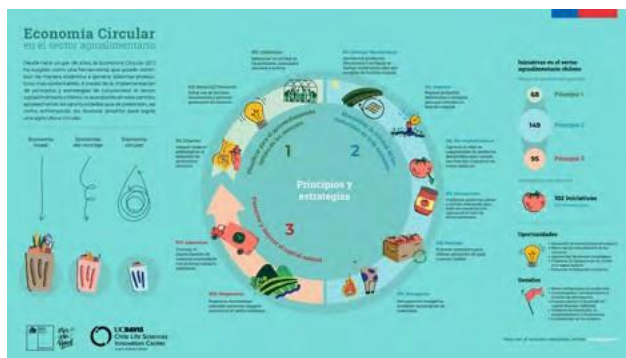
TEAM

- Olivia Valdés
Biologist with specialization in bioprocesses and technology transfer.
- Leticia Rojas
Agronomist engineering, MBA in Agribusiness
- Juan Carlos Galaz
Agronomist engineering from Universidad de Chile and MD in Chile and a Master in Agriculture in Rural Economies from the University of Alberta

- Natalia Díaz, Master's degree in Agricultural Economics from Universidad Católica de Chile (PUC)
- Edward Spang
PhD Faculty Lead Food Loss and Waste Collaborative UC Davis
- Kiara Winanns
PhD research scientist collaborator UC Davis Food Loss and Waste collaborative
- Alyssa Kendall
PhD Dept. of Civil and environmental engineering
- Jackeline Martinez
International Project Management: Material Flow Management and Circular Economy del Instituto para la Gestión Aplicada de Flujos de Materiales- IfaS Instituto de la Universidad de Ciencias Aplicadas de Trier

PROJECT DESCRIPTION

The Office of Agricultural Studies and Policies (ODEPA) of the Ministry of Agriculture commissioned UC Davis Chile the "Circular Economy in the Chilean Agri-Food Sector" study to understand the country's condition on these issues and establish a benchmark regarding other countries where sustainable and ecosystem-friendly production practices are applied.





HOW THE PROJECT WAS CARRIED OUT

An international expert panel was established with researchers from UC Davis and the Institute for Applied Material Flow Management (IFAS) of the Trier University of Applied Sciences in Germany. This panel was intended to support the development of international policies and programs and validate the study's final recommendations. Recently implemented regulations in California served as a concrete example of how regulations and policies drive innovation in circular economy.

At the local level, we created a strategic public-private committee to support the study during the background information collection, feedback on follow-up activities, and the reports' validation. For the national background research, 25 interviews, five workshops, and two working panels were conducted with the committee.



CONTRIBUTION

The study identifies the principles of the circular economy as drivers of innovation and growth for the sector. Among these, it highlights the development of new businesses and the emergence of a non-extractive sector that could value food loss and agri-industrial by-products while creating solutions that range from new food lines to clean energy production and the improvement of degraded soils.

In addition, the study highlights the value of sustainable and regenerative agricultural management, which can reduce the use of agrochemicals creating a more efficient use of water, and reduce pollution.

PARTNERSHIPS

- Food Loss Waste Initiative, UC Davis
- Biological and Agricultural Engineering UC Davis
- Western Center for Agricultural Health and Safety, Food Science and Technology UC Davis
- Soil Ecology laboratory and Pest Management Lab UC Davis

The study represents a baseline that raises the state of the arts in the sector, identifying innovation initiatives in five agricultural subsectors and the main challenges they face to promote circular strategies.



Mitigation strategies with emphasis on biological control of grapevine wood diseases



EXECUTION DATE

March 2017 to date

CLIENTS

- VSPT Wine Group
- Universidad de Talca
- Univiveros

TOTAL INVESTMENT

CLP \$203.000.000

TEAM

- Isidora Silva
Junior Researcher. UC Davis Chile. Bioquímica.
- Álvaro Castro
Research and Development Coordinator. UC Davis Chile. Biochemist and Ph.D. in Biotechnology
- Darío Cantu
Plant Biologist Ph.D. in Plant Biology
- Gonzalo Díaz
Researcher, Universidad de Talca.
- Samuel Barros
Head of Winery Grapevine SBU, Univiveros.
- Camila Leyton
Field Trails Specialist, Univiveros.
- Catalina Pavez
Researcher. UC Davis Chile. Engineer and Master in Biotechnology (UNAB).
- Diana Toapanta
Research Assistant UC Davis Chile.
- Claudio Urrea
Ph.D. in Biotechnology, UNAB/UC Davis Chile.
- Francisca Venegas
Research Assistant, UC Davis Chile.
- Denise Cifuentes
Researcher UC Davis Chile. Bioengineer and Ph.D. in Engineering Sciences with a mention in Chemical Engineering, Universidad de Concepción.
- Paulina González
Universidad de Talca. Forestry Engineering

PROJECT DESCRIPTION

One current problem in grape production for wine and table grapes is wood diseases (GTD). These generate a drastic decrease in grape quality and vineyard longevity, causing multiple production losses worldwide, with no efficient control measures available to date.

To develop a preventive tool for the control of these diseases, endophytic fungi were isolated from grapevines in different locations throughout the country. These were evaluated in laboratory trials against the predominant fungi that produce GTD, obtaining up to 98% effectiveness. Trials have been carried out on propagation material and under nursery production conditions, observing colonization of the internal tissue of the plant without affecting its normal development.

During the following seasons, the effectiveness of the plants treated with endophytic bio-controllers to reduce the incidence of pathogenic fungi will be evaluated.

HOW THE PROJECT WAS CARRIED OUT

For the execution of the project, endophytes were used as antagonists, allowing the confrontation with the pathogens where they developed, which is the internal tissue of the plant, an unprecedented strategy for these fungi's control.

Sampling was carried out in organic and traditional commercial fields and in 150-year-old grapevines that had not been subject to modern pest management. This allowed the discovery of a collection of more than 350 fungi present on grapevines.

A selection of these was evaluated traditionally, using dual cultures on potato agar against the predominant pathogens that produce these diseases in the country. Given the need to connect the laboratory results and what

occurs in the field, new trials were established. Such as dual culture on a plate with culture medium made only with annual lignified vine material, and the use of autoclaved and natural pruning material as a matrix for antagonism. The results obtained reached up to 100% effectiveness in wood disease pathogens control in several cases. This established a bio controller evaluation protocol that allows better predictions of the field effectiveness of the microorganism used in laboratory conditions and scale.

CONTRIBUTION

The usage of fungi that inhabit the interior of grapevines without causing damage to compete with those that have been identified as pathogens is a novel strategy to address a problem that, to date, has no effective control measures.

Wood diseases not only wreak havoc in vineyards throughout the country but also throughout the world. Fungal isolation was found to provide a unique biological control tool of great effectiveness for diseases treatments both in the Chilean industry and worldwide.

Their use as pruning protection or in support of the production of new healthy plants is sustainable and environmentally friendly and in practices increasingly required by international markets.

PARTNERSHIP:

- Department of Viticulture & Enology, UC Davis
- Universidad de Talca, Facultad de Ciencias Agrarias
- Viña San Pedro technical team



Chile Lagos Limpios



EXECUTION DATE

March 2019 - to date

CLIENTS

- Fundación Chile + Hoy
- Fundación Mustakis
- Corporación Futrono y Corporación Amigos de Lago Ranco
- PLADES Frutillar
- Corporación Acción Esperanza (Colico)
- Corporación Amigos de Panguipulli
- Fundación Ibáñez Atkinson
- U.S. Embassy in Santiago, Chile

TOTAL INVESTMENT

CLP \$158.780.955

UC DAVIS CHILE

- Fernando Coz
 - Coordinator of Environment and Sustainability, UC Davis Chile and Executive Director of the CHLL Foundation.
- Ángela Delorenzo
Architect, Strategy Director of Fundación CHLL
- Cristóbal Valenzuela
Architect, Project Director Fundación CHLL
- Dr. Geoff Schladow
Director, Tahoe Environmental Research Center, UC Davis.
- Ing. Micah Swann
Tahoe Environmental Research Center, Department of Civil and Environmental Engineering, UC Davis
- Devin Middlebrook
Sustainability Program Coordinator, Tahoe Regional Planning Agency - California

PROJECT DESCRIPTION

The lakes in Patagonia are a source of biodiversity and a unique platform for economic and social development in Chile. Chile Lagos Limpios (ChLL) was created in 2018 to protect these ecosystems by applying science, education, and our best practices to preserve them.



For this, an alliance with UC Davis Chile was born, bringing the experience of the Tahoe Environmental Research Center (TERC), which works in Lake Tahoe, in California, USA.

Today the project is monitoring Ranco and Panguipulli lakes based on the experience of TERC in Lake Tahoe and Clear Lake, with a fund awarded to develop an academic collaboration project between UC Davis and PUC'S the Center for Local Development in Villarrica.

HOW THE PROJECT WAS CARRIED OUT

El TERC's management model and the information obtained in its research were the basis for creating the framework. Among the tools used, there is a predictive model that allows quantitative analysis of lake water quality. With this technique, it is possible to delineate future scenarios adapted to economic development and climate change.

Currently, lakes Ranco and Panguipulli are being monitored, with plans to expand to Llanquihue Lake, and the Tahoe Environmental Research Center is carrying out the first modeling of Ranco lake. By the end of 2020, we expect the model to be calibrated and operational making it possible to predict scenarios of pollutant movement and their impact on the lake.

CONTRIBUTION

Se We developed and adapted management and study tools that can be applied to other lakes and ecosystems and are available to universities researchers, the private sector, and government agencies that wish to replicate them In addition, a good practices campaign, "Entre Los Lagos nos Cuidamos" was implemented focused on changing the habits and influencing neighbors and vacationers' behaviors to protect the loss of native vegetation and wetlands, avoid garbage and waste, and reduce water pollution.

Outreach activities have included seven seminars, media appearances, the creation of a network with more than 140 stakeholders, and participation in webinars and national and international seminars.

ALIANZAS:

- Tahoe Environmental Research Center, University of California, Davis
- Ministerio del Medio Ambiente y Ministerio de Ciencia, Tecnología, Conocimiento e Innovación.
- Corporación de Amigos de Panguipulli
- PLADES Frutillar
- Corporación Acción Esperanza
- Corporación Futrono
- Corporación Amigos de Lago Ranco
- Fundación Caburga Sustentable
- Parlamento de Coz Coz
- Lincoln Institute of Land Policy
- Chile California Council
- Sustenta Pucón
- Salmón Chile
- Cámara Chilena de la Construcción
- Nestlé
- Aquachile
- Consorcio Lechero

- Cámara de Comercio e Industria de Valdivia
- Cámara de Comercio Panguipulli
- ESSAL
- Growler
- Grupo Alianza
- LECHE
- Karun
- Mesa Tropera.
- Universidad Austral de Chile
- Centro de Ciencias Ambientales EULA-Chile de la Universidad de Concepción
- Pontificia Universidad Católica de Chile
- Centro UC de desarrollo local
- Universidad del Desarrollo

Aconcagua River Basin Water Information and Modeling Center (CIMHi)



EXECUTION DATE

December 2018 to November 2021.

CLIENTS

- General Water Directorate (DGA)
- Oversight Boards of the First, Second and Third Sections of the Aconcagua River.

TOTAL INVESTMENT

CLP \$151.325.000

TEAM

- Alejandra Acuña
Agronomy Coordinator, UC Davis Chile, Ph.D. Crop Science.
- Javier Camaño
Hid, Hydrologist, UC Davis Chile, Ph.D. Agricultural Engineering with a mention in Water Resources.
- Samuel Sandoval
Assistant professor, UC Davis, Ph.D. Environmental.

- Samuel Sandoval
Assistant professor, UC Davis, Ph.D. Environment and Water Resources.
- Roberto Fuentes
Developer Engineer, UC Davis Chile, Civil Electrical Engineer.

PROJECT DESCRIPTION

The CIMHi project is a web platform for surface and subway hygrometry of the Aconcagua River. We based its development on a collaborative work model in which professionals from different organizations participate and seek the joint management of the Aconcagua river basin's water resources.

To reduce information asymmetries and extend knowledge to users, the platform provides fluviometric and meteorological data from 60 gauging stations, including snow routes. The data is provided by the Dirección General de Aguas (DGA), Codelco, and the oversight boards of the first, second, and third sections of the Aconcagua River. Esvál data will soon be incorporated.

The platform also includes an extensive library of reports on hydrology, agriculture, planning, economic studies, etc., developed in the Aconcagua river basin, which the user can freely access and download.

Additionally, CIMHi incorporates simulated results of the Hydrological Planning Model of the Aconcagua river basin developed by the DGA. In it, users can visualize the surface and subway hydrology of the river from 1950 to March 2020. This information is relevant because it is the model used by the DGA for decision-making and allows a better understanding of the dynamics of the basin in different climatic, demographic, and productive scenarios.

HOW THE PROJECT WAS CARRIED OUT

In the last decade, various stakeholders and water users of the Aconcagua River have expressed their interest in having an online monitoring platform with representative information on flow rates, meteorology, wells, etc., to help improve water resource management.

In this context, in 2018, the oversight boards of the 1st, 2nd, and 3rd sections, the General Water Directorate, and UC Davis Chile applied and were awarded a CORFO Strategic Public Goods project to develop the CIMHi Web Platform to strengthen sustainable water management and support decision-making in the distribution and use of the water resource.

CONTRIBUTION

The CIMHi platform has been outlined as a set of tools available to water users to extend knowledge and reduce information gaps, thereby supporting the integrated management of water resources and providing information to the actors that manage and ensure the proper distribution of the water resource. In this context, CIMHi provides:

Tools with reliable information validated by water users that collaborate to improve water management and decision making.

Reduction of information asymmetries and uncertainties in water balances.

Coordination achievement among relevant stakeholders and water institutions.

Support in decision-making for future investments in the basin.

The basis for developing a modeling tool to simulate future scenarios.

Active participation in the dissemination and extension for the proper understanding and use of the CIMHi web platform.

Promotion to water users to take joint responsibility for maintaining the CIMHi web platform.

PARTNERSHIPS

- Juntas de vigilancia de la Primera, Segunda y Tercera Sección del río Aconcagua, junta de vigilancia de Putaendo
- Programa Estratégico Regional Fruticultura Sustentable, Región de Valparaíso
- Codelco División Andina
- Esva

APPENDIX:

Executed projects

PHASE 1

Broomrape Characterization

Focus: R&D

Área: Agriculture

Araucaria Foliar Damage, Microbiome and Environment Effects

Focus: R&D

Área: Bioproducts

Biodiscovery in Arica y Parinacota for Agriculture

Focus: R&D

Área: Bioproducts

Plant Pathogen, Strategies of Mitigation

Focus: R&D

Área: Bioproducts

Quality markers in Grapevine

Focus: R&D

Área: Enology

Rootstocks for

GrapevineFocus: R&D

Área: Enology

Tanins and Anthocianins

ModelsFocus: R&D

Área: Enology

Genetic identification of clones

Focus: R&D

Área: Genetics and Genomics

Plant Pathogen Detection, molecular Diagnostic

Focus: R&D

Área: Genetics and Genomics

Surface Renewal

ApplicationFocus: R&D

Área: Water

HUB APTA (Chilean TT Platform)

Focus: I&E

Área: IP & Tech Transfer

HUB TEC (Chilean TT Platform)

Focus: I&E

Área: IP & Tech Transfer

Irrigation Extension in BioBío

Focus: I&E

Área: Water

Maule Food Trademark Development

Focus: I&E

Área: Extension

Technological Roadmap for support systems

Focus: I&E

Área: Agriculture

Wine Extension Center in

ÑubleFocus: I&E

Área: Enology

PHASE 2

Broomrape Control

Focus: R&D

Área: Agriculture

Microbiome Characterization Vitaterra

Focus: R&D

Área: Bioproducts

Bioproducts Development Vitaterra

Focus: R&D

Área: Bioproducts

APPENDIX:

Executed projects

BioProducts Platform in Arica

Focus: R&D

Área: Bioproducts

Cal Austral Shells Waste Characterization

Focus: R&D

Área: Bioproducts

GRN Roostock evaluation

Focus: R&D

Área: Enology

Stuck Fermentation Hazzard Prediction

Focus: R&D

Área: Enology

Wine Quality Prediction Model

Focus: R&D

Área: Enology

Clonal Identification of Grapevine

Focus: R&D

Área: G&G

Foliar Damage Araucaria

Focus: R&D

Área: G&G

Trunk Disease Control by Endophite

Focus: R&D

Área: G&G

Trunk Disease Diagnostic Kit

Focus: R&D

Área: G&G

Surface

RenewalFocus:

R&D **Área:** Water

Remote Quality Model

Focus: I&E

Área: Agriculture

Bioproducts Facility Development Vitaterra

Focus: I&E

Área: Bioproducts

Biotech Translation Center Sofofa

Focus: I&E

Área: Bioproducts

Grapevine Variety Catalog

Focus: I&E

Área: Enology

Extensionism Training PER

Focus: I&E

Área: Agriculture

Fruit Industry Extension Program

Focus: I&E

Área: Agriculture

Support Systems Extension Program Design

Focus: I&E

Área: Agriculture

Support Systems RoadTrip

Focus: I&E

Área: Agriculture

CEVS (Extension Center)

Focus: I&E

Área: Enology

Vitiviniculture Extension in Araucanía

Focus: I&E

Área: Enology

Chile Lagos Limpios Initiative

Focus: I&E

Área: Environment

APPENDIX:

Executed projects

R+D+i Model for ESPOL (Ecuador)

Focus: I&E

Área: Extension

Telemedicine

Focus: I&E

Área: Extension

Circular Economy Study for Agro-food Sector

Focus: I&E

Área: Food

HUB OEA (Seminar and Courses)

Focus: I&E

Área: IP & Tech Transfer

IP Study on Stemcells exosome

Focus: I&E

Área: IP & Tech Transfer

Fondecyt Peru

Focus: I&E

Área: IP & Tech Transfer

Aquifer Recharge Management Copiapo

Focus: I&E

Área: Water

CIMHi Aconcagua

Focus: I&E

Área: Water

Groundwater Reload (CSIRO)

Focus: I&E

Área: Water

Prototype for Aquifer Recharge in Copiapo

Focus: I&E

Área: Water

European Prunes Extension Program

Focus: I&E

Área: Agriculture

Dr. Aminoup Trials on Potato

Focus: R&D

Área: Agriculture

Trichoderma Biocontrol in Mushrooms

Focus: R&D

Área: Bioproducts

Monilinia Protection

Focus: I&E

Área: IP & Tech Transfer

Vitaterra Plus Protection

Focus: I&E

Área: IP & Tech Transfer



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