KARL KUNZE

To seek a position in plant breeding and genetics

Test

🎓 EDUCATION

2017
|
2023

Cornell University, Gradudate School
Field of Plant Breeding and Genetics, advisor Dr. Mark Sorrells 📍 Ithaca, NY

Dissertation: Genomic and phenotypic characterization of barley breeding in New York state

2013
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2017

Cornell University, College of Agriculture and Life Sciences
B.S. Plant Sciences Concentration in Plant Breeding and Genetics, minor in Buisness for the Life Sciences

📍 Ithaca, NY

💻 RESEARCH EXPERIENCE

2017
|
2023

Management of a novel winter malting barley breeding program for the New York State Environment

📍 Ithaca, NY

Advanced an initial double haploid population of 500 lines and 800 F4 recombinant inbred lines for selection based on agronomic traits, pre-harvest sprouting and seed dormancy. Currently we have 200 recombinant inbred lines and 200 double haploid lines in preliminary yield trials and 25 advanced double haploid lines in a second year of regional test trials.

Conducted 5 to 8 time series seed dormancy tests of 500 winter/facultative double haploid lines across three locations and two growing seasons. Samples were harvested adjusting for physiological maturity and frozen at identical post maturity states until seed dormancy tests were conducted.

Analyzed 240 sub samples of winter double haploid barley over two timepoints using micro malting techniques to determine how malting quality corresponds to dormancy loss

Used linear mixed models, field trial design, spatial correction and genomic data to make predictions and selection decisions for advancement.

2017
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2022

Organic Multi-use naked barley for New York and the Northern United States
Multi institutional project to characterize and develop naked barley for organic US systems

📍 United States

Advanced a small population of covered by naked and naked by naked winter barley crosses to develop a naked barley variety adapted to New York conditions.

Performed genotype by environment analysis for 8 naked barley trials across the northern United States

Performed a genome wide association analysis of 250 diverse lines across 13 environments for foliar disease resistance in natural field organic conditions

Used aerial imaging of a spring naked barley variety trial over two years to quantify barley growth over time as a precursor for competition with weeds.

Initialized a combined nested association population using three common parents across all collaborating institution and five parents specific to NY conditions.

CONTACT INFO

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🆔 0000-0003-4548-1808

SKILLS

Plant Breeding, Experimental Design, breeding program management, variety selection and improvement

Experience in agronomic, disease and grain quality phenotpic data collcetion

Genomic prediction, genotype by environment analysis, genome wide association studies, spatial correction, and aerial imaging processing.

Highly proficient in R, microsoft office applications and git version control

Moderate proficiency in unix shell scripting and command line

Limited familiarity with python, SQL, docker, latex, css and html.

LANGUAGES

English

Basic Proficiency in German(A2)

Last updated on 2023-05-08.

LEADERSHIP EXPERIENCE

2021
|
2023

Graduate Student representative for the board of the Crop Science Society of America
Serve as a liason between the CSSA leadership and the graduate student members

PROFESSIONAL SOCIETIES

Crop Science Society of America(CSSA)

National Association of Plant Breeders (NAPB)

Cornell Plant Breeding and Genetics Graduate Student Association, Synapsis

New York State Agriculture Society

Alumni of Alpha Gamma Rho, Professional and Social Agricultural Fraternity, Zeta Chapter

SKILLS

Highly experienced in processing, analysis, organization, and experimental design of field trials of a novel barley breeding program

Field data collection, including agronomic phenotypes, aerial imaging collection, seed germination and malting quality

Highly proficient in data analysis to integrate phenotypic and genotypic data for mapping, genomic prediction and section decisions

Five years of experience managing a novel winter malting breeding program and organic naked barley program for New York State

Demonstrated collaboration of working with multiple research institutions for multi collaborative national grant projects

Highly proficient in R, moderate proficiency in command line and unix shell scripting, and minor proficiency in python.

Demonstrated leadership activities including crop science society of America and graduate student organizations at Cornell.

2016
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2017

Computational Biology and Bioinformatics.
Teaching assistant of GBS CB2-201 courses at UAB ⦿ AL, USA

SELECTED PUBLICATIONS AND PRESENTATIONS

2022

Interaction of Pre-harvest sprouting, germination rate and malting quality for winter and facultative malting barley"
Presentation for the 43rd Barley Improvement Conference and Tri -Societies
⦿ UC Davis, CA & Baltimore, MD, United States
Kunze K, Rooney T., Sweeney D., Sorrells M.

2016

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J Cell Sci. 2016 May 15;129(10):2075-84.
Sheng Z, **Yu L**, Zhang T, Pei X, Li X, Zhang Z and Du W.