Dr. Bohn’s overall research goal is to develop improved maize germplasm that contributes to an economically efficient and sustainable maize production under restricted growing conditions. His group develops and employs innovative high-throughput phenotyping tools, quantitative genetic theory, and deep genomic information to study the genetic basis of biotic and abiotic stress responses, root development, grain processing and nutritional quality in maize. They use this information to characterize the genetic diversity of elite maize and use this information in crop improvement. With his work to understand the genetic basis of tolerance to biotic and abiotic stresses, Dr. Bohn envisions speeding up the development of high yielding and nutrient-stable maize cultivars, which contribute to food security and could build the basis for a stable economic development in Sub-Saharan Africa.

### Countries or regions of collaborations

Sub-Saharan Africa, Australia, China

### Research and teaching highlights

- **Does Root Architecture Affect Tolerance of Maize (Zea mays L.) to Postanthesis Drought and Low Nitrogen Stress?**

  - Developing maize inbreds and hybrids with contrasting root architectural features and study how these architectural differences contribute to tolerance to drought stress and low fertilizer availability. Collaborating with Dr. Lai, Chinese Agricultural University, Beijing, China, and Dr. Graeme Hammer, University of Queensland, Australia, on this project.

- **Nutrient Stability of Maize during Food Product Processing**

  - Collaborating with scientists from Food Sciences, Agricultural and Biological Engineering, Kellogg’s and DOW they are studying the change of key nutritional components in maize grain (i.e., antioxidants, proteins, vitamins, minerals) during processing. He envisions that this information will guide us to develop maize cultivars that can retain their high nutritional value from grain to food product.

- **Teaching initiatives:** CPSC116: The Food Production Web. The objective of this class is for students to understand the role of crops in the global food system, i.e., from production to consumption, and how that system is impacted by geographic, environmental, economic, and cultural influences. Each spring semester 200 undergraduate students attend this class.