the INSTITUTE
FOR ADVANCED LEARNING AND RESEARCH

AGENDA

IALR Board of Trustees

APPLIED RESEARCH COMMITTEE

Tuesday, October 29, 2024 - 9:00–10:30 am – IALR Conference Room 203

I.	**Convening of Meeting** A. Welcome B. Call to Order and Confirmation of Quorum C. Call for Changes to Agenda	Mr. Don Merricks
II.	**Attendance of Committee Member(s) by Electronic Communication Means** (Vote Required)	Mr. Don Merricks
III.	**Approval of Minutes** **(Vote Required)** A. July 30, 2024	Mr. Don Merricks
IV.	**Research Report**	Dr. Scott Lowman
V.	**Open Discussion of Concerns, Issues, and Observations**	Group
VI.	**Adjournment**	Mr. Don Merricks

Reference material included: "Research-Related Updates"

Future Committee Meetings

January 28, 2025
April 29, 2025

Future Plenary/BOT Meetings

November 21, 2024
February 13, 2025
May 15, 2025

Applied Research Committee Members

Dr. Guru Ghosh, *Chair*
Ms. Emma Kozlowski
Mr. Charles Majors
Ms. Leslie Mantiply
Mr. Don Merricks, *Ex Officio*
Mr. Kunal Patel

IALR Staff

Mr. Telly Tucker, President
Dr. John Hughes, Executive Vice President, Operations
Dr. Scott Lowman, Director of Applied Research
Ms. Pam Patterson, BOT Secretary & Executive Assistant

IALR BOARD OF TRUSTEES (BOT)

APPLIED RESEARCH COMMITTEE

Minutes – Tuesday, July 30, 2024 – 9:00 a.m. – IALR Conference Room 203

Members Present	**IALR Staff Present**
Dr. Guru Ghosh, *Chair* Ms. Emma Kozlowski, *via Zoom* Mr. Charles Majors Ms. Leslie Mantiply Mr. Don Merricks, *Ex Officio* Mr. Kunal Patel	Mr. Telly Tucker, President, IALR Dr. John Hughes, EVP, Operations Dr. Scott Lowman, Vice President of Applied Research Ms. Pam Patterson, BOT Secretary & Executive Assistant
Members unable to attend	**IALR Staff unable to attend** None
	Guests None

Call to Order / Quorum / Changes to Agenda

Dr. Guru Ghosh called the meeting to order at 9:00 a.m. on Tuesday, July 30, 2024. A quorum was present. There were no changes to the agenda.

Attendance of Committee Member(s) by Electronic Communication Means

Dr. Guru Ghosh announced that Ms. Emma Kozlowski would be participating electronically. Ms. Kozlowski attended via Zoom due to the distance between her principal residence and the meeting location. The committee voted to allow her to attend the meeting via Zoom.

- **Motion**: Mr. Charles Majors made a motion to allow Ms. Kozlowski to attend the meeting via Zoom. Mr. Kunal Patel seconded the motion. The motion passed unanimously.

The results of the vote are shown below.

Committee Members Absent	-	0
Committee Votes For	-	5
Committee Votes Against	-	0
Committee Abstentions	-	0

Approval of Minutes

- **Motion** – Mr. Charles Majors made a motion to accept the Minutes for the April 30, 2024, meeting. Mr. Kunal Patel seconded the motion. The motion passed unanimously.

Research and Business Development Update

Dr. Scott Lowman presented the Applied Research Report (Exhibit A).

- CEA Research - A new partnership was established with BASF's seed division to improve knowledge of their lettuce cultivars and enhance customer service by providing detailed growth data. Another partnership was formed with Seedway to trail 16 varieties of bell peppers for Controlled Environment Agriculture (CEA) production. A VT PhD student was set to start in the fall, with another expected to begin during the winter break. Dr. Michael Evans, co-founder of the VT/IALR Controlled Environment Agriculture Innovation Center, stepped down as Director of the School of Plant and Environmental Science to focus on research and workforce training. A new partnership was also established with a company that uses proprietary technology to sterilize seeds for CEA production. The Center hosted two summer STEM interns, each working on variety-selection projects for herbs and specialty crops in CEA production. Additionally, the IALR team hosted three summer interns, one focused on biotechnology and the others on robotics and computer vision. Dr. Amaradasa and the research team published a peer-reviewed article on biocontrol potential in the journal PLOS ONE. Dr. Mei and his team published a peer-reviewed article on beneficial bacterial endophytes promoting spinach growth in the journal *Technology in Horticulture*.

- Meetings, Tours, and Events - Dr. Scott Lowman, along with Matt Lohr, Secretary of Agriculture and Forestry, and Delegate Windell Walker, toured the National Center for Healthy Veterans in Altavista, Virginia, discussing integrating controlled environment agriculture (CEA) into their training program. Dr. Lowman presented on CEA at the Virginia Agriculture Director Organization meeting in Richmond on April 11. Later, he and Secretary Lohr attended the Greentech Summit in the Netherlands, where they met with over 20 companies to promote Virginia's CEA efforts. They also attended the AgTech Summit in Chicago, discussing Virginia's CEA research and workforce development. Dr. Lowman presented the CEA Roadmap at the GO Virginia Region 3 meeting on April 17. RIOT, a research center in Wilson, NC, toured IALR to explore partnership opportunities. Bryan David, Program Director of GO Virginia Region 3, also visited the labs and CEA center at IALR.

- CEA Economic Development - The GoVA report "Leveraging IALR and VT to Move the CEA Industry Forward" was released. The CEA Innovation Center partnered with the Secretary of Agriculture and Forestry, and the Virginia Economic Development Partnership (VEDP) to address CEA industry challenges, showcasing the center to several companies. It also collaborated with the National Center for Healthy Veterans on a greenhouse job training program. Visits from Mr. Dov Hoch of the Virginia-Israel Advisory Board and a Chicago-based company, BG BIOLOGICS, explored potential collaborations. Dr. Lowman attended the Roanoke Tech Night, and the CEA Center completed a workforce needs assessment led by Dr. Kaylee South, aimed at future program development.

- Current Activities - In analytical chemistry, collaborations were initiated with JTI and a biotech company for long-term testing, and a new project was started to test products from waste streams. Contract research saw the establishment of new partnerships with BASF and Syngenta, focusing on biologicals, with contracts finalized and underway. In economic development, the research team, alongside SVRA and VEDP, hosted a Mexican biotech company interested in lab space for a North American facility in Danville. They also hosted a food and beverage company funded by a major VC firm, which was in the final stages of deciding on using IALR's biotechnology platform. Additionally, agreements were nearing completion for polymer science companies and a consulting startup to rent or lease lab space, with one startup gaining two new customers thanks to IALR's testing capabilities.

- Grants & Funding -
  - Received
    1. Tobacco Region Revitalization Commission (TRRC) grant titled "Building a Regional Food System Through the Creation of a Value Chain Coordinator" ($104,452 request plus $100,000 external match)
    2. TRRC grant in partnership with Virginia Tech (VT) titled " Supporting Controlled Environment Agriculture (CEA) Growth in Southern Virginia" ($145,841 request plus $150,000 external match)
    3. USDA Specialty Crop Block Grant titled "Biostimulants to Improve Indoor Strawberry Production" ($54,000)
    4. Agrospheres will be funding a new employee for two years ($110,000)
    5. The Applied Research team along with VT and Cornell University submitted a grant titled "Empowering Greenhouse Resiliency with an Optimized Workforce (E-GROW)" focused on introducing controlled environment agriculture to K-12 ($149,119 sub-award)

Return to Agenda

6. A grant partnership with Virginia Western Community College focused on AgTech robotics and vegetable production resulted in a National Science Foundation (NSF) grant award to develop an in-depth program for workforce training in community colleges. Dr. Lowman will serve on the advisory board

- Submitted
    1. A Virginia Department of Agriculture and Consumer Services (VDACS) grant focused on stress reduction in summer greenhouse vegetable production. The project is titled "A novel approach to improve heat stress tolerance in hydroponic greenhouse grown lettuce utilizing biostimulants" by Drs. Mei and Lowman. The funding amount is approximately $60,000.

Dr. Ghosh thanked Dr. Lowman for his excellent report.

Open Forum of Concerns, Issues, and Observations

Mr. Mitchell Doss, a former VT master's student housed at IALR, accepted the position of Value Chain Coordinator. The three-year project will connect producers to buyers and help establish and grow a local food system.

Adjournment

Dr. Ghosh asked for a motion to adjourn the meeting.

- **Motion**: Mr. Charles Majors made a motion to adjourn the meeting. Mr. Kunal Patel seconded the motion. The meeting was adjourned at 9:50 a.m.

Minutes Recorded By:

_____

Ms. Pam Patterson
BOT Secretary

_____

Date

Minutes Approved By:

_____

Dr. Guru Ghosh
Chairman

_____

Date

Attachments Included as Official Part of Minutes

Exhibit A – Applied Research Narrative Report, July 2024
Exhibit B – Applied Research Committee Report – PowerPoint

Return to Agenda

Return to Agenda

Applied Research Committee Report
Dr. Scott Lowman
October 14, 2024

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) **CEA Research**

a. Two new VT PhD students will be starting in May.
b. A new workforce development webpage is being added to the Innovation Center's website. This is being used to leverage content already created through a previous grant and work by Dr. Evans. The goal of the webpage is to create a premier online training site for controlled environment agriculture companies. It will also serve as a basis for credentials and badges.
c. Established a partnership with a company called Resource Innovations. The partnership is focused on Controlled Environment Agriculture (CEA) related economic development and workforce training opportunities. in CEA.
d. The research team is working with five Governor's School students to help with their research projects.
e. The research team initiated a new project with NPT Technologies to assist in product development in the field of Controlled Environment Agriculture.
f. A new coding intern started this semester.

2) **Meetings, Tours, and Events**

a. Participated in a tour with State Senator Aron Rouse.
b. Dr. Lowman and Bryan David from GoVA Region 3 presented at a Future Farmers of America (FFA) Conference on K12 CEA partnering opportunities.
c. Hosted a meeting and tour with the Virginia Tobacco Region Revitalization Commission and the North Carolina Golden Leaf Fund.
d. IALR sponsored and research staff attended a Biocontrol in Agriculture conference at Virginia Tech.
e. Research hosted Rob Davenport from the Virginia Department of Agriculture and Consumer Services for a day-long tour.
f. Dr. Lowman attended the ribbon cutting at Plenty in Richmond.

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Return to Agenda

3) **CEA Economic Development**

a. Mitchell Doss was hired to fill the Value Chain Coordinator position.
b. Finalized a partnership and hosted a visit from a company named PlantSustain. The partnership will include lab space rental, an employee onsite, and co-developing IP.
c. GoVA report "Leveraging IALR and VT to Move the CEA Industry Forward" has been rolled out and is available upon request.
d. The CEA Center recently completed a VT grant-funded assessment of workforce needs in CEA. The project, led by Dr. Kaylee South, will be leveraged for grant funding and program development in workforce training in CEA.

4) **Other Items to Support the Above**

a. Update on the implementation of the CEA strategy and roadmap.
    1. Partnerships established for workforce development.
        a. Virginia Future Farmers of America (FFA)
        b. Cooperative Extension
b. A planning grant "The Synergistic Co-Location of Data Centers and Controlled Environment Agriculture Greenhouses to Boost Competitiveness" is under development.
c. GoVa Implementation Grant is under development to support workforce training and entrepreneurship.

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

Current Activities

1) Contract Research

a. A new BASF partnership established focused on biologicals and contract research – the contract has been finalized and is underway.
b. New Syngenta partnership established focused on biologicals and contract research – the contract has been finalized and is underway.
c. Established a biotech partnership with a company in Austria.
d. Project under development with ChemQuest

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Return to Agenda

Grants/Funding

a. State budget update
b. **Received** - 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)
c. **Received** - 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)
d. **Received** – USDA Specialty Crop Block Grant "Biostimulants to Improve Indoor Strawberry Production" ($54,000)
e. **Received** – USDA Specialty Crop Block Grant "Biotechnology to Improve Indoor Strawberry Production and Disease Control"
f. **Received** - Agrospheres is funding a new employee for 2 years ($110,000)
g. **Received** – The applied research team along with Virginia Tech and Cornell University submitted a grant titled "Empowering Greenhouse Resiliency with an Optimized Workforce (E-GROW)" focused on introducing controlled environment agriculture to K-12. ($149,119 subaward)
h. **Received** - A grant partnership with Virginia Western Community College focused on AgTech robotics and vegetable production resulted in an NSF grant award to develop an in-depth program for workforce training in community colleges. Dr. Lowman will serve on the advisory board.

Economic / Business Development – Companies Utilizing Space at IALR

a. Agrospheres

b. Lester Polymer Insights

c. Scale Holdings

d. TerraSafe Materials

e. PlantSustain

f. Canon

g. Mosaic

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Return to Agenda

Workshops Planned - Fermentation

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Return to Agenda