BRYAN K. SALES, PhD

Assistant Professor of Instruction
Texas State University, San Marcos Tx

EDUCATION

Ph.D., Horticulture, Oregon State University, Corvallis, OR (2019) Focus area:
Highbush blueberry production, Soil amendments

B.S., Horticulture, Texas A&M University, College Station, TX (2015)
Focus area: Fruit, Vegetable, and Nut production
magna cum laude

DISSERTATION

"Evaluation of biochar and nitrogen-enriched soil amendments for establishment and production of highbush blueberry"

Committee: David Bryla (chair), Bernadine Strik, Dan Sullivan, Kristin Trippe, Carolyn Scagel

PROFESSIONAL EXPERIENCE

2025-2026	Associate Professor of Biology, University of North Carolina at Pembroke, Pembroke, NC
2017-2026	Agriculture Program Coordinator, University of North Carolina at Pembroke, Pembroke, NC
2015-2025	Assistant Professor of Biology, University of North Carolina at Pembroke, Pembroke, NC
2015-2019	Graduate Research Assistant, USDA-ARS Horticultural Crops Research Unit, Corvallis, OR
2018	Adjunct Professor, Chemeketa Community College, Salem, OR

GRANTS AND HONORS

- Professional Honors
  - UNCP Undergraduate Research and Creativity Mentor Award (2026)
  - UNCP Outstanding Teaching Award (2026)
  - Roger Godwin Community Partner of the Year Award (2023)
    https://www.uncp.edu/news/bryan-sales-wins-community-partner-year-award
- Grants
  - *Artificial Intelligence Adoption in Agriculture: Barriers and Opportunities for Small Farms in Robeson County, NC.* North Carolina Collaboratory HMSI Research Grant ($85,000.00). 2025. 15 Months
  - *Bezos Sustainable Protein Center*. Bezos Earth Fund Grant ($30,000,000.00). Subaward to

Bryan Sales ($357,000.000). 2024. 5 year

- Sales, B.S. (2023) *Evaluation of Growth and Yield of Blueberry as a Result of Cultivation Methods* UNC Pembroke College of Arts and Science's Dean's Research and Scholarship Fund ($4,000.00)
- Sales, B.S. (2023) *UNCP Agriculture Enrollment and Retention Initiative* ERPI Grant ($3,500.00).

- Graduate Student
  - Oregon Blueberry Commission Scholarship (2018)
  - American Society of Horticulture Science Travel Grant (2018)
- Undergraduate
  - Senior Merit Award
  - Craig Rosborough Memorial Scholarship
  - Joel Ray Reese 50 Endowed Scholarship
  - Wine Society of Texas Scholarship
  - Herb Society of Texas Scholarship
  - Bryan and Cora Hearne Endowed Scholarship
  - College of Agriculture Students Honors Scholarship
  - Horticulture Science Excellence Award (2014, 2015)
  - Second Place Poster Competition. Student Research Week at Texas A&M University (2015). Div: Plant Sciences, Animal Sciences, Wildlife & Fisheries Science, Entomology, Agriculture, and Ecological Restoration.
  - Undergraduate Research Scholar, Texas A&M University (2015)

PRESENTATIONS

- Sales, Bryan K., *Biochar as a Soil Amendment for Blueberry.* Nursery Applications of Biochar, Cornell Cooperative Extension of Suffolk County. November 17, 2020. (Oral).
- Sales, Bryan K., *Advances in Soilless Substrates*, Nursery Session,2021 Long Island Agricultural Forum. January 07, 2021. (oral).
- Biochar as a soil amendment for blueberry production
- *Soil amendments for highbush blueberry production*, North Willamette Horticulture Society Conference and Trade Show, Aurora, OR, Jan. 2, 2018 (oral)
- *Effects of biochar on plant growth, mycorrhizae colonization, and Phytophthora root rot in northern highbush blueberry*, Annual Conference of the American Society of Horticultural Science, Washington, DC, July 31–Aug. 3, 2018 (oral)
- *Ammonium-enriched amendments for the production of highbush blueberry*, North American Blueberry Research and Extension Workers Conference, Orono, ME, Aug. 12–15, 2018 (poster)

COMMUNITY OUTREACH AND EDUCATION

- Student Learning Component of *Techniques in Horticulture*, Lumbee Cultural Center, Pembroke, NC, Spring 2020.

- Instructor, *Creating a healthy soil*, Garland Nursery, 2017
- Guest Speaker, *Use of biochar and nitrogen-enriched composts in blueberry-options for use in establishment*, OSU-NWREC Blueberry Field Day, Aurora, OR, July 12, 2017
- Guest Speaker, *Growing fruit in the Willamette Valley*, Chemeketa Community College, Salem, OR, Nov. 18, 2017
- Instructor, *Growing tomatoes in the Willamette Valley*, Garland Nursery, Corvallis, OR, May, 12, 2018
- Guest Speaker, *Benefits of biochar and nitrogen-enriched amendments*, OSU-NWREC Blueberry Field Day, Aurora, OR, July 12, 2018

JOB RELATED SKILLS

- Project management: experimental design, plant management, and data collection in greenhouse and field settings
- Team leadership among Biology Faculty, student researchers, and student workers.
- Facility management: Purchasing automobiles, tractors, greenhouses, high tunnels, aquaponics and hydroponics systems, and project designs.
- Plant physiology: plant nutrient allocation and water relations, plant response to biotic and abiotic stress (temperature, irrigation, pathogens, fertigation), berry analyses, and evaluation of plant growth and yield
- Soil: soil moisture, soil fertility, soil health assessment (active carbon, aggregate stability, microbial activity, structure), mycorrhizal colonization
- Statistics: proficient in statistical analyses and software (SAS and SYSTAT)
- Teaching and communication: e-learning (blackboard), Canvas, and Microsoft Office.
- *Skillsoft* certification: Title IX, FERPA, and Campus Security for Higher Education
- *Collaborative Institutional Training Program Certifications*- CITI Conflicts of Interest, Social and Behavioral Research, and Social and Behavioral Responsible Conduct of Research
- Student advising, research mentorship, internship placement, graduate study development.
- Undergraduate research poster and presentation preparation and development

COMMITTEE SERVICE

- Tenure and Promotion Committee (2026-2028)
- Biology Department Course Offerings Committee (2023-2025)
- Agriculture Committee (2019-2025)
- Chaired Marion F. Bass Distinguished Professorship (2022-2023)
- Chaired Marion F. Bass Distinguished Professorship (2021-2023)
- Chaired Agriculture Farm Technician Hiring Committee (2022)
- Chaired Peer Evaluation Committee for Biology Faculty (2023
- Committee member Peer Evaluation Committee (2024)
- Committee member Peer Evaluation Committee (2024)
- Committee member Agriculture Farm technician Hiring Committee (2023)

TEACHING SKILLS

- Course development
    - Defining course goals and learning outcomes
    - Determining course content
    - Developing teaching methods and tools
    - Developing student evaluation techniques
    - Creating course syllabus: schedule, policies, and materials
    - Creating course posters
- Curriculum development
    - 4-year course plan for Biology Majors with Agriculture Emphasis
    - 4-year course curriculum for Bachelor of Science of Agriculture
- Author-Request to Establish Bachelor of Science of Agriculture Major
    - Program Summary
    - Program Planning and Unnecessary Duplication
    - Faculty
    - Delivery Considerations
    - Library
    - Facilities and Equipment
    - Administration
    - Additional Program Support
    - Accreditation and Licensure
    - Evaluation Plans
    - Supporting Fields
    - Costs, Funding, and Budget
- Instruction
    - Provide expert knowledge of course material with consideration to the interests, goals, and education level of the audience.
    - Organization of instruction: Presenting the origin of ideas and concepts with a logical progression to current scientific methods and theories
    - Promote student interaction through class discussion, activities, and online tools
    - Excitement of subject matter and relevance across disciplines
    - Promote field trips and guest speakers that are relevant to the industry and student interests
- Laboratory exercises
    - Foster learning, understanding, and innovation with approachable scientific laboratory procedures: plant physiology (photosynthesis and growth), plant hormones (plant propagation and grafting) plant morphology (plant identification and taxonomy) soil morphology (texture and structure), and its influence on agricultural inputs as they relate to plant growth.

PUBLICATIONS

- Sales, B.K., Scheiner, J., 2014. Impact of organic mulch on vineyard soil moisture retention, grapevine growth and nutrition. Texas A&M University. http://oaktrust.library.tamu.edu/handle/1969.1/154480?show=full

- Sales, B., Bryla, D., Scagel, C., Weiland, J. and B.C. Strik. 2020. Effects of amending soil with biochar on plant growth, mycorrhizal colonization, and phytophthora root rot in northern highbush blueberry. *HortScience* 55 353-361.
- Sales, B., Bryla, D., Strik, B., A grower's guide to soil amendments for highbush blueberry. Oregon State University Extension Service (in prep.).
- Sales BK, Bryla DR, Trippe KM, Scagel CF, Strik BC, Sullivan DM. Biochar as an Alternative Soil Amendment for Establishment of Northern Highbush Blueberry. HortScience: a publication of the American Society of Horticultural Science. 2022 April 04; 57 (2): 277-285.
- Sales, B., Bryla, D., Trippe KM, Sullivan, D., Ammonium Enriched Soil Amendments for the Production of Blueberry. (In Prep)

TEACHING EXPERIENCE

Assistant Professor
Department of Biology, University of North Carolina at Pembroke 2019-present

- **General Botany (BIO 1010) (4 credit hrs.)**
  Introductory level lecture and lab course for biology majors; designed to familiarize students with the different groups of plants and the basic morphology and physiology of seed plants. Course format includes lecture, laboratory exercises with accompanying worksheets, homework assignments, in-class activities and discussions, exams, and a writing component for extra credit.
- **Plant Physiology (BIO 3540) (4 credit hrs.)**
  An upper-level lecture and lab course for biology majors; a study of the physiological activities in plants such as water relations, metabolism, plant growth hormones, as well as growth, development, and environmental adaptations. Course format includes, lecture, laboratory exercises, student presentations, and scientific literature review.
- **Soils and Hydrology (ENV 3200) (4 credit hrs.)**
  An upper-level lecture and lab course for biology and environmental science majors; overview of soil physical properties, chemical properties, and hydrology. Topics covered include the formation, structure, and description of soils, soil water and the hydrologic cycle, and the modeling of soil systems. Course format includes lecture, laboratory exercises, quizzes, lab reports, and field trips.
- **Techniques in Horticulture (BIOS 2010) (4 credit hrs.)**
  A sophomore-level lecture and lab course; survey of the basic biology of plants (anatomy, morphology, and lifecycle), environmental sciences (water, light, temperature, soil, atmosphere, nutrient elements) and biotic factors (pests) that impact the growth, development, productivity, and aesthetic value of horticultural crops. Course format includes lecture, laboratory exercise, field experience, quizzes, and a service-learning component at the Lumbee Cultural Center.
- **Graduate Student for Independent Biology Research (BIO 5550) (3 credit hrs**.) A graduate-level research course; advanced students carry out independent research activity relating to a significant problem in a major field of study in biology. Course format includes development of a hypothesis, experimental design, and research trial to produce a dissertation.

- **History of Cultivated Plants (BIOS 5020) (3 credit hrs.)** This course explores our history with cultivated plants through the lens of recent, popular literature. Major themes include plant breeding, biodiversity, conservation, human impacts on the environment through waste and pollution, food production and agriculture. This is an online course with weekly synchronous discussion meetings (WebEx).
- **Tropical Horticulture (BIOS 3055) (3 credit hrs.)** This course explores the status of horticultural crop cultivation throughout the Tropics. Students will learn how local climates, edaphic factors, and societal conditions in the tropics influence horticultural practices such as crop selection, cultural practices, postharvest handling, and international trade. In addition, students will discuss their effect on the environment, climate change, human health, water access, poverty, and development. The course includes an overview of tropical crops including rubber, oil palm, cocoa, coconut, coffee, tea, vanilla, avocado, papaya, and various other tropical/subtropical nut crops.
- **Pest Management (co-teach) (ENV 4200) (4 credit hrs.)** This course teaches the basic principles of conventional and organic methods of pest control. Students will be able to recognize the signs and symptoms of disease problems in crops and identify some common insect pests on local crops. Students analyze life cycles of insects and diseases for effective control strategies.
- **Organic Food Production (BIOS 5035) (3 credit hrs.)** This course explores methodology and theory surrounding teaching organic farming and gardening. Students will review information associated with all aspects of organic food production, answer questions associated with the material, and produce lesson plans that fit their pedagogical requirements.
- **Greenhouse Management (BIO 3020) (4 credit hrs.)** Covers structural and mechanical aspects of the greenhouse environment. Compares greenhouse systems with regard to styles, frames, covers, benches, mechanical controls, lighting, irrigation, and fertilization. Focuses on management practices in production greenhouses. Covers irrigation and fertilization practices that result in high quality plant material. Considers regulation of light and temperature to achieve desired plant growth. Emphasizes growth regulation, production scheduling, and shipping and handling. Examines the wholesale and retail nursery industry in North Carolina.
- **Small Farming Systems (BIO 4510) (4 credit hrs.)** Students will learn the agricultural production systems associated with small farms, including crop production and livestock management. The course will address animal and plant crop integration strategies integral to the success of small farms including; crop rotation, pest management, and soil regenerative techniques. This course requires the synthesis of a small farm management plan with regard to product identification, marketing, livestock integration, and crop production.
- **Principles of Sustainable Agriculture (ENV 24500) (4 credit hrs.)** This course will explore the characteristics of a sustainable food system. It will discuss the challenges of balancing food production with preservation of ecological resources and promoting integrated livable communities. The associated lab will use case studies to analyze integrated farming systems that illustrate multiple concepts of sustainable agriculture and include sustainable projects and films. Does not fulfill a BIO elective.
- **Plant Cropping and Weed Management (ENV 3250) (4 credit hrs.)** Students will receive a scientific methodology in the instruction of organic gardening and farming

including propagation, irrigation, tillage, transplanting, and compost production. Students will also learn critical skills and considerations in the management of soil fertility and agriculture pests in organic systems. A considerable amount of the course will focus on weed classification, reproduction and dispersal, invasive plants, allelopathy, and methods of weed management.

- **Small Fruit and Berry Production (BIOS 3020) (3 credit hrs.)** Students will: obtain general knowledge of the culture, management, and physiology of grapes and berry crops (including strawberry, raspberry, blackberry, blueberry, cranberry, and other miscellaneous berry crops as time allows); be able to identify important cultivars and morphological and taxonomic traits of these crops; and develop necessary skills to research and discuss many of the horticultural, physiological, and economic principals upon which planting and management decisions are made for these crops.

MENTORING EXPERIENCE

University of North Carolina at Pembroke Undergraduate and Graduate Mentored Research:

  - RISE fellows: 4 students
  - UNCP Bezos Scholars: 7 students
  - RISE summer fellows: 9 students
  - HON 4990: 2 students
  - BIO 4990: 4 students

- Alternative Protein Summit, Bezos Sustainable Protein Center.
  - Chiara Messex, Evan Phillips, and Tonyetta Perry.
    - First Place Award for Best Poster: The Emerging Sustainable Protein Industry: Workforce Development Trends and Gaps in The Hiring Market (2026).

- Students presenting PURC Posters 2026:
  - Bezos Scholars
    - Chiara Messex, Jack Taylor, Tonyetta Perry, Evan Phillips
      - Workforce Development Sustainable Protein Industry
      - Importance of K-12 Education in Sustainable Proteins
    - Jakira McCrimmon, Gradie Heaton
      - Barriers to AI Adoption by Small Farmers in Robeson County
- Mariam Abdulhamid Qambar, Masters of Education Thesis
  - Greenhouse Study of Southern Highbush Blueberry in Soilless Media Amended with Biochar to Enhance Plant Growth and Mycorrhizal Fungi Colonization" 2020
- Eric Schwarz, RISE Scholar
  - "Okra Production Under Drip, Overhead, and No Irrigation in a No-Till Cropping System". 2021
  - "Suitability of Biochar, as a Substrate, for Hydroponically Grown Lettuce". 2022
- Samantha Cranford, RISE Scholar
  - "The Effects of Biochar Amended Soil on Growth and Yield of June-Bearing Strawberry (Chandler and Camarosa)". 2021
  - "Testing to Determine the Effects of Biochar on the Survival of Beneficial

Nematodes (*Steinernema carpocapse)*". 2021

- David Hoskings, RISE Summer Research
    - "*Evaluation of Containerized Production of Tomatoes in a High Tunnel".* 2021
- Johnathon Oxendine, RISE Summer Research
    - "*Biochar for Seedling Germination and Asexual Propagation of Spinach in Marigolds*". 2021
- Richard Hays, Tyler Locklear, Kristin Phillips, RISE Summer Research
    - "*Construction and Establishment of Commercial Aquaponics System for Growth and Production of Blue Tilapia and Basil*". 2021
- Tyler Locklear, Dominick Burgess, Richard Hays, RISE Summer Research
    - "*Feasibility of Using Locally Obtained Swine Manure to Grow Lettuce in an Aquaponics System*". 2023
    - 2023 "Feasibility of Using Swine Manure as Organic Fertilizer for a Modified Aquaponic System". RISE (Symposium) Pembroke, NC Poster.
    - 2024 "The Effect of Stocking Density on Water Quality, Growth, and Survival of Blue Tilapia (Oreochomis aureus) in an Aquaponics System Growing Lettuce (Lactuca sativa) PURC (Symposium) Pembroke, NC Poster
- Cassandra Helms
    - 2024. "Influence of Amendment Type on the Establishment of Highbush Blueberry" PURC (Symposium) Pembroke, NC Poster
- Haven Guin
    - 2023 "Investigation of Cherry Tomato Production in Three Different Trellis Systems in a Floating Garden Bed" Esther G. Maynor Honors College Senior Project (Symposium) Pembroke, NC Poster.
- Kaitlyn Pressley
    - 2023. "Sustainability in Native Landscape Design for Installment on the UNCP Campus". Esther G. Maynor Honors College Senior Project (Symposium) Pembroke, NC Poster.

Memberships

American Society of Horticulture Science (ASHS)
Carolina Farm Stewardship Association (CFSA)
North Carolina Ag Task Force: Member
North Carolina Agroecology Council: Member
Community Dynamics: An International and Interdisciplinary Journal. Editorial Board Member