

## CURRICULUM VITAE

### **Bhupinder Singh, Ph.D.**

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### **JOB EXPERIENCE**

<b>Title</b>	<b>Institution</b>	<b>Field of Research</b>	<b>Supervisor</b>	<b>Year</b>
Assistant Professor & Extension Specialist	University of Arizona	Agronomy (Conventional Cropping Systems)	Betsy Arnold	August 2024 - Present
Postdoctoral Research Associate	Texas A&M AgriLife Research	Agronomy	Srinivasulu Ale	April 2022- August 2024
Postdoctoral Associate	Mississippi State University	Agronomy	Gurbir Singh	Oct 2021-April 2022
Postdoctoral Fellow	University of Missouri	Agronomy	Felix Fritschi	Jan 2020-Sept 2021

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### **BACKGROUND**

I am deeply interested in studying the three primary factors of Cropping Systems (genotype, management, and environment) to enhance crop yield and quality. My goal is to develop a program that offers practical solutions to the challenges faced by farmers and stakeholders. I utilize outreach programs such as Cooperative Extension, Twitter, Webex, Podcasts, YouTube, and newspapers to understand the needs of farmers and promptly share my research and extension findings. My focus areas include crop physiology, remote sensing, and crop modeling to understand the mechanisms that enable crop adaptation and acclimation to various stresses in the desert environment of Arizona. Additionally, I am interested in studying the long-term environmental impacts of conservation and integrated farming practices under projected future climatic conditions.

### **EDUCATION**

**Ph.D. Agronomy** (June 2016 - May 2020)

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Mississippi State University, MS, USA

Advisor: Dr. Daryl Chastain

Co-advisor: Dr. K. Raja Reddy

GPA: 3.93/4.00

**M.S. Agronomy** (August 2014 – May 2016)

Mississippi State University, MS, USA

Advisor: Dr. K.R. Reddy

GPA: 3.86/4.00

**B.S. Soil Science, Agronomy and Agroforestry** (July 2008 - June 2014)

Punjab Agricultural University, Ludhiana, India

Advisor: Dr. Inderpal Singh Sandhu

GPA: 8.49/10.00

## **PUBLICATION, REVIEWER, AND PRESENTATION METRICS**

- Total Published = 20
- Total Presentations = 43
- Total Peer-reviewed = 66
- Peer-review Editor = 2

### ***Google Scholar:***

- 333 citations
- h-index: 7
- <https://scholar.google.com/citations?user=m-fo610AAAAJ&hl=en>

### ***ResearchGate:***

- Total Reads = 5138
- h-index = 7
- [https://www.researchgate.net/profile/Bhupinder\\_Singh32](https://www.researchgate.net/profile/Bhupinder_Singh32)

**ORCID:** <https://orcid.org/0000-0001-5523-2288>

## **RESEARCH EXPERIENCE**

- **April 2022-Present** Postdoctoral Research Associate  
Agrohydrology Lab of Dr. Srinivasulu Ale  
Texas A&M AgriLife Research Center- Vernon

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**Research Goal:** To effectively use crop/ecosystem models to study various "what if" scenarios and develop and evaluate efficient pasture/crop and irrigation management strategies to enhance resource use efficiency and optimize production while protecting the environment.

### **Projects:**

1. Assessment of the impacts of regenerative agricultural practices such as cover crops, conservation tillage, crop rotation, and pasture cropping on water balances, soil health, ecosystem services, and climate change mitigation potential at various spatial scales using crop/ecosystem models.
2. Use of Unpiloted Aerial Systems (UASs), Big Data, and Artificial Intelligence programs, along with hydrologic/crop/ecosystem models, to suggest best management practices for increasing water use efficiency and protecting soil and environment.
3. Determine the potential effects of climate change on cotton yield, irrigation water requirement, growing season length, and harvest dates at five sites across the Cotton Belt.

### **Responsibilities:**

1. Work in multi-disciplinary teams and assist in crop/Ecosystem modeling, download and processing of future climate data, field crop experimental design, procurement of necessary field/laboratory equipment/supplies, conduct of experiments, and collection and analysis of research data including UAS images.
2. Assist in other ongoing research projects in the Agrohydrology program as needed.
3. Prepare manuscripts for publication based on crop modeling and field research.
4. Assist in writing grant proposals through literature reviews and collecting, analyzing, and interpreting preliminary data.
5. Train technicians and graduate students in modeling, planning and conducting research experiments and data analysis techniques.
6. Participate in field days, conferences, and stakeholder meetings to present research findings to consumers, growers, researchers, and policymakers as directed.
7. Install, maintain, and operate laboratory and field equipment as needed.

- **Oct. 2021- April 2022** Postdoctoral Associate  
National Center for Alluvial Aquifer Research  
Mississippi State University

**Research Goal:** To evaluate and develop water-efficient cropping systems for US midsouth row crops- corn, soybean, and cotton.

### **Projects:**

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1. Assessing cover crop benefits in continuous corn production system.
2. Assessing planting geometry and irrigation patterns effects on soybean yield and water use efficiency.

### ***Responsibilities:***

1. Design, establish, execute, and interpret field-scale experiments associated with irrigation, soil health, and row crop production.
2. Collaborate and coordinate closely with existing project personnel at MSU.
3. Coordinate field activities with on-farm cooperators and conduct including but not limited to; sampling soil, plant, and water samples, making in-field soil measurements to capture changes in soil properties.
4. Coordinate field operations associated with planting, fertilizing, irrigating, cultivating, and harvesting research plots and fields.
5. Keep detailed records of field operations and data.
6. Write research reports and scientific manuscripts and make oral presentations.
7. Supervise technical support staff, graduate students, and/or student workers, as assigned.
8. Prepare and write supplementary proposals to funding agencies.

- **Jan 2020- Sept. 2021**    Postdoctoral Fellow  
                                 Crop Physiology Lab of Dr. Felix Fritschi  
                                 University of Missouri- Columbia

***Research Goal:*** Dissect physiological mechanisms that contribute to plant adaptation to drought and may be leveraged to improve drought tolerance.

### ***Projects:***

1. Dynamic response of photosynthesis to fluctuating light conditions in the field to assess genotypic differences in water use efficiency in soybean.
2. Characterizing biparental soybean population for water use efficiency using morpho-physiological traits at reproductive stages.
3. Characterizing biparental soybean populations for atmospheric N<sub>2</sub> fixation (%NDF) using photosynthetic and growth traits at reproductive stages.
4. Soybean variety trial test for eleven distinct water-use efficient genotypes across different geographic locations.
5. Developing low and high-throughput phenotyping models to assess soybean response to varying row spacing and rooting depth.
6. Developing low and high-throughput phenotyping models to assess corn yields and biomass to variable rates of soil phosphorus.

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7. Assessing differences in nitrogen fixation using  $^{15}\text{N}$  natural abundance among diverse parental lines of common beans.
8. Characterizing root system architectures of upland and lowland switchgrass ecotypes under a wide range of soil moisture stress at different growth stages.

### ***Responsibilities:***

1. Collaborate and coordinate closely with existing project personnel at MU and investigators at other institutions.
2. Conduct soybean, corn, and switchgrass phenotyping experiments.
3. Lead the day-to-day soybean and switchgrass eco-physiological experiments associated with the dissection of adaptation mechanisms to different environments.
4. Keep accurate and detailed records, assemble and analyze multi-site and manipulated field experiment data, and summarize data for progress reports.
5. Write manuscripts for publication in peer-reviewed journals.
6. Develop and pursue ideas building and extending ongoing research efforts.

- **2016-2019** Graduate research assistant  
Delta Research and Extension Center  
Mississippi State University

### ***Projects:***

#### ***Dissertation projects***

1. Physiological and agronomic characterization of cotton genotypes susceptible and resistant to *Rotylenchulus reniformis* in the US Midsouth.
2. Morphological and physiological responses of resistant and susceptible cotton cultivars to reniform nematode and soil nitrogen.
3. Responses of resistant and susceptible cotton cultivars to reniform nematode and soil phosphorus based on plant morphology and physiology.
4. Growth and physiological responses of resistant and susceptible cotton cultivars to reniform nematode and soil potassium.

#### ***Non-dissertation projects***

1. Rapid  $\text{A}_\text{N}\text{-C}_\text{i}$  response (RACiR) of two *Gossypium* species under drought.
2. Sensitivity and recovery of grain sorghum to simulated drift rates of glyphosate, glufosinate, and paraquat.
3. Assessing stomatal and non-stomatal limitations to carbon assimilation under progressive drought in peanut (*Arachis hypogaea* L.).
4. Projected day/night temperatures specifically limit rubisco activity and electron transport in diverse rice cultivars.

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5. Weed management programs in grain sorghum (*Sorghum bicolor*).
6. Effects of flooding duration and timing on growth and development of soybean cultivars.
7. Introduction of feed grains into the soybean production systems in the Mid-south United States.
8. Effects of row spacing and irrigation practices impact on soybean production, water use, and water use efficiency.
9. Assessing morpho-physiological vigor differences in wide germplasm of soybean planted in hills.
10. Growth and physiological responses of resistant and susceptible cotton cultivars to reniform nematode and soil moisture.

**Responsibilities:** Research investigation, conceptualization, and methodology, managing resources, software and formal analysis, data curation, writing-review & editing manuscripts and extension reports, writing grants proposals, supervising student workers and technicians, mentoring undergraduate and graduate students, collaborations with researchers, assisting other graduate students, oral and poster presentations at regional, annual and international meetings.

- **2014-2016** Graduate research assistant  
Environmental Plant Physiology Lab  
Mississippi State University.

### **Projects:**

#### **Thesis projects**

1. Developing a screening tool for osmotic stress tolerance classification of rice cultivars based on in vitro seed germination.
2. Screening of rice cultivars for morpho-physiological responses to early-season soil moisture stress.

#### **Non-Thesis projects**

1. Evaluating soybean cultivars for low- and high-temperature tolerance during the seedling growth stage.
2. Assessing morphological characteristics of elite cotton lines from different breeding programs for low temperature and drought tolerance.
3. Parental environmental effects on seed quality and germination responses to temperature of big bluestem (*Andropogon gerardii*).
4. Temperature effects on soybean seedling shoot and root growth and developmental dynamics.

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**Responsibilities:** Investigating research problems, conceptualization and methodology of research experiments, managing resources, software and formal analysis, data curation, writing-review & editing manuscripts and extension reports, supervising student workers and technicians, mentoring undergraduate students, collaborations with researchers, assisting other graduate students, oral and poster presentations at regional, annual and international meetings.

### **EXTENSION EXPERIENCE**

1. On-farm evaluation of Pasture Cropping practices in the Southern Great Plains to regain land cover, soil health, and resilience of grasslands that were degraded by conventional livestock grazing over the years.
2. Pathways to possibilities event: Exhibition of agronomy tools and implements for the middle and high school students in the convention center, Greenville, MS. March 20, 2019.
3. Soil and water testing at farmers' fields under the Rural Agricultural Work Experience (RAWE) program, Punjab Agricultural University, Ludhiana, Punjab, India. April 1-30, 2014.
4. Preparation of soil health and irrigation water quality reports of farmer's fields and their distribution to individual growers. Punjab Agricultural University, Ludhiana, Punjab, India.
5. Exhibition of new agricultural innovation in the county offices under learning scheme, Punjab Agricultural University, Ludhiana, Punjab, India. April 1-30, 2014.

### **TEACHING EXPERIENCE**

1. Certified instructor for teaching online classes by The Center for Teaching and Learning Department, Mississippi State University, MS.
2. Invited Speaker for Crop Physiology Class, Starkville Academy, Starkville, MS. August 20, 2019.
3. Invited Speaker for Grain Crop Class, University of Missouri, Columbia, MO. June 15, 2021.
4. Speaker for Bradford Carrer Exploration Day, University of Missouri, Columbia, MO. September 15, 2021.

### **PUBLICATIONS**

#### • **Peer-reviewed Journal Articles**

1. Samanta, S., Ale, S., Himanshu, S. K., **Singh, B.**, & Kothari, K. (2024). Identification of Priority-based Variable Deficit Irrigation Strategies for Grain Sorghum Production in the

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- Texas High Plains under Increasing Climate Variability. *Journal of Agricultural Engineering (India)*, 61(3). <https://doi.org/10.52151/jae2024613.1850>
2. Chastain, D.R., **B. Singh**, J.L. Snider. 2024. Drought Response Modeling of Leaf Photosynthetic Parameters in Two *Gossypium* Species. 2024. *Journal of Agronomy and Crop Science* 210: e12709.
  3. Jumaa, S.H., I.K. Al-mafraji, A.H Mohammed, F.A Alsajri, S.K Sah . . . . ., **B. Singh**, S.H Jumaa. 2024. J.L. Studying the cumulative vigor response index of morphophysiological, quality, and yield-related traits of wheat cultivars using planting dates. TJAS. <https://tjas.org/index.php/tjas/article/view/657>
  4. **Singh, B.**, D.R. Chastain, J.L. Snider, L.J. Krutz, S.R. Stetina, G. Kaur, S.K. Bazzar. 2023. Reniform nematode impact on cotton growth and management strategies: a review. *Agronomy Journal*. <https://doi.org/10.1002/agj2.21368>
  5. **Singh, B.**, G. Singh, G. Kaur, J.S. Dhillon. 2023. Single and multispecies cover crop effects on corn production and economic returns. *Journal of Contemporary Water Research and Education*.
  6. **Singh, B.**, G. Singh, G. Kaur, N.E. Quintana-Ashwell. 2023. Row spacing and irrigation management affect soybean yield, water use efficiency and economics. *Agricultural Water Management*. <https://doi.org/10.1016/j.agwat.2022.108087>
  7. **Singh, B.**, D.R. Chastain, J.L. Snider, L.J. Krutz, S.R. Stetina. Early-season growth responses of resistant and susceptible cotton genotypes to reniform nematode and soil potassium. *Agronomy*. 12: 2895-2910. <https://www.mdpi.com/2073-4395/12/11/2895>
  8. **Singh, B.**, D.R. Chastain, K.R. Reddy, J.L. Snider, L.J. Krutz, S.R. Stetina, A. Sehgal. 2021. Agronomic characterization of cotton genotypes susceptible and resistant to *Rotylenchulus reniformis* in the US Midsouth. *Agronomy Journal*. <https://doi.org/10.1002/agj2.20755>.
  9. **Singh, B.**, D.R. Chastain, K.R. Reddy, J.L. Snider, L.J. Krutz, S.R. Stetina, A. Sehgal. 2020. Early season morphological and physiological responses of resistant and susceptible cotton genotypes to reniform nematode and soil nitrogen. *Agronomy*. 10: 1974-1995. <https://doi.org/10.3390/agronomy10121974>
  10. Alsajri, F.A., C. Wijewardana, R. Rosselot, **B. Singh**, L.J. Krutz, W. Gao, K.R. Reddy. 2020. temperature effects on soybean seedling shoot and root growth and developmental dynamics. *Journal of the Mississippi Academy of Sciences*. 65: 247-258. [https://msacad.org/wp-content/uploads/2013/04/July-2020\\_Vol65\\_No-32.pdf](https://msacad.org/wp-content/uploads/2013/04/July-2020_Vol65_No-32.pdf)
  11. **Singh, B.**, D.R. Chastain, C. Wijewardana, and K. R. Reddy S.K. Singh, S.M. Vijaya, G. Kakani, W. Gao. 2019. Parental environmental effects on seed quality and germination responses to temperature of *Andropogon gerardii*. *Agronomy* 9: 304-320. <https://doi.org/10.3390/agronomy9060304>
  12. **Singh, B.**, D.R. Chastain, S. Jumaa, C. Wijewardana, E.D. Redona, and K. R. Reddy. 2019. Projected day/night temperatures specifically limit rubisco activity and electron

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- transport in diverse rice cultivars. *Environmental and Experimental Botany* 159: 191-199. <https://doi.org/10.1016/j.envexpbot.2018.12.018>
13. Hale R.R., T. Bararpour, G. Kaur, J.W. Seale, **B. Singh**, T. Wilkerson. 2019. Sensitivity and recovery of grain sorghum to simulated drift rates of glyphosate, glufosinate, and paraquat. *Agriculture* 9: 70-84; <https://doi.org/10.3390/agriculture9040070>
  14. Bararpour, M.T., G. Kaur, **B. Singh**, L.R. Oliver, C.E. Brewer, N.V. Goldschmidt, and J.L. Alford. 2019. Weed management programs in grain sorghum (*Sorghum bicolor*). *Agriculture* 9: 182-194; <https://doi.org/10.3390/agriculture9080182>
  15. Pilon, C., J.L. Snider, V. Sobolev, D.R. Chastain, R.B. Sorensen, C.D. Meeks, R.S. Arieas de Ares, A.N. Massa, T. Walk, and **B. Singh**. 2018. Assessing stomatal and non-stomatal limitations to carbon assimilation under progressive drought in peanut (*Arachis hypogaea* L.). *Journal of Plant Physiology* 231: 124-134.
  16. Alsajri, F.A., **B. Singh**, C. Wijewardana, J.T. Irby, W. Geo, and K.R. Reddy. 2019. Evaluating soybean cultivars for low- and high-temperature tolerance during the seedling growth stage. *Agronomy* 9: 13-26. <https://doi.org/10.3390/agronomy9010013>
  17. **Singh, B.**, E. Norvell, C. Wijewardana, T. Wallace, D. Chastain, and K.R. Reddy. 2018. Assessing morphological characteristics of elite cotton lines from different breeding programs for low temperature and drought tolerance. *Journal of Agronomy and Crop Science* 4: 467-476. <https://doi.org/10.1111/jac.12276>
  18. **Singh, B.**, K.R. Reddy, E.D. Redoña, and T. Walker. 2017. Developing a screening tool for osmotic stress tolerance classification of rice cultivars based on in vitro seed germination. *Crop Science* 57: 387-394. <https://doi.org/10.2135/cropsci2016.03.0196>
  19. **Singh, B.**, K.R. Reddy, E.D. Redoña, and T. Walker. 2017. Screening of rice cultivars for morpho-physiological responses to early-season soil moisture stress. *Rice Science* 24: 322-335. <https://doi.org/10.1016/j.rsci.2017.10.001>
  20. Ale, S., S.K. Himanshu, S. Samanta, **B. Singh**. 2023. Enhancing crop water productivity through crop-growth-stage-based variable deficit irrigation strategies. *ICID Journal (In review)*
  21. **Singh, B.**, S. Samanta, S. Ale. 2023. Mapping vegetation species in a mixed rangeland managed under adaptive multi-paddock grazing using UAV acquired RGB images. *GIScience & Remote Sensing (In preparation)*.
  22. **Singh, B.**, S. Samanta., S. Ale, and E. Barnes. 2023. Simulated effects of projected climate change on cotton phenology and growing season length in the Cotton Belt Region. *Climate Risk Management (In preparation)*.
  23. Singh, H., **B. Singh**, S. Ale, P.D. Laune, R. Mohtar. 2023. Impact of termination date of winter wheat on cotton production in the Texas Rolling Plains. *Field Crops Research (In preparation)*.
  24. Sushil, H., **B. Singh**, S. Ale, J. Bell, R. Mvuyekure, S. Samanta, K. Kothari, Y. Fan, J. Bordovsky, D. Gitz III, R. Lascano, D. Brauer. Evaluating crop-growth-stage-based

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variable deficit irrigation strategies for grain sorghum production in the Texas High Plains (*In preparation*).

25. **Singh, B.**, A., Sanz-Saez, M.J. Maw, S.E. Beebe, I.M. Rao, and F.B. Fritschi. 2020. Assessing differences in nitrogen fixation using <sup>15</sup>N natural abundance among diverse lines of common bean. *Crop Science (In preparation)*.
26. Muhammad, A., A. Sanz-Saez, **B. Singh**, S.K. Bazzzer, F.C. Torralbo, and F.B. Fritschi. 2021. Identification of quantitative trait loci associated with leaf gas exchange parameters in soybean. *Journal of Experimental Botany (In preparation)*.
27. Suhas, K., S.K. Bazzzer, **B. Singh**, A. Rajurkar, and F.B. Fritschi. 2021. Mapping of root complexity and architecture qtl in a field-grown soybean bi-parental population. *Plos One (In preparation)*.

### • Book Chapters

1. **Singh, B.**, D. Chastain, J.L. Snider, G. Kaur, and K.R. Reddy. Low temperature and moisture stress effects on cotton seed germination. In: D.R. Chastain, J. Snider, K.R. Reddy, and G. Kaur, Cotton seed and seedlings, The Cotton Foundation, Cordova, TN. P. 53. <https://www.cotton.org/foundation/cseedcontents.cfm>
2. **Singh, B.**, D. Chastain, J.L. Snider, G. Kaur, and K.R. Reddy. Cotton seedling growth and development responses to temperature and drought stress. 2020. In: D. Chastain, J. Snider, K.R. Reddy, and G. Kaur, Cotton seed and seedlings, The Cotton Foundation, Cordova, TN. P. 53. <https://www.cotton.org/foundation/cseedcontents.cfm>
3. Singh, B., K. Kothari, S. Ale. Seasonal and projected climate change effects on crop evapotranspiration. 2023. In: Evapotranspiration: Spatio-Temporal Applications at Different Scales in Agro-ecosystems and Forestry and Advances and Future Needs in Research and Education. Elsevier (*In preparation*).

### • Selected Article in News Magazine

1. **Singh, B.**, K.R. Reddy, E.D. Redoña, and T. Walker. 2017. Screening tool for rice seed germination, drought tolerance traits, CSA News Magazine. 62:9-9. <https://doi.org/10.2134/csa2017.62.0308>

### • Extension Articles /Reports

1. **Singh, B.**, G. Singh, G. Kaur, N.E. Quintana-Ashwell. 2022. Can winter cover crops benefit growth and yield in an irrigated continuous corn? National Center for Alluvial Aquifer Research annual report 2022. Leland, MS. Delta Research and Extension Center. (<https://www.ncaar.msstate.edu/research/research-detail.php?id=41>)
2. Hayden B., G. Singh, **B. Singh**, D. Russell, T. Freeland. 2022. Every row and skip row irrigation impacts on soybean production in the Mississippi Delta. (<https://www.ncaar.msstate.edu/research/research-detail.php?id=20>)
3. **Singh, B.**, T. Walker, K.R. Reddy. Developing a screening tool for osmotic stress tolerance classification based on in vitro seed germination of rice cultivars. Page 10 in

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Mississippi Rice Promotion Board Research Highlights 2015. Stoneville, MS: Delta Research and Extension Center.

<https://drec.msstate.edu/sites/default/files/2015MRPBloprf6%28singles%29.pdf>

4. **Singh, B.**, E.D. Redoña, T. Walker, and K.R. Reddy. Effect of early-season soil moisture stress on growth and development of different rice cultivars. Page 9 in Mississippi Rice Promotion Board Research Highlights 2015. Stoneville, MS: Delta Research and Extension Center.  
<https://drec.msstate.edu/sites/default/files/2015MRPBloprf6%28singles%29.pdf>
5. **Singh, B.**, D.R. Chastain, J.L. Snider, L.J. Krutz, S.R. Stetina, and K.R. Reddy. Reniform nematode resistant cotton lines have higher early-season vigor and field yield. Page 12 in Delta Research and Extension Center annual report 2017. Stoneville, MS: Delta Research and Extension Center.

- **Thesis / Dissertation**

1. **Singh, B.** 2016. Rice cultivars responses to moisture stress during seed germination and early seedling growth. M.S. thesis, Mississippi State University, Starkville, MS.
2. **Singh, B.** 2019. Agronomic and physiological responses of resistant and susceptible cotton genotypes to reniform nematode severity and soil fertility. Ph.D. dissertation, Mississippi State University, Starkville, MS.

- **Published Abstracts**

1. **Singh, B.**, S. Samanta., S. Ale, and E. Barnes. 2023. Evaluating Climate Change Adaptation Strategies for Cotton Production in the Texas High Plains. Beltwide Cotton annual meeting, Fort Worth, TX, USA. February 3-5, 2024.
2. **Singh, B.**, S. Samanta., S. Ale, and E. Barnes. 2023. Projected Climate Change Impacts on Cotton Production in the Texas High Plains. American Society of Agronomy annual meeting, St. Louis, MO, USA. November 1, 2023.
3. **Singh, B.**, S. Samanta., S. Ale, and H. Singh. 2023. Characterizing Rangeland Composition Managed Under Adaptive Multi-Paddock Grazing. American Society of Agronomy annual meeting, St. Louis, MO, USA. November 1, 2023.
4. Muhammad, A., F. Torralbo, S. Bazzar, **B. Singh**, A. Sanz-Saez, and F.B. Fritschi. 2023. Genetic Mapping to Identify Loci Associated with Leaf Gas Exchange Traits and Water Use Efficiency in Soybean. American Society of Agronomy annual meeting, St. Louis, MO, USA. November 1, 2023.
5. **Singh, B.**, S. Samanta., S. Ale, and E. Barnes. 2023. Simulated effects of projected climate change on cotton phenology and growing season length in the Texas High Plains. The American Society of Agricultural and Biological Engineers (ASABE) annual meeting, Omaha, NE. July 17-20, 2023.
6. **Singh, B.**, S. Samanta., S. Ale, and H. Singh. 2023. Mapping vegetation species in a mixed rangeland managed under adaptive multi-paddock grazing using UAV-acquired

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- RGB images. The American Society of Agricultural and Biological Engineers (ASABE) annual meeting, Omaha, NE. July 17-20, 2023.
7. Singh, H., **B. Singh**, S. Ale, P.D. Laune, R. Mohtar. 2023. Simulated impacts of winter wheat termination date on cotton production systems in the Texas Rolling Plains. The American Society of Agricultural and Biological Engineers (ASABE) annual meeting, Omaha, NE. July 17-20, 2023.
  8. Sushil, H., S. Ale, J. Bell, R. Mvuyekure, S. Samanta, **B. Singh**, K. Kothari, Y. Fan, J. Bordovsky, D. Gitz III, R. Lascano, D. Brauer. 2023. Simulated efficient growth-stage-based variable deficit irrigation strategies for cotton and grain sorghum production. Ogallala Aquifer Program Workshop, Canyon, TX. April 4-5, 2023.
  9. Ale, S., Singh, J., **Singh, B.**, Bawa, A., Stotz, M., Dowhower, S., DeLaune, P., Steffens, T., Wang, T., Gomez-Casanovas, N., & Teague, W.R. 2022. Improving soil ecosystem health and resilience through cover crops and pasture cropping. A Community on Ecosystem Services (ACES) Conference. Washington, D.C., December 12-15, 2022.
  10. **Singh, B.**, A. Bawa, S. Dowhower, J. Singh, P. DeLaune, R. Teague. 2022. Pasture Cropping - An initiative to improve soil cover, health, and resilience in the Texas plains. 2022. American Society of Agronomy annual meeting, Baltimore, MD, USA. November 6-9, 2022.
  11. Kaur, G., G. Singh, J.S. Dhillon, **B. Singh**. 2022. Cover crop overseeding impact on corn production and economics in Mississippi. American Society of Agronomy annual meeting, Baltimore, MD, USA. November 6-9, 2022.
  12. Kaur, G., G. Singh, J.S. Dhillon, **B. Singh**, K.A. Nelson. 2022. Irrigation and row spacing affects soybean yield and water use efficiency. American Society of Agronomy annual meeting, Baltimore, MD, USA. November 6-9, 2022.
  13. Ale, S, A. Bawa, S. Dowhower, J. Singh, **B. Singh**, P. DeLaune, and R. Teague. 2022. Baseline soil and vegetation measurements for investigating the soil health and ecosystem service benefits of pasture cropping. 2022. The American Society of Agricultural and Biological Engineer (ASABE) annual meeting, Houston, TX, USA, July 17-20.
  14. **Singh, B.**, G. Singh, G. Kaur, N.E. Quintana-Ashwell. 2022. Environment regulates cover crop benefits on following corn growth and yield. Mississippi Academy of Sciences (MAS) annual meeting, Biloxi, MS, USA. March 30-31, 2022.
  15. **Singh, B.**, G. Singh, and D. Chastain. 2022. Soil potassium do not alleviate reniform nematode damage on early cotton growth. Mississippi Academy of Sciences (MAS) annual meeting, Biloxi, MS, USA. March 30-31, 2022.
  16. **Singh, B.**, G. Singh, G. Kaur, N.E. Quintana-Ashwell. 2022. Assessing the interaction of row and irrigation patterns for maximizing water productivity in soybean. American Society of Agronomy Southern Branch annual meeting, New Orleans, LA, USA. February 12-14, 2022.

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17. **Singh, B.**, D. Chastain, G. Singh. 2022. Morpho-physiological responses of cotton cultivars to reniform nematode and soil phosphorus. American Society of Agronomy Southern Branch annual meeting, New Orleans, LA, USA. February 12-14, 2022.
18. **Singh, B.**, and F.B. Fritschi. 2021. Static and kinetic responses of photosynthetic mechanisms in soybean lines differing for carbon isotope ratio. Crop Science Society of America (CSSA) annual meeting. November 7-10, 2021.
19. Pokharel, M., V. Sagan, **B. Singh**, M. maimaitijiang, N. Meier, F.B. Fritschi. 2021. Quantifying the impact of row spacing and rooting depth limitation on agronomic and seed quality traits in soybean. Crop Science Society of America (CSSA) annual meeting. November 7-10, 2021.
20. Kadam, S., **B. Singh**, H. Almtarfi, S. Bazzar, A. Rajurkar, A.P. Dhanapal, and F.B. Fritsch. 2021. Mapping of root complexity and architecture qtl in a field-grown soybean bi-parental population. Crop Science Society of America (CSSA) annual meeting. November 7-10, 2021.
21. **Singh, B.**, G. Kaur, G. Singh. 2021. Multi-species cover crops and irrigation interaction effects on nutrient dynamics in soybean production system. Crop Science Society of America (CSSA) annual meeting. November 7-10, 2021.
22. Muhammad, A., F. Torralbo, S. Bazzar, **B. Singh**, A. Sanz-Saez, and F.B. Fritschi. 2021. Quantitative trait loci mapping identifies additive, epistatic and environment interaction qtl linked to photosynthesis and intrinsic water use efficiency related traits in soybean (*Glycine max* L. Merr). Crop Science Society of America (CSSA) annual meeting. November 7-10, 2021.
23. **Singh, B.**, A. Sanz-Saez, M.J. Maw, S.E. Beebe, I.M. Rao, and F.B. Fritschi. 2020. Genotypic differences in symbiotic nitrogen fixation among diverse lines of common bean. Crop Science Society of America (CSSA) annual meeting, Virtual meeting. November 9-13, 2020.
24. **Singh, B.**, D. Chastain, and J.L. Snider. Screening of rose cultivars for heat and drought tolerance using physiological and reproductive parameters. Crop Science Society of America (CSSA) annual meeting, San Antonio, TX, USA. November 10-13, 2019.
25. **Singh, B.**, D. Chastain, J.L. Snider, L.J. Krutz, S.R. Stetina, and K.R. Reddy. Influence of nitrogen on reproduction and pathogenicity of *Rotylenchulus reniformis* in cotton. Crop Science Society of America (CSSA) annual meeting, San Antonio, TX, USA. November 10-13, 2019.
26. **Singh, B.**, D. Chastain, and J.L. Snider. Photosynthetic responses to drought in cotton using rapid  $A_N-C_i$  response (RACiR) function. Mississippi Academy of Sciences (MAS) summer symposium. Mississippi State University, MS. July 11, 2019.
27. **Singh, B.**, D. Chastain, J.L. Snider. 2019. Stomatal effects on leaf metabolism in two cotton species with alternative stress response strategies. American Society of Agronomy Southern Branch annual meeting, Birmingham, AL, USA. February 3-5.

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28. **Singh, B.**, D. Chastain, J.L. Snider, L.J. Krutz, S.R. Stetina, and K.R. Reddy. 2019. Characterizing resistance to reniform nematode in accessions of *Gossypium barbadense* based on classical growth analysis. American Society of Agronomy Southern Branch annual meeting, Birmingham, AL, USA. February 3-5, 2019.
29. **Singh, B.**, D. Chastain, J.L. Snider, L.J. Krutz, S.R. Stetina, and K.R. Reddy. 2019. Assessing reniform nematode-resistant cotton lines using classical growth analysis. Cotton Beltwide conference annual meeting, New Orleans, LA, USA. January 8-10, 2019.
30. **Singh, B.**, D. Chastain, and J. Snider. Rapid  $A_N-C_i$  response (RACiR) of two *Gossypium* species under drought. Cotton Beltwide conference annual meeting, New Orleans, LA, USA. January 8-10, 2019.
31. **Singh, B.**, D. Chastain, and K.R. Reddy. 2019. Assessing heat and drought tolerance among rose cultivars using physiological and reproductive parameters. Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS, USA. February 22-24, 2019.
32. **Singh, B.**, D. Chastain, and K.R. Reddy. 2019. Effects of projected day/night temperatures on carbon assimilation and photosystem of two rice cultivars. Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS, USA. February 22-24, 2019.
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34. **Singh, B.**, D. Chastain, J.L. Snider, L.J. Krutz, S.R. Stetina, and K.R. Reddy. 2018. Characterization of *Rotylenchulus reniformis* resistant cotton lines based on growth, development, and yield responses in the nematode-infested fields. Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS, USA. February 22-24, 2018.
35. **Singh, B.**, D. Chastain, J.L. Snider, L.J. Krutz, S.R. Stetina, and K.R. Reddy. 2018. *Rotylenchulus reniformis* resistant cotton lines exhibit higher early-season vigor and fiber yield when compared to susceptible varieties. Beltwide Cotton Conference, San Antonio, Texas. January 3-5, 2018.
36. **Singh, B.**, D.R. Chastain, S. Jumaa, C. Wijewardana, E.D. Redona, and K.R. Reddy. 2018. Evaluation of two rice cultivars based on sub- and supra-optimal day/night temperature responses of carbon assimilation and photosystem. Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS, USA. February 22-24, 2018.
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38. **Singh, B.**, D.R. Chastain, S. Jumaa, C. Wijewardana, E.D. Redona, and K. R. Reddy. 2018. Carbon assimilation and photosystem responses of two rice cultivars acclimated to

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- sub- and supra-optimal day/night temperature regimes. American Society of Agronomy Southern Branch annual meeting, Jacksonville, FL, USA. February 4-6, 2018.
39. **Singh, B.**, D. Chastain, J.L. Snider, L.J. Krutz, S.R. Stetina, and K.R. Reddy. 2017. An evaluation of *Rotylenchulus reniformis* resistant cotton lines in the nematode-infested fields using classical growth analysis. American Society of Agronomy annual meeting, Tampa, FL, USA. October 21-25, 2017.
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  41. **Singh, B.**, K.R. Reddy, E.D. Redoña, and T. Walker. 2017. Assessing morpho-physiological characteristics and moisture deficit stress tolerance of rice. Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS, USA. February 22-24, 2017.
  42. **Singh, B.**, K.R. Reddy, E.D. Redoña, and T. Walker. 2016. Morpho-physiological Characterization of rice cultivars for early-season soil moisture stress response. American Society of Agronomy Annual Meeting, Phoenix, AZ. November 6-9, 2016.
  43. **Singh, B.**, K.R. Reddy, E.D. Redoña, and T. Walker. 2016. Osmotic stress tolerance classification based on in vitro seed germination of rice. Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS, USA. February 18-19, 2016.
  44. **Singh, B.**, K.R. Reddy, E.D. Redoña, and T. Walker. 2016. Effect of early-season soil moisture stress on growth and development of different rice cultivars. American Society of Agronomy Southern Branch annual meeting, San Antonio, TX. February 8-9, 2016.
  45. **Singh, B.**, K.R. Reddy, E.D. Redoña, and T. Walker. 2016. Developing a screening tool for osmotic stress tolerance classification based on in vitro seed germination of rice cultivars. American Society of Agronomy Southern Branch annual meeting, San Antonio, TX. February 8-9, 2016.

### Approved GRANTS: PI & COLLABORATOR (~\$92,000)

1. Ale. S., and **B. Singh**. Potential effects of climate change on cotton production, growing season length and harvest dates across the Cotton Belt. Cotton Incorporated. November 2022. (\$60,000).
2. Singh G., and **B. Singh**. Soybean Variety Selection Based on Leaf Shape and Venation Effects Productivity under Different Irrigation Thresholds. Mississippi Soybean Promotion Board. November 2021.
3. Singh G., G. Kaur, and **B. Singh**. Strip-tillage and fertilizer placement effects on irrigated and dryland soybean production. Mississippi Soybean Promotion Board. November 2021.
4. G. Kaur, T. Irby, N. Quintana, Singh G., D. Gholasan, A. Sehgal, and **B. Singh**. Cover Crop Aerial Seeding and Sensor Thresholds for Irrigation Scheduling in Soybean Production. November 2021.

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### **AWARDS / HONORS**

- **Academic Awards and Honors**

1. Outstanding Agricultural Postdoc Award, Association of Agricultural Scientists of Indian Origin, Baltimore, MD, USA November 7, 2022.
2. Graduate student poster competition award (1<sup>st</sup> place, \$300), Crop Science Society of America (CSSA) annual meeting, San Antonio, TX, USA. November 10-13, 2019.
3. Graduate student poster competition award (2<sup>nd</sup> place, \$75), Mississippi Academy of Sciences (MAS) summer symposium. Mississippi State University, MS. July 11, 2019.
4. Honorable mention, Mississippi Academy of Sciences (MAS) summer symposium. Mississippi State University, MS. July 11, 2019.
5. Recognized with 2019 Graduate School Hall of Fame Scholars, Graduate School Mississippi State University, MS. March 18, 2019.
6. MAFES Excellence in Research Award, College of Agriculture and Life Sciences (CALS) and the Mississippi Agriculture and Forestry Experiment Station (MAFES), Mississippi State University, MS. February 28, 2019.
7. Outstanding Manuscript Award, Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS. February 2019
8. “Honor of Excellence in Science” award, INBRE Scholars Symposium, Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS. February 2019.
9. Graduate student poster competition award (2<sup>nd</sup> place, \$75), Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS. February 22-23, 2019.
10. Graduate student oral competition award (2<sup>nd</sup> place, \$75), Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS. February 22-23, 2019.
11. Graduate student poster competition award (2<sup>nd</sup> place, \$200), Cotton Beltwide conference annual meeting, New Orleans, LA, USA. January 8-10, 2019.
12. Graduate Student Leadership Conference Award, ASA and CSSA Annual Meeting, Baltimore, MD, November 2018.
13. Outstanding Graduate Student Award for 2018, Association of Agricultural Scientists of Indian Origin. November 5, 2018.
14. Gamma Sigma Delta Scholarship Award (\$500) for 2018, Gamma Sigma Delta Society, Mississippi State University Chapter Mississippi State University, MS. April 3, 2018.
15. 2018 Gerald O. Mott Meritorious Graduate Student Award in Crop Science, Crop Science Society of America, June 2018.
16. Honorable mention, Mississippi Academy of Sciences (MAS) summer symposium. Mississippi State University, MS. July 26, 2018.
17. Graduate student poster competition award (2<sup>nd</sup> place, \$200), Crop Science Society of America (CSSA) annual meeting, Baltimore, MD, USA. November 4-7, 2018.

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18. Graduate (PhD.) oral presentation award (2<sup>nd</sup> place, \$100), Division of Agricultural and Plant Sciences, Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS. February 22, 2018.
19. “Honor of Excellence in Science” award, INBRE Scholars Symposium, Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS. February 22-24, 2017.
20. Graduate student poster competition award (2<sup>nd</sup> place, \$50), Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS, USA. February 22-24, 2017.
21. Graduate student poster competition award (1<sup>st</sup> place, \$300), Southern American Society of Agronomy annual meeting, San Antonio, TX, USA. February 8-9, 2016.
22. “Honor of Excellence in Science” award, INBRE Scholars Symposium, Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS. February 18-19, 2016.
23. Merit award certificate, Punjab Agricultural University, Ludhiana, Punjab, India.
24. University Marketing Board Scholarship (2008-2013), Punjab Agricultural University, Ludhiana, Punjab, India.
25. Gurdev Singh scholarship award (2013-2014; 14,000 Indian Rupees), Punjab Agricultural University, Ludhiana, Punjab, India.
26. Outstanding Student of the Year award, Department of Entomology, Punjab Agricultural University, Ludhiana, Punjab, India. February 2009.

### • **Co-curriculum Awards**

1. Inter-college quiz competition (2<sup>nd</sup> place), Punjab Agricultural University, Ludhiana, Punjab. June 2010.
2. Grade “A” certificate in National Cadet Corps (NCC), 2011 NCC camp. Ludhiana, Punjab.
3. Drama competition (2<sup>nd</sup> place), Health Festival at NCC camp, Ludhiana, Punjab, India. June 2010.

## **MEMBERSHIPS**

### • **Professional Societies**

1. American Society of Agronomy (2014- present).
2. Crop Science Society of America (2014- present).
3. Soil Science Society of America (2014- 2020).
4. Association of Agricultural Scientists of Indian Origin (2017-present).

### • **University Organizations**

1. Texas A&M University Postdoctoral Association, College Station, TX (2022-Present).
2. MU Postdoctoral Association, University of Missouri-Columbia, MO (2020-2021).

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3. Indian Student Association, University of Missouri-Columbia, MO (2020-2021).
4. Gamma Sigma Delta Society, Mississippi State University Chapter, Mississippi State University, MS (2016- present).
5. Graduate Student Association, Mississippi State University, MS (2014- present).
6. Indian Student Association, Mississippi State University, MS (2014-2019).
7. Punjab Agricultural Student Association (PAUSA), PAU, Ludhiana, India (2008- 2014).

### • Community Organizations

1. Leland Lions Club, Leland, MS, USA (2016-2022).
2. Annual African American History Program, 2018, Stoneville, MS.
3. National Asian American & Pacific Islander Heritage Month, 25 May 2018. Stoneville, MS.
4. Annual African American History Program, 2017, Stoneville, MS.
5. Starkville Multicultural Lions Club, Starkville, MS (2014- 2016).
6. Guru Gobind Singh Study Circle (GGSSC), Ludhiana, India (2008- 2014).
7. Volunteered for National Cadet Corps, August, PAU, India (2008-2011).

### ORAL / POSTER PRESENTATIONS

1. **Singh, B.**, S. Samanta., S. Ale, and E. Barnes. 2023. Evaluating Climate Change Adaptation Strategies for Cotton Production in the Texas High Plains. Beltwide Cotton annual meeting, Fort Worth, TX, USA. February 3-5, 2024.
2. **Singh, B.**, S. Samanta., S. Ale, and E. Barnes. 2023. Projected Climate Change Impacts on Cotton Production in the Texas High Plains. American Society of Agronomy annual meeting, St. Louis, MO, USA. November 1, 2023.
3. **Singh, B.**, S. Samanta., S. Ale, and H. Singh. 2023. Characterizing Rangeland Composition Managed Under Adaptive Multi-Paddock Grazing. American Society of Agronomy annual meeting, St. Louis, MO, USA. November 1, 2023.
4. Muhammad, A., F. Torralbo, S. Bazzar, **B. Singh**, A. Sanz-Saez, and F.B. Fritschi. 2023. Genetic Mapping to Identify Loci Associated with Leaf Gas Exchange Traits and Water Use Efficiency in Soybean. American Society of Agronomy annual meeting, St. Louis, MO, USA. November 1, 2023.
5. **Singh, B.**, S. Samanta., S. Ale, and E. Barnes. 2023. Simulated effects of projected climate change on cotton phenology and growing season length in the Texas High Plains. The American Society of Agricultural and Biological Engineers (ASABE) annual meeting, Omaha, NE. July 17-20, 2023.
6. **Singh, B.**, S. Samanta., S. Ale, and H. Singh. 2023. Mapping vegetation species in a mixed rangeland managed under adaptive multi-paddock grazing using UAV-acquired RGB images. The American Society of Agricultural and Biological Engineers (ASABE) annual meeting, Omaha, NE. July 17-20, 2023.

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7. Sushil, H., S. Ale, J. Bell, R. Mvuyekure, S. Samanta, **B. Singh**, K. Kothari, Y. Fan, J. Bordovsky, D. Gitz III, R. Lascano, D. Brauer. 2023. Simulated efficient growth-stage-based variable deficit irrigation strategies for cotton and grain sorghum production. Ogallala Aquifer Program Workshop, Canyon, TX. April 4-5, 2023.
8. Ale, S., Singh, J., **Singh, B.**, Bawa, A., Stotz, M., Dowhower, S., DeLaune, P., Steffens, T., Wang, T., Gomez-Casanovas, N., & Teague, W.R. 2022. Improving soil ecosystem health and resilience through cover crops and pasture cropping. A Community on Ecosystem Services (ACES) Conference. Washington, D.C., December 12-15, 2022.
9. **Singh, B.**, A. Bawa, S. Dowhower, J. Singh, P. DeLaune, R. Teague. 2022. Pasture Cropping - An initiative to improve soil cover, health, and resilience in the Texas plains. 2022. American Society of Agronomy annual meeting, Baltimore, MD, USA. November 6-9, 2022.
10. Kaur, G., G. Singh, J.S. Dhillon, **B. Singh**. 2022. Cover crop overseeding impact on corn production and economics in Mississippi. American Society of Agronomy annual meeting, Baltimore, MD, USA. November 6-9, 2022.
11. Kaur, G., G. Singh, J.S. Dhillon, **B. Singh**, K.A. Nelson. 2022. Irrigation and row spacing affect soybean yield and water use efficiency. American Society of Agronomy annual meeting, Baltimore, MD, USA. November 6-9, 2022.
12. Ale, S, A. Bawa, S. Dowhower, J. Singh, **B. Singh**, P. DeLaune, and R. Teague. 2022. Baseline soil and vegetation measurements for investigating the soil health and ecosystem service benefits of pasture cropping. 2022. The American Society of Agricultural and Biological Engineers (ASABE) annual meeting, Houston, TX, USA, July 17-20, 2022.
13. **Singh, B.**, G. Singh, G. Kaur, N.E. Quintana-Ashwell. 2022. Environment regulates cover crop benefits on following corn growth and yield. Mississippi Academy of Sciences (MAS) annual meeting, Biloxi, MS, USA. March 30-31, 2022.
14. **Singh, B.**, G. Singh, and D. Chastain. 2022. Soil potassium do not alleviate reniform nematode damage on early cotton growth. Mississippi Academy of Sciences (MAS) annual meeting, Biloxi, MS, USA. March 30-31, 2022.
15. **Singh, B.**, G. Singh, G. Kaur, N.E. Quintana-Ashwell. 2022. Assessing the interaction of row and irrigation patterns for maximizing water productivity in soybean. American Society of Agronomy Southern Branch annual meeting, New Orleans, LA, USA. February 12-14, 2022.
16. **Singh, B.**, D. Chastain, G. Singh. 2022. Morpho-Physiological responses of cotton cultivars to reniform nematode and soil phosphorus. American Society of Agronomy Southern Branch annual meeting, New Orleans, LA, USA. February 12-14, 2022.
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  37. **Singh, B.**, D.R. Chastain, S. Jumaa, C. Wijewardana, E.D. Redona, and K. R. Reddy. 2018. Carbon assimilation and photosystem responses of two rice cultivars acclimated to sub- and supra-optimal day/night temperature regimes. American Society of Agronomy Southern Branch annual meeting, Jacksonville, FL, USA. February 4-6, 2018.
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44. **Singh, B.**, K.R. Reddy, E.D. Redoña, and T. Walker. 2016. Developing a screening tool for osmotic stress tolerance classification based on in vitro seed germination of rice cultivars. American Society of Agronomy Southern Branch annual meeting, San Antonio, TX. February 8-9, 2016.

## SKILLS

### • **Laboratory and Field Skills**

1. **Field experience:** More than five years of experience in farm layout, experimental designing, and planting to harvesting operations and tools for conducting classical growth analysis at regular intervals in row crops, including cotton, soybean, and peanut.
2. **Greenhouse experience:** More than five years of experience in managing and conducting research in different types of greenhouses such as SPAR facilities (Sunlit chambers) and walk-in growth chambers.
3. **Crop physiology:** Skilled in using:
  - Li-COR 6400 & Li-COR 6800 portable photosynthesis system for gas exchange measurements, generating A/Ci, RACiR curves, light responses, and Sun-Shade flecks.
  - Portable fluorometer (Model OS5p+, Opti-Sciences) to determine OJIP or NPQ.
  - FluorPen photon systems to determine photosynthetic quantum efficiency.
  - VIS Spectrophotometer for pigment analysis.
  - Em-5b moisture and temperature sensors
  - Line quantum sensor to measure PAR

## CURRICULUM VITAE

- Digital temperature, and RH sensor (Watch-dogs sensor),
  - Watermark, ThetaProbe, and Teros 21 soil moisture sensors,
  - CR1000x data loggers
  - SPAD chlorophyll meter
  - Infrared thermometer gun,
  - Pressure chamber to determine leaf water Potential
  - WinRHIZO root scanner for root imaging and analysis.
  - ACCUPAR model LP-80 and LI 2200C plant canopy analyzer for LAI.
4. **Crop Modeling**
- DSSAT model.
5. **Remote Sensing:**
- Certified FAA drone pilot.
  - PIX 4D capture
  - PIX 4D Mapper
  - ArcMap 10.7.1
  - Multispectral, thermal, and RGB image processing for extracting canopy temperatures and vegetation Indices.
6. **Nematology:**
- Standard elutriation and sucrose centrifugation protocols for nematode extraction from soils.
  - nematode counting using a compound microscope.
- **Computer Skills**
    1. Microsoft Windows (all versions).
    2. Documentation and presentation programs: MS Word, PowerPoint, Excel.
    3. *Statistical analysis*: MS Excel, SAS 9.4., SAS Studio, JMP pro 12.0, ARM 2019.
    4. *Graphical software*: Sigma Plot (version 12 and 13); R software (R version 3.4.1; plantecophys package for  $A_N/C_i$  and  $A_N/PPFD$ ).
  - **Communication Skills**
    1. *Languages*: Fluent in English, Hindi, Punjabi.
    2. *Oral and poster presentations*: Regional, national, and international scientific conferences.
  - **Leadership Skills**
    1. Member, Crop Science Graduate Student Scholarship Committee, Crop Science Society of America, 2024-2025.

## CURRICULUM VITAE

2. Outreach and Satellite campuses officer, Texas A&M University Postdoctoral Association, College Station, TX (2022- Present).
3. Guest Speaker for the Postdoctoral Panel in the Preparing Future Faculty (PFF) seminar program on February 22, 2021.
4. Membership Chair in Starkville Multi-Culture Lion's Club (May 2016- Dec 2016).
5. Board member, MU Plant Science Research Symposium 2021, University of Missouri-Columbia, MO (2020-2021).
6. Social Chair, MU Postdoctoral Association, University of Missouri-Columbia, MO.
7. Membership Chair, Leland Lions Club, Leland, MS (2016- 2019).
8. Member, Student Aid Fund Committee, PAU, India (2013-2014).
9. Member, National Cadet Corps, PAU, India (2008-2011).
10. Class Representative in B.S. Agricultural Sciences, Punjab Agricultural University, Ludhiana, Punjab, India. 2008-2014.

### • **Mentoring Skills**

1. Mentored early-career professionals (graduate students or post-docs) for six months through the ASA-CSSA-SSSA Peer Review Mentoring Program, 2023.
2. Mentored Golden Opportunity Scholars, Soil Science Society of America, 2023-2025.
3. Sayantan Samanta (graduate student), Texas A&M University, TX (2022-2023).
4. Hardev Singh (graduate student), Texas A&M University, TX (2022-2023).
5. Christophen Barron (undergraduate student), Texas A&M University, TX, 2021.
6. Katelynn Carpentar (undergraduate student) Mississippi State University, MS (2018-2019).
7. Grace A. Adegoye (graduate student), Mississippi State University, MS (2018-2019).
8. Nelson Corban (graduate student), Mississippi State University, MS (2017-2019).
9. Kyle Lassiter (graduate Student), Mississippi State University, MS (2016-2019).
10. Naqeeb Ullah (graduate Student), Mississippi State University, MS (2015-2017).
11. Ethan Norvell (undergraduate student), Mississippi State University, MS (2015-2017).

### • **Supervision Skills**

1. Student workers.
2. Agriculture technician.
3. Research technician.

### • **Other Skills**

1. Production/protection technology of the agronomic crops under the Indian Council of Agriculture Research (*ICAR*) -“Learning by earning scheme.”

## CURRICULUM VITAE

2. Ability to work independently and in a team.
3. Military drill and shooting training in National Cadet Corps Camp, 2009, Ludhiana, India.

### **PROFESSIONAL SERVICE**

- **Peer-Review Editor**

1. Associate Editor, Journal of Crop Improvement (IF: 1.03).
2. Associate Editor, Agronomy Journal, Agronomy Society of America (IF: 1.6).

- **Grant Reviewer**

1. Southern On-Farm Research Grant, Sustainable Agriculture Research and Education (SARE) program. January 2023.

#### **Manuscript Reviewer = 65**

1. Environmental pollution (IF: 8.07)
2. Soil Research (IF: 1.6)
3. Journal of Plant Nutrition (IF: 1.7)
4. Crop Science, Crop Science Society of America (IF: 1.8)
5. Agronomy Journal, Agronomy Society of America (IF: 1.6)
6. Soil Science Society of America (IF: 2.3)
7. Agronomy, MDPI (IF: 2.4)
8. Applied Sciences, MDPI (IF: 1.7)
9. Canadian Journal of Plant Science, Canadian Science Publishing (IF: 0.7)
10. Crop, Forage, and Turfgrass Management, ASA, CSSA, SSSA Journals (IF: 0.3)
11. Journal of Crop Improvement (IF: 1.03)
12. Scientific Report (IF: 4.0)
13. The Crop Journal (IF: 3.4)
14. Horticulturae, MDPI
15. Environmental and Experimental Botany (IF: 5.7)
16. Plants (IF: 4.5)

- **Chair/Organizer/Judge/Moderator oral and poster competitions**

1. Chair, Global Climate Change Community, 2023 ASA-CSSA-SSSA International Annual Meeting, Oct. 29-Nov.1, St. Louis, MO.
2. Vice-Chair, Global Climate Change Community, 2022 ASA-CSSA-SSSA International Annual Meeting, November 6-9, Baltimore, MD.
3. Board Member, Golden Opportunity Scholars, Soil Science Society of America, May 18-present.
4. Organizer, Symposium--Crossdiv--Applications of Agroecosystem Models in Addressing Climate Change Issues, 2023 ASA-CSSA-SSSA International Annual Meeting.

## CURRICULUM VITAE

5. Organizer, Climate Change and Agriculture: General Poster (includes student competition), Global Climate Change Community, 2023 ASA-CSSA-SSSA International Annual Meeting.
6. Organizer, Climate Change and Agriculture: General Oral I (includes student competition), 2023 ASA-CSSA-SSSA International Annual Meeting.
7. Organizer, Climate Change and Agriculture: General Oral II, 2023 ASA-CSSA-SSSA International Annual Meeting.
8. Organizer, Global Climate Change Community Planning Session, 2023 ASA-CSSA-SSSA International Annual Meeting.
9. Moderator, Climate Change and Agriculture: General Poster (includes student competition), Global Climate Change Community, 2023 ASA-CSSA-SSSA International Annual Meeting.
10. Moderator, Climate Change and Agriculture: General Oral I (includes student competition), Global Climate Change Community, 2023 ASA-CSSA-SSSA International Annual Meeting.
11. Moderator, Climate Change and Agriculture: General Oral II, Global Climate Change Community, 2023 ASA-CSSA-SSSA International Annual Meeting.
12. Moderator, Global Climate Change Community Planning Session, 2023 ASA-CSSA-SSSA International Annual Meeting.
13. Organizer, Climate Change and Agriculture: General Poster (includes student competition), Global Climate Change Community, 2022 ASA-CSSA-SSSA International Annual Meeting, November 6-9, Baltimore, MD.
14. Organizer, Climate Change and Agriculture: General Oral (includes student competition), 2022 ASA-CSSA-SSSA International Annual Meeting, November 6-9, Baltimore, MD.
15. Moderator, Climate Change and Agriculture: General Poster (includes student competition), Global Climate Change Community, 2022 ASA-CSSA-SSSA International Annual Meeting, November 6-9, Baltimore, MD.
16. Moderator, Climate Change and Agriculture: General Poster (includes student competition), Global Climate Change Community, 2022 ASA-CSSA-SSSA International Annual Meeting, November 6-9, Baltimore, MD.
17. Moderator, Water use efficiency and resource use session. Mississippi Water resource conference, Starkville, MS, USA. April 12-14.
18. Judging, Student oral session, 2022 ASA-CSSA-SSSA International Annual Meeting, November 6-9, Baltimore, MD.
19. Judging, Student Poster Session, 2022 ASA-CSSA-SSSA International Annual Meeting, November 6-9, Baltimore, MD.
20. Judging, Student oral session, Mississippi Water resource conference, Starkville, MS, USA. April 12-14.
21. Moderator, Student oral session, agriculture and plant sciences, American Society of Mississippi Academy of Sciences (MAS) annual meeting, Biloxi, MS, USA. March 31.

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22. Moderator, Professional oral session, agriculture and plant sciences, American Society of Mississippi Academy of Sciences (MAS) annual meeting, Biloxi, MS, USA. March 31.
23. Judging Student oral session, agriculture and plant sciences, American Society of Mississippi Academy of Sciences (MAS) annual meeting, Biloxi, MS, USA. March 31.
24. Moderator, MS student oral session, American Society of Agronomy Southern Branch annual meeting, New Orleans, LA, USA. February 12-14, 2022.
25. Moderator, Professional oral session, American Society of Agronomy Southern Branch annual meeting, New Orleans, LA, USA. February 12-14, 2022.
26. Moderator, Global Climate Change General Oral (includes student competition), Crop Science Society of America (CSSA) annual meeting. November 7-10, 2021.
27. Graduate poster presentations, Crop Physiology and Metabolism division, Crop Science Society of America (CSSA) annual meeting. November 7-10, 2021.
28. Judging, Undergraduate poster presentations, Mississippi Academy of Sciences (MAS) summer student symposium, Starkville, MS. July 26, 2018.
29. Judging, Undergraduate poster presentations, Mississippi Academy of Sciences (MAS) annual meeting, Hattiesburg, MS. February 22, 2018.

### • Volunteer work

1. Assistant, poster competition at Southern Branch ASA annual meeting, New Orleans, LA, USA. February 12-14, 2022.
2. Assistant, poster competition at Southern Branch ASA annual meeting, Birmingham, AL, USA. February 3-5, 2019.
3. Assistant, poster competition at Southern Branch ASA annual meeting, Jacksonville, FL, USA. February 4-6, 2018.
4. Exhibitor, International Fiesta, 2016-2019, Mississippi State University, MS.
5. Exhibitor, Annual African American History Program, 2018, Stoneville, MS.
6. Exhibitor, National Asian American & Pacific Islander Heritage Month, 25 May 2018. Stoneville, MS.
7. Exhibitor, Annual African American History Program, 2017, Stoneville, MS.
8. Member, NGO- Guru Gobind Singh Study Circle (GGSSC), Ludhiana, India (2008-2014).
9. Assistant, Easter Day 2016 and Service DAWGS Day 2015, Mississippi State University, MS.

## **TRAINING / WORKSHOPS**

1. Certification of completion of Fundamentals of Deep Learning by NVIDIA, Santa Clara, California. August 12, 2022.
2. ARM training by Gylling Data Management, Delta Research and Extension Center, Mississippi State University, Stoneville, MS. July 18, 2019.

## CURRICULUM VITAE

3. Almaco Planter Training Course, Delta Research and Extension Center, Mississippi State University, Stoneville, MS. May 6, 2019.
4. Worker/Handler training for pesticide use and application, Delta Research and Extension Center. May 16, 2019.
5. Li-COR Photosynthesis training course, Mississippi State University, Mississippi State, MS. March 20, 2018
6. Heartsaver First Aid CPR AED training course, Delta Research and Extension Center, Mississippi State University, Stoneville, MS. April 19, 2018.
7. Li-COR Photosynthesis Training Course held at Li-COR Biosciences in Lincoln Nebraska. May 2-4, 2017.
8. MAFES UTV Operator Training Course, Mississippi State University, Starkville, MS. February 11, 2015.
9. Industrial Training for fertilizer testing and distribution under *ICAR (Indian Council of Agriculture Research)* Learning by earning scheme at Krishak Bharati Cooperative Ltd. (KRIBHCO), Chandigarh, India, March 1-30, 2014.