

# Limeng (Momo) Xie

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## Education

### University of Georgia (UGA)

Phd Candidate in Plant Biology, GPA 3.96

- Advisor: Dr. Alexander Bucksch, Computational Plant Science Lab

Athens, GA

2018 - Present

### Texas A&M University (TAMU)

Master in Horticultural Science, GPA 3.81

- Certificate in Applied Statistics
- Committee: Dr. Kevin Crosby, Dr. Patricia Klein & Dr. John Jifon, Vegetable Breeding Lab
- Thesis: SNP Discovery and Mapping QTLs Associated with Root Traits and Morphological Traits in Tomato

College Station, TX

2014 - 2016

### China Agricultural University (CAU)

Bachelor in Agronomy, GPA 3.65

- Thesis: Evaluation of Methane Production in Anaerobic Reactor with Sweet Potato Vine and Dairy Manure

Beijing, China

2009 - 2014

### Saga University

Exchange Student

- Major in Plant Science and Japanese

Kyushu, Japan

2011 - 2012

## Publications

**Xie, L.,** Burridge, J., Klepp, N., Miller, J., Lynch, J.P., Bucksch, A., Phenotypic spectrum: uncovering root architecture diversity in common bean (*Phaseolus vulgaris* L.). *In prep*

**Xie, L.,** Klein, P., Crosby, K., & Jifon, J. (2019). A Genotyping-by-sequencing Single Nucleotide Polymorphism Map and Genetic Analysis of Root Traits in an Interspecific Tomato Population, *Journal of the American Society for Horticultural Science* 144(6), 394-404.

## Presentations

2021 **Xie, L.,** Burridge, J., Lynch, J.P., Bucksch, A., **ASA, CSSA, SSSA International Annual Meeting**, *Oral*: Phenotypic Spectrum: Uncovering Root Architecture Diversity in Common Bean (*Phaseolus vulgaris* L.), Salt Lake City, UT

2021 Kim, C., **Xie, L.,** Bucksch, A., Seymore, L., Van Iersel, M., **American Society of Horticultural Science Annual Meeting**, *Poster*: Quantification of Canopy Size Using Automated Chlorophyll Fluorescence Image Analysis, Denver, CO

2021 **Xie, L.,** Burridge, J., Lynch, J.P., Bucksch, A., **North American Plant Phenotyping Network Annual Conference**, *Poster*: Phenotypic Spectrum: Uncovering Root Architecture Diversity in Common Bean (*Phaseolus vulgaris* L.), Online

2020 **Xie, L.,** Burridge, J., Klepp, N., Miller, J., Lynch, J.P., Bucksch, A., **the 7th International Horticulture Research Conference**, *Poster*: Quantifying diversity of root architecture types within a genotype of common bean (*Phaseolus vulgaris* L.), Online

2019 **Xie, L.,** Bucksch, A., **International Plant Phenotyping Symposium**, *Poster*: The shape of plants revealed: A shape theoretic perspective on statistics of trait measurements, Nanjing, China

2019 **Xie, L.,** Burridge, J., Klepp, N., Miller, J., Chutoe, C., Saengwilai, P., Lynch, J.P., Bucksch, A., **Crops Conference**, *Poster*: The Phenotypic Spectrum: Identifying Whole Root Architecture Types in Genotypes of Common Bean (*Phaseolus vulgaris* L.), Huntsville, AL

2018 **Xie, L.,** Liu, S., Bucksch, A., **Plant Center Fall Retreat**, *Poster*: Extracting Traits from 3D Models of Maize Root System Architecture", Unicoi State Park, GA

2017 **Xie, L.,** Klein, P., Crosby, K., & Jifon, J., **American Society of Horticultural Science Annual Meeting**, *Oral*: "Mapping Novel QTLs Associated with Root Morphological Traits in an Interspecific Tomato Population, Waikoloa,

2015 **Xie, L.**, Crosby, K., & Jifon, J., **American Society of Horticultural Science Annual Meeting**, *Poster*: Estimates of Genetic Variance for Drought Tolerance Traits in Tomato, New Orleans, LA

## Awards

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2021 Graduate Education Advancement Graduate Fellowship, Graduate School, UGA  
 2020 Palfrey Travel Award, Department of Plant Biology, UGA  
 2020 Travel Scholarship for Root Short Course, University of Florida  
 2016 Outstanding Graduate Student Award, Texas Plant Protection Association  
 2013 Third Prize Scholarship for Academic Excellence, CAU  
 2012 Japan Student Service Scholarship, Japan Student Service Organization  
 2011 Third Prize Scholarship for Academic Excellence, CAU  
 2010 Second Prize Scholarship for Academic Excellence, CAU  
 2010 National Scholarship for Encouragement, Ministry of Education in China  
 2010 Merit Undergraduate Student Award, CAU

## Research Experience

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### Computational Plant Science Lab, UGA

Athens, GA

*Graduate Research Assistant*

2018 - Present

- Current project: Design and execute experiments to study root architecture diversity of crop roots, using common bean as a model species
- Rotation projects: 1. Developed an image processing pipeline to automatically extract root traits from 3D models of maize root system; 2. Identified potential genetic regions with insulators in Bladderwort by analyzing a public RNA-seq database; 3. Explored genetic variation of volatile content among 150 tomato accessions (wild, semi-domesticated, domesticated)

### Vegetable Breeding Lab, TAMU

College Station, TX

*Lab Technician*

2017

- Conducted all daily operations including plant, fertilize, trellis, prune, IPM, supplies and asset acquisition to complete short term and long breeding goals over 7 greenhouses and acre-size field
- Established greenhouse trials of grafted tomatoes to study yield performance in relation to various rootstock and scion combinations
- Screened pepper hybrids for thrip resistance and performed hybrid testing at multiple locations across Texas
- Crossed pepper, tomato, melon and squash to produce hybrid seed.

### Vegetable Breeding Lab, TAMU

College Station, TX

*Graduate Research Assistant*

2014-2016

- Measure morphological root traits using the WinRhizo software
- Extracted, purified, and quantified tomato DNA for GBS library
- Constructed linkage map for mapping population using R/qtl, AsMap, and Joinmap
- Mapped 29 QTLs for 12 root and shoot traits using R/qtl, WinQTLCartographer, MapQTL and QTLNetworks

### Biomass Engineering Lab, CAU

Beijing, China

*Undergraduate Research Assistant*

2012-2014

- Reutilized agricultural waste, e.g. dairy manure and sweetpotato vine, into clean and renewable energy
- Evaluated the volatile fat acid of effluent using HPLC
- Obtained an optimal ratio of dairy manure and sweetpotato vine (2:8) to achieve stable methane production

## Teaching & Mentoring

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### University of Georgia

Athens, GA

*Teaching Assistant*

2019 Fall

- Concepts in Biology (BIOL1103), 70 students
- Presented lectures for 3 lab session during semester
- Lead field trip and graded assigned homework for class
- Achieved overall student approval rating of 4.38 on 5 point scale

## University of Georgia

Athens, GA

*Mentor*

*2020 Summer*

- Lilly Adams, REU Project: Developing a new image processing pipeline to extract root trait of Arabidopsis and identifying candidate genes for root traits from GWAS
- Joslyn Mcklveen, CURO Project: Analyze the effect of temperature and humidity on plant development on a newly-developed mesocosm system

## Texas A&M University

College Station, TX

*Mentor*

*May 2017 - Dec 2017*

- Trained 8 undergraduates of pepper and tomato breeding

## Agricultural Extension

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### Center for Chinese Agricultural Policy (CCAP)

Beijing, China

Intern

Aug 2011

- Participated the Farmer Field School Promotion Project led by CCAP, Ministry of Agriculture, and Rand Corporation (US)
- Investigated application of pesticides and fertilizers in tomato productions in Hubei Province
- Surveyed farmers in three villages and analyzed the questionnaire data

### China Agricultural University

Beijing, China

Co-leader, Summer Field Program

June 2011

- Investigated the overuse of additives in the daylily industry in Qidong County
- Surveyed with local farmers and small business owners (>200 people)
- Presented results to the local government and appeared on the local media
- Organized a workshop introducing alternative methods to preserve daylily for farmers
- Won the Excellent Investigators Team Award

## Leadership and Community Service

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2020 Judge Lead for Junior Section of 72nd Georgia Science & Engineering Fair

2019 Judge for Senior Section of 72nd Georgia Science & Engineering Fair

2019 Executive Board Member of Chinese Genomics Online Meet-up | Responsible for inviting guest speakers and technical support for live stream

2018 Volunteer for March for Science at Washington, DC

2015 Secretary, Texas A&M Horticulture Graduate Student Council

2015 Volunteer, Texas A&M Plant Breeding Symposium

2012 Speaker, Introduction of Chinese Culture with local elementary schools in Ichikikushikino-shi, Kagoshima, Japan

2011 CAU Ambassador, Student representative for university-wide foreign affair activities, CAU

2010 Scrum Half Player of College Rugby Team | Won the plateclass champion of college wide games, CAU

2010 Volunteer, Elder Care Center | Helped take care of senior people monthly, Beijing

2009 Tutor for a group of middle school students and several high school students in science courses, Qimen & Beijing

## Professional Affiliations

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Member, Botanical Society of America

Member, American Association for Advancement of Science

Member, Phi Alpha Xi Honor Society

Member, American Society of Horticultural Science

## Skills

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**Bioinformatics:** NGS (GBS, RNA-Seq), Reads Alignment (Bowtie, GSNAP), SNP Calling (Tophat, VCF Tools, Sam-Tools), Gene Expression Analysis (Cufflinks)

**Quantitative and Population Genetics:** Polygenetic Tree, QTL mapping, Marker Assistant Selection, Clustering, Principle Component Analysis

**Computer and Data Sciences:** Linux/Unix, Python (Pandas, Numpy, OpenCV, Sci-py, Jupyter Notebooks), R (R/qtl, ggplot2, Rmarkdown, Tidyverse), SQL (MariaDB, Dbeaver), Github

**Language Skills:** Chinese (Native), English (Fluent), Japanese (Basic)