Field Day: Translating from model plants to crop systems

AG2PI
Agricultural Genome to Phenome Initiative

Iowa State University · The University of Arizona · University of Idaho · University of Nebraska Lincoln

Rapidly domesticating pennycress into an oilseed cash cover crop by leveraging decades of plant research

Field Pennycress (*Thlaspi arvense L.*) is a Brassica under development as a winter annual oilseed cash cover crop for the U.S. Midwest Corn Belt and other temperate agricultural regions. Pennycress has unique attributes such as extreme cold tolerance and rapid spring growth, allowing it to be planted in the fall e.g. at the time of corn harvest and harvested in the spring in time to plant soybeans. This talk will describe how decades of basic plant research enabled rapid domestication of the weed pennycress into a crop named CoverCress.

Presenter:

John Sedbrook is a Professor of Genetics at Illinois State University using molecular genetic methods to improve plants for their use in generating biofuels, food, feed, and industrial products. Dr. Sedbrook is leading multi-institutional interdisciplinary efforts in domesticating and improving pennycress as an oilseed-producing winter cash cover crop for the U.S. Midwest and other temperate agricultural regions.

Translating model and non-model genomic discoveries to crop plants

Much of what is known of the molecular and cellular workings in plant biology has been worked out using reductionist methods in model plants like *Arabidopsis thaliana*, which do not always translate well to crop plants. Moreover, there has been a bias towards manipulating genes of interest with strong promoters from *Arabidopsis* or knocking out a presumed ortholog in crops; these efforts have largely failed to produce robust commercial biotechnology crops. The availability of high-quality genomes across an array of landraces and elite lines in the major crops, coupled to advances in gene editing technologies, have opened news ways to translate discoveries from model and non-model plants directly to crops.

Presenter:

Todd Michael is a Research Professor at the Salk Institute for Biological Studies and Research Associate at the San Diego Botanical Garden (SDBG). The Michael group is focused on leveraging sequencing and informatics to understand plant genome architecture and is applying their genomics platform to the Harnessing Plant Initiative (HPI).

March 15, 2023

10:30 AM–12:00 PM
(Central Time, UTC–5)

Purpose:

Demonstrate how research on model and non-model plants has been applied in crop improvement.

Register for this Zoom virtual meeting:

https://tinyurl.com/AG2PI-FD25

Upon registration, you will receive a confirmation email with information about joining the meeting.

A recording will be available at a later date at: **ag2pi.org/**

USDA

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