



PULSE CROP DATABASE

Genomic, Genetic, and Breeding Resources
for Pulse Crop Improvement

www.pulsedb.org

Expanding the Cool Season Food Legume database into a resource for pulse crop research and improvement

Humann J¹, Crabb J¹, Cheng C-H¹, Lee T¹, Zheng P¹, Buble K¹, Jung S¹, Yu J¹, Frank M¹, McGaughey D¹, Scott K¹, Sanad M¹, Hough H¹, Coyne C², McGee R³, Main D¹

¹Department of Horticulture, Washington State University, Pullman, WA; ²Plant Germplasm Introduction and Testing Research, USDA-ARS, Pullman, WA; ³Grain Legume Genetics Physiology Research, USDA-ARS, Pullman, WA

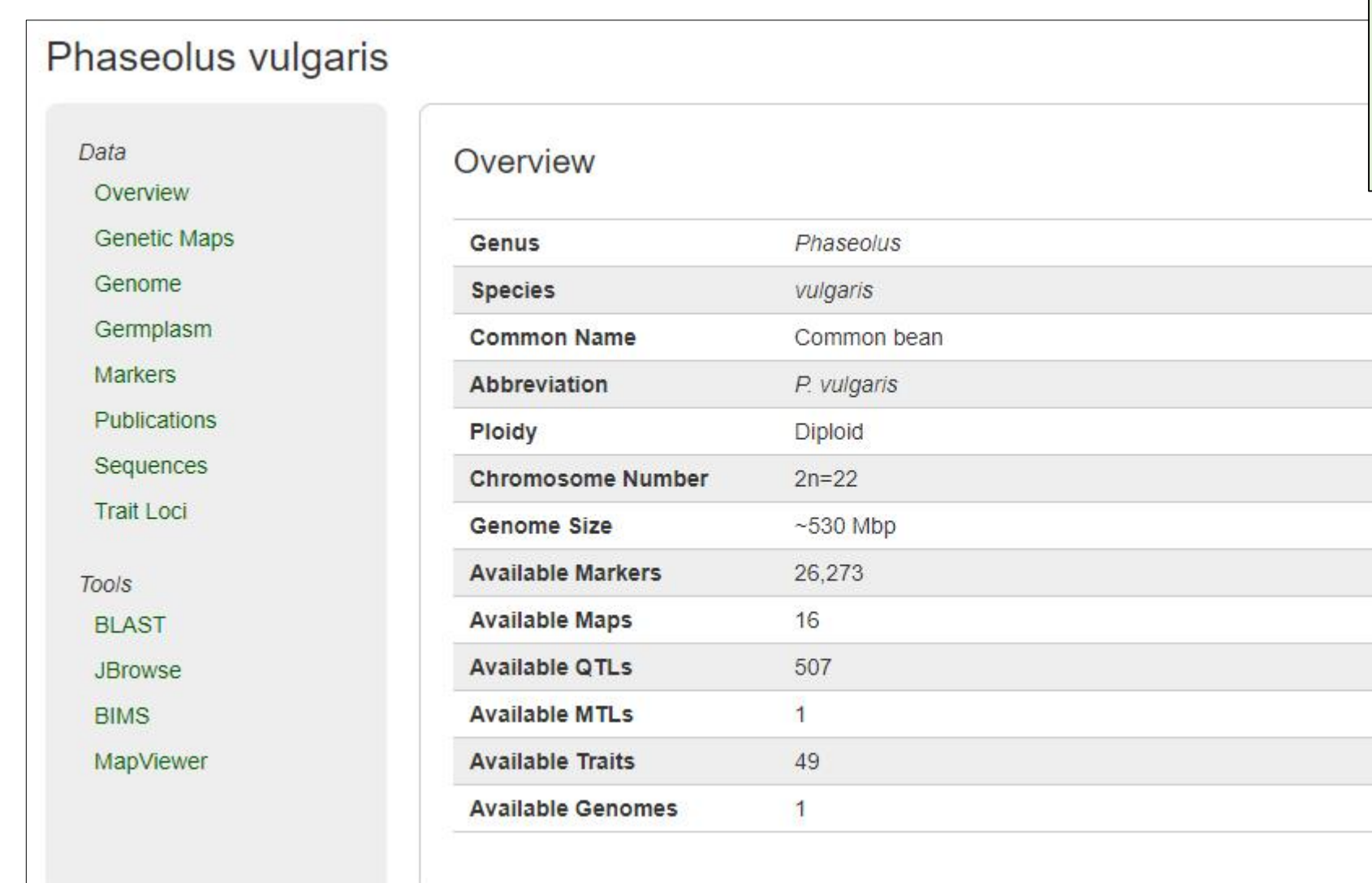
Contact info: jhumann@wsu.edu, dorrie@wsu.edu

ABSTRACT

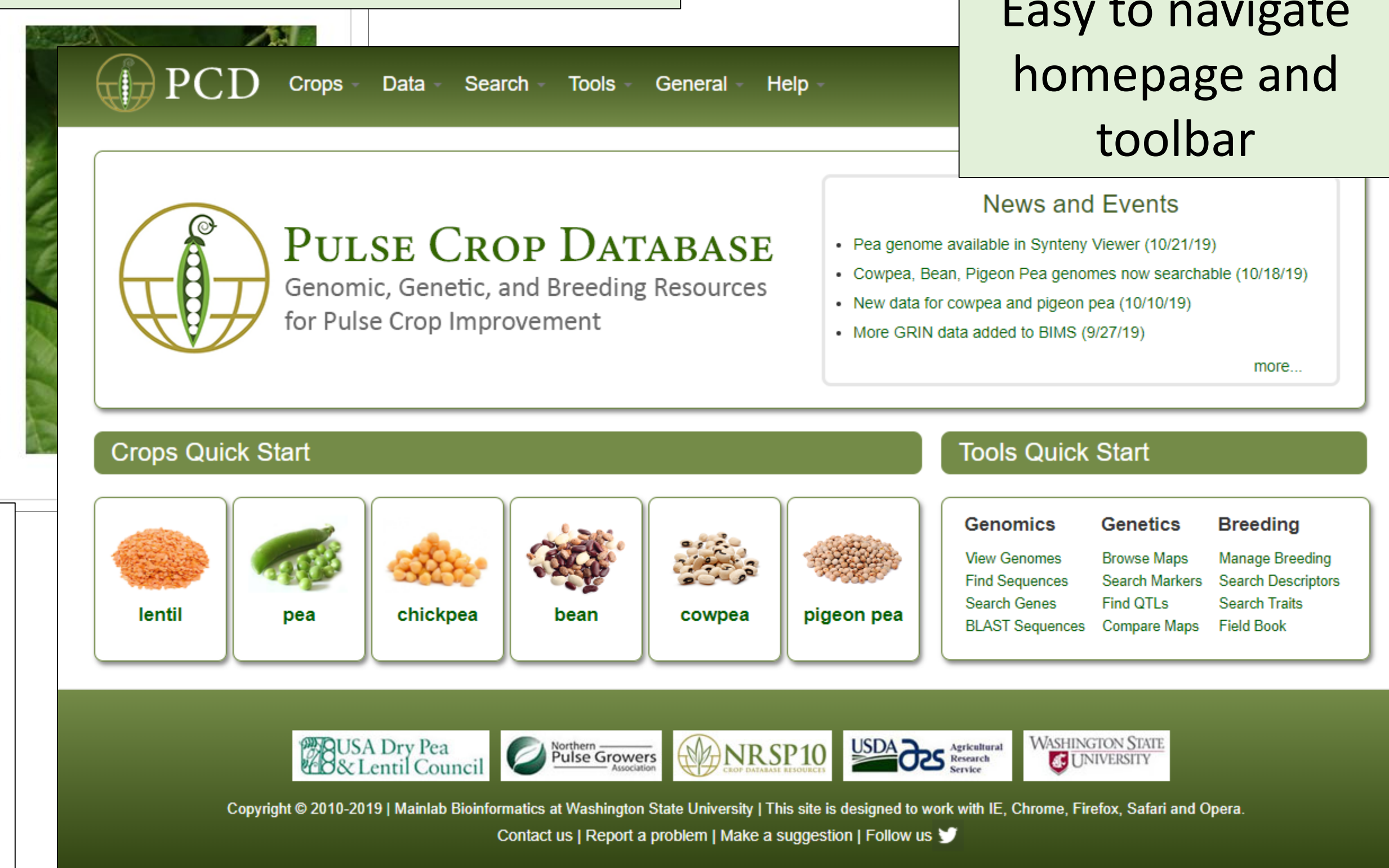
The Cool Season Food Legume Database (CSFL) is being expanded under National Research Support Project 10 (NRSP10, www.nrsp10.org) to include common bean, cowpea, pigeon pea, groundnut, lupin, and vetches. Renamed the Pulse Crop Database (PCD, www.pulsedb.org), the new online resource focuses on providing access to curated and integrated data and tools to enable pulse crop research, translation and improvement. PCD includes publicly available genomics, genetics and breeding data including genomes, genes, transcripts, genetic maps, markers, QTL, germplasm, phenotype and publications, with integrated tools to easily access, view, filter and download the data. PCD users can: view and compare genetic maps using the MapViewer tool; search markers by type, organism, and/or location; search genome sequences with BLAST; view genomes with JBrowse and the Synteny Viewer; and explore genome metabolic pathways using PathwayCyc. The Breeding Information Management System (BIMS) in PCD allows for management of breeding programs via private user accounts while also enabling access to publicly available pulse phenotype data downloaded from the GRIN database. BIMS works with the Android app Field Book for streamlined phenotype data collection and upload, or with spreadsheet templates provided for data upload. Once the breeding program data is in BIMS, the secure data can be viewed, filtered, analyzed, and archived and used to create templates for data entry. BIMS also allows for genotype data upload and querying and will implement more advanced analysis capabilities using high performance computing and BrAPI compatibility in the future.

AVAILABLE DATA

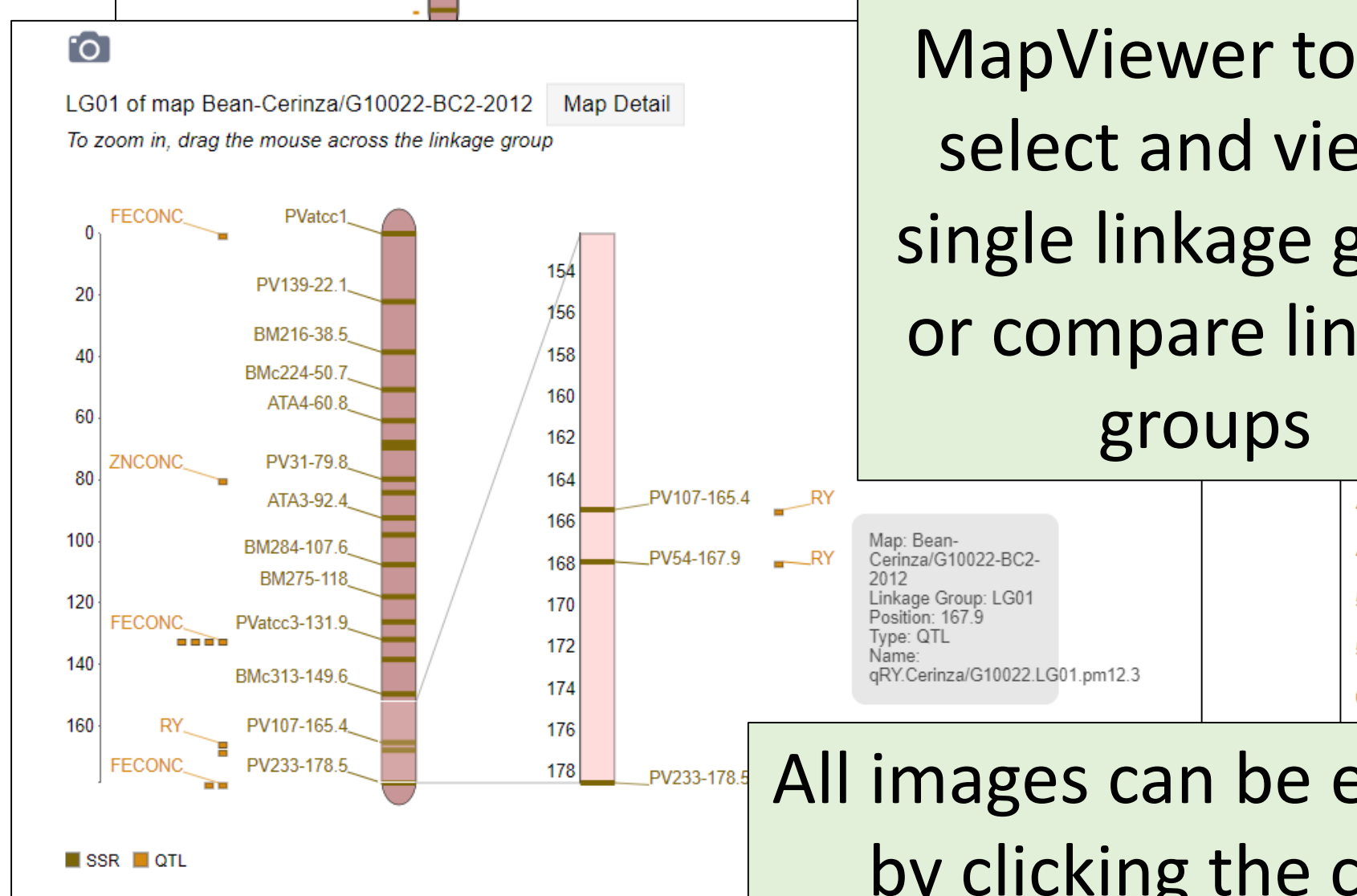
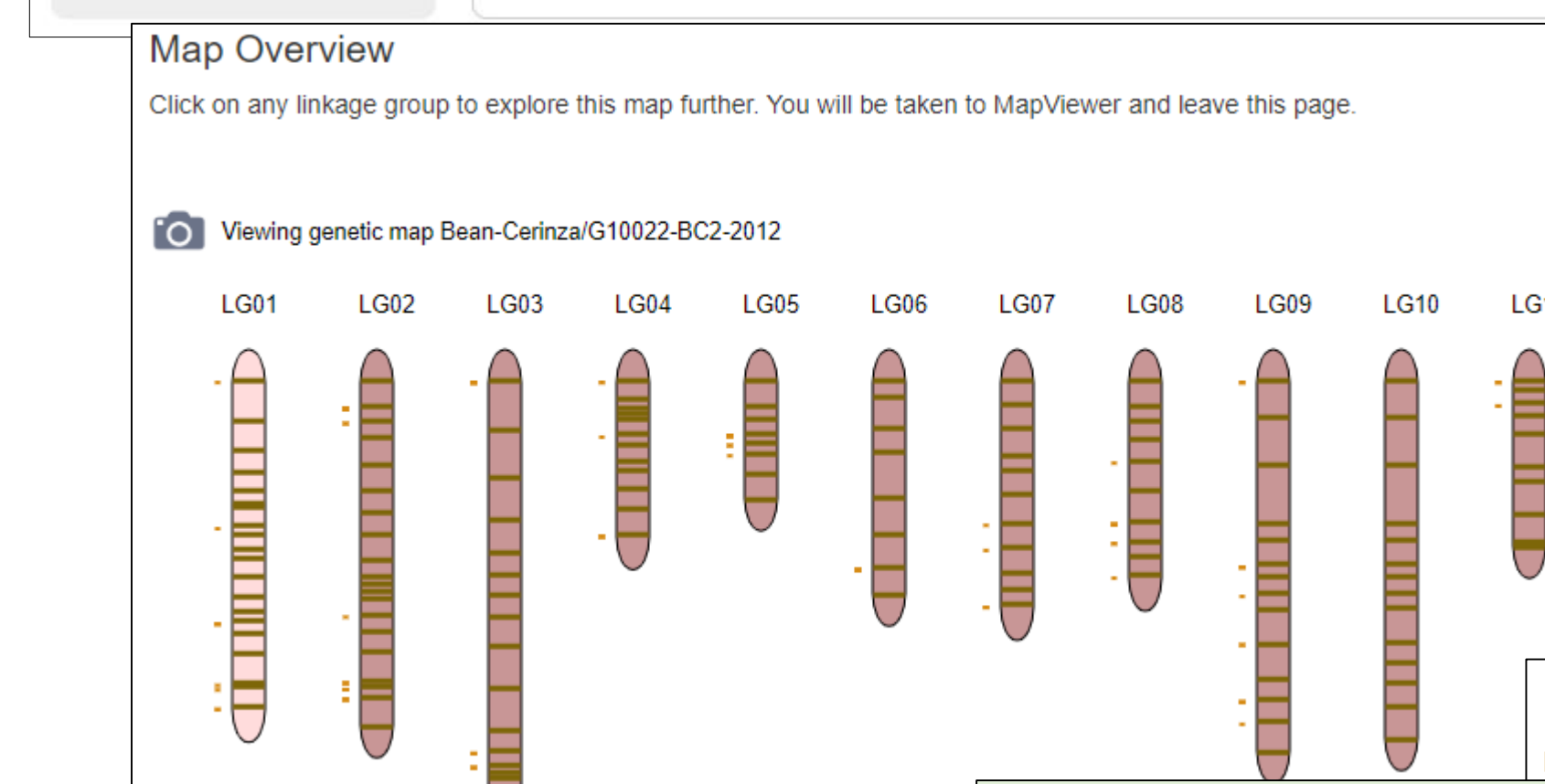
Crop	Markers	Maps	QTLs	Phenotype Measurements
Bean	26,273	16	507	243,442
Chickpea	69,931	81	1,310	110,037
Cowpea	92,741	12	363	81,959
Faba Bean	3,449	21	271	22,660
Lentil	69,646	33	267	43,968
Pea	75,311	50	1,271	156,005
Pigeon Pea	33,162	6	19	39,548



Crop Overview pages display links to different data in PCD

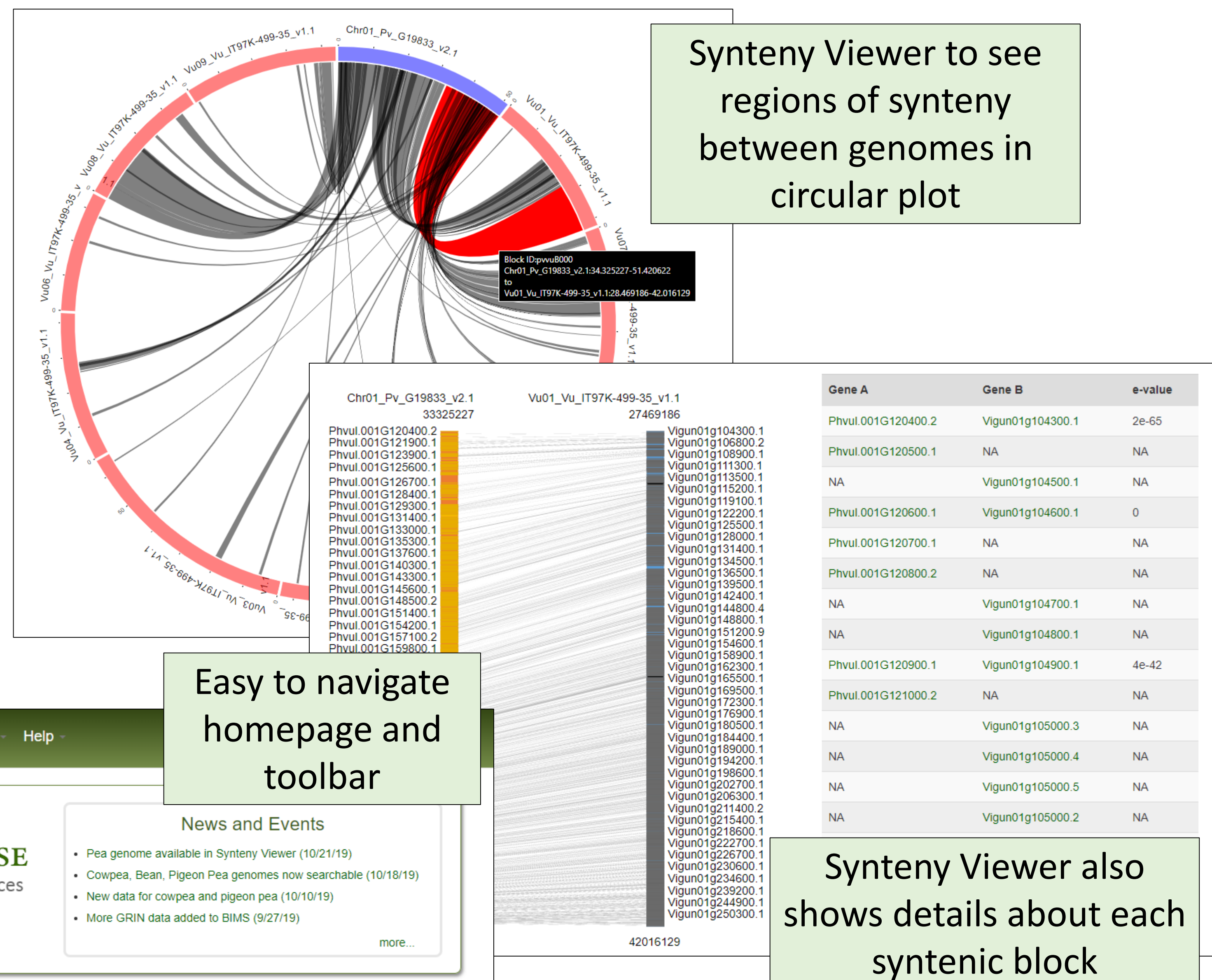


Easy to navigate homepage and toolbar

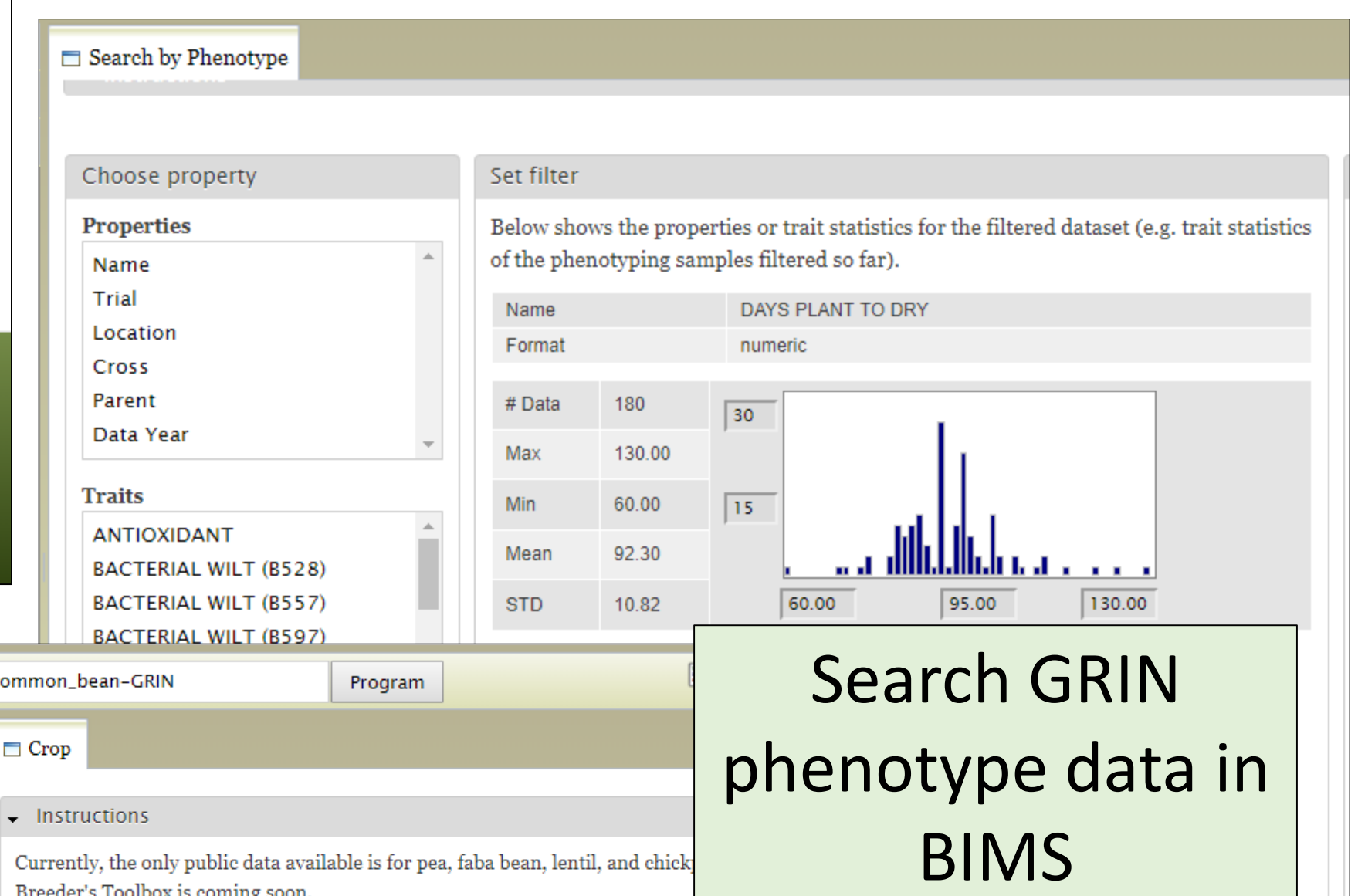


MapViewer tool to select and view a single linkage group or compare linkage groups

All images can be easily exported by clicking the camera icon



Synteny Viewer also shows details about each syntenic block



Search GRIN phenotype data in BIMS

Funding provided by

Thanks to

