

Speaker: **Curtis Pozniak, Ph.D.**
Professor (CDC) and Director, Crop Development Centre,
University of Saskatchewan, College of Agriculture and
Bioresources, Saskatchewan, Canada



Title: **Feed the future: Integration of next generation technologies to wheat breeding.**

Time: **Tuesday, September 26, 2023, 2 pm**

Place: **IPK Lecture Hall**

VCS Zoom: <https://ipk-gatersleben->

[de.zoom.us/j/65093350352?pwd=ZStFNHl0K0tWWjFJNm4wbG1OMXlhZz09](https://ipk-gatersleben-de.zoom.us/j/65093350352?pwd=ZStFNHl0K0tWWjFJNm4wbG1OMXlhZz09)

Meeting-ID: 650 9335 0352

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Skype for Business: <https://ipk-gatersleben-de.zoom.us/skype/65093350352>

Abstract:

Wheat is a staple food for 35% of the world's population and is one of the most important crops to global food security. Our wheat breeding program at the Crop Development Centre applies a technological, data-driven approach to develop and commercialize improved wheat cultivars. Over the past five years, remarkable innovations have emerged that have allowed us to characterize our germplasm at the most fundamental level. We have developed and deployed sequencing-based genotyping platforms that, together with computational decision support systems, are improving selection efficacy. We are conducting whole genome sequencing and comparative (pan)genomics of diverse collections of diploid, tetraploid and hexaploid species - all with the aim to clone and functionally annotate genetic factor(s) influencing phenotypic expression of traits targeted by our selection program. CRISPR-based “*de novo* domestication” is also being explored as a novel approach to rapidly modify domestication-related loci to realize the breeding value of wild wheat germplasm collections. Lastly, we are integrating genomic, physiological, and digital phenotypic data to accelerate breeding cycles and to maximize genetic gains across a range of target agro-ecological environments. For the latter, we are optimizing manual and artificial intelligence (AI)-driven feature selection strategies to improve the accuracy of predicted breeding values for environmentally influenced traits, such as grain yield. Examples of how these data are being integrated and applied locally to develop new wheat cultivars adapted to Canadian production systems will be presented.

Dr. Curtis Pozniak is a Professor and Wheat Breeder at the University of Saskatchewan’s Crop Development Centre (CDC) where he has been a faculty member since 2002. In July 2020, he was appointed Director and is responsible for managing all cereal, pulse, forage, and oilseed breeding/pathology research programs at the CDC. He earned a Bachelor of Science in Agriculture (1999) and a PhD (2002) in plant genetics and breeding from the University of Saskatchewan. Dr. Pozniak’s research program spans the continuum from the basic to applied. Since 2004, he has released 20 wheat cultivars, several of which are popular among western Canadian wheat growers. He has received well over \$140 million in research funding and has led or co-led five large-scale Genome Canada funded grants aimed to sequence and annotate the genomes of wheat and its relatives. He was a member of the International Wheat Genome Sequencing Consortium that published the first genome assembly of wheat (published in Science, 2018), and was the lead scientist for the “10+ Wheat Genomes Project”, which resulted in the first pangenome of wheat (published in Nature, 2020). He is a leader in the application of genomic technologies to wheat breeding and has published over 200 manuscripts in this area. In 2010, Dr. Pozniak was named the Most Outstanding Young Researcher at the University of Saskatchewan and was bestowed the honor of Outstanding Agronomist by the Canadian Society of Agronomy. He received an Award of Innovation from the City of Saskatoon in 2014, the College of Agriculture Research Excellence Award in 2015 and the International Wheat Genome Sequencing Consortium Leadership Award in 2019. He has been named one of Canada’s Top 20 Seed Industry Influencers, and in 2023, he received the prestigious Queen Elizabeth II Platinum Jubilee Medal for service to agricultural science. Curtis, along with his wife and 2 sons, Jonathon and Marcus, also help with the 3500-ha family farm located in eastern Saskatchewan.

Prof. Dr. Nils Stein (Organizer and Host)