

Plant Science Major Passionately Guides Growers to Water Solutions

After graduating from high school, Diana Zegarra started at College of the Sequoias (COS) majoring in nutrition. That evolved into an interest in Plant Science and she switched her major. She went on to California State University, Fresno, to study Plant Science. She simultaneously enrolled in the one semester COS Agriculture Irrigation Academy. After a few internships, and graduating from Fresno State, she found her passion as an **Assistant Water Resources Engineer** for **Tulare Irrigation District**, primarily doing work with the Mid-Kaweah Groundwater Sustainability Agency.

Zegarra's career plans were uncertain when she graduated from El Diamante High School in Visalia. "When I started at COS, I didn't know what career I wanted to pursue," said Zegarra. "I was interested in good food, being a gardener for my family, so I chose to major in nutrition."

The smaller class size at COS gives students an experience more like a private school, according to Zegarra. "I had a wonderful time at COS," said Zegarra. "Teachers notice if you are not in class. They get to know you on an individual level, pay attention to your interests and help you to be successful."

While she was at COS, she recalled enjoying a high school Plant Science course she took from Visalia Technical Early College (VTEC) and began to rethink her plans. "After seeing that Plant Science was a viable career, I fell in love and switched majors," said Zegarra.

Gaining experience by working while attending COS was invaluable in shaping her career plans. "I worked for Nichols Farms and a small farmer in Fresno, and I fell in love with all aspects of crop production from start to finish," said Zegarra. "At that point, the idea of becoming an agronomist, where you look at everything -- soil, water, fertilizer and pest management -- appealed to me as a career."

Zegarra graduated from COS in 2019 with an Associate of Art for transfer in Math/Science. While she was in her last semester of Plant Science at California State University, Fresno, Zegarra heard about the COS Agriculture Irrigation Academy. "I decided to enroll in both colleges simultaneously and returned to COS to learn irrigation efficiency, pumps and design, and flesh out my skills," said Zegarra.

The COS Irrigation Academy combined one semester of classwork with a 225 hour internship. For her internship, Zegarra volunteered with Farms to Grow Inc. "The farmer I worked for was passionate about getting people to eat more vegetables and sold his organic produce at farmers markets," said Zegarra. "I used what I learned in class to assess the problems he faced, such as the edges of the fields not getting enough water. We discovered that the sediment in the water was clogging the emitters at the end of the line. Flushing the lines more frequently and investing in a better filtration system would result in more uniform water distribution."



At COS, Cosmo Costales in CTE Career Services was instrumental in connecting academy students with jobs. “Props to Cosmo for helping us get internships in the irrigation industry,” said Zegarra.

Working hands-on at the COS Tulare campus farm reinforced the classroom instruction, according to Zegarra. “Charlie Abee was an awesome instructor because he turned theory into action,” said Zegarra.

“We’d take a schematic to dissect the field and follow the water from the pump to the plant, so it all tied together. When we discovered that the water pressure was lower in certain areas, he showed us how to calculate the friction loss as water traveled across the acres. I just loved the classes.”



Working together, Abee and Costales arranged for industry speakers to expose students to irrigation careers. “At one of the lunchtime programs, I heard presentations from two representatives from Groundwater Sustainability Agencies (GSA),” said Zegarra. “Learning about the Sustainable Groundwater Management Act (SGMA) and the water challenges facing growers really scared me, so I decided to dive head first into SGMA.”

After she graduated from Fresno State with a Bachelor of Science degree in Plant Science and completed the COS Irrigation Academy, Zegarra got an internship with a GSA. “At age 23, I became an Engineering Technician with the Kaweah Delta Water Conservation District, primarily doing work with the Greater Kaweah Groundwater Sustainability Agency,” said Zegarra. “The future of water resources in California is complex but smart solutions are everywhere. I learned a lot on the job about what is being done in my area as well as the challenges facing farmers.”

About a year later, she took a position as an Assistant Water Resources Engineer with Tulare Irrigation District, primarily doing work with the Mid-Kaweah Groundwater Sustainability Agency. “I sit down with growers to provide clear and concise information to explain how they are being billed for groundwater,” said Zegarra. “These are difficult conversations. I make every effort to be transparent, go over the math equations, and provide spread sheets and charts so that they know what is going on.”

Zegarra enjoys the challenge of her work. “It is a tough time for growers as they adapt to the SGMA regulations,” said Zegarra. “I get the greatest satisfaction from giving farmers good information without sugar coating it and providing them with tools to understand the numbers.”

Farmers are adapting to SGMA. “Growers are very creative in their thinking and come to us with ways they can improve their water footprint,” said Zegarra. “For example, they might take a field that was previously a double crop rotation field and turn it into a recharge basin. The field collects surface water and allows it to percolate down to the water table. In addition, the grower gets groundwater credits.”

The practical experience she gained at COS is beneficial on the job. “For the longest time I didn’t really understand how you get water from a well,” said Zegarra. “On the COS farm, we learned hands-on to operate wells, run them efficiently

and calibrate the pumps to reduce energy costs. Now that I've been working for Tulare Irrigation District, this knowledge allows me to understand and work with the farmers more effectively."

Costales recently invited Zegarra back to COS for a career fair. "Diana has come full circle, returning to campus to share her experiences," said Costales. "Diana is a great role model to encourage students."

Zegarra told students that she didn't expect to go into an irrigation career. "Students should know that water is the first essential input," said Zegarra. "Without water, fertilizer and pest management won't matter because plants need water to grow. I love my work helping farmers with local groundwater regulations. SGMA is a big shift for growers and I hope I can be beneficial to them by providing them good, truthful information."

She recommended the COS Ag Irrigation Academy to students. "COS is by far the best college to attend in the area," said Zegarra. "I still stay in touch with Charlie Abee and other instructors. COS provided the hands-on experience that tied it all together. I'd definitely recommend COS."

Zegarra indicated that she hopes to become a small grower herself someday. "I like working on the business side of the industry where the decisions you make can increase or reduce yield," said Zegarra. "Overall, I believe George Washington was correct; 'agriculture is the most healthful, most useful and most noble employment of man.'"

