

Implementing Breedbase

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IL Wheat Breeding Program

Mid-size, yet efficient

- 6,000+ yield plots
- ~30,000 head rows
- 6 locations
- 3 graduate students
- 1 research specialist

Data Management System

BREED**DB**ASE

Add crossing
experiments
and crosses



Make
crosses

Add self-
pollination
generations



Generate
fixed lines

Create
genotyping
plates



Genotype

Create
seed lots



Produce seed

Add field
trials



Phenotype

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Phenotype

Data Management Routine

Activity	Timeframe	
Upload accessions, (aka line names) with their purdy pedigrees 	As soon as entry lists are made	August
Create or upload trials 	Before planting	September
Download electronic data collection files 	Before phenotyping	April
Upload phenotypic data	Each time phenotypic data is collected	April-July

Frequently Used Pages

'Search Wizard'

The screenshot shows the 'Search Wizard' interface. At the top, there's a navigation bar with 'T3/Wheat UIUC' and various menu items like 'Search', 'Manage', 'Analyze', 'Maps', 'About', 'Contact Us', and a user profile 'jrutkoski'. Below the navigation, the 'Search Wizard' title is followed by 'Don't see your data?' and buttons for 'Refresh Lists' and 'Update Wizard'. The main area is divided into four columns, each representing a different search criterion: 'Breeding Programs', 'Years', 'Locations', and 'Trials'. Each column has a search input, a 'Select All' button with a count, and a list of items. The 'Breeding Programs' column shows 'Kansas State University' (selected) and 'University of Illinois' (deselected). The 'Years' column shows years from 2016 to 2022. The 'Locations' column shows 'ACES Plant Care Facility', 'Carmi, IL', 'Danforth, IL', 'St. Jacob Township, IL', 'Neoga, IL', and 'Urbana, IL'. The 'Trials' column shows trial names like 'Aug_Urb_21', 'CC_Urb_21', 'DH2_Urb_21', 'DH_Neo_21', and 'DH_Urb_21'. At the bottom of each column, there are 'Match ANY ALL' options.

'Manage Trials'

The screenshot shows the 'Manage Trials' interface. At the top, there's a navigation bar with 'T3/Wheat UIUC' and menu items like 'Search', 'Manage', 'Analyze', 'Maps', 'About'. Below the navigation, there's a 'Trials' section with buttons for 'Upload Existing Trial(s)' and 'Design New Trial'. The main area is divided into two panels. The left panel is titled 'Information' and contains a 'Search' input, a 'Download Trial Phenotypes' section with a 'Download Phenotypes' button, and a note: 'Double click trial (🌿) or folder (📁) to view detail page.' The right panel is titled 'Breeding Programs -- Folders -- Trials' and shows a tree view of folders and trials. The folders include 'Kansas State University' and 'University of Illinois'. Under 'University of Illinois', there are several folders and trials: 'A5S_Neo_22', 'A5S_Scb_22', 'A5S_Urb_22', 'Advanced Breeding Trials', 'Cooperative Trials', 'IL GBS', 'IL_Scb_22', 'Lgl_Urb_22', 'MI_Urb_22', and 'MSU_Neo_22'. A 'Refresh' button is located at the top right of this panel.



Search Wizard

Don't see your data?

Refresh Lists

Update Wizard

Breeding Programs ▾

Search

Select All **1/2** Clear

- + Kansas State University
- University of Illinois

Match **ANY** ALL

Years ▾

Search

Select All **2/22** Clear

- + 2016
- + 2017
- + 2018
- + 2019
- + 2022
- 2020
- 2021

Match **ANY** ALL

Locations ▾

Search

Select All **2/6** Clear

- + ACES Plant Care Facility
- + Carmi, IL
- + Danforth, IL
- + St. Jacob Township, IL
- Neoga, IL
- Urbana, IL

Match **ANY** ALL

Trials ▾

Search

Select All **0/52** Clear















- + Aug_Urb_20
- + Aug_Urb_21
- + CC_Urb_21
- + DH2_Urb_21
- + DH_Neo_21
- + DH_Urb_21



Trials

Upload Existing Trial(s)

Design New Trial

Information	Breeding Programs -- Folders -- Trials Refresh
<p>Search</p> <input data-bbox="422 708 1118 782" type="text" value="Search"/>	<ul style="list-style-type: none">  Kansas State University  University of Illinois <ul style="list-style-type: none">  A5S_Neo_22  A5S_Scb_22  A5S_Urb_22  + Advanced Breeding Trials  + Cooperative Trials  IL GBS  IL_Scb_22  Lgl_Urb_22  MI_Urb_22  MSU_Neo_22
<p>Download Trial Phenotypes</p> <p><i>Select multiple trials by holding 'Ctrl'.</i></p> <p><a data-bbox="422 1029 907 1115" href="#" style="background-color: #4a7ebb; color: white; padding: 5px 15px; border-radius: 3px;">Download Phenotypes</p> <p><i>Double click trial () or folder () to view detail page.</i></p>	

Features That Have Been Useful

- Field book generation
- Label printing
- Barcoding
- Seed lot management
- Controlled ontology

PHENOAPPS





How I Got Started

- February 2020- Migrated all IL data from Agrobase to Bb using flat files.
- August 2020- Uploaded new phenotypic data to Bb
- September 2020- I created/uploaded new field trials in Bb before planting.



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- February 2021- Started using barcode label printing with Bb.
 - March 2021- Generated field books from Bb and imported them to handhelds.
 - Summer 2021- Uploaded phenotypic data to Bb as it was generated.
 - October 2021- Began creating and barcoding seedlots with Bb.

Tips and Tricks

- Consider yourself as the primary user at first
- Start using Bb and new features during winter
- Ask for help from David Waring for data migration
- Use R-scripts to help prepare flat files
- Enlist students/staff in curation and routine upload of phenotypic data

QUESTIONS

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Instagram: smallgrains

Thank you for your attention