

Title: National Database Resources for Crop Genomics, Genetics and Breeding Research

Project Start Date: January 1, 2015

Progress by Objective:

- 1) *Expand online community databases currently housing high quality genomics, genetics and breeding data for Rosaceae, citrus, cotton, cool season food legume and Vaccinium crops*
 - (a) Genetic data (map/marker/QTL) added/being added from literature for all the crops in NRSP10
 - (b) Genomic data added/being added for all the crops in NRSP10
 - (c) Converting all the databases from Drupal 6 to Drupal 7
- 2) *Develop a tablet application to collect phenotypic data from field and laboratory studies.*
 - (a) Assessed utility and usability of the FieldApp application (developed by Jesse Poland, USDA ARS) for use with NRSP10 and other orphan crops (perennial, specialty and field crops).
 - (b) Modifications have been made by Jesse's lab to add functionality needed for our crops
 - (c) Hosting a half day workshop at the National Association of Plant Breeders annual meeting (Pullman, July 2015) to further assess the application and other online tools our breeders require.
 - (d) Providing invited NRSP representative breeders with a handheld tablet and the FieldApp for further assessment
- 3) *Develop a Tripal Application Programming Interface for building breeding databases.*
 - (a) Will begin design and programming after we complete a breeders needs assessment for breeding database functionality following the NAPB workshop and conversion of databases to Drupal 7.
- 4) *Convert GenSAS, the community genome annotation tool, to Tripal*
 - (a) Reprogrammed GenSAS to integrate JBrowse and WebApollo for community curation, added more gene prediction programs and redesigned the interface to be more user friendly and intuitive to use, developed an online video tutorial, and released as GenSAS v3.0.
 - (b) Preparing to release version 4.0 with added functionality (runs on HPC cluster, protein function prediction, more gene prediction tools).

(c) Submitted manuscript to BMC Genomics

5) *Develop Web Services to promote database interoperability*

(a) Working with Tripal community of developers to develop a generic solution for Tripal web services

Other activities

- Hold monthly Tripal developer meetings
- Organized first Tripal Workshop at the 2015 Plant and Animal Genome Conference
- Establishing steering committees for the Citrus/Vaccinium and Cool Season Food Legume Databases
- Held steering committee meetings for CottonGen and the Genome Database for Rosaceae.
- Developing an NRSP10 website.