



VIRGINIA AGRICULTURAL EXPERIMENT STATION  
EASTERN VIRGINIA AGRICULTURAL  
RESEARCH AND EXTENSION CENTER  
VIRGINIA TECH.

# EASTERN VIRGINIA AREC NEWSLETTER

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June 2021

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Eastern Virginia AREC



We hope that everyone had a great planting season! We have recently finished soybean planting here at the center, and as the calendar turns to June, we will be beginning wheat and barley harvest in the coming days. It was good to see many of you at our Small Grain Field Day in May. After a year of Zoom meetings, it was great to have an in-person event! If you were unable to attend, we invite you to check out our YouTube page and watch it there. The link is at the end of this newsletter.

We are pleased we have received significant funding from the General Assembly through CALS to be able to make several technological and equipment upgrades to streamline our planting and harvesting operations.

- Joseph

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## June Research Highlight!

### Using Aerial Imagery to Determine Nitrogen Applications

For some time now, we have emphasized using tiller density to determine if nitrogen applications are needed at Growth Stage 25 in wheat. Research published in Extension publications over several years advises that with a threshold of 50 to 100 tillers you don't need to apply nitrogen at Growth Stage 25, but if your tiller count falls below 50 at that stage, nitrogen is needed. In the past, handheld Normalized Differential Vegetative Index sensors have been used to collect the data on the greenness of plants and to determine how growth is progressing and the relationship to tiller count. With the advent of drones, we are looking to determine if aerial imagery can be used to help determine nitrogen rate and timing. In 2017, we launched a study examining the relationship between tiller density and aerial NDVI collected with an unmanned aerial vehicle over several Virginia locations. Research reveals that NDVI data collected through drones recommends the same amount of Growth Stage 25 nitrogen as did tiller density. Both methods recommended applying 40 pounds of nitrogen at Growth Stage 25 if the tiller count was below 50. Therefore, there is no difference in yield on whether nitrogen is applied based on tiller density or NDVI.



This study shows us that aerial NDVI is a great proxy and it can be used to determine tiller density, so instead of having to go out and physically count tillers, you can fly your drone to collect your NDVI data. The next step in this research is to bring the studies to large scale farmer fields in Virginia. We have been notified that this next stage of research has been funded by the Virginia Agricultural Council beginning in 2022. This will allow us to determine if the technology works large scale on the farm instead of just in small plots.

*This was adopted from an article describing this research in the Southeast Farm Press: [Using aerial imagery for nitrogen application in Virginia wheat \(farmprogress.com\)](https://www.farmprogress.com).*

## Recent Grants & Publications

### Grants:

- Improving Efficiency and Accuracy of Soybean Breeding Selection Using Remote Sensing Technology. **\$10,000**. Joseph Oakes, Bo Zhang, Song Li, Maria Balota. Virginia Soybean Board
- Eastern Virginia AREC Soybean Research Support. **\$7,500**. Joseph Oakes Virginia Soybean Board.
- Validating the Use of Aerial Imagery to Apply Nitrogen in Winter Wheat. **\$15,000**. Joseph Oakes, Maria Balota, Alexandre Brice Cazenave. Virginia Agricultural Council.
- Helping Wheat and Soybean Breeding with More Accurate Selection Technologies. **\$15,000**. Maria Balota, Joseph Oakes, Alexandre Brice Cazenave. Virginia Agricultural Council.

### Publications:

Brooks, W., Griffey, C., Vaughn, M., Seago, J., Thomason, W., Fitzgerald, J., Christopher, A., Pitman, R., Dunaway, D., Light, J., Rucker, E., Behl, H., Beahm, B., Browning, P., McMaster, N., Schmale III, D., Hardiman, T., Custis, J.T., Gulick, S., Ashburn, S.B., Jones Jr., N., Marshall, D., Fountain, M., Tuong, T., and Oakes, J. Registration of “SB255” winter barley. Journal of Plant Registrations. <https://doi.org/10.1002/plr2.20124>

## Small Grain Field Day

Did you miss our **Field Day in May** or is there a talk you would like to hear again? All of the presentations have been uploaded to YouTube and are available here:

[2021 Virginia Small Grain Field Day - YouTube](#)

## SAVE THE DATE!

The 2021 Virginia Soybean Field Day will be here at EVAREC on **September 23**. Stay tuned for more info!



Eastern Virginia AREC's **mission** is to serve Virginia's grain and soybean industries through research and educational programs leading to improved varieties and crop management practices. Our research objectives are to support the Virginia Tech soybean and small grain breeding programs, and to conduct agronomic research that contributes to economically and environmentally sound crop production in the Commonwealth and beyond.



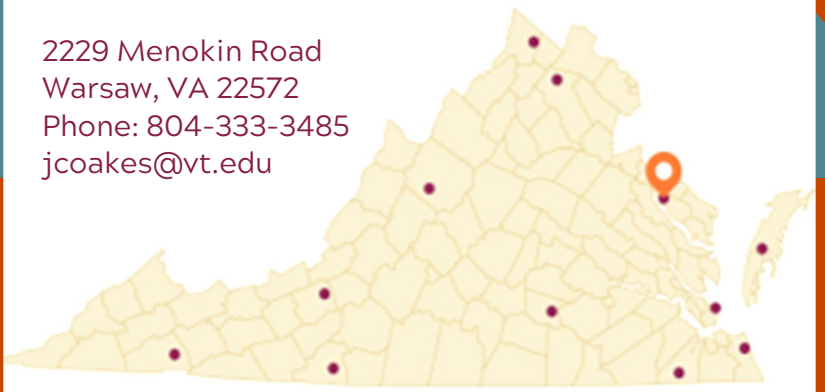
## A COLLABORATIVE NETWORK

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