

# STUART A. SPRAGUE

ASSISTANT PROFESSOR OF HORTICULTURE

KANSAS STATE UNIVERSITY

2021 THROCKMORTON HALL

1712 CLAFLIN ROAD

MANHATTAN, KS 66506

[SSPRAGUE@KSU.EDU](mailto:SSPRAGUE@KSU.EDU)

## EDUCATION

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### **Doctor of Philosophy, Horticulture, 2018**

Kansas State University, Manhattan, KS

Dissertation: *Ectopic Expression of an Arabidopsis Glutaredoxin Increases Thermotolerance in Maize During Reproductive Developmental Stages*

Graduate Certificate: Genetics, Genomics, and Biotechnology

### **Bachelor of Science, Horticultural Science, 2012**

Kansas State University, Manhattan, KS

## PROFESSIONAL EXPERIENCE

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<b>Assistant Professor</b> , Department of Horticulture and Natural Resources Kansas State University	2023-Present
<b>Assistant Professor</b> , School of Agricultural Sciences Northwest Missouri State University	2018-2023
<b>Graduate Teaching Assistant</b> , Kansas State University	2013-2015
<b>Graduate Research Assistant</b> , Kansas State University	2012-2018

## TEACHING EXPERIENCE

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<b>Northwest Missouri State University</b> , (Assistant Professor)	2018-present
<ul style="list-style-type: none"><li>• AGRI 380, Plant Propagation (3 credit hours; Spring)</li><li>• AGRI 130, Plant Science (4 credit hours; Fall, Spring)</li><li>• AGRI 385, Greenhouse Crop Production (3 credit hours; Fall)</li><li>• AGRI 534, Plant Breeding (3 credit hours; Fall)</li><li>• AGRI 484, Hydroponic Crop Production (3 credit hours; Spring-odd year)</li><li>• AGRI 537, Plant Genetics and Biotechnology (3 credit hours; Spring-even year)</li></ul>	
<b>Kansas State University</b> , (Graduate Teaching/Research Assistant)	2012-2018
<ul style="list-style-type: none"><li>• HORT 350, Plant Propagation (Spring)</li><li>• HORT 201, Principles of Horticultural Science (Fall)</li><li>• HORT 710, Plant Cell, Tissue, and Organ Culture (Spring)</li><li>• HORT 910, Advances in Plant Cell Culture (Spring)</li></ul>	

### **Invited Guest Lectures**

- “Cultural Pest Control Methods for the Greenhouse.” Integrated Crop Management (AGRI 331) Northwest Missouri State University, Fall 2022
- “Biotechnology Basics.” Crop Physiology (AGRI 336) Northwest Missouri State University, Fall 2020
- “Micropropagation” Principles of Horticultural Science (HORT 201) Kansas State University, Fall 2015.
- “Undergraduate Research Opportunities” Pre-Internship in Horticulture (HORT 190) Kansas State University, 2012-2017

### **SERVICE AND PROFESSIONAL DEVELOPMENT**

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#### **Northwest Missouri State University**

- Designated Curriculum Matters, committee member 2019-2022
- Graduate Council, committee member 2020-present
  - Graduate Council scholarship selection committee
- School of Agricultural Sciences scholarship selection committee 2022
- Agronomy Program Review 2022
- Horticulture club advisor 2018-present
  - MACHS trip
- Advisement of 60 undergraduate students (16 current) 2019-present
- Development of new courses
  - Hydroponic Crop Production
  - Plant Genetics and Biotechnology
- FFA Career Development Events (Fall and Spring) 2018-present
  - Floriculture Superintendent
- Precision Ag Summer Academy Field Day 2018-2020
- Teaching & Learning Academy 2019
- Spring Professional Development Series 2023
  - How Trauma-informed Pedagogy Keeps Post-Secondary Students in the Classroom
  - From Proposal to Catalog Publication
  - Culturally Responsible Instruction
- Faculty Search Committee, Ag Business 2019
- Faculty Search Committee, Agronomy 2019
- “Growing Opportunities: Tissue Culture and Micropropagation” 2019
  - I’m going to Northwest (Recruitment Day activity)
- Distinguished Scholar Day 2019

#### **Kansas State University**

- Teaching in College (EDCI 943) 2017
- Teaching Seminar (Agronomy 810) 2014

- Spring Teaching Workshop: Actively Engaging the Brain 2014
- Department Head Search committee, Horticulture, Forestry and Recreation Resources 2014
- College of Agriculture Undergraduate Research Workshop 2012
  - Panel Member
- 2025 College of Agriculture Vision: Committee member 2012-2013

## AWARDS AND RECOGNITION

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- Richard Elmore Brown Outstanding College of Agriculture Graduate Student Teaching Award, Kansas State University 2015
- North American College and Teachers of Agriculture Graduate Student Teaching Award 2018
- Top 10 finisher, Research and the State, Kansas State University 2017
- 1<sup>st</sup> place, Capitol Graduate Research Summit 2018
- MACHS advisee placed 1st 2019
- Don C. Warren Excellence in Genetics Scholarship 2015-2018
- Pi Alpha Xi, Omega Chapter, initiated 2016
- Gamma Sigma Delta, Eta Chapter, initiated 2015

## PUBLICATIONS

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### *Journal Publications*

**S.A. Sprague**, T.M. Tamang, T. Steiner, Q. Wu, Y. Hu, T. Kakeshpour, J. Park, J. Yang, Z. Peng, B. Bergkamp, I. Somayanda, M. Peterson, E. Oliveira-Garcia, Y. Hao, Paul St. Amand, G. Bai, P.A. Nakata, I. Rieu, D.P. Jackson, N. Cheng, B. Valent, K.D. Hirschi, K.S.V. Jagadish, S. Liu, F.F. White, and S.H. Park (2022) Redox-engineering enhances maize thermotolerance and grain yield in the field. *Plant Biotechnology Journal*. 20: 1819-1832

T.M. Tamang, **S.A. Sprague**, T. Kakeshpour, S. Liu, F.F. White, and S.H. Park (2021) Ectopic expression of a heterologous glutaredoxin enhances drought tolerance and grain yield in field grown maize. *International Journal of Molecular Sciences*. 22: 5331

B-C. Kang, Q. Wu, **S.A. Sprague**, S.H. Park, F.F. White, S-J. Bae, K. Kim, and J-S. Han (2019) Ectopic overexpression of an Arabidopsis monothiol glutaredoxin *AtGRXS17* affects floral development and enhances tolerance to heat stress in chrysanthemum (*Chrysanthemum morifolium* Ramat.). *Environmental and Experimental Botany*. 167: 103864

Y. Hu, Q. Wu, Z. Peng, **S.A. Sprague**, W. Wang, J. Park, E. Akhunov, K.S.V. Jagadish, P. Nakata, N. Cheng, K.D. Hirschi, F.F. White, and S.H. Park (2017) Silencing of *OsGRXS17* in rice improves drought stress tolerance by modulating ROS accumulation and stomatal closure. *Scientific Reports*. 7: 15950

Q. Wu, Y. Hu, **S.A. Sprague**, T. Kakeshpour, J. Park, P. Nakata, N. Cheng, K.D. Hirschi, F.F. White, and S.H. Park (2017) Expression of a monothiol glutaredoxin, *AtGRXS17*, in tomato (*Solanum lycopersicum*) enhances drought tolerance. *Biochemical and Biophysical Research Communications*. 491: 1034-1039

H. Yu, J. Yang, Y. Shi, J. Donelson, S.M. Thompson, **S.A. Sprague**, T. Roshan, D. Wang, J. Liu, S.H. Park, P.A. Nakata, E.L. Connolly, K.D. Hirschi, M.A. Grusak, and N. Cheng (2017) *Arabidopsis* Glutaredoxin S17 Contributes to Vegetative Growth, Mineral Accumulation, and Redox Balance during Iron Deficiency. *Frontiers in Plant Science*. 8: 1024

Y. Hu, Q. Wu, **S.A. Sprague**, J. Park, M. Oh, C.B. Rajashekar, H. Koiwa, P. Nakata, N. Cheng, K.D. Hirschi, F.F. White, and S.H. Park (2015) Tomato expressing *Arabidopsis* glutaredoxin gene *AtGRXS17* confers tolerance to chilling stress via modulating cold responsive components. *Horticulture Research*. 2: 15051

### **Book Chapters**

J. Park, and **S. Sprague**. (2021) *Agrobacterium*-Mediated Transformation of Plants. Plant Tissue Culture: Techniques and Experiments, 4th Edition: Ed. S.H. Park, Academic Press. pp171-192

J. Park, S.H. Park, Q. Wu, and **S. Sprague**. (2012) *Agrobacterium*-Mediated Transformation of Plants. Plant Tissue Culture: Techniques and Experiments, 3rd Edition: Ed. R.H. Smith, Academic Press. pp155-166

### **Conference Papers**

T.M. Temang, **S.A. Sprague**, T. Kakeshpour, T. Steiner, S. Liu, F.F. White, and S.H. Park (2019) Ectopic expression of a heterologous glutaredoxin enhances tolerance to multiple abiotic stressors and grain yield in field grown maize. 2019 World Congress SIVB, June/2019. Tampa, FL

T.M. Temang, **S.A. Sprague**, T. Kakeshpour, T. Steiner, S. Liu, F.F. White, and S.H. Park (2019) Ectopic expression of a heterologous glutaredoxin enhances tolerance to multiple abiotic stressors and grain yield in field grown maize. Annual Maize Genetics Conference – Maize GDB, March/2019. Saint Louis, MO

**S.A. Sprague**, T.M. Temang, T. Steiner, N. Cheng, K.D. Hirschi, S.V.K. Jagadish, F.F. White, and S.H. Park (2018) Expression of *AtGRXS17* in Maize Increases Heat Stress Tolerance. 2018 World Congress SIVB, June/2018. Saint Louis, MO

**S.A. Sprague**, Y. Hu, Q. Wu, J. Park, N. Cheng, K.D. Hirschi, F.F. White, and S.H. Park (2018) Expression of *AtGRXS17* in Maize increases yield under heat stress. 2018 Capitol Graduate Research Summit. Topeka, KS.

B. Valent, E. Oliveira-Garcia, M. Yi, P. Migeon, M. Dalby, **S. Sprague**, J. Park, and S.H. Park (2017) How the blast fungus hijacks living rice cells. *Plant Biology* 2017, June/2017. Honolulu, HI

**S.A. Sprague**, Y. Hu, Q. Wu, J. Park, N. Cheng, K.D. Hirschi, F.F. White, and S.H. Park (2017) Expression of *AtGRXS17* in Maize increases yield under heat stress. 2017 Kansas State University Research and The State Forum

B.K. Hoch, **S.A. Sprague**, and C.T. Miller (2017) Grocery shopping for geophytes. North American Colleges and Teachers of Agriculture 2017, July. West Lafayette, IN

**Stuart A. Sprague**, Ying Hu, Qingyu Wu, Jungeun Kim Park, Ning-hui Cheng, Kendal Hirschi, Frank F. White, and Sunghun Park (2017) Expression of *AtGRXS17* in Maize increases yield under heat stress. Kansas State University Graduate Research, Arts, and Discovery Forum.

**S.A. Sprague**, Y. Hu, Q. Wu, J. Park, N. Cheng, K.D. Hirschi, F.F. White, S.H. Park (2016) Ectopic expression of Arabidopsis glutaredoxin gene *AtGRXS17* in maize (*Zea mays*) enhances tolerance to heat stress. *Plant Biology* 2016, July/2016. Austin, TX

**S.A. Sprague**, Q. Wu, Y. Hu, D. Park, N. Cheng, K.D. Hirschi, F.F. White, and S.H. Park (2014) Ectopic expression of *AtGRXS17*, an Arabidopsis glutaredoxin, enhances drought resistance in tomato. *Plant Biology* 2014, July/2014. Portland, OR

Y. Hu, Q. Wu, **S.A. Sprague**, J. Park, M. Oh, C. B. Rajashekar, H. Koiwa, P.A. Nakata, N. Cheng, K.D. Hirschi, F.F. White, and S.H. Park (2014) Ectopic expression of Arabidopsis glutaredoxin gene *AtGRXS17* in tomato (*Solanum lycopersicum*) confers tolerance to chilling stress. *Plant Biology* 2014, July/2014. Portland, OR

Q. Wu, J. Park, J. Craven, X. Wang, W. Lim, Y. Hu, **S. Sprague**, K.D. Hirschi, N-H. Cheng, F. White, and S.H. Park (2012) *AtGRXS17*, an Arabidopsis Glutaredoxin, Plays Conserved roles in Adaptation of Oxidative and Multiple Abiotic Stresses across Different Species. *Plant Biology* 2012, July/2012. Austin, TX

Y. Hu, J. Park, Q. Wu, **S. Sprague**, J. Craven, K.D. Hirschi, N-H. Cheng, F. White, and S.H. Park (2012) Ectopic expression of *AtGRXS17* in rice enhances drought and salt tolerance. *Plant Biology* 2012, July/2012. Austin, TX

**S. Sprague**, and S.H. Park (2012) Efficient *Agrobacterium*-mediated sweet potato transformation. *Plant Biology* 2012, July/2012. Austin, TX