Gurpreet Kaur

PhD Candidate, Graduate Research and Teaching Assistant
Department of Animal Science | Cornell University, Ithaca, New York
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EDUCATION

Ph.D. in Animal Science August 2022-August 2026 (expected)
Department of Animal Science, Cornell University, US
Dissertation: *Soil health assessments and nutrient management for climate resilient forage production in New York*
Advisor: Quirine Ketterings, Ph.D.
GPA: 3.91 / 4.0

Integrated Master of Science in Microbiology (Hons.) July 2016 – October 2021
Department of Microbiology, Punjab Agricultural University, India.
Thesis: *Effect of biofertilizer and organic fertilizer on soil health, growth and yield of Cowpea* (*Vigna unguiculata* L.)
Advisor: Jupinder Kaur, Ph.D.
GPA: 3.5 / 4.0

RESEARCH AND EXTENSION EXPERIENCE

PhD Graduate Research Assistant (Soil health and climate resiliency), Cornell University August 2022-Present
Research and extension

- Conducting on-farm research, soil sampling and lab analysis for sustainable nutrient management practices and presenting at various research and extension meetings
- Leading research project on assessing soil health indicators in yield-based zones for yield stability and climate resiliency in two dairy farms (six fields each) in Central NY
- Leading research project on assessing carbon and microbial soil heath indicators to understand the yield enhancing effects of manure in corn fields (three sites in 2023 and nine sites in 2024) in New York
- Leading research project on assessing carbon and microbial soil heath indicators as part of Dair Soil and Water Regeneration project in corn fields (one site with two fields) in New York
- Conducting literature review connecting soil biodiversity and management practices in NY to support development of a below-ground biodiversity based adaptive management framework
- Conducting processing and analysis of microbial sequencing data using QIIME2/DADA2 and statistical analysis using R

Research outputs
Five publications as first-author in preparation:

- Chapter 1: Soil health indicators and microbial diversity in corn fields: Linking temporal and spatial variability patterns to yield and climate resiliency in New York
- Chapter 2: Impact of soil health management on soil health indicators, microbial diversity and yield stability in corn production systems in New York
- Chapter 3: Impact of manure application on soil health indicators, microbial diversity and yield in corn production systems in New York
- Chapter 4: Soil biodiversity, soil health and climate resiliency in dairy farming: A review of indicators and management practices

Mentoring
Supervise and mentor one undergraduate honors thesis student, an international visiting student, an additional undergraduate researcher, and a research technician in field and laboratory research on soil health and nutrient management, including data analysis and extension outreach

Master's research experience August 2019-October 2021
Punjab Agricultural University (PAU)
Thesis: *Effect of biofertilizer and organic fertilizer on soil health, growth, and yield of Cowpea (Vigna unguiculata L.)*

- Conducted field experiments in randomized block design, soil sampling, recorded plant growth attributes at various stages of crop growth

- Microbial (Bacteria, Fungi, Diazotrophs, PSB and Actinomycetes) enumeration of soil samples amended with different fertilizer combinations
- Analysis of soil enzyme activities (Dehydrogenase, Alkaline phosphatase, and Urease)
- Determination of soil physicochemical properties viz. soil pH, EC, N, P, K and organic carbon
- Analysis of plant nutrient uptake in response to different fertilizer combinations
- Conducted data analysis with Statistical Package for Social Sciences (SPSS) and GraphPad prism software for calculating standard errors, ANOVA, applying Duncan and Tukey, etc
- Participated in extension events for promoting use of biofertilizers as sustainable farming practices

TEACHING EXPERIENCE

- **Center for Teaching Innovation Fellow, Cornell University** August 2025-Present
  - Participate in regular professional development and meetings focused on active learning, inclusive teaching, and evidence-based pedagogy
  - Develop and facilitate workshops on these topics for graduate students and postdoctoral scholars
  - Serve as a liaison between the Center for Teaching Innovation and my department

- **Graduate Teaching Assistant, Department of Animal Science, Cornell University** January 2023-Present
  Assist with leading lab sessions, preparation of teaching materials, grading exams and homework assignments, and giving a guest lecture for courses:
  - ANSC 2120: Animal Nutrition - 26 students (Fall 2025)
  - ANSC 4120/6120: Whole Farm Nutrient Management -21 students (Spring 2025)
  - ANSC 2120: Animal Nutrition -29 students (Fall 2024)
  - ANSC 4120/6120: Whole Farm Nutrient Management -14 students (Spring 2024)
  - ANSC 2300: Introduction to Domestic Mammalian Behavior -38 students (Fall 2023)
  - ANSC 4140: Ethics and Animal Science -68 students (Spring 2023)

PUBLICATIONS

Journal articles:

- **Kaur, G.**, Kaur, J. and Walia, S. S. (2024) Effect of Integrated Nutrient Management on Soil Health, Soil Quality, and Production of Cowpea (*Vigna unguiculata* L.). *Journal of Basic Microbiology*, e2400225.
- Kaur, J., and **Kaur, G.** (2021). Dehydrogenase activity as a biological indicator of soil health. *Chemical Science Review and Letters,* 10 (39), 326-329.

Extension articles:

- Flanagan, S. **Kaur, G.**, O'Neil, K., Ketterings, Q.M. (2025) Active Carbon. NMSP Agronomy Factsheet Series, Factsheet 133 http://nmsp.cals.cornell.edu/publications/factsheets/factsheet133.pdf
- **Kaur, G.**, Buckley, D.H., Longchamps, L., Wilder, A.M., Letham, J., and Ketterings, Q.M. (2023) Biologicals for Nitrogen Management. NMSP Agronomy Factsheet Series, Factsheet 127 http://nmsp.cals.cornell.edu/publications/factsheets/factsheet127.pdf

SUPERVISORY AND MENTORING EXPERIENCE

PhD Program, Cornell University, NY

- Sara Mach- Research technician, Environmental Science and Development (2024-present)
- Sarah Flanagan- Undergraduate honors thesis student, Agricultural Sciences (2023-present)
- Cosmo Wessel- Undergraduate student, Environmental and Sustainability (2024-present)
- Darian Lee- Undergraduate student, Agricultural Sciences (2024)
- Lauren Anderson – New Visions high school student (2023-2024)
- Gretchen Wittmeyer- Undergraduate student, Agricultural Sciences (2023)
- Khoa Nyugen- Undergraduate student, Computer Science (2023)

PRESENTATIONS

Scientific presentations

- **Kaur, G.,** Marcaida, M. III, Guinness, J., Longchamps, L., Buckley, D. H., & Ketterings, Q. M. (2025) *Soil Health Indicators in Corn Fields: Linking Temporal and Spatial Patterns to Yield and Climate Resiliency*. CANVAS 2025, Salt Lake City, UT. (Poster presentation)

- Flanagan, S., **Kaur, G.**, Ramos Tanchez, J. C., Workman, K., & Ketterings, Q. M. (2025) Assessing the Impact of Manure Application on Soil Health Indicators. CANVAS 2025, Salt Lake City, UT. (Poster presentation)
- Mach Tomas, S., **Kaur, G.**, & Ketterings, Q. M. (2025) Impact of Soil Health Management on Microbial Indicators and Yield Stability in Corn Production Systems in New York. CANVAS 2025, Salt Lake City, UT. (Poster presentation)
- **Kaur, G.**, Marcaida M. III, Ketterings, Q.M. 2024. *Microbial Soil Health Indicators as a Factor for Yield and Climate Resiliency Zones in Corn Fields*. ASA-CSSA-SSSA International Annual Meeting, St. Louis, MO, Nov 10-13, 2024. (Oral presentation)
- **Kaur, G.**, Tanchez, J.C.R., Ketterings, Q.M. 2023. *Can carbon and soil health indicators explain the yield enhancing effects of manure?* ASA-CSSA-SSSA International Annual Meeting, Baltimore, MD, Oct 29–Nov 1, 2023. (Oral presentation)

Extension presentations

- *Managing dairy manure for increased soil health and forage production sustainability.* Manure Road Show-2025, as part of Soil Health and Nutrient Management Workshop, Ontario and Yates County, NY. March 2025 (oral presentation)
- *Managing dairy manure for increased soil health and forage production sustainability.* Manure Monday-2025 organized by Ontario's Soil and Crop Improvement Association, Ontario, NY. March 2025 (oral presentation)
- *Research and extension projects update.* Cornell Cooperative Extension Agriculture, Food and Environmental Systems In-service, Cornell University, NY. November 2024, November 2023 and November 2022 (oral presentations)
- *Microbes and manure: Assessing the impact of manure application on soil microbial biomass*. Aurora Field Day, Musgrave Research Farm, Aurora, NY. August 2024 (poster presentation)
- *Assessing the Value of Manure: Impacts on soil health and corn yield*. North American Manure Expo in Auburn, NY. July 2024 (oral and poster presentation)
- *Understanding soil health in manured fields.* Aurora Field Day, Musgrave Research Farm, Aurora, NY. August 2023 (poster presentation)

CONFERENCES ATTENDED

- ASA-CSSA-SSSA International Annual Meeting (In person), Nov 9-Nov 12, 2025
- University-Wide GET SET Teaching Conference held on April 26th, 2025
- ASA-CSSA-SSSA International Annual Meeting (In person), Nov 10-Nov 13, 2024
- ASA-CSSA-SSSA International Annual Meeting (In person), Oct 29–Nov 1, 2023
- University-Wide GET SET Teaching Conference held on April 22nd ,2023
- ASA-CSSA-SSSA International Annual Meeting (In person), Nov 6–Nov 9, 2022

GRANT WRITING

1. Can microbial biodiversity explain yield stability and climate resilience in corn fields in NY? 2024-Funded by New Corn and Soybean Growers Association, NY (Awarded)
2. Can carbon and soil health indicators explain the yield enhancing effects of manure? 2022-Funded by Towards Sustainability Foundation, Cornell University, NY (Awarded)

AWARDS AND HONORS

- Center for Teaching and Innovation Fellowship (2025)
- Graduate Travel Grant (2023, 2024 and 2025)
- Department Travel Grant (2023, 2024 and 2025)
- Morrison Fellowship in Livestock Feeding from August 2022 to December 2022
- Awarded merit certificate for having obtained an OCPA above 8.0/10
- R P Sethi Memorial Grant for highest OCPA in Microbiology for the year 2021

LEADERSHIP

- Professional Development and Operations Manager, Animal Science Graduate Student Association, Cornell University (August 2025-Present)

- Participated in 2025-Early Career Graduate Teaching Cohort organized by Center for Teaching Innovation, Cornell University (April 2025)
- Co-led 'Expanding Your Horizons' workshop organized by Cornell University (April 2023)
- Member of the Placement Awareness group (August 2018- October 2021)
- Volunteered as a Gender Champion (August 2020- October 2021)
- Volunteered for the National Service Scheme (NSS) of India (July 2016- July 2018)
- Volunteered in 'Kisan Melas' or 'Farmer Fairs' (September 2016- October 2021)

RELATED WEBLINKS

- Proving its worth: The link between manure and crop yield (2025)
- New Visions student Lauren Anderson digs into soil health (2024)
- Field testing new soil treatments for sustainable forage production (2024)
- Manure boosts hidden ecosystem beneath our feet (2024)