



Applied Research Committee Report

Dr. Scott Lowman

July 2023

Name of Program or Initiative: Building Virginia's Controlled Environment Agriculture (CEA) Industry Through Targeted Research, Workforce, and Economic Development Initiatives

Current Activities by the IALR/VT team

1) Research

a. Aerofarms Research Collaboration

- i. Project one – Bioinformatics led by Dr. Amaradasa completed
- ii. Project two – Volatile organic compound analysis led by Jack He completed
- iii. New project – Seed testing

b. Research Partnerships

- i. New BASF partnership established focused on biologicals and contract research
- ii. New Syngenta partnership established focused on biologicals and contract research
- iii. New Invasive Species Corporation partnership under development
- iv. New Innatrix partnership established
- v. VTARC (Virginia Tech Applied Research Corporation) visited in June
 1. Exploring opportunities in Controlled Environment Agriculture, and AgBiotech opportunities
 2. Based in DC, they have strong ties with the Navy and Department of Defense
- vi. Dr. Lowman hosted a visit from Phillips Signify regarding CEA facilities
- vii. Hosted a visit from contract research partner Plant Response, Inc. regarding lab space and other synergistic opportunities

c. Meetings

- i. Dr. Mei attended a National Aeronautics and Space Administration (NASA) and United States Department of Agriculture (USDA) conference in Ohio titled, *Advancing Controlled Environment Agriculture on Land and in Space in the Next 20 Years*
- ii. In partnership with Advanced Manufacturing, Senator Kaine's staff toured the VT/IALR Controlled Environment Agriculture Innovation Center
- iii. Dr. Mei attended the Bill and Melinda Gates Foundation workshop titled, *"Endophytic Microbes for Crop Nutrition"*



d. Grants/Funding

- i. One million dollars remains in the State Budget for CEA expansion
- ii. Dr. Lowman submitted a Tobacco Region Revitalization Commission (TRRC) grant titled “Building a Regional Food System Through the Creation of a Value Chain Coordinator” (\$104,452 request + \$100,000 external match)
- iii. Dr. Lowman submitted a Tobacco Region Revitalization Commission grant in partnership with Virginia Tech titled “Supporting Controlled Environment Agriculture (CEA) Growth in Southern Virginia”, (\$145,841 request + \$150,000 external match)
- iv. VT, Dr. Kaylee South and Dr. Lowman submitted a USDA grant in partnership with Earth Microbials, INC, and the University of Waterloo titled, “*Optimization of microbial inoculants for enhanced plant growth in hydroponic systems*” (\$100,000)
- v. Agrospheres is funding a new employee for 2 years (\$110,000)

2) CEA Economic Development

- a. GoVA draft report “Leveraging IALR and VT to Move the CEA Industry Forward” is complete and under review
- b. Aerofarms Chemistry Training Module completed and under review with company
- c. Dr. Lowman and Telly Tucker attended a Controlled Environment Agriculture (CEA) related bill signing with Governor Youngkin at McCormick Farm in Raphine, VA
- d. Dr. Lowman attended an event at Red Sun Farms with Governor Glenn Youngkin, Secretary of Agriculture and Forestry Matthew Lohr, and the Commissioner of the Virginia Department of Agriculture and Consumer Services Joseph Guthrie to tour the facility in Pulaski and promote the controlled environment agriculture industry
- e. Partnering with the Secretary of Agriculture and Forestry’s office to solve real problems facing Virginia’s CEA industry

3) Other Items to Support the Above

- a. IALR STEM summer interns
 - i. Applied Research welcomed seven summer interns who worked in areas including coding and robotics, biotechnology, and controlled environment agriculture.
 - ii. An AET intern worked in coding and robotics



Name of Program or Objective: AgTech and Life Sciences Manufacturing Support to Grow Industries Through Testing, Contract Research, and Lab Access

Current Activities

- 1) Bio-Manufacturing / Cell Factory / Bio-Foundry Initiative
 - a. Vessel has been relocated and the lab is set up in Room 235
 - b. Fermentation workshop development underway
 - c. Submitted an NSF grant to support initial cohorts of students (adult learners) for three years
 - i. GoVa is also interested in exploring a biopharmaceutical manufacturing workforce development component
 - d. Multiple companies have expressed interest in participating including Novozymes, Agrospheres, and Bonumose
 - e. Multiple opportunities have already arisen
- 2) AgBio Conference was held on July 19th
 - a. This conference focused on both Agtech and Biotech and was cohosted in partnership with NC Bio, NC Biotech, Va Bio, and IALR
- 3) Contract Research
 - a. Currently working with three new companies developing contract research projects
 - b. Continue to do work for Plant Response
 - c. Continue to support Agrosphere's growth
 - i. Expansion of testing and greenhouse support for critical growth products
 - d. Work with Electroagro systems to identify a new market for their technology
- 4) Economic Development
 - a. Agrospheres will be establishing a presence at IALR
 - i. To include renting office space, lab space, and an employee for two years
 - b. Dr. Lowman attended a ribbon-cutting at Agrospheres' new facility in Charlottesville, VA along with Governor Youngkin and Secretary of Agriculture Matt Lohr