

# KARL HANS KUNZE PHD

To seek a position in plant breeding and genetics

Test

Last updated on 2023-05-10.



## EDUCATION

2017  
|  
2023

### **Cornell University, Gradudate School**

Field of Plant Breeding and Genetics, advisor Dr. Mark Sorrells

📍 Ithaca, NY

Minors in Plant Pathology and Food Science

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

2013  
|  
2017

### **Cornell University, College of Agriculture and Life Sciences**

B.S. Plant Sciences

📍 Ithaca, NY

Concentration in Plant Breeding and Genetics, minor in Buisness for the Life Sciences



## RESEARCH EXPERIENCE

2017  
|  
2023

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

📍 Ithaca, NY

Advanced a double haploid and recombinant inbred population starting with crosses in 2017. We currently have 25 lines being tested for a third year of yield trials and a preliminary yield trial consisting of 200 advanced double haploid lines and 200 Recombinant Inbred lines.

Conducted seed dormancy assays and genome wide association studies of 450 lines at two locations over two years. 5 timepoints were measured in 2020 and 8 timepoints measured in 2021.

Micromalted 240 winter barley over two timepoints at the USDA Cereal crops and research unit in Madison, WI. Malting quality resulted were used to inform selection decisions

Used genomic prediction, linear mixed models, spatial correction and genome wide association studies to advance lines and inform selection decisions

2017  
|  
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 eight 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.



## 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 of the society Currently serve on the tri society science policy committee

## CONTACT INFO

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🌐 [github.com/karlkunze](https://github.com/karlkunze)

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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  
phenotypic data collection

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)

2020   2021	<b>Local graduate student liason for National Assocaiaon of Plant Breeders graduate student working group</b> Coordinated graduate student working group to organize virtual events and connect to personel at Cornell University for the virtual 2021 NAPB meeting
2020   2021	<b>Cornell Plant Breeding and Genetics Graduate Student Association Professional Development Committee</b> Organized 4 virtual seminar chat series with graduate alumni of the Plant Breeding and Genetics program Invited speakers from various fields including, industry, academia, start ups and government research organizations
2018   2019	<b>Cornell Plant Breeding and Genetics Graduate Student Association(Synapsis)-President</b> Organized recruitment activities for 14 students applying to the Plant breeding and genetics PhD program Served as liason between graduate students and faculty
2018   2019	<b>Plant Breeding and Genetics faculty search committee</b> Served as the graduate student representative for the first year of the faculty search committee for the forages position.
2018   2019	<b>Corteva Symposium Committee Member</b> Organized Synapsis' 8th Corteva Symposium "Common Plants for uncommon goals" Received symposium ideas and speaker recommendations from Synapsis, and integrated into a voted theme  Arranged flight and hotel accommodations for hosted speakers  Coordinated logistics of symposium planning
Oct 2019	<b>Multi cultural exchange workshop Cornell University, Tokyo University of Agriculture and Technology and the Technical University of Munich</b> Participated in developing presentations and presenting ideas with fellow students of different instiutions to develop a greater sense of collaboration

📍 Ithaca, NY

## 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.



## 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 Conference

📍 UC Davis, CA & Baltimore, MD, United States

**Kunze K**, Rooney T., Sweeney D., Sorrells M.

2016

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.