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The ESVA Farming Community Remembers Fred Holland

Fred Holland Jr., of W.T. Holland & Sons, passed away unexpectedly on January 26, 2021. He will be greatly missed and is remembered fondly as one of the most important members of our agricultural community ([cont'd on page 3](#)).

From The Director

More rain means more rest, right? Well, at least more time to plan upcoming Spring field activities. You can easily check out the latest weather conditions on our AREC weather site found at: <http://vt-arec.weatherstem.com/arec81>. With our station, you can easily find typical weather outputs such as temperature, wind, and rainfall, but also harder to find indicators such as solar radiation and UV radiation. You can also easily mine past weather data using the historical function and spy on us with the weather cam. Interested in WeatherSTEM on the go? Download the



App and add “Eastern Shore” to your dashboard! Available in the [App Store](#) and [Google Play](#).

When we dry out, our new publication relating to common fertilizer sources available for nitrogen, phosphorus, and potassium application might be helpful (https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/spes/spes-199/SPES-199.pdf). This new publication outlines weight per gallon and corresponding pounds of nitrogen per gallon for some common products used on the Eastern Shore, along with salt-out temperatures that might be informative.

Finally, the Eastern Shore Ag Conference and Trade Show is live on our YouTube channel. Check out some of the latest information that will hopefully help you increase yields and/or save money: <https://www.youtube.com/playlist?list=PLldHHn24T22mSj7OGG6vbZfKE8sG6blyq>.



**Eastern Shore
Agricultural
Conference
& Trade Show**

Let us know if you have any questions!

— Mark

Agents Corner

As the winter lingers on, signs of spring are starting to appear. Soon sprayers will be in the field killing weeds and potatoes will be planted. These long winter days are a great opportunity to expand our agricultural knowledge and start planning for the next growing season. This year we worked hard to provide one of those educational opportunities by hosting the 2021 Eastern Shore Ag Conference virtually. We had 24 recorded videos of timely updates from specialists who normally provide key presentations at the annual in-person Eastern Shore Ag Conference. If you didn't get a chance to look at these videos please take some time and watch them, we are interested in your feedback. We are hopeful to be back in-person next year so make sure to [Save the Date](#) for the [2022 Eastern Shore Ag Conference & Trade Show on January 26th & 27th](#).



Ursula & Theresa

CHESAPEAKE BAY FARM VOLUNTARY AG BMP SURVEY

If you farm any land on the bayside it is crucial that you fill out the Chesapeake Bay Farm Voluntary Ag BMP Survey. The documentation of these practices will let government officials know that producers on the Eastern Shore and Virginia are working tirelessly to meet the WIP III goals. Every documented acre will be entered into the Chesapeake Bay model and we will be given "credit" for each practice. Our hope is that we can provide evidence that growers are working to meet our goals and not have further regulatory legislation passed. For more information about the survey, including answers to frequently asked questions as well as the survey link, please visit <https://vaswcd.org/virginia-farm-voluntary-agricultural-bmp-inventory>. If you have any questions about the survey or need assistance, please contact your County Agent.

PRIVATE PESTICIDE CLASSES 90 & 91

If you need recertification credits for 2021 – contact us NOW! Private pesticide recertification will be offered virtually for the foreseeable future through the Virginia Tech Canvas platform. If you would like to participate, please contact Ursula or Theresa.

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

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

JANUARY'S BUG



Did you guess a wheel bug?
Click [here](#) to learn more about this member of the assassin bug family!

Remembering Fred Holland

For those of us that had the pleasure of knowing Fred Holland, January 26th was a day of disbelief. The Eastern Shore of Virginia not only lost one of its strongest agricultural advocates, but also a dear friend and colleague. Fred was always willing share a laugh, serve his community and help his fellow farmer. We wanted to share the impact he had on our community with all of our Stalk readers. His obituary can be found [here](#). Our thoughts are with his family and friends during this time.



"When I think of Fred Holland, I will always remember him as a man of integrity, always striving to treat others with kindness and respect. When I started working at the ES Soil & Water Conservation District over 17 years ago, just a month later Fred began serving his first term as a Director on the Board. Over the course of 17+ years, Fred also became a reliable friend. He loved his family, agriculture and conserving natural resources on the Eastern Shore and will be tremendously missed by all who knew him." - Carmie Savage, Executive Director of the Eastern Shore Soil and Water Conservation District

"Fred was a dear friend, tireless worker, and vital member of numerous farm and civic organizations. His contribution to Virginia agriculture was immense; he was never too busy to lend a helping hand to an individual or organization, always with a smile. He will be missed by many..." - Butch Nottingham, Virginia Department of Agriculture and Consumer Services (VDACS)

"Faith, Family, & Farming were all hallmarks of Fred, Jr. and he excelled in all three. He will be missed by all who knew him."

- Bruce Richardson, Chairman of the Virginia Irish Potato Board

"To know Fred you had to understand that he had a great sense of humor and loved playing pranks. As you know, I am a Hokie and a few years ago Tech was playing an early game on tv. The tv room was on the third floor but the breaker box was by the pool table on the ground floor. Well, Fred found it and throughout the game would trip the breaker for our tv and I would have to run down 3 flights of stairs and flip it back on. I would have never known what happened until his laughter got the best of him and he couldn't hold it any longer. We were laughing about that shortly before he died and he is probably still laughing. The other thing about Fred is his moral compass was way more north than 99.9% of the people you will ever meet." - Phil Hickman, Dublin Farms

"Every time I talked to Fred and asked him how everything was going he would say 'Just Wonderful'. He will be missed." - HL Kellam, Farm Service Agency

"Fred Holland was one of the best farmers on the Eastern Shore, but he was an even better man than he was a farmer. Fred was the type of man who was always glad to see you and remembered the names of your wife and children when he asked about them. Meetings of the Eastern Shore Soil and Water Board will never be the same. We will miss you greatly, Fred." - Jim Evans, Evans Farm

"Fred played a big role in Virginia Cooperative Extension programs from hosting Accomack County Farm Tour to starring in YouTube videos about white potato production. He was always someone we could count on to be supportive and to make us laugh." - Theresa Pittman, Accomack County Extension, Ursula Deitch, Northampton County Extension

"You could not find a bigger advocate for agriculture than Fred. Whether it was serving on a committee or advising us on a research project at the Virginia Tech Eastern Shore AREC, you could count on Fred to give advice for the betterment of Eastern Shore Ag. He will be missed by all." - Dr. Mark Reiter, Eastern Shore AREC Director



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<https://www.arec.vaes.vt.edu/arec/eastern-shore.html>

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: Nitrogen, Phosphorus and Potassium

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

Introduction

Macro elements are used in large quantities by plants for optimal growth. Ensuring an adequate nutrient supply over the growing season and applied at proper timings with correct rates is imperative for efficient fertilizer use efficiency. For fertilizers, fully understanding what nutrient sources are available and some fertilizer basic characteristics is imperative for using nutrients economically in Virginia production systems. For liquid materials, understanding the weight per gallon is needed in conjunction with fertilizer nutrient labeling (i.e. % N-P₂O₅-K₂O) to calculate total nutrient applied. While not substantial, temperature can also impact liquid fertilizer density; which slightly changes application rates (Table 1). This publication will summarize commonly used fertilizers in Virginia for nitrogen (N), phosphorus (P), and potassium (K) (Table 2). Several fertilizer products have a range for nutrient concentrations, as raw products may vary. When possible, the most common form used in Virginia is presented. However, note that your local fertilizer dealers' product may vary slightly and their label should be used instead of this document.

Table 1. Nitrogen fertilizer density and applied nutrient per gallon changes with temperature.

Material Supplying Nitrogen Fertilizer	Nitrogen (%N)	Density Temperature (°F)	Density (lbs./gallon)	Nitrogen (lbs. N/gallon)	Salt Out Temperature (°F)
Urea-ammonium nitrate	28	30	10.76	3.01	1
		50	10.70	3.00	
		60	10.67	2.99	
		70	10.64	2.98	
		80	10.61	2.97	
		90	10.58	2.96	
Urea-ammonium nitrate	30	30	10.99	3.30	14
		50	10.93	3.28	
		60	10.90	3.27	
		70	10.87	3.26	
		80	10.84	3.25	
		90	10.81	3.24	
Urea-ammonium nitrate	32	30	11.14	3.56	28
		50	11.09	3.55	
		60	11.05	3.54	
		70	11.02	3.53	
		80	10.99	3.52	
		90	10.95	3.50	

Table 2. Common fertilizer sources used in Virginia for nitrogen, phosphorus, and potassium nutrient applications.

Material Supplying	Synonyms	Chemical Formula	Nitrogen (%N)	Phosphate (%P ₂ O ₅)	Potash (%K ₂ O)	Other Nutrients	Physical State	Weight per gallon for liquids (lbs./gal.)
Nitrogen								
Ammonium nitrate	---	NH ₄ NO ₃	33-34	0	0	---	solid	---
Ammonium sulfate	AMS	(NH ₄) ₂ SO ₄	21	0	0	24% S	solid	---
Ammonium sulfate, liquid	---	(NH ₄) ₂ SO ₄	8	0	0	9% S	liquid, salt out at 15°F	10.14
Ammonium thiosulfate	---	(NH ₄) ₂ S ₂ O ₃	12	0	0	26% S	liquid, salt out at 20°F	11.18
Anhydrous ammonia	---	NH ₃	82	0	0	---	gas	5.15
Calcium nitrate	Lime nitrate, nitrocalcite, lime saltpeter, Norwegian saltpeter	Ca(NO ₃) ₂	15	0	0	21% Ca	solid	---
Sodium nitrate	Chilean saltpeter, Chilean nitrate	NaNO ₃	16	0	0	26% Na	solid	---
Urea	Carbamide	CO(NH ₂) ₂	45-46	0	0	---	solid	---
Urea-ammonium nitrate	Liquid nitrogen, UAN28	CO(NH ₂) ₂ ·NH ₄ NO ₃	28	0	0	---	liquid, salt out at 1°F	10.66
Urea-ammonium nitrate	Liquid nitrogen, UAN30	CO(NH ₂) ₂ ·NH ₄ NO ₃	30	0	0	---	liquid, salt out at 14°F	10.88
Urea-ammonium nitrate	Liquid nitrogen, UAN32	CO(NH ₂) ₂ ·NH ₄ NO ₃	32	0	0	---	liquid, salt out at 28°F	11.06
Urea-ammonium nitrate, sulfur blend	UANS	Various	24	0	0	3% S	liquid	10.68
Urea-ammonium nitrate, sulfur blend	UANS	Various	28	0	0	5% S	liquid, salt out at 10°F	10.76

Table 2 cont. Common fertilizer sources used in Virginia for nitrogen, phosphorus, and potassium nutrient applications.

Material Supplying	Synonyms	Chemical Formula	Nitrogen (%N)	Phosphate (%P ₂ O ₅)	Potash (%K ₂ O)	Other Nutrients	Physical State	Weight per gallon for liquids (lbs./gal.)
Phosphorus								
Ammonium polyphosphate	APP, Polyphosphate	[NH ₄ PO ₃] _n (OH) ₂	10	34	0	1.4% S	liquid, salt out at -10°F	11.63
Ammonium polyphosphate	APP, Polyphosphate	[NH ₄ PO ₃] _n (OH) ₂	11	37	0	1.6% S	liquid, salt out at <32°F	11.99
Bone, ground and raw	Raw bone meal	---	4-6	16-27	0	---	solid	---
Bone, steamed meal	Bone flour meal	---	2	20-28	0	---	solid	---
Diammonium phosphate	DAP	(NH ₄) ₂ HPO ₄	18	46	0	---	solid	---
Ground rock phosphate	Phosphorite, mineral phosphate	[Ca ₅ (PO ₄ ,CO ₃) ₃ (F,OH)]	0	5-48	0	---	solid	---
Monoammonium phosphate	MAP	NH ₄ H ₂ PO ₄	11	52	0	---	solid	---
Poultry litter	Litter, chicken litter	---	2-4	2-4	2	0.4% S	solid	---
Superphosphate, single	SSP, ordinary supersphosphate, normal superphosphate	Ca(H ₂ PO ₄) ₂ ·H ₂ O	0	16-20	0	18-21% Ca; 11-21% S	solid	---
Superphosphate, triple	TSP	Ca(H ₂ PO ₄) ₂ ·H ₂ O	0	44-48	0	13-15% Ca	solid	---
Potassium								
Polyhalite	---	K ₂ SO ₄ ·MgSO ₄ ·2CaSO ₄ ·2H ₂ O	0	0	14	19% S, 4% Mg, 12% Ca	solid	---
Potassium chloride	Muriate of potash, KCl	KCl	0	0	60	48% Cl	solid	---
Potassium magnesium sulfate	Langbeinite, Sul-Po-Mag, K-Mag	K ₂ SO ₄ ·2MgSO ₄	0	0	22	11% Mg, 22% S, <2.5% Cl	solid	---
Potassium nitrate	Nitrate of potash, NOP, saltpeter	KNO ₃	13	0	44	---	solid	---
Potassium orthophosphate	Potassium phosphate solution	---	0	20	20	---	Liquid, salt out at 10°F	12.04
Potassium sulfate	Sulfate of potash, SOP	K ₂ SO ₄	0	0	48-54	17-20% S, <2.5% Cl	solid	---
Potassium thiosulfate	KTS	K ₂ S ₂ O ₃	0	0	25	17% S	liquid, salt out at <15°F	12.18

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