



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

EASTERN VIRGINIA AREC NEWSLETTER

VOLUME IV, ISSUE I

March 2023

Dr. Joseph Oakes, Superintendent

Eastern Virginia AREC



Greetings from Eastern Virginia AREC!

Warm weather in March has caused wheat to green up and grow quickly! We have just hit jointing, and there is still concern that a late spring freeze will impact yield. It will be important to keep your eye on the crop closely as we move through March and into early April. See the *Specialist's Column* in this newsletter for more information on wheat freeze damage.

Our annual Small Grain Field Day will be held here at EVAREC on the morning of May 18, 2023. See attached flyer for more details and a registration link. We hope to see many of you here that day!

-Joseph

follow us:



YouTube



Specialist's Column

Due to our recent spring-like temperatures, we have received several questions regarding a late spring freeze. There is great concern that wheat will joint too early (growing point above the ground) and will be in danger of a late spring freeze in late March/early April.

Check out this handy publication from Kansas State outlining the temperatures that typically cause freeze injury to wheat at each growth stage.

[Click here to read the full publication.](#)



SPRING FREEZE INJURY

TO KANSAS WHEAT



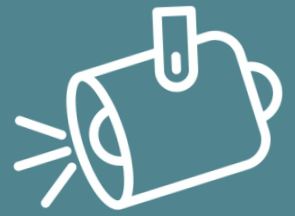
AGRICULTURAL EXPERIMENT STATION
AND
COOPERATIVE EXTENSION SERVICE
KANSAS STATE UNIVERSITY • MANHATTAN

Table 1. Temperatures that cause freeze injury to wheat at spring growth stages and symptoms and yield effect of spring freeze injury.

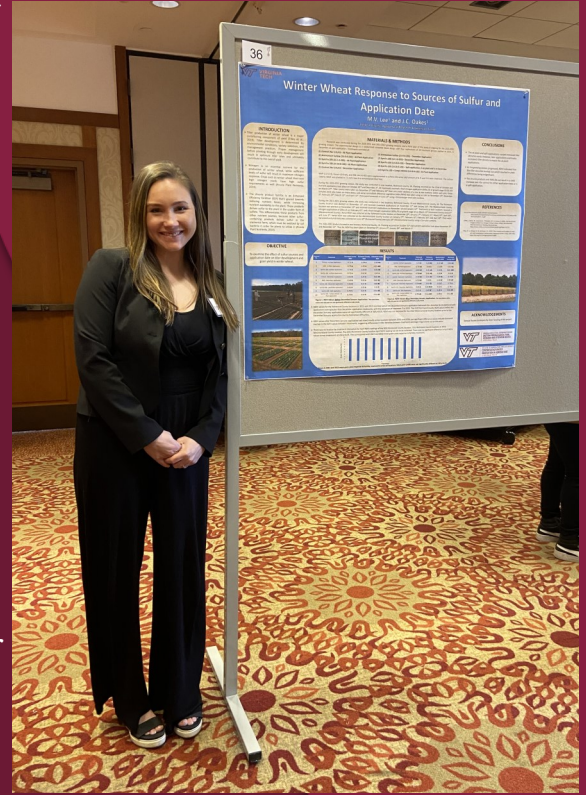
Growth stage	Approximate injurious temperature (two hours)	Primary symptoms	Yield effect
Tillering	12 F (-11 C)	Leaf chlorosis; burning of leaf tips; silage odor; blue cast to fields	Slight to moderate
Jointing	24 F (-4 C)	Death of growing point; leaf yellowing or burning; lesions, splitting, or bending of lower stem; odor	Moderate to severe
Boot	28 F (-2 C)	Floret sterility; spike trapped in boot; damage to lower stem; leaf discoloration; odor	Moderate to severe
Heading	30 F (-1 C)	Floret sterility; white awns or white spikes; damage to lower stem; leaf discoloration	Severe
Flowering	30 F (-1 C)	Floret sterility; white awns or white spikes; damage to lower stem; leaf discoloration	Severe
Milk	28 F (-2 C)	White awns or white spikes; damage to lower stems; leaf discoloration; shrunken, roughened, or discolored kernels	Moderate to severe
Dough	28 F (-2 C)	Shriveled, discolored kernels; poor germination	Slight to moderate

Student Spotlight

Michelle Lee
Research Specialist
OMALS Student



Tiller development of winter wheat is a major component of yield potential and relies heavily on environmental conditions, variety selection, and management practices. One major aspect of winter wheat management is nutrient applications. It is well known that nitrogen (N) is an essential nutrient for the production of winter wheat, and that sufficient levels of sulfur (S) will result in maximum N response. It is our theory that how and when sulfur is delivered to the plant, can either enhance or detract from that response and have an effect on yield. In 2020, we developed a study to examine the effect of sulfur sources and application date on tiller development and grain yield in winter wheat. The study evaluated Enhanced Efficiency Fertilizer (EEF) products from Anuvia Plant Nutirents, trademarked as SymTRX, in comparison to a control (no sulfur) and Ammonium Sulfate (AMS). The SymTRX products and AMS deliver sulfur to the plant in the usable form of sulfate. This differentiates these products from other nutrient sources, because other sulfur-containing products deliver sulfur in the elemental form, which must then be oxidized by soil bacteria in order for plants to utilize it. During our trials, Normalized Differential Vegetative Index (NDVI) was taken using an unmanned aerial vehicle (UAV) to observe tiller density in response to fertility treatments. So far, the relationships between application date, sources of sulfur, and NDVI have remained the same. The at-plant applications of the SymTRX products and AMS caused



increased tiller densities early; however, later applications eventually increased tiller density to match the at-plant applications. Yield differences have been insignificant at two of the three site-years. One of the site-years (Warsaw 2022) did show differences in yield. The SymTRX20S product, containing 20lbs. of S per acre, applied at plant, had higher yields than the split application and December application treatments. This suggests that the amount of sulfur and application timing does play a role in yield potential, under certain conditions. We are currently in year 3 of this study and are looking forward to the results of this year's trial.



Recent Awards & Publications

Grants and Awards:

- Automated Satellite Detection & Drone Tasking Automation for Precision Agriculture. \$10,000. Joseph Oakes. Pixelar, LLC from Virginia Innovation Partnership Corporation

Publications:

- Lee, M. and Oakes, J. Effective Tiller Management for Winter Wheat. Virginia Cooperative Extension Publication SPES-431P. https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/spes/spes-431/SPES-431.pdf
- Virginia Soybean Performance Tests 2022. Virginia Cooperative Extension Publication. https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/spes/spes-478/SPES-478.pdf
- Specialty Small Grains in 2022. Virginia Cooperative Extension Publication. https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/spes/spes-473/SPES-473.pdf

Upcoming Events:

- Virginia Small Grains Field Day - May 18, 2023 | 8:00am - 12:00pm | *see attached flyer*
 - CCA/pesticide credits
 - BBQ/Seafood lunch

Did you know



The Easter Virginia AREC was founded in Williamsburg in 1912 and moved to Warsaw in 1950.

2023 VIRGINIA SMALL GRAIN FIELD DAY



VIRGINIA AGRICULTURAL EXPERIMENT STATION
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May 18, 2023
8:00 – 12:00 pm

- Join us for the latest from the Virginia Tech small grain breeding team!
- CCA and pesticide credits will be available
- BBQ and Seafood lunch will be provided

[Register Here](#) for this free event!



Eastern Virginia Agricultural Research &
Extension Center

2229 Menokin Road
Warsaw, VA 22572



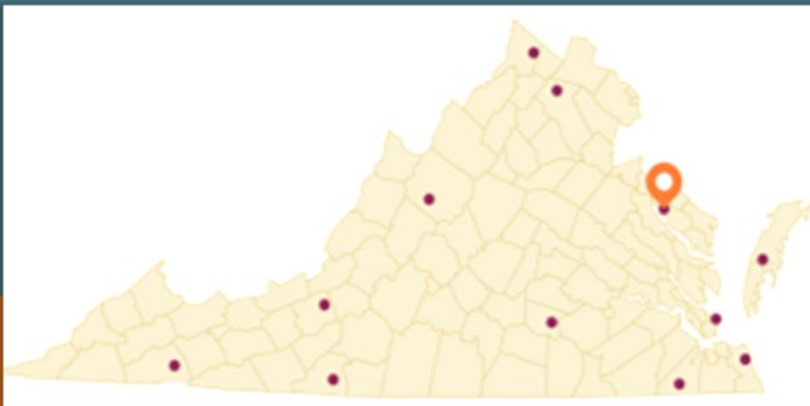


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Eastern Virginia AREC's mission is to serve Virginia's grain and soybean industries through research and educational programs leading to improved varieties and crop management practices. Our research objectives are to support the Virginia Tech soybean 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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