VITA - Wenxuan Guo

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Department of Soil and Crop Sciences - Texas A&M AgriLife Research
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EDUCATION:

1996	B.S.	Crop Science	Agricultural University of Hebei, Baoding, China
2002	M.S.	Plant, Soil, and Environmental Science	West Texas A&M University, Canyon, TX
2005	Ph.D.	Crop Science	Texas Tech University, Lubbock, TX

PROFESSIONAL EXPERIENCE:

1996 - 1999	*Lecturer*, Department of Agronomy, Handan Agricultural College, Handan, China
2006 - 2013	*Precision Agriculture Scientist*, South Plains Precision Ag, Plainview, TX
2013 - 2016	*Global Environmental Modeling Scientist*, Breeding Organization, Monsanto Company, St. Louis, MO
2016 - present	*Assistant Professor of Crop Ecophysiology/Precision Agriculture*, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX
2019 - present	*Assistant Professor of Crop Ecophysiology/Precision Agriculture*, Texas A&M AgriLife Research, Lubbock, TX

MEMBERSHIP IN PROFESSIONAL SOCIETIES:

1. American Society of Agronomy, 2005 to present
2. Crop Science Society of American, 2005 to present
3. Soil Science Society of America, 2005 to present
4. American Geophysical Union, 2018 to present
5. International Society of Precision Agriculture, 2021 to present

LICENSES AND CERTIFICATIONS:

2004. SSToolbox Geographic Information System. SST Software.
2017. Remote Pilot Certificate. Federal Aviation Administration.
2019. DSSAT Training Certificate. DSSAT Foundation.

AREAS OF EXPERTISE:

1. Precision agriculture
2. Remote sensing and digital image analysis
3. Crop ecophysiology
4. High-throughput plant phenotyping using unmanned aerial systems (UAS)
5. Crop modeling and environmental modeling
6. Irrigation scheduling
7. Computer programming and simulation
8. Data science and machine learning in agriculture

INTERNATIONAL EXPERIENCE:

2017. Hosted Visiting Professor from Agricultural University of Hebei, China: Aijun Zhang. Currently collaborating on irrigation and dryland agriculture research.

2017. Improving water use efficiency with precision agriculture technologies. Anyang, China. August 23, 2017. Invited presentation.

2018. Data-driven Precision Agriculture: State of the Art and Outlook. Agricultural University of Hebei, Baoding, China. June 29, 2018. Invited presentation.

2018. Data-driven Precision Agriculture: Opportunities and Challenges. Huazhong Agricultural University, Wuhan, China. July 5, 2018. Invited presentation.

2018-2019. Hosted Visiting Assistant Professor from Jinlin Agricultural University of Jilin, China: Liying Cao.

2019. Hosted Visiting Scholar from Chonnam National University, South Korea: Jonghan Ko.

2019-2020. Hosted Visiting Scholar from Huazhong Agricultural University, China: Le Xu.

2020-2021. Hosted visiting Scholar and postdoctoral research associate from University of Damanhour, Egypt: Ahmed Hammad.

HONORS AND AWARDS:

Honors:

2018. Program Lead of Precision Agriculture Program at Texas Tech University as one of the 25 Best Colleges for Precision Agriculture by PrecisionAg.com.

2018. Nominee, Robert Foster Cherry Award for Great Teaching. Texas Tech University, Nominated by Department of Plant and Soil Science.

2021. Nominee - CASNR Junior Faculty Award, CASNR, College. Nominated by Department of Plant and Soil Science.

Awards:

1. Above and Beyond Award, Monsanto Company, 2014
2. Technology Recognition, Monsanto Company, 2014
3. Breeding Operational Excellence Award, Monsanto Company, 2015
4. Breeding Operational Excellence Award, Monsanto Company, 2016

PATENTS: total of 0.

PUBLICATIONS:

Books: total of 0

Refereed Book Chapters: total of 1

1. **Guo, W.**, S. Cui, J. Torrion, and N. Rajan. 2015. Data-Driven Precision Agriculture: Opportunities and Challenges. *In* Soil-Specific Farming: Precision Agriculture. L. Rattan and B. A. Stewart (*eds.*). CRC Press, Boca Raton, FL. P.353–372. doi: 10.1201/b18759-15.

Other Book Chapters: total of 0

Books and Book Chapters Edited: total of 0

Refereed Journals: total published or accepted 24 (17 after hire with Texas Tech University; *: Guo's graduate student; §: Guo as corresponding author)

Published or Accepted:

1. Meng, Q., A. Meng, J. Wang, Z. Liu, **W. Guo**, and M. Cui. 1998. The path analysis of main quantity characters and dry leaf yield of *Stevia rebaudiano* Bertoni. Journal of Jilin Agricultural University, 20:17-19.
2. Todd, R., **W. Guo**, B.A. Stewart, and C. Robinson. 2004. Vegetation, phosphorus, and dust gradients downwind from a cattle feedyard. Journal of Range Management, 57: 291-299 [impact factor: 0.859; citations: 25].
3. Todd, R.W., N.A. Cole, R.N. Clark, W.C. Rice, and **W. Guo**. 2008. Soil nitrogen distribution and deposition on shortgrass prairie adjacent to a beef cattle feedyard. Biology and Fertility of Soils, 44(8): 1099-1102. doi: 10.1007/s00374-008-0286-2 [impact factor: 5.52; citations: 8].
4. Ko, J., G. Piccinni, **W. Guo**, and E. Steglich. 2009. Parameterization of EPIC crop model for simulation of cotton growth in South Texas. Journal of Agricultural Science, 147: 169-178 [impact factor: 2.891; citations: 30].
5. §**Guo, W.**, and S.J. Maas. 2012. Terrace layout design utilizing geographic information

system and automated guidance system. Applied Engineering in Agriculture, 28:31-38 [impact factor: 0.99; citations: 7].

6. §**Guo, W.**, S.J. Maas, and K.F. Bronson. 2012. Relationship between cotton yield and soil electrical conductivity, topography, and Landsat imagery. Precision Agriculture, 13: 678-692 [impact factor: 5.39; citations: 72].
7. Torrion, J. A., S. J. Maas, **W. Guo**, J. P. Bordovsky, and A.M. Cranmer. 2014. A three-dimensional index for characterizing crop water stress. Remote Sensing, 6: 4025-4042 [impact factor: 4.85; citations: 13].
8. Chen, T., R. Zeng, **W. Guo**, X. Hou, Y. Lan, and L. Zhang. 2018. Detection of stress in cotton (Gossypium hirsutum L.) caused by aphids using leaf level hyperspectral measurements. Sensors, 18(9), 2798. doi:10.3390/s18092798 [impact factor: 3.58; citations: 20].
9. §**Guo, W.** 2018. Application of geographic information system and automated guidance system in optimizing contour and terrace farming. Agriculture, 8(9): 142. doi: 10.3390/agriculture8090142 [impact factor: 3.05; citations: 4].
10. §**Guo, W.** 2018. Spatial and temporal trends of irrigated cotton yield in the Southern High Plains. Agronomy, 8(12): 298. doi:10.3390/agronomy8120298 [impact factor:3.42; citations: 6].
11. *Neupane, J., and §**W. Guo**. 2019. Agronomic basis, technology, and benefits of precision water management: a review. Agronomy, 9(2): 87. doi:10.3390/agronomy9020087 [impact factor:3.42; citations: 45].
12. Thompson, C., **W. Guo**, B. Sharma, and G. Ritchie. 2019. Using Normalized Difference Red Edge index to assess maturity in cotton. Crop Science, 59(5): 2167-2177 [impact factor: 1.88; citations: 4].
13. Gusso, A., **W. Guo**, and S. Rolim. Reflectance-based model for soybean mapping in United States at common land unit scale with Landsat 8. 2019. European Journal of Remote Sensing, 52(1): 522-531 [impact factor: 2.81; citations: 2].
14. Pabuayon, I. L., *Y. Sun, **W. Guo**, and G. Ritchie. 2019. High-Throughput Phenotyping in Cotton: A review. *Journal of Cotton Research, 2*(1): 2-18 [citations: 7].
15. *Lin, Z., and §**W. Guo**. 2020. Sorghum Panicle Detection and Counting using Unmanned Aerial System Images and Deep Learning. Frontiers in Plant Science, 11:534853. doi: 10.3389/fpls.2020.534853 [impact factor: 5.75; citations: 14].
16. Lin, Y., Z. Zhu, **W. Guo**, *Y. Sun, X. Yang, and X. Kovalskyy. 2020. Continuous Monitoring of Cotton Stem Water Potential using Sentinel-2 Imagery. Remote Sensing, 12, 1176 [impact factor: 4.51; citations: 2].
17. *Gu, H., *Z. Lin, §**W. Guo**, and S. Deb. 2021. Retrieving Surface Soil Water Content Using a Soil Texture Adjusted Vegetation Index and Unmanned Aerial System Images. Remote Sensing, 13(1), 145; https://doi.org/10.3390/rs13010145 [impact factor: 4.51; citations: 2].

18. *Sun, Y., §**W. Guo**, D.C. Weindorf, F. Sun, S. Deb, G. Cao, *J. Neupane, and *Z. Lin, and *A. Raihan. 2021. Field-scale calcium spatial variability: implications for site-specific soil management. *Pedosphere, 31*(5): 705–714 [impact factor: 3.91].
19. *Lin, Z., and §**W. Guo**. 2021. Cotton Stand Counting from Unmanned Aerial System Imagery using MobileNet and CenterNet Deep Learning Models. *Remote Sensing*, 13(14): 2822. https://doi.org/10.3390/rs13142822 [impact factor: 4.51; citations: 5].
20. Wen, M., W. Zhao, **W. Guo**, X. Wang, P. Li, J. Cui, Y. Liu, and F. Ma. 2021. Coupling effects of reduced nitrogen, phosphorus and potassium on drip-irrigated cotton growth and yield formation in Northern Xinjiang. *Archives of Agronomy and Soil Science*. doi: 10.1080/03650340.2021.1881776 [impact factor: 2.85].
21. Gikunda, R. M., D. Lawver, M. Baker, A. Boren, and **W. Guo**. 2021. Extension education needs for improved adoption of sustainable organic agriculture in Central Kenya. American Journal of Geographic Information System, 10(2): 61-71.
22. *Neupane, J., §**W. Guo**, C.P. West, F. Zhang, and Z. Lin. 2021. Effects of irrigation rates on cotton yield as affected by soil physical properties and topography in the Southern High Plains. Plos ONE, 16(10): e0258496. doi: 10.1371/journal.pone.0258496 (impact factor: 3.24).
23. *Neupane, J., §**W. Guo,** G. Cao, F. Zhang, L. Slaughter, and S. Deb 2022. Spatial patterns of soil microbial communities and implications for precision soil management at the field scale. *Precision Agriculture.* https://doi.org/10.1007/s11119-021-09872-1 (impact factor: 5.39).
24. Rabia, A. H., *J. Neupane, *Z. Lin, K. Lewis, G. Cao, and §**W. Guo.** 2022. Principles and applications of topography in precision agriculture. *Advances in Agronomy*, Volume 171 (in press; impact factor: 5.89).

Proceedings:

Refereed (Invited): 0

Refereed (Volunteered): 1

1. Nguyen, L., Zhu, J., *Lin, Z., Du, H., Yang, Z., **Guo, W**., Jin, F. 2019. Spatial-temporal multi-task learning for within-field cotton yield prediction. In Proceedings of the 23rd Pacific-Asia Conference on Knowledge Discovery and Data Mining. 14-17 April 2019 Macau, China. Springer International Publishing.

Non-refereed (Volunteered) 10 before hire

1. **Guo, W**., Todd, R., Robinson, C., Stewart, B. A. 2002. Feedyard wind-blown dust effects on native rangeland soil chemical properties. Great Plains Foundation Symposium Meeting. Amarillo, TX.
2. Todd, R., **Guo, W**., Stewart, B. A., Robinson, C. 2003. Long-term changes in shortgrass

prairie adjacent to a beef cattle feedyard. Society for Range Management 56th Annual Meeting. American Society of Range Management; Society for Range Management. Casper, WY.

3. Todd, R., **Guo, W.**, Stewart, B. A., Robinson, C. 2003. Vegetation and soil changes in shortgrass prairie near a beef cattle feedyard. American Water Resources Association 2003 Spring Specialty Conference Proceedings. American Water Resources Association. Kansas City, MO.
4. Maas, S., Lascano, R., Cooke, D., Richardson, C., Upchurch, D., Wanjura, D., Krieg, D., Mengel, S., Ko, J., Payne, W., Rush, C., Brightbill, J., **Guo, W.**, Bronson, K., Rajapakse, S. (2004). Within-season estimation of evapotranspiration and soil moisture in the High Plains using YieldTracker. Proceedings of High Plains Groundwater Resources Conference. Lubbock, TX.
5. Maas, S. J., Rajapakse, S., **Guo, W.**, Ko, J., Lascano, R., Booker, J. 2005. Relationship between RADARSAT imagery and cotton field characteristics. Proceedings of Beltwide cotton conferences. New Orleans, LA.
6. **Guo, W.**, Maas, S., Lascano, R., Brightbill, J. 2005. Mapping spatial and temporal variability of cotton yield in west Texas. Proceedings of Beltwide Cotton Conferences. New Orleans, LA.
7. **Guo, W.**, Bronson, K., Maas, S., Rajapakse, S., Brightbill, J. 2005. Electrical Conductivity, Elevation, Landsat Imagery, and Yield Maps to Delineate Management Zones in Irrigated Cotton. Proceedings of Beltwide Cotton Conferences. New Orleans, LA.
8. Maas, S., Torrion, J., Rajapakse, S., **Guo, W.** 2005. Using satellite imagery to radiometrically calibrate digital airborne multispectral imagery. 20th Biennial Workshop on Aerial Photography, Videography, and High Resolution Digital Imagery for Resource Assessment. Weslaco, TX.
9. Maas, S., **Guo, W.**, Brightbill, J., Hooton, J. 2005. Using aerial imagery in variable-rate cotton growth regulator application. 20th Biennial Workshop on Aerial Photography, Videography, and High Resolution Digital Imagery for Resource Assessment. Weslaco, TX.
10. **Guo, W.**, S. Maas, G. Moudy, J. Brightbill. 2008. Application of yield monitor, EC mapping, remote sensing, and topographic properties in precision agriculture. Proceedings of the 9th International Conference on Precision Agriculture. Denver, CO.

Abstracts: total of 32 after hire (Published abstracts were also presented at scientific meetings)

Volunteered Abstracts (32):

1. *Neupane, J., **Guo, W.**, *Raihan, A., *Lin, Z., Bennett, J. E., West, C. 2017. Cotton growth variability in relation to topography and soil physical properties in the High Plains. ASA-

CSSA-CSA. Oct 22-25, 2017, Tampa, FL.

2. *Raihan, A., **Guo, W.** 2017. Multi-Sensor Data Fusion to Estimate Soil Moisture and Evapotranspiration for Irrigation Scheduling. ASA-CSSA-CSA. Oct 22-25, 2017, Tampa, FL.
3. **Guo, W.**, Acosta-Martinez, V., Cano, A., *Neupane, J., *Raihan, A., *Lin, Z. 2017. Relationship between microbial community composition, soil physicochemical properties and cotton yields at a field scale. ASA-CSSA-CSA. Oct 22-25, 2017, Tampa, FL.
4. *Raihan, A., **Guo, W.**, Deb, S., Zhu, Z., *Neupane, J., *Lin, Z., *Sun, Y., West, C. 2018. Application of Unmanned Aerial Systems for Estimating Soil Water Content in the Southern High Plains. International Aridlands Conference, Texas Tech University, August 13-14, 2018, Lubbock, TX.
5. *Sun, Y., **Guo, W.**, Weindorf, D., Sun, F., Deb, S., *Lin, Z., *Neupane, J., *Raihan, A., West, C. 2018. Identifying Soil Properties Using Proximal Sensors in the Southern High Plains. International Aridlands Conference, Texas Tech University, August 13-14, 2018, Lubbock, TX.
6. *Neupane, J., **Guo, W.**, Zhang, F., Deb, S., *Lin, Z., *Raihan, A., *Sun, Y., West, C. 2018. Irrigation Rates, Soil Physical Properties and Topography Effects on Cotton Yield in the Southern High Plains. International Aridlands Conference, Texas Tech University, August 13-14, 2018, Lubbock, TX.
7. *Neupane, J., **Guo, W.**, *Raihan, A., *Lin, Z., West, C. 2018. Cotton yield variability in relation to topography and soil physical properties in the Texas High Plains. ASA-CSSA-CSA. November 4-7, 2018, Baltimore, MD.
8. *Sun, Y., **Guo, W.**, Weindorf, D., Sun, F., Deb, S., *Lin, Z., *Neupane, J., *Raihan, A., West, C. 2018. Assessing within-field spatial variability of Ca using proximal and remote sensing. ASA-CSSA-CSA. November 4-7, 2018, Baltimore, MD.
9. *Sun, Y., **Guo, W**., Yang, X., Kovalskyy, V., Lin, Z., Neupane, J. 2019. *Assessing cotton water stress in Southern High Plains Using Unmanned Aerial Systems*. ASA-CSSA-SSSA.
10. *Neupane, J., **Guo, W.**, Acosta-Martinez, V., Lin, Z., Cano, A. 2019. *Assessing spatial pattern of soil microbial community at landscape scale for precision soil management*. ASA-CSSA-SSSA.
11. *Lin, Z., Guo, W., West, C., Jin, F., Sun, Y. 2019. *Unmanned Aerial Systems and Crop Modeling for Irrigation Scheduling in the Southern High Plains*. ASA-CSSA-SSSA.
12. Guo, W. 2019. *Precision soil and crop management using sensor data*. Lubbock: After Design: Monitoring + Managing the Texas Landscape.
13. Rabia, A., Guo, W., Gu, H. 2020. *Crop water use estimation using uav thermal images to improve irrigation water management*. Madison, WI: ASA-SSSA-CSSA.
14. Gu, H., Guo, W., Lin, Z. 2020. *Retrieving surface soil water content using unmanned aerial system multispectral and thermal images*. Madison, WI: ASA-SSSA-CSSA.

15. Neupane, J., Wang, C., Guo, W. 2020. *Spatial and temporal variability of cotton yield and profit as affected by topography and soil properties at the field-Scale*. Madison, WI: ASA-SSSA-CSSA.
16. Singh, A., Deb, S. Singh, S., Guo, W. 2020. A multi-model approach for analyzing soil water dynamics and root water uptake patterns of cotton grown under semiarid conditions. ASA, CSSA, and SSSA International Annual Meetings. Virtual.
17. Lin, Z., Guo, W., Rabia, A. 2021. *Cotton stand count with UAS imagery using image processing tools and deep learning algorithm*. Beltwide Cotton Conference. Virtual.
18. Torres, U., Dotray, P., Russell, K. R., Guo, W., and Maeda, M. M. 2021. UAS Multispectral Image Based Detection of 2,4-D Injury in Cotton. Beltwide Cotton Conference, National Cotton Council. Virtual.
19. Torres, U., Dotray, P., Russell, K. R., Guo, W., Maeda, M. M. 2021. Detecting 2,4-D Injury Using an Unmanned Aerial System. Southern Weed Science Society. Virtual.
20. Buckingham, B., Lin, Z., and Guo, W. 2021. Comparing Two Unmanned Aerial Systems in Determining Elevation at the Field Scale. International Conference on Agricultural Drone Technology, Data-Driven Farm and Crop Monitoring. San Francisco, September 27-28, 2021.
21. Neupane, J., and W. Guo. 2021. Spatio-Temporal Variability of Vegetation Indices in Relation to Soil Properties, Topography, and Cotton Yield. Salt Lake City, UT: ASA-SSSA-CSSA. Nov 7-10, 2021.
22. Singh, A., S.K. Deb, L. C. Slaughter, W. Guo, and S. Singh. 2021. Numerical Simulation of Root Zone Soil Water Dynamics in Subsurface Drip Irrigation Under Cotton-Weed Interactions. Salt Lake City, UT: ASA-SSSA-CSSA. Nov 7-10, 2021.
23. Singh, A., S.K. Deb, L. C. Slaughter, W. Guo, and S. Singh. 2021. Modeling of soil water dynamics in cotton production systems using multi-model approach. Salt Lake City, UT: ASA-SSSA-CSSA. Nov 7-10, 2021.
24. Karn, R., W. Guo, K.L. Lewis, S. Deb, G. Ritchie, C. Wang. 2022. Optimizing Nitrogen Management in Dryland Cotton using Precision Agriculture Technologies in the Southern High Plains. Beltwide Cotton Conference. San Antonio, TX. Jan 4-6, 2022.
25. Gu, H., and W. Guo. 2022. Integration of Unmanned Aerial Systems Images and DSSAT Modeling in Predicting Cotton Growth and Yield. Beltwide Cotton Conference. San Antonio, TX. Jan 4-6, 2022.
26. Lin, Z., and W. Guo. 2022. Cotton Open Boll Counting Using UAS Imagery and Deep Learning. Beltwide Cotton Conference. San Antonio, TX. Jan 4-6, 2022.
27. Adedeji, O., Z. Lin, and W. Guo. 2022. Effects of Spatial and Temporal Scales on Assessing Cotton Water Stress Using Unmanned Aerial System Images. Beltwide Cotton Conference. San Antonio, TX. Jan 4-6, 2022.
28. *Neupane, J., Guo, W., Wang, C. 2022. *Assessing profitability of variable rate irrigation management at landscape scale in the Southern High Plains*. Minneapolis, MN:

International Society for Precision Agriculture. Accepted.

29. *Gu, H., Guo, W. 2022. *Monitoring surface soil water content using thermal and multispectral images from Landsat 8 and unmanned aerial systems*. Minneapolis, MN: International Society for Precision Agriculture. Accepted.
30. Rabia, A., Guo, W. 2022. *Within-Season Monitoring of Crop Evapotranspiration Using Google Earth Engine and METRIC Model*. Minneapolis, MN: International Society for Precision Agriculture. Accepted.
31. Rabia, A., Guo, W. 2022. *Crop Water Use Estimation using UAV and Thermal camera images to improve Irrigation Water Management*. Minneapolis, MN: International Society for Precision Agriculture. Accepted.
32. Guo, W., and Shelia, V. 2022. *Prediction of within-field cotton yield variability using DSSAT in the Southern High Plains*. Minneapolis, MN: International Society for Precision Agriculture. Accepted.

Invited Abstracts (2):

1. **Guo, W.** Assessing the value of variable rate irrigation on cotton production under limited well capacities. 2017. International Conference on Intelligent Agriculture (ICIA). Changchun, Jilin, China. August 13, 2017.
2. **Guo, W.**, *Neupane, J., *Raihan, A., *Sun, Y., *Lin, Z. 2018. Sensor-based Water Management in Precision Agriculture – a Case Study. ASA-CSSA-SSSA. November 4 - 7, 2018, Baltimore, MD.

Technical Reports: total of 0

Other Publications or Media: total of 6

1. Magazine, The Agriculturist. 2018. Where the Grass Grows Greener. Features J. Young and W. Guo working on a research project to conserve water using unmanned aerial systems. Available online at: https://ttuagriculturist.com/2018/04/25/where-the-grass-grows-greener/
2. TV, Fox34. 2018. Drones, new technology could be the future for West Texas farming, by Jonah Tuls.
3. TV, KLBK News. 2018. Texas Tech on the cutting edge for agriculture research, by Emily Harrison. Available online at: https://www.everythinglubbock.com/news/klbk-news/texas-tech-on-the-cutting-edge-for-agriculture-research.
4. Internet, CASNR NewsCenter. 2018. Smart drones take flight for precision agriculture use in plant and soil science. Available online at: https://www.depts.ttu.edu/agriculturalsciences/news/posts/2018/11/picador-pss-guo-smart-drones-in-precision-agriculture.php.
5. Internet, PrecisionAg.com. 2018. 25 Best Colleges for Precision Agriculture - Available online at: https://www.precisionag.com/market-watch/25-best-colleges-for-precision-

agriculture/

6. Internet, CASNR NewsCenter. 2017. Ag Drones; CASNR research helps cutting edge technology take flight. Available online at: https://www.depts.ttu.edu/agriculturalsciences/news/posts/2017/11/agriculture-drones-casnr-pss-research-2017.php

PRESENTATIONS AND LECTURES: total of 28 (8 listed below plus all 20 listed in volunteered and invited abstracts above, which were presented at scientific meetings). Those listed below are invited seminar presentations.

1. October 15, 2017. UAV remote sensing in agriculture, opportunities and challenges. USDA-ARS, Mississippi State, MS.
2. January 3, 2018. Variable rate irrigation under limited well capacities in the Southern High Plains. Beltwide Cotton Conferences, National Cotton Council. San Antonio, TX.
3. July 4, 2018. Data-driven Precision Agriculture: Opportunities and Challenges. Huazhong Agricultural University. Wuhang, China.
4. July 30, 2018. Water Management using Precision Agriculture Technologies. Texas Tech University. First Workshop on Water Resource Management in Smart and Connected Communities. Lubbock, TX.
5. April 6, 2019. Art Exhibitions interdisciplinary research space between the fields of art and agriculture. Guest Speaker, Lubbock, Texas, US.
6. July 28, 2020. Hesketh, P., Guo, W., and French, R. Onsite fertilizer production and the future of agriculture. Precision agriculture, sensors and data analytics. Texas Tech University, Texas Tech University.
7. April 7, 2020. Guo, W. Opportunities and challenges of data science and computer technology in precision agriculture. Texas Tech University, Department of Computer Science, Lubbock, Texas.
8. August 5, 2021. Precision water management. Cotton School. Texas Tech University, Department of Computer Science, Lubbock, Texas.

GRADUATE STUDENT COMMITTEES:

Completed: 6

Chaired: total of 6

M.S.: 5

1. Jasmine Neupane. Completed in December 2018. Title of thesis: Cotton Yield Variability in Relation to Irrigation Rates, Soil Physical Properties and Topography.
2. Abir Raihan. Completed in December 2018. Title of thesis: Surface Soil Moisture Estimation Using Unmanned Aerial System and Satellite Images.

3. Yazhou Sun. Completed in 2019. Title of thesis: Assessment of Cotton Water Stress with Unmanned Aerial Systems Remote Sensing.
4. Zhe Lin. Completed in 2018. Title of thesis: Unmanned Aerial Systems and Crop Modeling for Irrigation Scheduling in the Southern High Plains.
5. Spencer Cox. Completed in May 2021. Non-thesis.

Ph.D.: 1

1. Jasmine Neupane. Completed in August 2021. Title of Dissertation: Assessing Spatial and Temporal Variability in Cotton Yield, Soil Properties, and Profitability for Precision Agriculture in the Southern High Plains.

Co-Chaired: total of 0

Committee member of: total of 6:

1. Raphael Gikunda. Completed: December 2019. Agricultural Education and Communications.
2. Corey Thompson. Completed: December 2019. Plant and Soil Science.
3. Yi Chen. Completed: May 2020. Agricultural and Applied Economics
4. Mark Mayo. Completed December 2020. Plant and Soil Sciences.
5. Ubaldo Torres. Completed August 2021. Plant and Soil Sciences.
6. Cole VonOhlen. Completed May 2020. Plant and Soil Sciences.

In progress: 8

Chaired: total of 5

M.S.: 0

Ph.D.: 5

1. Haibin Gu. Anticipated completion date December 2022. cotton phenotyping using UAS imaging.
2. Zhe Lin. Anticipated completion date December 2022. Plant phenotyping using UAS imaging and irrigation scheduling using remote sensing.
3. Rupak Karn. Anticipated completion date December 2025. Precision nitrogen management.
4. Oluwatola Adedeji. Anticipated completion date December 2024. Precision nitrogen management.
5. Bishnu Ghimire. Anticipated completion date December 2024. Precision nitrogen management.

Committee member of: total of 4

M.S.: 0

Ph.D.: 4

1. Kaniz Farzana. Anticipated completion: December 2021. Plant and Soil Science.
2. Atinderpal Singh. Anticipated completion: December 2021. Plant and Soil Science.
3. Juan Cantu. Anticipated completion: December 2021. Plant and Soil Science.
4. Gilbert Odilla, Anticipated completion: August 2024. Agricultural Education and Communications.

Non-Thesis M.S. Students in Progress (0):

UNDERGRADUATE ADVISING: 2

1. Brock Buckingham. Department of Mechanical Engineering
2. Kathleen Warren. Department of Agricultural Education and Communications.

TEACHING RESPONSIBILITIES:

1. PSS 6301: Quantitative Agricultural Remote Sensing (3 credits; 100% responsibility)
2. PSS 6301-D: Quantitative Agricultural Remote Sensing (3 credits; 100% responsibility)
3. PSS 5323: Environmental Crop Physiology (3 credits; 50% responsibility)
4. PSS 5323-D: Environmental Crop Physiology (3 credits; 50% responsibility)
5. PSS 5323-X: Environmental Crop Physiology (3 credits; 50% responsibility)
6. PSS 5329: Precision Agriculture (3 credits; 100% responsibility)
7. PSS 5329-D: Precision Agriculture (3 credits; 100% responsibility)
8. PSS 6302: Plant Growth Modeling (3 credits; 100% responsibility)
9. PSS 4340: Irrigation Management Seminar (3 credits; 7% responsibility)

Other Teaching Responsibilities:

2017

1. PSS 7000, Research. Total 4 students

2018

1. PSS 6000, Master's Thesis. Total 4 students.
2. PSS 7000, Research. Total 9 students

2019

1. PSS 6000, Master's Thesis. Total 5 students.

2. PSS 7000, Research. Total 9 students
3. PSS4001. Problems in Plant and Soil Science. Total 1 student

2020

1. PSS 4001, Problems: UAV Research and Education in Agriculture. Total 1 student.
2. PSS 7000, Research. Total 8 students
3. PSS 8000. Doctor's Dissertation. Total 1 student

2021

1. PSS 4001, Problems. Total 1 student.
2. PSS 7000, Research. Total 8 students
3. PSS 8000, Doctor's Dissertation. Total 2 students.

GRANTS AND AWARDS:

Funded at Texas Tech University and Texas A&M AgriLife Research, Total: **$3,272,879** (My portion of total amount is **$1,163,516**).

1. PI, Wenxuan Guo. 2016. Water Use, Irrigation Scheduling, and Climatic Effects – Task 5 Water Management Research and Development. Texas Alliance for Water Conservation – Texas Water Development Board. $156,000 (*Transferred to me after hire;* my portion: **$156,000**).
2. PI, Wenxuan Guo. 2017. On-farm precision water management for sustainable agriculture in the Southern High Plains of Texas. Cotton Incorporated. **$20,000** (my portion: **$20,000**).
3. CO-PI, West, C., M. Burow, R. Williams, W. Xu, J. Young, D. Lacombe, J. Pavlik, M. Farmer, W. Guo, S. Deb, D. McCallister. 2017. OAP - Precipitation and Irrigation Management to Optimize Profits from Crop Production. USDA-ARS Ogallala Aquifer Program. $399,352 (my portion: $**11,980**).
4. CO-PI, Joseph Young, Glen Ritchie, Sanjit Deb, Wenxuan Guo. 2017. Enhancing Water Conservation through Remote Sensing Technology on Golf Courses. USGA- Green Research Section. $95,618 (my portion: **$9,562**).
5. PI, Wenxuan Guo. 2018. On-farm precision water management for sustainable agriculture in the Southern High Plains of Texas. Cotton Incorporated, $20,000 (my portion: **$20,000**).
6. PI, Wenxuan Guo and Zhe Zhu. 2018. Quantifying Cotton Water Stress using Unmanned Aerials Systems and Satellite Remote Sensing. Monsanto Company. $130,000 (my portion: **$104,000**).
7. CO-PI, Glen Ritchie, Wenxuan Guo. 2019. Minimizing effects of field variability in plot research through imagery. Cotton Incorporated. $15,000 (my portion: **$6,000**).

8. PI, Wenxuan Guo, Kermit Price, Cory Mills, and Lorenzo Aleman-Sarinana. 2019. Cotton stress assessment using multispectral and thermal sensors on unmanned aerial systems. Project Revolution, $133,156 (my portion: **$133,156**).
9. PI, Wenxuan Guo. 2019. On-farm precision water management for sustainable agriculture in the Southern High Plains of Texas. Cotton Incorporated, $20,000 (my portion: **$20,000**).
10. PI, Wenxuan Guo. 2019. Crop water stress and disease monitoring using remote sensing and smartphone photographs. Monsanto Company. $119,550 (my portion: **$119,550**).
11. PI, Wenxuan Guo, Sanjit Deb, Katie Lewis, Glen Ritchie, and Chenggang Wang. 2019. Optimizing Nitrogen Management in Dryland Cotton using Precision Agriculture Technologies in the Southern High Plains. Cotton Incorporated, $30,000 (my portion: **$18,000**).
12. Co-PI, Jane Dever, Terry Wheeler, Tom Isakeit, Libo Shan, Ping He, David Stelly, Cecilia Monclova-Santana, Murilo Maeda, Joel Arce, Orlando Flores, and Wenxuan Guo. 2019. Fov4 in Texas Cotton Strategic Research Initiative. Texas A&M AgriLife Research. Total $900,000 (my portion: **$64,000**).
13. CO-PI, West, C., Slaughter, L., Hudson, M., Williams, R., Burow, M., Mitchell, D., Singh, S., Guo, W., Deb, S. K. 2019. OAP - Precipitation and Irrigation Management to Optimize Profits from Crop Production. USDA Agricultural Research Service. Total $257,468 (my portion: **$28,321**).
14. PI, Guo W., and C. Mills. 2020. High-throughput cotton maturity phenotyping using unmanned aerial systems, Project Revolution, $169,864 (my portion: **$169,864**).
15. CO-PI, West, C., Slaughter, L., Hudson, M., Williams, R., Burow, M., Mitchell, D., Singh, S., Guo, W., Deb, S. K. 2020. Precipitation and Irrigation Management to Optimize Profits from Crop Production- OAP 2nd Phase with TTU. USDA Agricultural Research Service. Total $153,648 (my portion: **$4,609**).
16. PI, Guo, W., S. Deb, K. Lewis, G. Ritchie, and C. Wang. 2020. Optimizing Nitrogen Management in Dryland Cotton using Precision Agriculture Technologies in the Southern High Plains. Cotton Incorporated. $30,000 (my portion: **$18,000**).
17. PI, Guo, W. 2020. On-farm precision water management for sustainable agriculture in the Southern High Plains of Texas, Cotton Incorporated, $20,000 **(**my portion: **$20,000**).
18. Co-PI, Guo, W. 2020. Integrating Phenotyping with Cotton Growth and Development Functions, Texas State Support Committee (TSSC), $15,000 (my portion: **$15,000**).
19. PI Guo. 2020. Integrating unmanned aerial system and satellite and remote sensing technologies in high-throughput plant phenotyping and precision agriculture. Texas Tech University I-Corps Program, **$3,000**.
20. PI, Guo, W. 2021. On-farm precision water management for sustainable agriculture in the Southern High Plains of Texas, Cotton Incorporated, $20,000 (my portion: **$20,000)**.
21. Co-PI, Laza, H., R. Saini, and W. Guo. 2021. Assessing Crop Ecophysiology for

Sustainable Agricultural Production in the Southern High Plains. USDA-ARS. $137,500 (my portion: **$45,375**).

22. Co-PI, Helwi, P., W. Guo. 2021. Improving Fruit Quality and Profitability by Increasing Vineyard Uniformity with Remote Sensing Coupled with Precision Viticulture. Texas Department of Agriculture. $59,000 (my portion: **$54,164**).
23. PI, Guo, W., S. Deb, K. Lewis, G. Ritchie, and C. Wang. 2021. Optimizing Nitrogen Management in Dryland Cotton using Precision Agriculture Technologies in the Southern High Plains. Cotton Incorporated. $25,000 (my portion: **$15,000**).
24. Co-PI, Guo, W. 2021. Integrating Phenotyping with Cotton Growth and Development Functions, Texas State Support Committee (TSSC), $15,000 (my portion: **$15,000**).
25. Christy Bratcher, Wenxuan Guo, Donna McCallister, Sukhbir Singh, Monica Hightower, Rupinder Saini, Ryan Williams, Sanjit Deb, and Chenggang Wang. 2021. OAP-Precipitation and Irrigation Management to Optimize Profits from Crop Production - OAP 3rd Phase with TTU. $262,723 (my portion: **$70,935**).
26. PI. Guo, W. 2021. Comparing Two Unmanned Aerial Systems in Determining Elevation at the Field Scale. College of Agricultural Sciences and Natural Resources, Texas Tech University. $2000.

Pending Grants

1. PI, Guo, W., G. Ritchie, C. Wang, and M. Maeda. 2021. Integrating a resilient cropping system and precision conservation for sustainable agriculture in a semi-arid region. USDA-NIFA. $300,000.
2. PI, Guo, W., N. Rajan, and Craig Bednarz. 2021. Capacity Building for AI-driven Research and Education on UAS Applications in Precision Agriculture. USDA-NIFA. $750,000.

Not Funded

1. Wenxuan Guo, Zhangxi Lin, Guofeng Cao, Yonggang Wang, Fangyuan Zhang, Fang Jin, Fethi Inan, and Ravi Vadapalli. 2016. A decision support system for optimized farm management using big data analytics in the Texas High Plains. Texas Tech University Seed Grant. $150,000.
2. Rosalyn A. Shim, Lindsey Slaughter, Wenxuan Guo. 2017. The CH Foundation Student Research Symposium. The CH Foundation. $7,600.
3. Wenxuan Guo. 2017. A decision support system for optimized crop management in the Texas High Plains, Texas State Support Committee. $28,000.
4. Wenxuan Guo, James Mahan, Glen Ritchie, Paxton Payton, and Donna Mitchell. 2017. Assessing the value of variable rate irrigation on cotton production under limited well capacities. $150,335.
5. Edward Hellman, Thayne Montague, J.D. Booker, Sanjit Deb, Wenxuan Guo, Sukhbir

Singh, Lindsey Slaughter, Ryan B. Williams, and Donna Mitchell McCallister. 2017. Improving irrigation scheduling of vineyards on the Texas High Plains for enhanced water use efficiency of a high value crop. $187,478.

6. Wenxuan Guo, James Mahan, Glen Ritchie, Paxton Payton, and Donna Mitchell. 2018. Assessing the value of variable rate irrigation on cotton production under limited well capacities. $120,471.
7. Wenxuan Guo. 2018. OIA Borlaug Fellowship: Use of remote sensing and/or geographic information system in production estimates. USDA - Foreign Agriculture Service OCBD. $50,000.
8. Wenxuan Guo, Charles West, Sanjit Deb. 2018. Irrigation Scheduling using Unmanned Aerial System Remote Sensing and Weather Data. Texas Water Development Board. $150,000.
9. Wenxuan Guo, David Weindorf, Lindsey Slaughter, Guofeng Cao, Yong Chen, Cade Coldren. 2018. EAGER SitS: Building a soil health monitoring and assessment system integrating sensor networks. National Science Foundation. $300,000.
10. Yu Zhuang, Wenxuan Guo. 2018. SCC: A Cyber-Physical System for Crop Stress Monitoring Using Unmanned Aerial Systems. National Science Foundation. $1,456,463.
11. Wenwei Xu, Wenxuan Guo. 2018. Drought-tolerant and Fumonisin-resistant corn hybrids for ensuring efficient use of irrigation water in the Texas High Plains. USDA-ARS Ogallala Aquifer Program. $82,736.
12. Weindorf, D., Guo, W., Singh, S., Dang, T., Zhang, H., Huerrera Estrella, L. 2018. A Proximal Sensor Tracking Approach to the Food Energy Water Nexus. National Science Foundation. $396,058.
13. David Montague, Edward Hellman, Wenxuan Guo, Ryan Williams. 2018. OAP: Improving High Plains Vineyard Irrigation Scheduling for Enhanced Water Use Efficiency. USDA-ARS. $135,410.
14. David Montague, Edward Hellman, Wenxuan Guo, Matthias Thecle Bougreau, Kirk Williams, Peter Dotray. 2019. Enhancing technology to assist West Texas grape growers detect auxin based herbicide injury. Texas Department of Agriculture. $121,796.
15. Guo, W., and E. Irlbeck. 2020. Building a Digital Agriculture Education Program to Strengthen Workforce. USDA-NIFA. $500,000.
16. Guo, W. 2020. CAREER: Spatiotemporal dynamics of water use and carbon cycle in a transitioning semiarid agroecosystem. NSF. $1,436,482.
17. Guo, W., and F. Jin. 2020. FACT-AI: Crop Growth Monitoring using Remote Sensing and Artificial Intelligence at Field and Regional Scales. USDA-NIFA. $971,740.
18. Guo, W., S. Deb, M. Siebecker, L. Slaughter, G. Cao, Y. Chen, and J. Salazar-Bravo. 2020. SitS: A sensor network and big data system for monitoring an agroecosystem transitioning from irrigated to dryland farming. NSF. $1,199,999.

19. Guo, C. Wang, and K. Kee. 2020. On-Farm Trial of Precision Irrigation Technologies for Sustainable Agriculture in A Semiarid Region. USDA-NRCS, $1,412,443.
20. Sheng, V., C. Li, and W. Guo. 2020. FW-HTF-RM: A Human-Machine Hybrid Learning System for UAV-based Agricultural Remote Sensing. NSF. $1,152,904.
21. Beksi, W., and Guo, W. 2020. Spatial and Temporal Crop Monitoring for High-Throughput Field Phenotyping. USDA-NIFA. $199,294.
22. Guo, W. 2021. Developing a decision support system based on sensor networks for crop management in Nigeria. Bill and Melinda Gates Foundation. $250,000.
23. CO-PI. Guo, W. 2021. NRI: Automating Infield High-Throughput Plant Phenotyping via Commercial-Off-The-Shelf Robots. NSF. $385,855.
24. PI. Guo, W., and P. Dotray. 2021. Integrating Unmanned Aerial Systems and Smartphone Images for Weed Monitoring and Precision Management in Cotton at the Field Scale. Cotton Incorporated. $43,077.
25. Guo, W., and E. Irlbeck. 2021. Building a Digital Agriculture Education Program to Strengthen Workforce. USDA-NIFA. $500,000.
26. PI, Guo, C. Wang, and K. Kee. 2021. On-Farm Trial of Precision Irrigation Technologies for Sustainable Agriculture in A Semiarid Region. USDA-NRCS, $1,382,573.

SERVICE TO PROFESSIONAL ORGANIZATIONS

National:

1. Early Career Grant Writing Programs at ASA conference, Volunteer, 2018.
2. Vice Leader, ASA US-Sino Research Community, 2018.
3. Presiding leader, ASA US-Sino Research Community 2019.
4. Vice-Leader for the ASA Sensor-Based Water Management Community, 2020.
5. Presiding Leader for the ASA Sensor-Based Water Management Community, 2021.
6. Guest editor. Remote Sensing Basel, Switzerland, September 2019 – 2020.
7. Grant Proposal Review. The United States - Israel Binational Agricultural Research & Development Fund (BARD), 2021.
8. Reviewer for 7 proposals to Vegetable Strategic Initiative, Texas A&M University.

OTHER PROFESSIONAL SERVICE:

Reviewed manuscripts for scientific journals:

1. Agronomy (MDPI): 2
2. Remote Sensing (MDPI), 4
3. Agronomy Journal (ASA): 1
4. Geoderma (Elsevier): 1

5. European Journal of Agronomy (Elsevier): 1
6. Field Crops Research (Elsevier): 2
7. Precision Agriculture (Springer): 1
8. Water (MDPI): 1
9. Artificial Intelligence in Agriculture (Elsevier): 1
10. Frontiers in Plant Science (Frontiers): 1

SERVICE TO:

UNIVERSITY:

1. 2018- present. Climate Science Center.

COLLEGE (college of Agricultural Sciences and Natural Resources - CASNR):

1. 2016-present. Member of TAWC management team.

DEPARTMENT (Plant and Soil Sciences, PSS):

1. 2016-present. Member of Curriculum Committee.
2. 2016-present. Member of Awards Committee.

COMMUNITY:

1. Presented precision water management technologies at Workshop of Water Resource Management in Smart and Connected Communities. July 30, 2018. Smarter Management of the Ogallala Aquifer for Efficient Irrigation.
2. Worked with local producers Brightbill Farms on precision water management. 2017-present.
3. Worked with local producer Brosch Farms on precision nitrogen management. 2018-present.
4. Art Exhibitions Interdisciplinary research space between the fields of art and agriculture., Guest Speaker, Lubbock, Texas. April 2019.
5. Agricultural Technology Adoption Engagement. Conducted surveys on local producers, crop consultants, and relevant professionals to understand challenges and opportunities of technologies, especially unmanned aerial systems and precision agriculture (September 1, 2020 - September 2020).