



Graduate Student Spotlight

Nicolas Cobo

I'm a Ph.D. candidate starting my fifth year in the Horticulture and Agronomy Graduate Group, working in Dr. Jorge Dubcovsky's lab (<http://dubcovskylab.ucdavis.edu>). I'm from Chile, where I studied Agronomic Engineering, although it was long before then when I started getting involved in science.

At the age of 15 I started participating in my high school science club, studying the fungicide properties of cinnamon. We got very exciting results which allowed me to work at the phytopathology laboratory at Universidad de Talca, where I learned new scientific techniques while I was still very young. I was very lucky to have the opportunity to present my results at the 2003 MILSET Expo-sciences International in Moscow, Russia and at the 2004 Intel ISEF Science Fair in the US – the world's largest international pre-college science competition.

During my undergraduate studies at Universidad de Talca, I worked with several professors who focused on a variety of different subjects, such as wine production and blueberry physiology. During the summer, I was part of a production team in a fruit exporting company, where I gained experience in intensive fruit production while working with more than 30 different growers. This experience taught me that different agronomic practices can affect results, and I began to understand the importance of plant breeding as a solution to the problems that growers and packers face everyday. My thesis focused on the effects of changes in the light environment, using shading, nets on the photosynthesis and leaf characteristics of blueberries, as a way to mitigate the light stress that plants suffer in open field production.

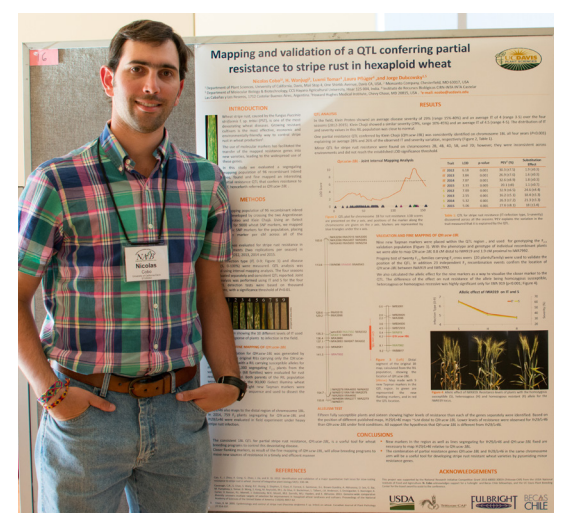
I began to see plant breeding as a way to integrate genetics and crop improvement with the knowledge I acquired in production and physiology. After graduation,

I worked for a year as the lead of R&D of a small company that commercialized organic fertilizers and soil improvers. We started testing the fertilizers in conventional agriculture as a way to get sustainable production. I had the chance to travel all over Chile interacting with professors, researchers, and growers with multiple problems and objectives. It was then that I realized the tremendous amount of opportunities breeders have to help solving many agricultural problems people face everyday.

Getting a Fulbright scholarship allowed me to pick where I wanted to pursue my Ph.D. studies. I chose UC Davis because it is one of the best universities in the world (#1 in agriculture for the last 3 years!) and it has a great group of faculty and researchers at the top of their fields. Most importantly, the Dubcovsky lab is one of the most prestigious in the world in wheat research. My research focuses on the discovery and fine mapping of new sources of resistance to stripe rust in hexaploid wheat. Wheat stripe rust is one of the most devastating wheat diseases, causing significant reductions in both yield and grain quality. California wheat relies largely upon a few mapped major resistance genes that have been introgressed into multiple varieties using marker-assisted selection (MAS), but are continuously challenged by a rapidly evolving pathogen population. Four years ago, I started screening a bi-parental population segregating for stripe rust resistance. I found a consistent QTL for partial resistance that was validated last year, and now it is being fine mapped. Next month, I'm planting the recombinant plants that will allow us to get a marker to help breeders move the gene into breeding programs using MAS. I'm also pyramiding the QTL with another close partial resistance gene to be able to deploy them together in breeding programs. It is only a matter of time for virulent races to overcome resistant genes, therefore we need to be prepared with more alternatives to ensure California's wheat resistant to stripe rust. I have been fortunate to collaborate during the last year with the Trait Genomics group at Monsanto, working on the fine mapping phase of the project. I think the collaboration between public and private sector is very valuable and, as a student, it's an incredible experience to be exposed to both worlds and take the best of each.

I'm graduating next year, and I'm certain that being part of UC Davis has not only given me the best education in plant breeding and genetics, but also opened my world to an enormous network of valuable people that certainly will be future collaborators in the projects to come.

-Nicolas Cobo



UC DAVIS NEWS

USDA AWARDS \$113 MILLION TO SUPPORT SPECIALTY CROP PRODUCTION, GROW OPPORTUNITIES FOR RURAL COMMUNITIES -USDA NEWS RELEASE

The U.S. Department of Agriculture (USDA) awarded more than \$113 million in program grants to support farmers growing fruits, vegetables, tree nuts, and nursery crops, also known as “specialty crops,” through research, agricultural extension activities, and programs to increase demand and address the needs of America’s specialty crop industry.

In fiscal year 2015, NIFA made 15 new awards totaling more than \$40 million. Fiscal year 2015 grants include:

- University of California, Davis, Calif., \$4,584,535

Examples of funded projects include a project at the University of California working to sustain the supply of high quality lettuce in the face of changing technology and climate.

[>>>read more](#)

CALIFORNIA’S VINEYARDS PRESSED TO TURN LESS WATER INTO WINE -THE SALT

Pressed to make improvements in the way they use water, others in the wine industry are thinking just as hard about how to reduce and conserve.

At the University of California, Davis, a research winery will be upgrading its existing rainwater capture system this winter. The new setup should provide all the water for the winery’s needs, according to David Block, chairman of the UC Davis viticulture and oenology department. Block says there are additional plans to install a water recycling system, similar in concept to the one at Free Flow.

The winery’s goal is to dramatically cut the amount of water it must use for cleaning by using the same water, over and over again. The hope is also that commercial wineries, not to mention breweries and other producers, will adopt the technology.

[>>>read more](#)



OPPORTUNITIES AND EVENTS

OCTOBER 15TH, 12-1:30PM, PES 3001 THIRD THURSDAY SEMINAR DR. REX BERNARDO “BANDWAGONS I, TOO, HAVE KNOWN.”

A bandwagon is an idea, activity, or trend that becomes increasingly fashionable as more and more people adopt it. In a 1991 article entitled Bandwagons I Have Known, Professor N.W. Simmonds in the UK described several bandwagons that he encountered in his career, beginning with induced polyploidy and ending with the then-new field of biotechnology. In this talk, Professor Bernardo will discuss post-1990s bandwagons in plant improvement, review the status of the current bandwagon of genomewide selection, and speculate on bandwagons to come in plant breeding. Register [here](#).



OCTOBER 15TH, 1:30-2:30PM, PES 2004 STUDENT LUNCH: DR. REX BERNARDO

Immediately following the seminar, Dr. Bernardo will attend an informal student lunch to discuss his research and career paths in plant breeding. Register [here](#).

ASA, CSSA, AND SSSA ANNUAL MEETING NOVEMBER 15-18, 2015 MINNEAPOLIS CONVENTION CENTER, MN

The 2015 Annual Meeting offers a unique opportunity as ASA, CSSA, and SSSA co-locate with the Entomological Society of America (ESA) to connect more than 7,000 scientists, professionals, educators, and students. For more information, or to register, click [here](#).

The Plant Breeding Center is posting a position for an undergraduate student worker!

Our events and programs are expanding and we need the extra support of a well-qualified undergraduate student. The position description will be posted to the student job site within the next week, so keep monitoring the site or contact ampietras@ucdavis.edu for more information.

PLANT BREEDING CENTER:

Director

[Charlie Brummer](#) - ecbrummer@ucdavis.edu

Associate Director

[Allen Van Deynze](#) - avandeynze@ucdavis.edu

Program Representative

[Amanda Pietras](#) - ampietras@ucdavis.edu



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