EASTERN SHORE AGRICULTURAL RESEARCH & EXTENSION CENTER

ACCOMACK & NORTHAMPTON COUNTY COOPERATIVE EXTENSION OFFICES

The Stalk

VOLUME I ISSUE VII

MARCH 2021

Winter Wheat Nitrogen Applications

What you need to know!

With over 8 inches of rain last month, it's been difficult to get in the field to apply nitrogen. We have received many calls and emails from growers with questions and concerns and wanted to share the Q & A session with our Stalk readers (cont. on page 3).

IN THIS ISSUE:

From The Director

Spring is around the corner and field preparation is well underway. You still have time to take soil samples and send them for processing at Virginia Tech or your favorite private lab. If you need soil testing kits for Virginia Tech, we have boxes at both Accomack and Northampton Extension offices and here at the Eastern Shore AREC. You can find the fillable soil test form at: https://tinyurl.com/7vwjb234 (VCE publication SPES-174NP). The best way to send soil samples is via UPS from the Eastern Shore as this delivery service remains relatively local along the route and samples are delivered directly to the VT Soil Testing Lab versus the campus mail delivery system. We also have a new publication that you can use if you are interested in applying secondary macronutrients and micronutrients to your small grain crops.

Check out SPES-200NP: https://tinyurl.com/n372xymn. Let us know if you have any questions!

– Mark

Agents Corner

Ursula & Theresa

The General Assembly concluded on March 1, 2021 and we wanted to highlight some of the bills that directly affect your operations.

Legislation passed that, in its original form, would prohibit any person from applying an aerosolized neonicotinoid insecticide for personal use unless the person (i) is certified or under the direct supervision of a certified applicator or (ii) provides 24-hour notice to the owner of any managed beehive within the line of sight of the application area. There were concerns about the bill and how it would restrict farmers' ability to use critical crop protectants. The Senate chose to convert the bill to a study on ways commercial applicators and beekeepers can improve communication to prevent impacts on pollinators. Aerosolized neonicotinoid insecticides can be applied for 2021 growing season.

Legislation failed that would have removed the exemption for farm workers from Virginia's minimum wage law, as well as the exemption for visa-holding migrant workers. For 2021, the farm worker minimum wage exemption is still in place.

Legislation passed that allows a locality to adopt an ordinance to require the removal of clutter from property, or may, whenever the governing body deems it necessary, after reasonable notice, have such clutter removed by its own agents or employees. The bill defines "clutter" as including mechanical equipment, household furniture, containers, and similar items that may be detrimental to the well-being of a community when they are left in public view for an extended period or are allowed to accumulate. For 2021, the "clutter" definition does not apply to land zoned for agriculture or inactive farming.

The State Budget passed and included the following amendments:

- Additional $30 million for agricultural BMPs and technical assistance to the Governor's total of $35 million dollars for a total of $65 million
- Additional $750,000 funding for matching grants from localities for local purchase of development rights programs to bring the total to $1,000,000
- $75,000 for the beehive grant program for a total of $200,000
- Language to create a workgroup to look at a nutrient credit trading program and its impact on loss of farmland
- $100,000 for ongoing internet costs at ARECs and county extension offices and $900,000 for additional agent positions
- $1.55 million for information technology upgrades at local offices and ARECs and $2.45 million for equipment at ARECs

We appreciate the work of Farm Bureau and The VA Agribusiness Council who lobbied on agriculture's behalf during the General Assembly. Without their hard work, farming operations in 2021 would be facing increased regulation on everything from minimum wage for farm workers, agricultural "clutter" and insecticide applications.

Virginia Cooperative Extension

Winter Wheat Nitrogen Applications

Questions?

Contact Dr. Mark Reiter (mreiter@vt.edu) or Dr. Wade Thomason (wthomaso@vt.edu)

It's finally drying out a bit and farmers are back in the fields. Some producers have not applied any nitrogen to wheat at this point. As always, we recommend following Mark Alley's publication for winter wheat nitrogen applications (https://www.pubs.ext.vt.edu/424/424-026/424-026.html). But, depending on what the producer has done so far this year, we have had these questions:

- ***I've applied no nitrogen yet. Do I have time to split my N applications?*** Probably not. You need at least 3 weeks between N applications to make the split worthwhile. If you expect to apply N in less than 3 weeks again, just 1 application might be warranted.
- ***How much N should I apply?*** We really only have enough growing season left for around 90 to 100 lbs. N/acre to be utilized. More than this is probably not needed.
- ***How do I figure out a rate?*** The best bet is a tissue test. Use Fig. 5 from VCE 424-026.
- ***Can you give me a rate without doing a tissue test?*** Try to gauge the current crop's N use so far. Take a look at figure 4 from pub VCE 424-026 using tiller counts and add that to the expected 60 lbs. N/acre second split to figure an applicate rate (i.e. 90 tillers/sq. ft. = 20 lbs. N/acre + 60 lbs. N/acre = 80 lbs. N/acre application rate).
- ***Is this wheat worth saving?*** On March 1, count the wheat tillers within a 1 square foot area. If you have at least 50 tillers, the wheat has enough plant population to have decent yields. If less than 50 tillers per 1 square foot, consider killing the crop as a cover crop as yields will be low.

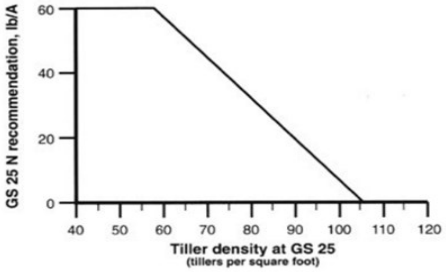

Figure 4 N rate recommendations for the first application in a split based on tiller density measurements.

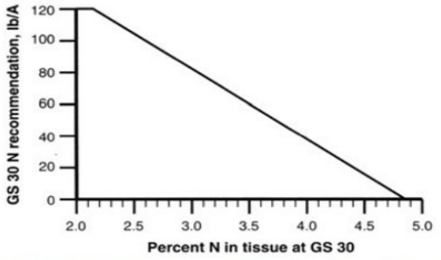

Figure 5. N rate recommendations for the second application in a split or a single late application based on tissue N content at growth stage 30.

The Entomology Department at the Eastern Shore AREC invites you enter March's "What's That Bug?" contest. Each month a new insect needs your correct identification. Email responses to hdoughty@vt.edu for your chance to win a prize!

*Quick tip, you can also email Hélène pictures of your pests to identify!

FEBRUARY'S BUG

Did you guess a squash vine borer? Click here to learn more about this common cucurbit pest!

VIRGINIA TECH™

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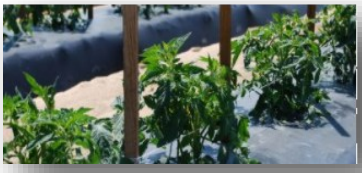
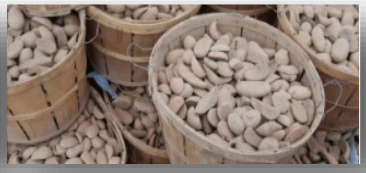
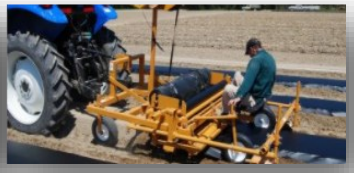
The Virginia Tech, Eastern Shore AREC is committed to supporting commercial vegetable, grain, oilseed, and fiber production throughout the Commonwealth of Virginia. Centrally located on Virginia's Eastern Shore, the center conducts basic and applied research on more than 25 agricultural crops.

If you are a person with a disability and desire any assistive devices, services or other accommodations to participate in any activity, please contact Lauren Seltzer at 757-807-6586* (*TDD number is (800) 828-1120) during business hours of 7:30 a.m. and 4:00 p.m. to discuss accommodations.



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Common Fertilizers Used in Virginia: Secondary and Micronutrients

Authored by Mark Reiter, Associate Professor and Extension Soils and Nutrient Management Specialist, Eastern Shore Agricultural Research and Extension Center, Virginia Tech

Introduction

Secondary macronutrients are used in relatively large quantities by plants for optimal growth and are sulfur (S), calcium (Ca), and magnesium (Mg). Micronutrients on the other hand are needed in much smaller quantities than both primary and secondary macronutrients; however, micronutrients are still essential for plant growth. Often, soils in Virginia contain enough micronutrients and fertilizer amendments are not warranted. Micronutrients include iron (Fe), zinc (Zn), copper (Cu), manganese (Mn), boron (B), chloride (Cl), molybdenum (Mo), cobalt (Co), sodium (Na), silicon (Si), selenium (Se), nickel (Ni), and Vanadium (V) (Havlin et al, 1996). Soil pH plays a large role in soil availability of secondary and micronutrients; therefore, proper soil testing and lime amendments are necessary to ensure adequate nutrient solubility within the soil system. Visit the Virginia Tech Soil Testing Lab website for additional publications and resources regarding proper soil sampling techniques and recommendations at: https://www.soiltest.vt.edu/. This publication will outline some possible secondary macronutrient and micronutrient fertilizer sources. However, numerous formulations and blends are available from many different companies and dealers. Regardless of product or source used, read the product's label carefully and follow all recommendations for foliar and/or soil application.

Table 1. Common fertilizer sources used in Virginia for secondary macronutrient and micronutrient applications.

Fertilizer Material	**Chemical Formula**	**Nutrient Percent**	**Other Nutrients (%)**
Calcium sources		**% Ca**	
Calcitic lime	$CaCO_3$	31.7	
Calcium nitrate	$Ca(NO_3)_2$	21.0	15% N
Dolomitic lime	$CaCO_3 \cdot MgCO_3$	21.5	11.4% Mg
Gypsum	$CaSO_4 \cdot 2H_2O$	22.5	16.8% S
Hydrated lime	$Ca(OH)_2$	46.1	
Marl	$CaCO_3$	24.0	
Polyhalite	$K_2SO_4 \cdot MgSO_4 \cdot 2CaSO_4 \cdot 2H_2O$	12.0	14% K_2O, 19% S, 4% Mg
Superphosphate, normal	$Ca(H_2PO_4)_2$	18-21	16-20% P_2O_5
Superphosphate, triple	$Ca(H_2PO_4)_2$	13-15	44-48% P_2O_5
Sulfur sources		**% S**	
Ammonium sulfate	$(NH_4)_2SO_4$	24	21% N
Ammonium thiosulfate	$(NH_4)_2S_2O_3$	26	12% N

Fertilizer Material	**Chemical Formula**	**Nutrient Percent**	**Other Nutrients (%)**
Gypsum	$CaSO_4 \cdot 2H_2O$	16.8	22.5% Ca
Polyhalite	K2SO4·MgSO4·2CaSO4· 2H2O	19	14% K_2O, 19% S, 4% Mg, 12% Ca
Potassium magnesium sulfate	$K_2SO_4 \cdot 2MgSO_4$	22.0	22% K_2O, 11% Mg
Potassium sulfate	K2SO4	17-20	48-54% K_2O
Potassium thiosulfate	$K_2S_2O_3$	17	25% K_2O
Sulfur, elemental	S	90-100	
Urea-sulfur	$CO(NH_2)_2$+S	10-20	36-40% N
Urea-ammonium nitrate, sulfur blend	Various	3-5	24-28% N
Zinc sulfate	$ZnSO_4 \cdot H_2O$	17.8	36.4% Zn
Magnesium sources		**% Mg**	
Dolomitic lime	$MgCO_3 \cdot CaCO_3$	11.4	21.5% Ca
Epsom salt	$MgSO_4 \cdot 7H_2O$	9.6	13% S
Magnesia	MgO	55.0	
Polyhalite	K2SO4·MgSO4·2CaSO4· 2H2O	4	14% K_2O, 19% S, 12% Ca
Potassium magnesium sulfate	$K_2SO_4 \cdot 2MgSO_4$	11.2	22% K_2O, 22% S
Boron Sources		**% B**	
Borax	$Na_2B_4O_7 \cdot 10H_2O$	11.3	
Sodium octaborate, Borate 65	$Na_2B_8O_{13} \cdot 4H_2O$	20-21	
Sodium pentaborate	$Na_2B_{10}O_{16} \cdot 10H_2O$	18	
Sodium tetraborate, Borate 46	$Na_2B_4O_7 \cdot 5H_2O$	14-15	
Boric acid	H_3BO_3	17.0	
Boron frits	Frit	2-11	
Solubor	$Na_2B_4O_7 \cdot 5H_2O$ + $Na_2B_{10}O_{16} \cdot 10H_2O$	20-21	
Molybdenum sources		**% Mo**	
Ammonium molybdate	$(NH_4)_6Mo_7O_{24} \cdot 2H_2O$	54	7% N
Molybdenum frits	Frit	1-30	
Molybdenum trioxide	MoO_3	66	
Sodium molybdate	$Na_2MoO_4 \cdot 2H_2O$	39	
Copper ammonium phosphate	$Cu(NH_4)PO_4 \cdot H_2O$	32	7.2% N, 36.5% P_2O_5
Copper chelates	NaCuHEDTA	9	

Fertilizer Material	Chemical Formula	Nutrient Percent	Other Nutrients (%)
Copper sources		**% Cu**	
Copper chelates	$Na_2CuEDTA$	13	
Copper frits	Frit	40-50	
Copper sulfate	$CuSO_4 \cdot 5H_2O$	25.5	12.8% S
Manganese sources		**% Mn**	
Manganese chelate	MnEDTA	12	
Manganese frits	Frit	10-35	
Manganese oxide	MnO	41-68	
Manganese sulfate	$MnSO_4 \cdot 4H_2O$	26-28	14.4% S
Zinc sources		**% Zn**	
Zinc carbonate	$ZnCO_3$	52	
Zinc chelates	NaZnHEDTA	9	
Zinc chelates	$Na_2ZnEDTA$	14	
Zinc oxide	ZnO	78	
Zinc phosphate	$Zn_3(PO_4)_2$	51	18.4% P_2O_5
Zinc sulfate	$ZnSO_4 \cdot H_2O$	35	17.9% S
Iron Sources		**% Fe**	
Iron ammonium phosphate	$Fe(NH_4)PO_4 \cdot H_2O$	29	7.5% N, 38% P_2O_5
Iron ammonium polyphosphate	$Fe(NH_4)HP_2O_7$	22	5.6% N, 57% P_2O_5
Iron chelates	NaFeEDTA	5-14	
Iron chelates	NaFeEDDHA	6	
Iron chelates	NaFeDTPA	10	
Iron frits	Frit	30-40	
Iron sulfate, Ferrous sulfate	$FeSO_4 \cdot 7H_2O$	19	11.5% S

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