Ag Tech Innovations Showcase Presentations

Agronomix Software: The Advantages of a Highly Relational Database for Plant Breeding Programs (presented by Dieter Mulitze, Founder)

Description of Innovation: Agronomix Software provides a Highly Relational Database called Genovix, which is a brand-new software system for plant breeding and variety testing. Plant breeding and variety testing decisions are most optimal with a highly relational database architecture. Easily linking phenotypic, genotypic, environmental, parental and generational data in a central database expands analytical possibilities and many practical tasks. Response to selection and tracking genotype development is far easier with highly linked data. Index queries, search tools, data queries, automation and more offer more possibilities for researchers with a highly relational database architecture. Database architecture for breeding and trials research has a greater impact on research than often realized.

Why it matters to the seed industry: Surprisingly, we find that all too many researchers in the US are doing breeding and trials research with spreadsheets or not very relational software systems. The cost in time and lost opportunities as well as not always releasing the best possible hybrids or varieties developed is huge, in our estimation in dialog with such researchers for almost 30 years in the industry.

Arable, Inc.: Innovative Tools for Digital Phenotyping on a Global Scale (presented by Jess Bollinger, VP of Strategic Partnerships)

Description of Innovation: Novel tools and sensors enable digital phenotyping and advances in breeding strategies by providing a more accurate, real-time evaluation of genetic material under widely varying environmental conditions. Low-cost, user-friendly technologies unlock a uniform methodology for collecting data throughout the breeding pipeline from greenhouse to open field.

Why it matters to the seed industry: With continuous, near field spectral data it's possible to understand characteristics such as drought-tolerance, staygreen quality and pathogen resistance on a global scale, improving customer satisfaction with seed recommendations. In today's shifting climate scenarios, evidence of potential success on a site-specific scale becomes increasingly important to the seed industry.

FarmMarket ID: Supporting Farmers with Streamlined and Integrated Agribusiness Processes (presented by Steve Rao, CEO)

Description of Innovation: FarmMarket ID's grower and farm database covers 2.8 million U.S. growers and over 320 million planted acres. Their innovation comes in the way that they contextualize that data through web-based applications for agribusiness professionals. By connecting farm fields to owners and operators, they can provide strategic insights to executives and decision-makers, market segmentation and customization to marketers, and individual grower information to boots-on-the-ground sales reps. Many agribusinesses, including seed companies, are using these tools to streamline and integrate their go-to-market processes to ensure they're only targeting the right farmer with the right message at the right time.

Why it matters to the seed industry: Agribusinesses, seed companies included, provide vital support for farmers to be able to do their jobs. Yet every farm is unique, and has different needs based on the type of crops they farm, their acreage, the number of stakeholders involved, and external factors like weather and fluctuating commodity prices. The more focused seed companies can be in responding to each farm's unique needs, the better off the market will be as a whole. Farmers' time will be respected, and the marketing-sales process will ultimately lead to a purchase that provides the maximum value to each farmer.

Granular: Helping Farmers Make Better Decisions (presented by Madelyn Koester, Granular Product Manager)

Description of Innovation: Granular Insights, the latest innovation from Granular, helps farmers scout faster to quickly identify and fix potential problems before yield impact. Coming soon, it will also offer the ability to analyze agronomic data and visualize performance all the way to the sub-field level.

Why it matters to the seed industry: Granular helps growers make better decisions so they can run stronger businesses, maximize profitability and steward the land for generations to come. Granular is an independent subsidiary of Corteva Agriscience, providing software and analytical tools for farmers and their advisers.

PowerPollen: On-Demand Pollinations with Preserved Pollen (presented by Jason Cope, Co-Founder, Chief Intellectual Property Officer)

Description of Innovation: PowerPollen has engineered an on-demand pollination solution that maximizes yield potential and mitigates the risk of decreased crop output. This technology is a production level system in which pollen is collected in mass, preserved, and then applied to females on-demand. The foundation for this technology is the pollen preservation method which increases the lifespan of corn pollen by 5000-fold. Their pollen preservation technology is their key driver and the mechanization they produce with ALMACO fuels this newly enabled pipeline.

Why it matters to the seed industry: Through the use of preserved pollen, the agricultural industry can deliver pollen to females with optimal timing. This process enables higher yields, increased purity and lower overall costs to produce seed.

Progeny Drone: Don't Count Plants Manually Anymore (presented by Co-Founder Anthony Hearst)

Description of Innovation: Most drone image processing pipelines require high-grade GPS, internet access, high-performance computing, extensive programming expertise, and various software such as Pix4D, Agisoft, or QGIS to extract plot-level metrics of plant growth and health from raw drone imagery. They also do not provide real-time turnaround (24 hours at best) which misses opportunities for real-time decision-making and quality control before leaving a field site. Researchers at Purdue University have developed a new pipeline that eliminates the need for high-grade GPS, internet, high-performance computing, programming expertise, or multiple software while providing real-time turnaround (images stitched in under 10 minutes and metrics generated in under 30). They have made this pipeline available to everyone in the form of a simple app that anyone can use with 10 minutes of training. This enables agronomists at small to mid-sized research groups who lack the resources to develop their own image processing pipelines to use the inexpensive off-the-shelf drones and laptops many of them already own to start collecting key metrics of plant growth & health (e.g. stand counts) 10 times faster and more accurately than ever before.

Why it matters to the seed industry: This technology was developed by plant breeders and is ideally suited to field trials so it should greatly accelerate the digitization, efficiency, & accuracy of crop improvement efforts in general while dramatically reducing their cost. It also de-centralizes the technology & empowers agronomists at small to mid-sized research groups who have been under-served and usually unable to get significant value or time-savings out of their inexpensive, off-the-shelf drones.

QualySense: Excellency in Seeds Breeding and Production (presented by Francesco Dell'Endice, CEO and Founder)

Description of Innovation: QSorter® technology is at the heart of a new generation of inspection and sorting devices for excellent in seed breeding and processing. The QSorter® devices are able to transport grains one by one in a fixed position and this unique feature allows measuring of biochemical and physical properties with superior accuracy and precision. The QSorter® platforms are very fast and can transport from a few to several thousands of kernels each second. The QSorter® is the result of state-of-the-art mechatronics, NIR spectroscopy, VISION, life science and machine learning technologies.

Why it matters to the seed industry: Solutions are available for ultra-fast seed phenotyping, fraud detection, increase of seed purity and optimization of processing of corn, soybeans, wheat, barley.

SlantRange: Advances in Aerial Phenotyping for Breeding and Research Applications (presented by Michael Ritter, Co-Founder and CEO)

Description of Innovation: New techniques in high-resolution spatio-spectral imaging and intelligent analytics are enabling more efficient, more accurate, and more comprehensive trait measurements for breeders and researchers. Technical methods related to spectral imaging, object recognition and segmentation, and trait measurement will be introduced with application to multiple crop types including corn, soybean, wheat, cotton, canola, and sorghum.

Why it matters to the seed industry: The ability of breeders and researchers to bring continuing improvements to new seed and crop protection products is becoming constrained by the inability to accurately quantify the performance of important traits across trials. The new techniques to be introduced in this session are enabling trait measurements that relieve this constraint and open opportunities for better performing inputs and more accurate forecasting.

Sound Agriculture: A New Tool in Plant Breeding (presented by Eric Davidson, Co-Founder and CEO)

Description of Innovation: Sound Agriculture has recently developed a biological seed treatment which can temporarily add valuable traits to a seed without breeding, genetic engineering or gene editing. Using a new technique to silence genes with never-before-seen precision, this treatment makes no permanent changes to the plant, yet imparts the new trait for six to ten generations.   We have already demonstrated this approach in corn, tomatoes and potatoes, so expect it to be applicable to row crops, tree crops, specialty crops and vegetables.

Why it matters to the seed industry: The treatment can cut the time to develop new traits from 5-12 years down to as little as two years with proof-of-concept within months.