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FINDING SOLUTIONS WITH FARMERS

New Chair champions integrated cropping systems

Linda Gormin wants to work at the source, tapping into the experiences and knowledge of farmers to find practical solutions for the challenges they face. As the WGRF Chair in Cropping Systems at the University of Alberta, she's in a great position to make a difference.

“The long-term sustainability of cropping systems is very important to me,” says Gorim, who assumed the WGRF Chair in January 2020. “Farmers know a lot and I want to work on what matters to them.” That idea hands-on, collaborative work is one of the things that brought her to Canada in the first place.

Abiotic stresses in cropping systems

Gorim, a self-described farm girl who grew up in Cameroon, West Africa, travelled to Stuttgart, Germany on a Fiat Panis Foundation scholarship for her master’s degree in agricultural sciences. She stayed on at the University of Hohenheim to do her PhD.

Her work in Germany looked at how cropping systems could be designed to help alleviate pest and environmental challenges and improve overall productivity – including protecting land and water resources – particularly in tropical regions.

In the summer of 2015, Gorim took a post-doctoral fellowship at the University of Saskatchewan to work with well-known pulse breeder, Bert Vandenberg. “One of the reasons I moved from Germany was Bert,” she says, recounting how it was made clear to her that knowledge transfer was going to be part of the job. “I really wanted to work in a place where information winds up with farmers and not just in scientific journals.”

At the University of Saskatchewan, Gorim began to focus on drought research. She worked with wild lentil material collected from drought-prone areas around the world, phenotyping roots and plants to identify traits that could be incorporated into the breeding program.

When the post-doc was finished, she took a professional research associate position and continued her work. “I’m a drought scientist,” says Gorim, adding there are two prongs to her research. “The first is the basic research looking at the water relationship because there’s no guarantee the same amount of rain will fall every year.” She’s looking at strategies, techniques and crop choices farmers can use to make the most of the moisture they do have.

The second prong is looking at vapour pressure deficit. “It involves testing the air for water and looking at how plants respond to this water,” she says. Gorim

is interested in how the interaction between ambient moisture and plant stomata (the pores on plant surfaces) is being affected by climate change, and how this impacts the incidence of pest damage and the carbon cycle.

It’s probably not something most prairie farmers think about on a day-to-day basis, but it’s hugely important. Stomata take up CO₂ from the atmosphere and they also control plant moisture loss through evaporation.

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So Gorim’s question is: are hotter summers limiting these functions and, if so, is that making crops more vulnerable to pests? “Are there wheat varieties that are coping with this heat already?” she asks. “What is happening with stomata in the heat? Is there a pest that wants to eat this plant and is it easier for them to do so in these conditions?”

Building for the future of agriculture

The WGRF Chair in Cropping Systems was established to close a gap in agronomy research by taking a systems approach to examine the layers of interaction between plants, soils, environmental conditions and crop management practices over the long term.

Gorim is raring to go in her new role at the University of Alberta. “I really want to get out there and talk with farmers, get some baseline data. I want to do this work with them – a solution that works in the lab or greenhouse might not work in the field, so I want to know what they experience.”

She’s passionate about the power of integrated cropping systems to address new agricultural challenges farmers face today, and she’s determined to find answers for them. If the last couple of harvests have shown us anything, this work is needed now more than ever.