

SINGH, HARDEEP

Department of Agronomy, Kansas State University, Manhattan, Kansas 66506, USA | Cell: 405-762-2539 |

Email: hardeep@ksu.edu | Google Scholar: [Profile](#) | Researchgate: [Profile](#)

RESEARCH INTEREST

Soil Nutrient Management, Soil Health, Sustainable Agriculture, Nutrient Cycling, Diversified Agricultural Systems, Resource use efficiency

EDUCATION

Oklahoma State University

Ph.D. in Crop Sciences

2018-2020

Advisor: [Dr. Gopal Kakani](#)

Oklahoma State University

M.S. in Horticultural Sciences

2016-2017

Advisor: [Dr. Bruce Dunn](#)

Punjab Agricultural University

B.S. in Agricultural Sciences

2009-2015

PROFESSIONAL EXPERIENCE

Kansas State University

Postdoctoral Research Associate

Feb 2021- Present

- Managing field, greenhouse and laboratory experiments focused on testing different crop rotations for cropping system diversification in Southern Great Plains
- Developing crop simulation models for nitrogen and water management in different crop rotations using computational tools.
- Advising graduate and undergraduate students in research group

Oklahoma State University

Graduate Research Assistant (Ph.D.)

2018-2020

- Research fieldwork, data collection, sample processing, storage and organization, and statistical analyses
- Monitoring greenhouse gas emissions from different cover crop residue management practices using gas analyzer GASMET DX-4040 and vial method.
- Assist in soil sampling, pH measurements, and determination of nitrogen and carbon concentration using dry combustion analyzer (LECO)

Graduate Research Assistant (M.S.)

2016-2017

- Evaluation of different fertilizers for different vegetable and ornamental crops (geranium, fountain grass, lilies etc. and vegetables such as lettuce, basil and swiss chard).
- Evaluation of different cultivars of ornamental and vegetable crops in field and hydroponic systems.
- Evaluation of different cultivars of vegetable crops in various hydroponic systems.
- Development of different low cost hydroponic production systems.

REFERRED JOURNAL PUBLICATIONS (* indicates corresponding author)

1. **Singh, H.***, Dunn, B.L., Payton, M. and Brandenberger, L.
"Fertilizer and cultivar selection of lettuce, basil, and Swiss chard for hydroponic production"
 HortTechnology, 29(1), 50-56. 2019
2. **Singh, H.***, Dunn, B.L., Payton, M. and Brandenberger, L.
"Selection of fertilizer and cultivar of sweet pepper and eggplant for hydroponic production".
 Agronomy, 9(8), 433. 2019
3. **Singh, H.***, Dunn, B. and Payton, M.
"Hydroponic pH modifiers affect plant growth and nutrient content in leafy greens"
 Journal of Horticultural Research, 27(1), 31-36. 2019
4. **Singh, H.***, Kandel, T.P., Gowda, P.H., Somenahally, A., Northup, B.K. and Kakani, V.G.
"Influence of contrasting soil moisture conditions on carbon dioxide and nitrous oxide emissions from terminated green manures". Agrosystems, Geosciences & Environment: DOI:[10.1002/agg2.20017](https://doi.org/10.1002/agg2.20017) 2019
5. **Singh, H.***, Northup, B.K., Baath, G.S., Gowda, P.P. and Kakani, V.G.
"Greenhouse mitigation strategies for agronomic and grazing lands of the US Southern Great Plains" Mitigation and Adaptation Strategies for Global Change: DOI: <https://doi.org/10.1007/s11027-019-099024> 2019
6. Baath G.S., V.G. Kakani, P.H. Gowda, A.C. Rocateli, B.K. Northup, **H. Singh**, J.K. Reddy.
"Guar responses to temperature: estimation of cardinal temperatures and photosynthetic parameters". Industrial Crops and Products: DOI: doi.org/10.1016/j.indcrop.2019.111940 2019
7. Baath H.K., G.S. Baath, P.H. Gowda, A.C. Rocateli, B.K. Northup, **H. Singh**, J. Thomas, S. Rao.
"Predicting Forage Quality of Warm-Season Legumes by Near Infrared Spectroscopy Coupled with Machine Learning Techniques". Sensors: doi.org/10.3390/s20030867 2020
8. Dunn, B.L., **Singh, H.**, Payton, M. and Kincheloe, S.
"Effects of nitrogen, phosphorus, and potassium on SPAD-502 and atLEAF sensor readings of Salvia." Journal of plant nutrition, 41(13), pp.1674-1683 2018
9. Dunn, B.L., **Singh, H.** and Goad, C.
"Relationship between chlorophyll meter readings and nitrogen in poinsettia leaves."
 Journal of plant nutrition, 41(12), pp.1566-1575. 2018
10. Swearingin, L., Dunn, B.L., **Singh, H.** and Goad, C.
"Evaluation of a mobile phone plant nitrogen recommendation application in the greenhouse". Journal of plant nutrition, 41(20), pp.2615-2625. 2018
11. **Singh, H.***, T.P. Kandel, B.K. Northup, G.S. Baath, P.H. Gowda, V.G. Kakani.
"Emissions of CO₂ and N₂O influenced by maturity level of the green manures at time of incorporation." Journal of Plant Nutrition and Soil Science [10.1002/jpln.202000239](https://doi.org/10.1002/jpln.202000239) 2020
12. **Singh, H.**, Poudel M., Dunn, B.L., Fontainer C., Kakani V.G.
"Carbon Dioxide Supplementation with Precision Irrigation and Fertilization Management on Two Ornamental Plants" Hortscience <https://doi.org/10.21273/HORTSCI15327-20> 2020
13. **Singh, H.**, Poudel M., Dunn, B.L., Fontainer C., Kakani V.G.
"Effect of greenhouse CO₂ supplementation on growth and nutritional quality of leafy

- greens grown in nutrient film technique” Agronomy*
10(3) <https://doi.org/10.3390/agronomy10030323> 2020
14. Baath G.S., V.G. Kakani, P.H. Gowda, A.C. Rocateli, B.K. Northup, **H. Singh**, J.K. Reddy.
“Forage Capabilities of Tepary Bean and Guar to Fill Summer Deficit Periods in the Southern Great Plains” Agronomy Journal <https://doi.org/10.1002/agj2.20220> 2020
15. Baath G.S., A.C. Rocateli, V.G. Kakani, **H. Singh**, B.K. Northup, P.H. Gowda, J.K. Reddy.
“Comparing growth and physiology of three warm-season legumes under different water regimes” Scientific Reports <https://doi.org/10.1038/s41598-020-69209-2> 2020
16. B. Dunn, S. Abit, J. Ramsey, **H. Singh**, and M. Payton.
“Efficacy of Teaching Tools and Strategies: A Student Perception Survey”. NACTA Journal
([Link](#)) 2020
17. Baath G.S., V.G. Kakani, P.H. Gowda, B.K. Northup, A.C. Rocateli, **H. Singh**.
“Quantifying and Modeling the Influence of Temperature on Growth and Reproductive Development of Sesame”. Journal of Plant Growth Regulation
<https://doi.org/10.1007/s00344-020-10278-y> 2021
18. **Singh, H.***, T.P. Kandel, B.K. Northup, G.S. Baath, P.H. Gowda, V.G. Kakani.
“N₂O emissions from oat and grass pea cover crop residues in the US Southern Great Plains”.
Frontiers in Sustainable Food Systems [10.3389/fsufs.2020.604934](https://doi.org/10.3389/fsufs.2020.604934) 2021
19. **Singh, H.***, Dunn, B.L., Maness, M. and Brandenberger, L.
“Greenhouse and Open Field Production of Cherry and Slicer Tomatoes: Yield and Fruit Quality” (In preparation) 2021
20. **Singh, H.***, B.K. Northup, V. Prasad, P.H. Gowda, J.S. Dhillon, G.S. Baath, P. Jha.
A quantitative review for determining effects of biochar application to soils on soil physical properties, chemical properties and crop productivity using meta-analysis (In preparation) 2021

EXTENSION PUBLICATIONS

1. **Singh, H.**, Dunn, B.L. *“Pruning hydroponic crops. HLA-6725.”* 2017
2. **Singh, H.**, Dunn, B.L. *“Building of vertical hydroponic tower- HLA-6724.”* 2017
3. **Singh, H.**, Dunn, B.L. *“Electrical conductivity and pH guide for hydroponics: HLA-6722”* 2016
4. Dunn, B.L., R. Leckie, **H. Singh**. *“Mycorrhizal fungi. HLA-6449”* 2016
5. Singh, H., Kakani, G., Northup, B. *“Nitrogen in Agriculture: Sources, Cycling, and Losses”* (In review)

ABSTRACTS

1. **Hardeep Singh**, Gurjinder S. Baath, Prasanna H. Gowda, Gopal Kakani, Brian K. Northup, Tanka P. Kandel. 2020 (Poster) *“Potential of Different Summer Cover Crops as Source of Nitrogen in Dryland Wheat Production System”* for ASA conference held virtually on November 9-13, 2020.
2. **Hardeep Singh**, Tanka P. Kandel, Prasanna H. Gowda, Gopal Kakani, Brian K. Northup, Gurjinder S. Baath. 2019 (POSTER) *“Influence of Maturity Level of Oat and Grass Pea Based Cover Crops at Soil Incorporation on Emissions of CO₂ and N₂O.”* for ASA conference held on November 10-13, 2019 at San Antonio, Texas. **Student Competition- First Place**
3. **Hardeep Singh**, Tanka P. Kandel, Prasanna H. Gowda, Gopal Kakani, Brian K. Northup, Gurjinder S. Baath. 2019 (ORAL) *“N₂O emissions after termination of a legume (grass pea) and a non-legume*

(oat) cover crops.” for ASA conference held on November 10-13, 2019 at San Antonio, Texas.

Student Competition- Third Place

4. Gurjinder S. Baath, Alexandre C. Rocateli, Gopal Kakani, Prasanna H. Gowda, **Hardeep Singh**. 2019 (POSTER) “Comparing Growth and Physiology of Three Warm-Season Legumes across an Irrigation Gradient” for ASA conference held on November 10-13, 2019 at San Antonio, Texas. **Student Competition- Second Place**
5. Gurjinder S. Baath, Alexandre C. Rocateli, Gopal Kakani, Prasanna H. Gowda, **Hardeep Singh**. 2019 (ORAL) “Effects of Temperature on Vegetative Growth, Development, and Reproduction of Guar” for ASA conference held on November 10-13, 2019 at San Antonio, Texas. **Student Competition- Second Place**
6. **Hardeep Singh**, Tanka P. Kandel, Prasanna H. Gowda, Gopal Kakani, Brian K. Northup. 2018 (ORAL) “Emissions of CO₂ and N₂O after termination of legume green manures at contrasting soil moisture conditions.” for ASA conference held on November 4-7, 2018 at Baltimore.
7. Gurjinder S. Baath, Prasanna H. Gowda, Gopal Kakani, Alexandre C. Rocateli, **Hardeep Singh**. 2018 (POSTER) “Forage yield of three warm-season annual legumes across an irrigation gradient” for ASA conference held on November 4-7, 2018 at Baltimore. **Student Competition- First Place**
8. Gurjinder S. Baath, Prasanna H. Gowda, Gopal Kakani, Alexandre C. Rocateli, **Hardeep Singh**. 2018 (POSTER) “Forage yield of three warm-season annual legumes across an irrigation gradient” for 2019 Research Symposium held at Department of Plant and Soil Science, Oklahoma State University. **Student Competition- First Place**
9. Gurjinder S. Baath, Prasanna H. Gowda, Gopal Kakani, Alexandre C. Rocateli, **Hardeep Singh**. 2018 (POSTER) “Forage yield of three warm-season annual legumes across an irrigation gradient” for The All-Crops conference which is held in Norman on Feb 19th and 20th, 2019.
10. **Hardeep Singh**, Tanka P. Kandel, Prasanna H. Gowda, Gopal Kakani, Brian K. Northup. 2018 (POSTER) “Emissions of CO₂ and N₂O after termination of legume green manures at contrasting soil moisture conditions” for 2018 Research Symposium held at Department of Plant and Soil Science, Oklahoma State University.
11. **Hardeep Singh**, Tanka P. Kandel, Prasanna H. Gowda, Gopal Kakani, Brian K. Northup. 2018 (POSTER) “Emissions of CO₂ and N₂O after termination of legume green manures at contrasting soil moisture conditions” for 4th Annual LTAR (Long-Term Agroecosystem Research) Conference, El Reno, Oklahoma, USA, April 24-26, 2018.
12. **Hardeep Singh** and Bruce Dunn. 2017 (ORAL) “Fertilizer and cultivar selection for lettuce, basil and swiss chard in hydroponics” for Student Water Conference held at Oklahoma State University on 23-24 March, 2017.
13. **Hardeep Singh**, and Bruce Dunn. 2017 (ORAL) “Fertilizer and cultivar selection for lettuce, basil and swiss chard in hydroponics” for ASHS conference held on September 19-23, 2017 at Hawaii.
14. **Hardeep Singh**, and Bruce Dunn. 2017 (ORAL) “Fertilizer and cultivar selection for sweet pepper and eggplant in closed hydroponics system” for ASHS conference held on September 19-23, 2017 at Hawaii.
15. **Hardeep Singh**, and Bruce Dunn. 2017 (POSTER) “Evaluation of different growing mediums in nutrient film technique” for ASHS conference held on September 19-23, 2017 at Hawaii.
16. Bruce Dunn, Jon Ramsey, Sergio Abit, **Hardeep Singh**, Megha R. Poudel. 2017 (POSTER) “Student perception of teaching approaches to student learning” for ASHS conference held on September 19-23, 2017 at Hawaii.

17. Bruce Dunn, **Hardeep Singh**, Megha R. Poudel, and Bernard Chodyla. 2017 (POSTER) "Evaluation of first color date of gediflora mums in Oklahoma" for ASHS conference held on September 19-23, 2017 at Hawaii.

AWARDS AND SCHOLARSHIPS

- | | |
|---|-----------|
| • Future Leaders in Science Award | 2021 |
| • 2020 Gerald O. Mott Award | 2020 |
| • Nelson Yield-Limiting Factors Graduate Student Scholarship (\$3000) | 2020 |
| • Fall 2020 Honorary Commencement Marshal (\$1000) | 2020 |
| • First position for poster presentation at ASA, San Antonio (\$300) | 2019 |
| • Third position for Oral presentation at ASA, San Antonio (\$100) | 2019 |
| • Jerry Grant Memorial Scholarship , Oklahoma State University | 2019 |
| • GPSGA Travel Award, Oklahoma State University | 2019 |
| • Jerry Grant Memorial Scholarship , Oklahoma State University | 2018 |
| • GPSGA Travel Award, Oklahoma State University | 2017 |
| • Jerry Francis Benton Memorial Graduate Student Scholarship, Oklahoma State University | 2017 |
| • Louis P. Sumpter Scholarship, Oklahoma State University | 2017 |
| • University Merit Scholarship | 2009-2015 |

TEACHING EXPERIENCE

Teaching Assistant – "Fundamentals of Soil Science" (Dr. Sergio Abit) 2019

- Demonstrate hands-on lab exercises every week
- Soil topics covered include the soil as a natural body, soil-forming rocks and minerals, particle size analysis, soil surveys, soil profile evaluation, soil physical properties, soil water, soil microbial decomposition, ionic exchange properties of soils, fertilizers, and fertilizer use, soil pH and liming acid soil and soil erosion.

Voluntary lab assistant- "Plant Propagation (HORT 3084)" (Dr. Bruce Dunn) Spring 2016

- Review experiments beforehand, ask and answer student questions, and evaluate student's lab work.
- Demonstrated hands-on lab exercises
- Prepared culture media for lab exercises.

Invited talks- In addition to the above-mentioned teaching and lab assistants I also delivered three invited talks in different undergraduate and graduate classes.

- Plant Response to Water Stress (PLNT 5413) (1st Oct 2019) - **Relationship between plant water stress and greenhouse gas emissions.**
- Plant Environment Interactions (PLNT 4123) (12 March 2020) - **Losses of Nitrogen from agricultural lands and their impact on the environment.**
- Horticulture Graduate Seminar (HORT 5020) (2 Feb 2021)- **Key to Success**

GRANT WRITING EXPERIENCE

H. Singh, B. Dunn, S. Deng. "Potential of eastern red cedar biochar as potting media for greenhouse production of ornamental and vegetable crops" (\$87,000) Planned to be submitted to Oklahoma Center for Advancement of Science in March 2021.

PROFESSIONAL SERVICE

Associate Editor (Agrosystems, Geosciences, and Environment)**2021 – 2023**

Handling 6-10 papers per year from a wide range of agronomic disciplines, precision agriculture, and soil sciences

Reviewer (Publons: [Profile](#))**2018- Present**

Reviewing papers in agronomic disciplines, precision agriculture, and soil sciences for various peer-reviewed journals

- Agronomy Journal (2)
- Agrosystems, Geosciences & Environment (6)
- Agricultural Water Management (1)
- MDPI Agronomy (5)
- MDPI Agriculture (1)
- HortScience (2)
- Nutrient Cycling in Agroecosystems (1)
- Crop & Pasture Science (1)
- Crop, Forage, and Turfgrass Management (1)
- Land (1)

Poster Presentation Judging**2018**

Research and Development of Precision Agriculture Tools for Agriculture Sustainability Oral."(Monday, November 5, 2018, 04:00-06:00 pm) ASA, CSSA and CSA, Annual Meetings, Baltimore, MD

Oral Presentation Judging**2020**

C-2 Graduate Student Oral Presentation, Virtual ASA, CSSA and CSA, Annual Meetings, 2020

LEADERSHIP ACTIVITIES AND ACHIEVEMENTS

- **Graduate Student Leadership Conference 2020 at ASA conference**
- **GPSGA [Parliamentarian](#) (2019-2020) (2020-2021)**
- **Chair of GPSGA Bylaws Committee (2019-2020) (2020-2021)**
- **GPSGA Representative** for Graduate Student Organization (2019-2020)
- **Certification** for completion of **OSU #Globalleaders- Rise to the Challenge Leadership Program**
- **Certification** for completion of volunteer hours at **American Red Cross for Global Leaders Mapathon**
- **President of Pi Alpha Xi at OSU (2016-2017)**
- **Pest Certification** for Oklahoma.
- Attended **Teaching workshop**, held at OSU on 13th August, 2019.
- Attended **Graduate Teaching Assistant Conference**, held at OSU on 14th August, 2019.

SKILLS

DNA extraction and qPCR.

Worked in *in vitro* multiplication of various ornamental plants in Dr. Bruce Dunn's Lab at OSU.

Plant trial and field plot maintenance.

Statistical software's: SAS, R

Languages: English, Punjabi, and Hindi – Fluent; Spanish–Beginner

MEMBERSHIPS

American Society of Agronomy (ASA)
Soil Science Society of America (SSSA)
Crop Science Society of America (CSSA)
Association of Agricultural Scientists of Indian Origin (ASSIO)
American Society of Horticultural Science (ASHS)
Graduate Student Organization (Department of Plant and Soil Science)
Graduate and Professional Student Government Association