



Improving Wheat Varieties Takes a Global Mindset

Sydney, Australia, native Dr. Alison Bentley has traveled the world in search of native and wild-relative wheat genes. Her work helps commercial wheat breeding programs develop more productive varieties with increased resistance to diseases and stresses that can limit yield and quality potential. Bentley chose to focus her studies on wheat because of its significance as a nutritional staple worldwide.

“I became focused on weeds and arable staple crops very early on, for the simple fact that they are the basis of food and nutritional security for a large proportion of the world’s population. There are many very nutritionally diverse foods, and we’re encouraged to eat diverse diets, but really at the core of that is being able to have something that you can grow on scales. Wheat’s grown on 200 million-plus hectares around the world. And half of that is in the developing world. There’s a huge demand for wheat as a primary product to process all the things we eat every day, including bread, breakfast cereal, biscuits, cakes and pasta. Wheat is the primary product that a large proportion of the world’s population relies on,” she explains.



‘Future-proofing’ wheat

Bentley was recently named program director for **CIMMYT’s global wheat program** in Mexico. Her experience mining wheat germplasm in search of advantageous traits will come in handy as she develops wheat varieties that are competitive against new environmental and biological stresses. Ensuring sufficient variation in the wheat breeding gene pool to address these issues will be critical for success. “The CIMMYT wheat program is really about future climate resilience, and heats and droughts.

There’s a lot of modeling data that gives an indication of what the wheat production areas of the future will look like. And then a lot of research that still needs to be done to say, ‘How do we actually make sure where we’re future-proofing our varieties?’. So, we’ve been looking at the use of wild relatives and how we mine the diversity in the wild relatives of wheat and make it available for plant breeding programs to use, very much from the angle of the public good,” she explains.



Maintaining a global vision

Although Bentley grew up in Australia, island living didn't limit her adventures. After graduating from university, she was anxious to experience the world. She spent 12 years working at the National Institute of Agricultural Botany in the United Kingdom. Her travels took her abroad to places including India and Turkey to conduct research on wheat. Understanding the challenges that different wheat-growing geographies face has given her a unique perspective to take the helms as CIMMYT's global wheat program director.

"The CIMMYT program is internationally-focused. I guess that's one of the inspiring things for me about joining CIMMYT; there is a Sustainable Intensification Program and a Socioeconomics Program. It's not just about, I need a variety for my farm, which is in Cambridge, and it has this level of rainfall, and this is the amount I want to spend on fertilizer.

There is a global view of where the major impacts will come from, and you have to understand that context. It's important that the varieties produced are going to perform in a specific environment, but are also going to be acceptable and useful for the product profiles and the things that they have to feed into once they're grown," she says.

To hear more from Dr. Bentley and other plant breeders from around the globe, subscribe to Plant Breeding Stories through [Apple](#), [Spotify](#), [SoundCloud](#), or through our [website](#)!