# ALSON H. SMITH JR. Agricultural Research and Extension Center





Sherif Sherif's lab, in collaboration with AgroSpheres, Inc. and the University of Virginia, has examined the efficacy of a novel class of bio-fungicides to manage grey mold disease in strawberry. Botrytis cinerea is the fungal pathogen that causes gray mold disease in more than 1,000 plant species, including many fruits and leafy vegetables, causing more than \$10 billion of annual losses worldwide. This fungus is of increasing commercial interest due to its ability to mutate quickly and the overreliance on synthetic fungicides to manage it. AgroSpheres, Inc., a startup company based in Charlottesville, Virginia, has introduced novel biotechnology called AgriCells that can deliver RNA molecules to invading fungal pathogens.

Using laboratory and greenhouse facilities and equipment at the AREC, Sherif and his research team have demonstrated that AGRNAs can significantly reduce fungal growth and prevent grey mold disease progression in strawberries for at least 12 days after application. The collaborative teams also showed that AGRNAs have a high degree of species specificity and are resistant to degradation by RNases and amenable to large-scale production and open-field applications.



Gray mold disease symptoms development on strawberry fruits sprayed with water, AgriCells (AGRNA1 & 2) targeting vital genes of Botrytis cinerea fungus after 5 days of inoculation with the fungus.

# PARTNER WITH US

595 Laurel Grove Road Winchester, Virginia (540) 869-2560 https://www.arec.vaes.vt.edu/ arec/alson-h-smith

"My lab explores novel and alternative means of improving tree fruit resiliency to both biotic and abiotic threats, including spring frost and diseases. The industry partnership with Agrospheres illustrates our commitment to finding fruit



industry solutions that embrace the SmartFarm Innovation Initiative and support the needs of startup, Virginia-based enterprises"

#### SHERIF SHERIF

ASSISTANT PROFESSOR, TREE FRUIT HORTICULTURE EXTENSION SPECIALIST

"Tony Wolf and other specialists at the AHS Jr. AREC organized and partnered with Virginia Vineyards Association leadership in 2020 to present a series of well-attended, virtual vineyard meetings, in which the impact of spring frosts and other seasonable vineyard topics



were discussed. These educational meetings kept our membership up-to-date with the necessary information in an unusual growing season. The feedback from our membership has been extremely positive."

NATE WALSH PRESIDENT, VIRGINIA VINEYARDS ASSOCIATION

# ALSON H. SMITH JR. AREC AT A GLANCE



# DISCIPLINES

- Tree fruit entomology
- Tree fruit and specialty crop horticulture
- Grape pathology
- Tree fruit and specialty crop pathology

# Viticulture

### **INNOVATIVE TECHNOLOGIES**

- Membrane-based grapevine virus sampling kit
- Molecular tools to detect and identify major grape pathogens
- Marker-Assisted Breeding (MAB) of apple
- CRISPR/Cas9-mediated gene editing of apple
- Weather-based prediction models for managing crop load in apple
- Partial canopy rain shelters for grapevine
- Novel fungicide chemistry for grape disease management

# FACILITIES

- 124 acres on the farm with over 40 field plots
- 6 modern labs
- 24,500 square foot complex
- 100 person auditorium

# INDUSTRY PARTNERS

- Virginia Agribusiness Council
- Wine Industry
- Apple Industry
- Virginia Department of Agriculture and Consumer Services

# ABOUT THE ALSON H. SMITH JR. AREC

The Alson H. Smith Jr. Agricultural Research and Extension Center serve Virginia's horticultural fruit industries through research, educational programs, student training, and the development of tools and technologies that increase sustainability and resiliency of commercial producers.

# A COLLABORATIVE NETWORK

The ARECs are a network of 11 centers strategically located throughout the state that emphasize close working relationships between Virginia Agricultural Experiment Station, Virginia Cooperative Extension, and the industries the work with. The mission of the system is

to engage in innovative, leading-edge research to discover new scientific knowledge and create and disseminate science-based applications that ensure the wise use of agricultural, natural, and community resources while enhancing quality of life.

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