GRADUATE
AG RESEARCH
SPOTLIGHT

Celina Gomez Vargas

"My advisor is guiding me to conduct relevant, applied research that could ultimately impact greenhouse growers in the area."
—Celina Gomez Vargas, Ph.D. candidate, Department of Horticulture and Landscape Architecture

THE STUDENT: When Celina Gomez arrived in Indiana in January 2011, she recalls, "I didn't see anything but snow—it was quite a shock for me." Since then, Gomez has adjusted well to following her academic opportunities progressively north. Her father's work in sales with Monsanto took the family from Celina's birthplace of San Jose, Costa Rica, to Guatemala. She followed in her father and older brother's footsteps, earning an agronomy degree from Zamorano University in Honduras before coming to the United States for master's-level study at the University of Arkansas. She then searched for doctoral programs where she could further explore greenhouse research: "I was interested in hydroponics—that was the topic of my undergraduate thesis—and the best way to do that is in a semi-controlled environment," she explains. She found information online about the relevant research of Professor of Horticulture Cary Mitchell and contacted him: "My advisor is very experienced in controlled environment production," she says. "I feel lucky to be working with him."

THE RESEARCH: Gomez's research compares the effectiveness of red and blue light-emitting diodes (LEDs) to high-pressure sodium lamps for year-round production of greenhouse-grown tomatoes. She has looked at the LEDs' effects both on tomato seedlings and on the fruit itself. She found that the LEDs, which are cooler and require significantly less energy, maintained the same yields in the size and number of fruit. "When you think about sunlight in natural ecosystems, plants are exposed to a broad light spectrum," she notes. "A greenhouse is an unnatural environment, but somehow the tomatoes do very well." The American Society for Horticulture Science has honored Gomez in two opportunities for oral presentations of her results. A USDA Specialty Crop Research Initiative grant funds the research.

CONTRIBUTIONS: "Speaking about the Horticulture department specifically, we have a great facility and great staff," Gomez says. She also served as HLA graduate student president in 2012-13, mentored undergraduate students and provided guidance to high school students during summer programs.

FUTURE PLANS: After graduating, Gomez intends to apply for positions in industry. "I'd want to work for a company with the facilities and interest in controlled environment agriculture," she says. "I really, really enjoy the research part of it."

GIVING IT A TRI: As a member of a master's swim club in Lafayette. Gomez often spends her lunch hours in the pool. Her fellow team members also sparked her interest in triathlons; she completed two last year as well as a 5K open swim in Lake Michigan.