ALSON H. SMITH JR.

Agricultural Research and Extension Center

Left: Acimovic lab members, L to R: Srdjan Acimovic, Fatemeh Khodadadi, Diana McHenry, and Bidhan Dhar. Right: Bitter rot symptoms on apple fruit.

Srdjan Acimovic was hired in May 2021 and, along with two research associates, Bidhan Dhar and Fatemeh Khodadadi, the team visited over 40 farms to collect apple bitter rot and fire blight samples. They formed a large collection of plant pathogen isolates, and are using new plant pathogen diagnostic equipment for genetic analyses of this collection. Apple bitter rot is one of the main diseases that impacted the fruit industry in Virginia in recent years. This disease is caused by several fungal species in the genus Colletotrichum, which infect apple fruit during summer. If fruit are not protected, infections quickly progress, fruit drop from the tree, and rot leads to load rejections as fruit cannot be used fresh or for processing.

Because several closely related species of fungi cause this disease, the team used gene sequencing and built a phylogeny tree to see how they relate to each other and to positively identify them. Identification is important because different species respond differently to fungicides and that complicates disease management and fungicide resistance prevention. The team is discussing its research ideas and disease management options with growers, and are including cooperators in project proposals going forward.

PARTNER WITH US

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"My lab works on integrated approaches to improve grape disease management, including the evaluation of a novel biological control agent against grapevine crown gall, which causes significant economic losses among growers in Virginia and around the world. As part of the SmartFarm Innovation Network and Center for Advanced Innovation in Agriculture, we launched two projects with a Virginia-based startup company, Agrology. Together, we are investigating the use of environmental sensor networks, near-infrared sensor images from an aerial drone, and machine learning models to develop precise disease management strategies."

MIZUHO NITA
ASSOCIATE PROFESSOR, GRAPE PATHOLOGY EXTENSION SPECIALIST

"Dr. Sherif has taken the needs of our Virginia growers to heart and is doing the work required to keep Virginia growers competitive in a complex marketplace. As a grower and consultant working with growers throughout the Mid-Atlantic, I am excited about what Dr. Sherif is bringing to the table. We will all benefit from it."

BILL MACKINTOSH
MACKINTOSH FRUIT FARM

ALSON H. SMITH JR. AREC AT A GLANCE

DISCIPLINES

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

VIRGINIA AGRICULTURAL EXPERIMENT STATION
VIRGINIA TECH.

Virginia Cooperative Extension
Virginia Tech • Virginia State University

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