

## COSHOCTON COUNTY AGRICULTURE & NATURAL RESOURCES



### March 17 Issue (Edition #86)

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 County

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Happy Saint Patrick's Day! It is another beautiful day here in Coshocton (but may be short lived with rain in the forecast tomorrow).

We had a nice response to our virtual **Minerals for Beef Cattle** workshop held last evening. Dr. Steve Boyles and Garth Ruff did a great job teaching. If you missed the program and would like to watch the recording, please let me know and I will happy to send to you.

Agriculture was featured by Leadership Coshocton County over the best week as both the Adult and Youth programs got to learn more about our great industry. Thanks to Daugherty Farms, Scheetz Christmas Tree Farm and Lapp Farms for sharing their operations. Thanks to Kecie Buxton, Samantha Daugherty and Jen Croft for spearheading these events.

Hope you have a great day. Looking forward to a great spring planting season.

Sincerely,

*David L. Marrison*

Coshocton County OSU Extension ANR Educator



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## Typical March Weather Continues

By Aaron Wilson

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2021-06/typical-march-weather-continues>

After a warm December and January but chilly February, Ohio's winter will go down as one of near-average temperatures for the season. This past winter also ranks as the 23rd driest on record (1895-2021). This was a bit unusual given the cooler than average sea surface temperatures in the tropical Pacific Ocean, a pattern referred to as La Niña, and one that often brings wet weather to the Ohio Valley during winter and early spring.

A more active pattern has certainly set in over the last several weeks, especially across southern Ohio. Precipitation for the last 30 days shows quite a contrast between northern and southern Ohio, with less than 1 inch falling across northwestern counties, while areas near the Ohio River have experienced more than 4 inches (Fig. 1). With long-term lingering dry conditions relative to average across northern Ohio, the current [U.S. Drought Monitor](#) depicts more than 50% of the state in abnormally dry conditions, with Fulton, Lucas, and northern Wood counties currently in moderate drought conditions. Whether this long-term dryness will have an impact on the summer growing season could largely be determined by the weather pattern over the next several weeks.

### Forecast

A system that brought rain (freezing rain and sleet to some areas) across the state on Monday will be moving out of the region on Tuesday. After a brief break on Wednesday, a potent system will move through on Thursday with another round of showers and thunderstorms. Under the influence of high pressure, conditions will dry out over the weekend with fair weather expected. Highs in the 50s and 60s midweek will trend cooler for Thursday and Friday, then slightly warmer temperatures will resume for the weekend. The [Weather Prediction Center](#) is currently forecasting 0.75-1.50" of rain across Ohio over the next 7 days (Fig. 2).

The latest [NOAA/NWS/Climate Prediction Center](#) outlook for the 8-14 day period (March 23 -29) and the [16-Day Rainfall Outlook from NOAA/NWS/Ohio River Forecast Center](#) show a strong probability of above average temperatures and

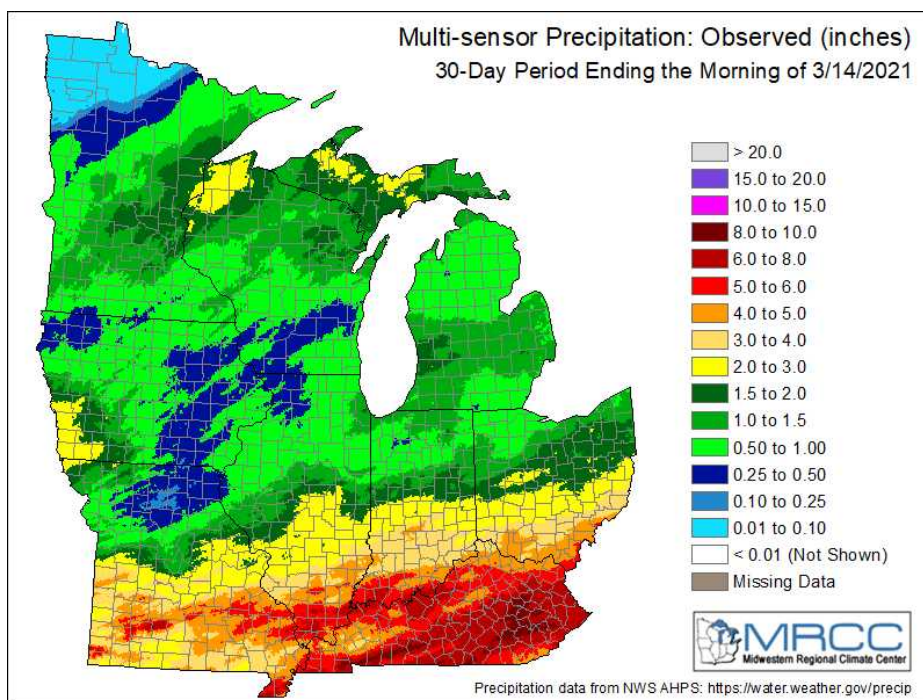


Figure 1). Multi-sensor precipitation estimates for the past 30-days ending March 14, 2021. Courtesy of the Midwest Regional Climate Center.

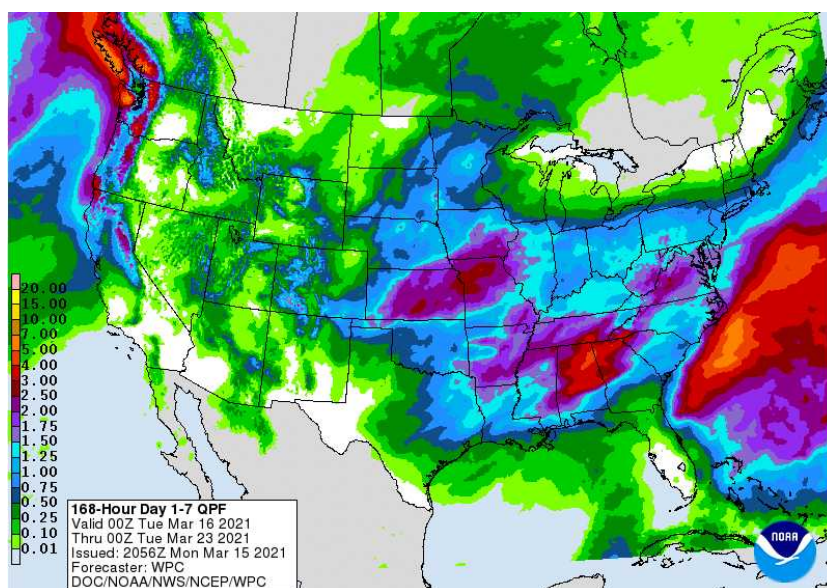


Figure 2: Forecast precipitation for the next 7 days. Valid from 7 pm Monday March 15, 2021 through 7 pm Monday March 23, 2021. Figure from the [Weather Prediction Center](#).

elevated probability of above average precipitation (Fig. 3). Normal highs (north-to-south) during the period are in the upper-40s to mid-50s, lows in the upper-20s to mid-30s, with 0.5-1.00" of precipitation per week.

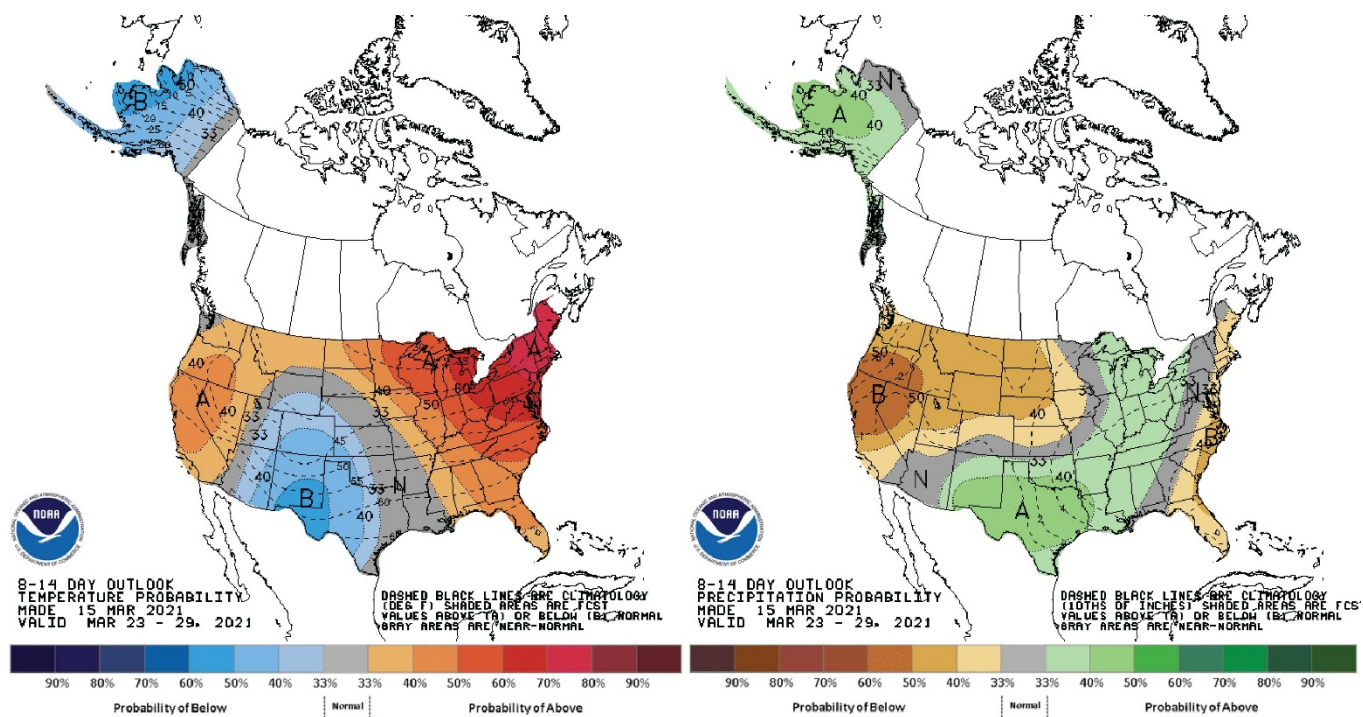


Figure 3: Climate Prediction Center 8-14 Day Outlook valid for March 23 - 29, 2020 for left) temperatures and right) precipitation. Colors represent the probability of below, normal, or above normal conditions.

## Forage Planting- How to Do It Well

By: Mark Sulc & Jason Hartschuh

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2021-06/forage-planting-%E2%80%93-how-do-it-well>

Early spring provides one of the two preferred times to seed perennial cool-season forages, the other being late summer. The outlook for this spring is for probabilities of above average precipitation in April and May. Planting opportunities will likely be few and short. An accompanying article on preparing now for planting along with the following 10 steps to follow on the day you plant will help improve chances for successful forage establishment.

1. Check now to make sure soil pH and fertility are in the recommended ranges. Follow the Tri-state Soil Fertility Recommendations (<https://forages.osu.edu/forage-management/soil-fertility-forages>). Forages are more productive where soil pH is above 6.0, but for alfalfa it should be 6.5 – 6.8. Soil phosphorus should be at least 20 ppm for grasses and 30 ppm for legumes, while minimum soil potassium should be 100 ppm for sandy soils less than 5 CEC or 120 ppm on all other soils. If seedlings are to include alfalfa, and soil pH is not at least 6.5, it would be best to apply lime now and delay establishing alfalfa until late summer (plant an annual grass forage in the interim).
2. Plant high quality seed of known varietal source adapted to our region. Planting "common" seed (variety not stated) usually proves to be a very poor investment, yielding less even in the first or second year and having shorter stand life. Be mindful of how much seed coating is present on the seed you are planting. Many of the new alfalfa varieties are sold with a 34% clay coating by weight, so your actual pure live seed rate would be dramatically reduced if you don't adjust for the seed coating.
3. Calibrate forage seeders ahead of time. Seed flow can vary greatly for different varieties and depending on the seed treatment and coatings applied. A good video on this entitled "Drill Calibration" is at <https://forages.osu.edu/video/>.
4. Prepare a good seedbed as soon as soils are fit in April. The ideal seedbed for conventional seedings is smooth, firm, and weed-free. Don't overwork the soil. Too much tillage depletes moisture and



increases the risk of surface crusting. Firm the seedbed before seeding to ensure good seed-soil contact and reduce the rate of drying in the seed zone. Cultipackers and cultimulchers are excellent implements for firming the soil. If residue cover is more than 35% use a no-till drill. No-till seeding is an excellent choice where soil erosion is a hazard. No-till forage seedings are most successful on silt loam soils with good drainage and are more difficult on clay soils or poorly drained soils. You will want no-till fields to be smooth because you do not want to bounce over them for all the years of this stand!

5. Try to finish seeding by the end of April in southern Ohio and by the first of May in northern Ohio. Timely planting gives forage seedlings the jump on weeds and the forages become established before summer stress sets in. Weed pressure increases with later plantings, and forages will not have as strong a root system developed by early summer when conditions can turn dry and hot. Later plantings also yield less, so if planting is delayed, it might be better to plant a summer annual and establish the perennial forages in August.
6. Plant seed shallow ( $\frac{1}{4}$  to  $\frac{1}{2}$  inch deep) in good contact with the soil. Stop and check the actual depth of the seed in the field when you first start planting. This is especially important with no-till drills. In my experience, seeding some seed on the surface indicates most of the seed is about at the right depth.
7. When seeding into a tilled seedbed, drills with press wheels are the best choice. When seeding without press wheels or when broadcasting seed, cultipack before and after dropping the seed, preferably in the same direction the seeder was driven.
8. In fields with little erosion hazard, direct seedings without a companion crop in the spring allows harvesting two or three crops of high-quality forage in the seeding year, particularly when seeding alfalfa and red clover. For conventional seedings on erosion prone fields, a small grain companion crop can reduce the erosion hazard and will also help compete with weeds. Companion crops like oat can also help on soils prone to surface crusting. Companion crops usually increase total forage tonnage in the seeding year, but forage quality will be lower than direct seeded legumes. Take the following precautions to avoid excessive competition of the companion crop with forage seedlings: (i) use early-maturing, short, and stiff-strawed small grain varieties, (ii) plant small grains at 1.5-2.0 bu/A, (iii) remove companion crop as early pasture or silage, and (iv) do not apply additional nitrogen to the companion crop.
9. During the first 6 to 8 weeks after seeding, scout new seedings weekly for any developing weed or insect problems. Weed competition during the first six weeks is most damaging to stand establishment. Potato leafhopper damage on legumes in particular can be a concern beginning in late May to early June.
10. The first harvest of the new seeding should generally be delayed until early flowering of legumes (approximately 60 days after emergence) unless weeds were not controlled adequately and are threatening to smother the stand. For pure grass seedings, generally harvest after 70 days from planting, unless weeds are encroaching in which case the stand should be clipped earlier to avoid weed seed production.

## ***Time is Now to Purchase the Right Nozzles for Your Spraying Needs***

By: Erdal Ozkan

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2021-06/time-now-purchase-right-nozzles-your-spraying-needs>

This is the time of the year you must complete shopping for nozzles because the spraying season is just around the corner. Each part of the application equipment plays a critical role in achieving maximum performance from the sprayer. Therefore, each component must be selected carefully and must perform successfully the tasks associated with it. Although nozzles are some of the least expensive components of a sprayer, they hold a high value in their ability to influence sprayer performance. They help determine the gallon per acre intended application rate. They also influence the droplet size, which plays a significant role in achieving improved penetration into crop canopy and better coverage on the target pest, both affect the efficacy we expect from pesticides applied. Wrong choice of nozzle may hurt us in several ways, but here are the three most obvious ones: We may end up with streaks of untreated areas causing non-uniform pest

control; or simply complete failure or ineffective pest control which require repeat applications; and finally, we may end up losing a significant part of the pesticides applied in the form of spray drift. Sometimes, the choice of nozzle may be determined by the requirements given on the pesticide label.

Selecting the best nozzle requires careful consideration of many important factors including: sprayer operation parameters (such as application rate, spray pressure, travel speed); type of chemical sprayed (herbicides, insecticides, fungicides); mode of action of chemicals (systemic, contact); application type (broadcast, band, directed, air assisted); target crop (field crops, vegetables, vineyard, shrubs and trees, etc.); and spray drift risk. I will briefly cover some of these topics in this article. For detailed information on nozzle selection, I strongly recommend you read a new Ohio State University Extension Publication, entitled “Selecting the Best Nozzle for the Job”. In this publication, you will see step-by-step guidelines for selecting the most appropriate spray nozzle for a given application situation. The publication is available online at following web site: <http://ohioline.osu.edu/factsheet/fabe-528>



### Which nozzle type is best for your situation?

When I get a question like, “what is the best nozzle I can buy?”, my answer is: it depends on the job on hand. The nozzle selection is a two-step process. First, we need to determine the type of nozzle best for a given situation. Next, we need to determine the appropriate size of that nozzle that will be capable of providing the desired gallons per acre application rate under various operating conditions such as travel speed and spray pressure. Each nozzle type is designed for a specific type of target and application. For example, a nozzle designed for broadcast spraying is not good for spraying pesticides over a narrow band. While one nozzle may be best for a given situation, it may be worst choice for another. For example, we at Ohio State University have conducted field experiments to determine which nozzles to choose for two different application situations: soybean diseases such as rust and white mold, and wheat diseases such as head scab and stem rust. We included 6-8 different nozzles in the experiments. We found out that while a twin-fan pattern nozzle was best for controlling wheat head scab, the same nozzle turned out to be the worst choice to protect soybeans against rust and white mold when the soybean canopy is tall and dense. So, before buying the nozzles and putting them on the boom, check the nozzle manufacturers’ catalogs which have charts showing which nozzle type will be best for a specific job. Check the websites of nozzle manufacturers to reach their catalogs.



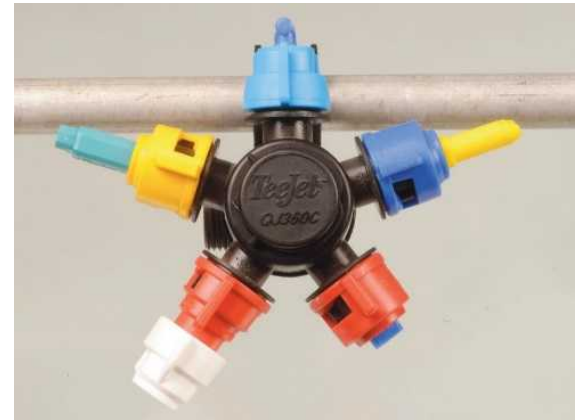
### Nozzle size

Once you determine the type of a nozzle you need to buy, you also must buy the right size of that nozzle which will satisfy the application rate (gallons per acre or gpa) you wish to use as you do your spraying at different travel speeds. Nozzle catalogs are filled with tables and charts showing application rates, given a nozzle’s flow rate (gallons per minute or gpm) delivered at various pressures (psi) and travel speeds (mph). However, the

charts are only for a limited number of travel speed and nozzle spacing situations. Most nozzle manufacturers have developed Apps for smart phones that provide you the exact nozzle flow rate required for any given set of application parameters, and identify a specific set of nozzle recommendations for the given application parameters. To find these Apps, simply visit the App Store in your smart phone or tablet and do a search under “Spray Nozzle Calculator”, or some other key words related to nozzle size selection.

#### Keep several types of nozzles on the boom

Remember that one specific type of nozzle will not be best for all applications. For this reason, it is best to have several types and sizes of nozzles on the boom so that you can switch to the “best” nozzle choice for a given spraying job. As shown in the pictures below, there are various types of sprayer components and setups you can buy to configure your boom so the new set up allows you to easily switch from one nozzle to another instantly.



#### Keep spray drift in mind when selecting nozzles

Spray drift (movement of pesticides by wind from the application site to an off- target site) is a serious problem for many reasons.



Extensive information

related to factors influencing creation of spray drift, is provided in the Ohio State University Extension publication FABE-525 (<http://ohioline.osu.edu/factsheet/fabe-525>). After wind speed and other weather-related conditions, choice of nozzles is the second most influential factor affecting drift. Research conducted at The Ohio State University and elsewhere clearly indicate that nozzles labeled as “low-drift” significantly reduce spray drift. If drift is, or becomes a concern, it may be best to switch from a conventional nozzle to a “low-drift” version of the same type nozzle with the same flow rate. This is another good reason to have more than one type of a nozzle on the boom.

#### Give special attention to choice of nozzles when applying pesticides containing 2,4-D and Dicamba

The labels of 2,4-D or Dicamba herbicides include specific requirements on which nozzle or nozzles must be used when spraying these products. The requirements also include a range of operating pressures for each one of these nozzles. These strict requirements are put on the labels to avoid off-target movement (drift) of spray droplets. Simple interpretation of these requirements is: you would be violating the pesticide label, therefore the law, if you use any other type and size of nozzle and operate these nozzles outside the pressure ranges. Remember, the label is the law! So, it is your responsibility to comply with the requirements on pesticide labels. You can reach a list of currently approved nozzles and their operating pressure ranges on labels of the several commonly used 2,4-D and Dicamba products at this web

site: <https://pested.osu.edu/sites/pested/files/imce/ApprovedNozzles.pdf>

The table at this site is provided mostly for information purposes and may not be up to date. So, check the manufacturers’ websites, and read the product label for the most current information. Do not assume that you do not have to worry about checking the label because you had applied the same product in a previous year. A nozzle required for the same product last year may not be on the label this year, or the operating pressures might have been changed.

#### Some final thoughts

Nozzles are typically the least costly items on a sprayer, but they play a key role in the final outcome from a spraying job: achieving maximum efficacy from the pesticide applied while reducing the off-target (drift) movement of pesticides to minimum. Pesticides work well if the rates on labels are achieved during application. This can be achieved only if the right nozzle type and the proper size of the nozzles are on the sprayer, and the sprayer is operated properly.



## Poison Hemlock Control

By Mark Loux and Curtis Young

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2020-07/poison-hemlock-control>

Re-print from 2020

Poison hemlock remains one of the more persistent and prevalent poisonous weeds that we deal with in Ohio. It's most typically a biennial plant (sometimes perennial), emerging from seed in year one and developing into a low-growing rosette by late fall. The rosette overwinters and then resumes growth in the spring of year two. Stem elongation initiates sooner in spring than many other biennials, and this is followed by continued growth and development into the often very tall plant with substantial overall size. Flowering and seed production occur in summer.

Failure to control poison hemlock occurs partly because, while it often grows in edges and fencerows around crop fields, no one really pays much attention to it until it does reach this large size when it's less susceptible to herbicides. And everyone is busy getting crops planted in spring anyway so control of hemlock gets low priority. Stages in the poison hemlock life cycle when it is most susceptible to control with herbicides are: 1) fall, when in the low-growing rosette stage; and 2) early spring before stem elongation occurs. It's most easily controlled in fall, but several products can work well in spring. Herbicide effectiveness ratings for poison hemlock can be found in Table 21



of the current Weed Control Guide for Ohio, Indiana, and Illinois. Herbicides rated 8 or 9 on poison hemlock include the following: 9 – Crossbow, Remedy Ultra; 8 – Cimarron Max, Curtail, dicamba, glyphosate. Mixing glyphosate and dicamba can improve control compared with either applied alone.



Several online resources cover poison hemlock more comprehensively than this article does, including one from the University of Missouri accessible at: <https://ipm.missouri.edu/IPCM/2012/2/Weed-of-the-Month-Poison-Hemlock/> Information on toxicity can also be found via an internet search or by contacting OSU Extension if help is needed to resolve a specific concern.

## Grass Tetany/Hypomagnesemia- Start Preventive Measures Now

By: Dr. Michelle Arnold, Ruminant Extension Veterinarian, University of Kentucky Veterinary Diagnostic Lab; A special thanks to Dr. Jeff Lehmkuhler for his contributions to this article.

Source: <https://u.osu.edu/beef/2021/03/17/grass-tetany-hypomagnesemia-start-preventive-measures-now/>

What is "Grass Tetany" and when are cattle most likely to have it? Grass tetany, also known as spring tetany, grass staggers, wheat pasture poisoning, winter tetany or lactation tetany, is a condition resulting from a low level of magnesium (Mg) in the blood. Maintenance of blood magnesium depends on the amount obtained from the daily diet since the magnesium present in teeth and bones and is not easily mobilized in times of need. Magnesium is required for proper nerve and muscle function so low levels in the blood result in "tetanic

spasms” where muscles contract uncontrollably. The disorder in an adult cow begins with separation from the herd and going off feed. The ears are often erect and twitching and the cow is alert, hyperexcitable and may be aggressive. The symptoms quickly progress to muscle spasms, convulsions, difficulty breathing, and death. Often the affected animal is found dead with evidence of thrashing and struggle on the ground around her. Deficiencies occur most often in beef cows when they are nursing a calf and grazing young, green grass in early spring. Fast-growing spring pastures are high in potassium (K+) and nitrogen (N+) and low in magnesium (Mg++) and sodium (Na+) ions. Affected cattle often have low blood calcium concurrently. Fall calving cows may also experience grass tetany during the winter months.

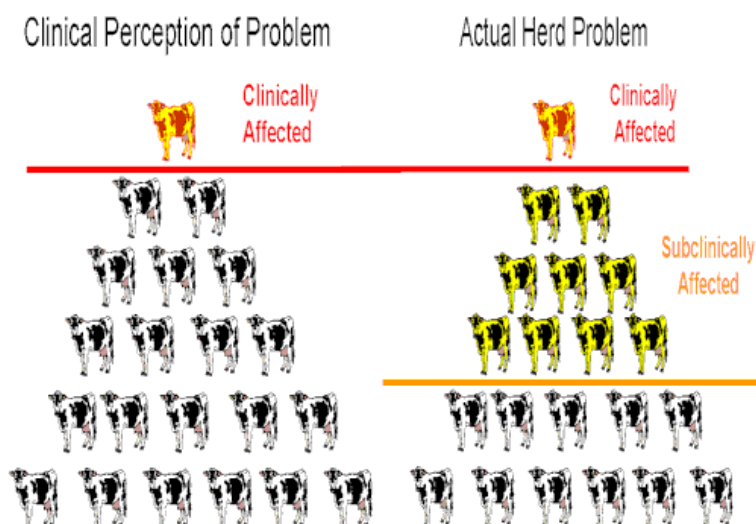
Will Feeding Plain White Salt to Cows Prevent Grass Tetany? This claim is shared every spring and, indeed, there are producers who do not have grass tetany that only feed salt. How can that be? Simply put, for some producers, the minerals available in their soils and forages are enough to meet the nutritional needs of their cows. Regional soil types, soil fertility, diverse forage species and differing cattle requirements based on age and stage of lactation result in different mineral needs for grazing livestock on every farm. A blanket recommendation to just feed salt ignores these factors and oversimplifies a very complex situation. Trace minerals such as copper, selenium, and zinc are all essential nutrients vital for proper growth, production, and immune system function. Trace mineral deficiencies are very common and predispose animals to serious and sometimes fatal disease conditions. Commercial trace mineral mixes are formulated to meet the needs of cattle, including their daily need for salt. Because interactions occur between all the various metals, minerals, and other elements in the diet, optimal amounts of all elements are essential for proper nutrition.

Several complex factors are in play for magnesium to be absorbed through the rumen (stomach) wall and into the blood. Primarily there is a “pump” mechanism that actively moves the dissolved “soluble” form of Mg across the rumen wall to the bloodstream. If potassium in the rumen is high and sodium is low, this setup changes the electrical potential needed to drive the pump. Research has shown that the negative effects of high potassium in early spring grass cannot be overcome by simply adding more sodium in the form of salt. In fact, too much salt will increase urination and cause magnesium to be lost in urine. Salt, as with any substance, can be dangerous and even fatal at high levels. Fortunately, a second, “passive transport” system for Mg exists which is not influenced by potassium. This transport system only works when soluble Mg in the rumen fluid is high and Mg will then flow into the bloodstream without having to be pumped. High magnesium mineral mixes prevent grass tetany by increasing the amount of dietary magnesium concentration in the rumen, allowing this passive movement of Mg to take place.

Does Grass Tetany Only Occur in the Spring? No! “Winter tetany” in beef cattle is caused by consumption of a diet low in energy and an insufficient intake of magnesium, usually over winter. It may also be observed when feeding wheat or rye baleage since these forages are often high in potassium and nitrogen but low in magnesium. Affected cattle have borderline low blood magnesium concentration then clinical signs of grass tetany are triggered by a stressor such as a severe cold snap.

Hypomagnesemia is often referred to as an “iceberg” disease because only a few clinical cases occur but there are many unobserved or subclinical cases that may become problems after a stressful event such as a weather change.

How Can Grass Tetany Be Prevented? Prevention is based on providing magnesium in the diet during times when conditions are right for grass tetany. If the active transport pump is driving magnesium across the rumen wall, grass tetany problems should not develop. However, when factors prevent this pump from working (for example, high levels of K+ in lush spring grass), the second or “backup”





pathway depends on increasing levels of magnesium in the diet. **Supplementation with high magnesium mineral should begin at least 30 days prior to calving.** Cows require magnesium daily or 4 ounces per day of a 12% magnesium mineral mix, especially during the late winter and early spring if pregnant or lactating. The keys to using a free-choice trace mineral product are to ensure cattle have access to mineral 100% of the time, use a palatable, quality product and make sure they are consuming it at the expected level. Remember a 50-pound bag of hi-mag mineral to be fed at 4 ounces per head per day will only last 4 days in a 50 cow herd. If the cows have calves that also eat mineral, a bag may only last 3 days. Mineral feeders should not be allowed to be empty because consistent intake is important for clinical disease prevention. Provide adequate access for cows and calves, for example 1 mineral feeder per 15 cow/calf pairs. Do not offer additional loose salt, salt blocks, or sources of salt at the same time! High magnesium mineral may be discontinued in late spring once the grass is more mature, the water content of the forage is decreased, and daily temperatures reach at or above 60°F.

Does the form of magnesium used in the mineral matter? Absolutely. The feed industry utilizes magnesium oxide (MgO) to supply magnesium but there is tremendous variation in quality and bioavailability. Magnesium oxide is bitter and unpalatable to beef cattle. Recently the UK Beef IRM mineral recommendations were updated to reflect current market conditions. The more palatable form of magnesium known as “prilled MagOx” has been removed from the Beef IRM mineral guidelines because it is unavailable at the present time. The granular or powder magnesium oxide has a greater surface area resulting in the potential for a decrease in palatability, therefore the magnesium oxide level was reduced to 12% from the previous recommendation of 14%. UK Beef Integrated Resource Management (IRM) mineral recommendations for free choice supplements for grazing beef cattle now include 15% salt and 12% magnesium in the complete mineral mix and all magnesium from magnesium oxide (no dolomitic limestone or magnesium mica). These complete mineral mixtures also supply the necessary sodium in the form of salt to aid in combatting high potassium intakes. Consumption should be monitored because cattle will not eat enough trace mineral if using poor quality products or if any additional free-choice salt is available. Only put out 1-2 weeks’ worth of mineral at a time. If feeding grain to cattle, MagOx can be added to grain to ensure magnesium consumption. For example, with approximately 60% Mg in MagOx and if feeding 2 lbs grain / cow, then adding 50 lbs MagOx / ton of feed will provide about 14 g Mg to the cow.

Are there management changes that reduce the risk of grass tetany? Yes. These include: 1) Soil test and apply fertilizer based on soil test results and use no more potassium than recommended since grasses are “luxury” consumers of potassium; 2) Legumes are high in magnesium and will help offset the problem although their growth is slow in late winter; 3) Offer hay to cattle on lush pasture during susceptible periods or limit grazing time to 2-3 hours per day to slow the rate of passage through the digestive tract and allow more time for magnesium absorption; 4) Graze the less susceptible or non-lactating animals (heifers, dry cows, stocker cattle) on the highest risk pastures. Be aware that the use of poultry litter as a feed supplement or fertilizer has frequently been associated with an increased incidence of grass tetany.

In summary, increasing magnesium intake by providing a free choice, high magnesium trace mineral mix and no alternative forms of salt, and meeting energy needs with good quality forage or supplemental feed are necessary to prevent development of grass tetany. Both are exceptionally important when moving from winter rations to young spring grass pasture, especially in early lactation cows. Grass tetany is considered a true veterinary emergency requiring prompt treatment with magnesium to prevent death. Response to therapy is not always good and depends largely on the length of time between onset of symptoms and treatment. Cattle that do recover take at least an hour which is the time it takes for magnesium levels to return to normal. Many of these cows will relapse and require more treatment within 12 hours. Administering oral magnesium gel once the animal has regained good swallowing reflexes, drenching with magnesium oxide or magnesium sulfate, or administering a Mg enema will reduce the rate of relapse. If grass tetany has occurred within a herd, an effort should be made to immediately increase the intake of magnesium to other herd members to prevent further losses.

## ***Corn Silage, It's What for Dinner-at What Cost?***

By: Dianne Shoemaker, OSU Extension

Originally Published for the March 11 Farm & Dairy Newspaper

Feed costs are the largest single expense item for dairy farms. Old news. After years of skimpy margins, feed costs have been reviewed, adjusted, and reviewed again. Rising grain prices launch the cycle all over again.

Forages are the foundation of the dairy cow's diet and are the most likely feed to be home-raised. As a corn-belt state, corn silage is included in most rations for Ohio's dairy cows.

When dairy farms participate in the Ohio Farm Business Analysis program, we do an enterprise analysis for the dairy, and most farms also complete enterprise analysis of their crop enterprises. Let's take a closer look at corn silage production for the three-year period from 2017 through 2019 (Table 1).

Table 1: Annual and average yields and returns per acre, corn silage grown on owned and rented land, 2017-2019.

	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>3-year Average</b>
Enterprises	34	26	33	
Yield, tons/acre	20.2	22.3	18.84	20.46
Value, \$/ton	\$41.10	\$35.97	\$39.27	\$38.78
Crop Insurance Revenue, \$/ac	\$8.39	\$3.61	\$67.28	\$26.42
Other Crop Income, \$/ac	\$0.31	\$2.04	\$33.08	\$11.81
Gross Returns, \$	\$843	\$807	\$840	\$830

Every year, at least a few of the farms experience poor local weather conditions, which explains the typical range of yields. On an annual basis, yield per acre ranged from 11 to 28 tons per acre in 2017, 17 to 28 tons per acre in 2018, and 10 to 25 tons per acre in 2019. While some corn silage yielded well in 2019, the \$33 average crop insurance revenue per acre and lower average yield per acre, reflects 2019's widespread weather challenges. Market Facilitation Program payments are included in the "Other Crop Income" category in 2019.

In this 3-year period, the average total cost of producing corn silage was \$746 per acre (Table 3). What inputs were the biggest contributors? The largest are shown in Table 2. Seed, fertilizer, custom hire, and the cost of land represented by either cash rent, or for owned land, the cost of real estate taxes and mortgage interest.

Table 2: Five highest expenses per acre for corn silage grown on owned and rented land, annual and average for 2017-2019.

	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>3-year Average</b>
Seed	\$124	\$91	\$122	\$110
Fertilizer	\$100	\$104	\$111	\$105
Custom Hire	\$113	\$95	\$111	\$103
Land rent <sup>1</sup>	\$99	\$94	\$108	\$100
Real Estate taxes & mortgage Interest <sup>2</sup>	\$83	\$100	\$117	\$100

<sup>1</sup>Rented land only, <sup>2</sup>Costs associated with land ownership, interest est.



For these dairy farms, home grown forage is “sold” or charged to the dairy enterprise at the total (direct + overhead expenses) cost of production per ton. Some farms also sell corn silage to other farms above their cost of production.

Once the crop is in the ground, the biggest factor impacting the farm’s cost of production per ton is the final yield. Keeping in mind the range in yields helps to explain the range in cost of production in 2019; from less than \$18 per ton to more than \$100 per ton. While some of the cost of the \$100+ per ton corn silage might be offset by crop insurance revenues, low yields, and the need to purchase replacement forages impact farms well into the future.

Table 3: Annual and average direct and total costs per acre and per ton for corn silage grown on owned and rented land, 2017 - 2019.

	2017	2018	2019	3-year Average
Direct Costs, \$/ac	\$621	\$570	\$610	\$600
Direct + Overhead Costs, \$/ac	\$747	\$704	\$787	\$746
Direct Costs, \$/ton	\$30.70	\$25.64	\$32.46	\$29.60
Direct + Overhead Costs, \$/ton	\$36.90	\$31.59	\$41.77	\$36.75

Cost of feed impacts dairy enterprise profitability. Input costs and yields impact costs of feed. In 2019, the median cost of production for corn silage was \$37.32 per ton. That means that half of the corn silage fed cost between \$18 and \$37.32 per ton to feed, and half cost between \$37.32 and \$100+ per ton to feed. Which side of \$37 are you on? Which side do you want to be on?

If you want to choose sides, enroll in the 2020 Ohio Farm Business Analysis Program. Farms can enroll now and work with their Technician to complete their analysis by the May 27<sup>th</sup> deadline. The information you receive from your analysis will tell you where you were in 2020. Integrating that information with your agronomic decisions will help you choose sides and line up for a profitable future. Contact me at [shoemaker.3@osu.edu](mailto:shoemaker.3@osu.edu) or 330.257.3377 to discuss analysis for your farm.

## Expect Farm Liquidity to Decline in 2021

By: Chris Zoller, Extension Educator, ANR, Tuscarawas County

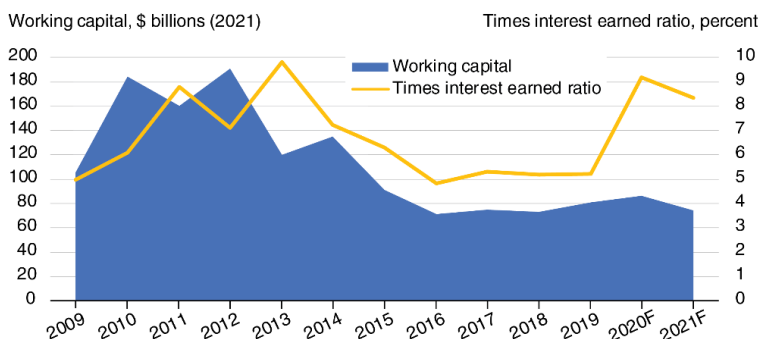
Source: <https://u.osu.edu/ohioagmanager/2021/03/11/expect-farm-liquidity-to-decline-in-2021/>

Liquidity is the ability of a farm business to quickly convert current assets to cash to pay short-term (less than 12 months) cash obligations, debt, family living, and taxes. It is one of several measures used to gauge farm financial performance over time. The United States Department of Agriculture Economic Research Service (USDA-ERS) is forecasting a decline in farm sector liquidity in 2021. This article will discuss working capital, current ratio, and times interest earned ratio financial measures.

### Working Capital

Working capital is calculated by subtracting current liabilities from current assets. Let’s assume a farm has \$300,000 in current assets and \$175,000 in current liabilities. This farm has \$25,000 (\$300,000 - \$175,000) in working capital. There is no standard dollar amount of working capital needed for businesses as it will vary by farm

U.S. farm sector working capital and times interest earned ratio forecasted to fall in 2021



Notes: F = forecast. Values are adjusted for inflation using the chain-type gross domestic product (GDP) deflator, 2021=100. Working capital is the amount of cash and cash-convertible assets (current assets) minus current debt. Values for working capitals are adjusted for inflation and shown in 2021 dollars. The times interest earned ratio measures the farm sector’s ability to service debt out of net farm income. A higher times interest earned ratio indicates greater ease in making debt payments.

Source: USDA, Economic Research Service, Farm Income and Wealth Statistics. Data as of February 5, 2021.

size. Comparing total working capital to gross revenues does provide an indicator of whether a farm's working capital is "enough". USDA-ERS forecasts a 13.6% decline in working capital in 2021 from 2020. If realized, this would be the largest decline since 2016. See the table below to see how your farm compares.

#### Working Capital to Gross Revenue Ranges

>30%	Strong
10% to 30%	Caution
<10%	Vulnerable

(Source: University of Minnesota Extension <https://extension.umn.edu/farm-finance/ratios-and-measurements>)

#### Current Ratio

The current ratio is sometimes used when discussing liquidity. The current ratio is determined by dividing current assets by current liabilities. Using the example above, this farm has a current ratio of 1.7 (\$300,000/\$175,000). In this example, for every \$1 of current debt (liabilities), there is \$1.70 of current assets available to cover it. Using the benchmark chart below, this farm falls into the "caution" category.

#### Current Ratio Ranges

Greater than 2.0	Strong
1.3 to 2.0	Caution
Less than 1.3	Vulnerable

(Source: University of Minnesota Extension <https://extension.umn.edu/farm-finance/ratios-and-measurements>)

#### Times Interest Earned Ratio

The times interest earned ratio is a less commonly known measure used to gauge the ability to service the interest portion of debt out of net farm income. Typically, interest is a cash expense and the principal portion of debt is paid out of net farm income. The times interest earned ratio is calculated as net farm income, less interest expense, divided by interest expense. A value less than 1 indicates that there is not enough cash coming from farm operations to make interest payments. Without a cash inflow from outside the farm, the ability to make interest payments would require borrowing or selling assets. It also indicates that the farm business is not generating sufficient dollars to make scheduled principal payments. A higher times interest earned ratio indicates greater ease in making interest payments. USDA-ERS forecasts the times interest earned ratio will decrease from 9.2 in 2020 to 8.4 in 2021. Still, the times interest earned ratio is forecasted to remain above 2014-19 levels.

#### Summary

It is important to remember that examining only one measure can give a skewed, incomplete picture of farm financial performance. An in-depth analysis of income, expenses, assets, liabilities, and cash flow is needed to provide a comprehensive understanding of financial performance. I encourage you to schedule a meeting with your lender or Extension Educator to review your balance sheet, crunch some numbers, and discuss any questions as you develop a plan. Whole farm analysis through the Ohio Farm Business Analysis program will also generate these critical financial numbers for your farm as well as benchmark reports with industry comparisons. Additional information is available here: <https://farmprofitability.osu.edu>.

#### Sources:

Farm Sector Liquidity Forecast to Decline in 2021, United States Department of Agriculture – Economic Research Service, <https://www.ers.usda.gov/amber-waves/2021/march/farm-sector-liquidity-forecast-to-decline-in-2021/>

Ratios and Measurements in Farm Income, University of Minnesota, <https://extension.umn.edu/farm-finance/ratios-and-measurements#liquidity-796060>

The Basics of a Farm Balance Sheet, Ohio State University Extension, <https://ohioline.osu.edu/factsheet/anr-64>



## ***Farm Succession and Estate Planning- Questions for You to Ponder***

By David Marrison, Coshocton County Extension Educator

Originally Published for March 18, 2021 Farm & Dairy Newspaper

Hello, Northeast Ohio! While the winter winds howled in February, OSU Extension was helping families heat up their farm succession and estate planning discussions through a three-part "Planning for the Future of Your Farm" webinar series.

The goal of this series was to help families begin to plan for the future management and ownership of the family's farm. With the course being virtual, it allowed sons, daughters, and grandchildren in-state or even out of state to join the senior generation to begin the planning process. Each generation had the chance to learn more about transition planning, how to have those tough family discussions, and to learn about different estate planning tools and strategies.

Talking about the future of any business is important, especially so for family farms. From a state-wide perspective, Ohio's ag industry is big business. In fact, the 2017 Census of Agriculture reports that Ohio has nearly 78,000 farm operations with over 14 million acres of crop and woodland. The value of the land, buildings, and machinery owned by these farms is estimated to be over \$96.7 billion.

Also, as our farm population ages, the importance of estate planning becomes exponentially more important each and every year. The 2017 Census reports the average age of all principal producers in Ohio continues to increase. Currently the average is 57.1 with 31.4% of principal producers over the age of 65.

With the incredible asset base of Ohio's agriculture industry and the increasing age of Ohio farmers, the discussion of what happens to the farm in the future is on the minds of many farm families. During our webinar series, we challenged each participant to pause and reflect on the future of their farm. We asked many challenging questions and through discussion, family planning sheets, and reading resources, we attempted to lay the groundwork for important transition and estate planning discussions to be held. Today, I would like to share some food for thought from this series.

**What is your Goal?** First and foremost, the senior generation (or those who own the assets) must decide what their goals are for the future of the farm. Is your goal to have someone from the next generation own and manage the farm in the future? Or will you be leaving the farm assets to your heirs to manage as landlords or as an inheritance to liquidate?

**What Kind of Operation Are You Leaving Behind?** If your goal is to have the next generation operate the farm in the future, have you identified the son, daughter or grandchild who wants to and is equipped to run the farm? If so, have you taken the steps to train them to manage all facets of the operation? What shape is the business that you are leaving behind? Is it profitable? What is the current income that it generates? Will the income be enough for a family member to undertake it as a full-time occupation or will it be a part time management operation? Our team advocates you to complete an in-depth financial and organizational analysis. What are the current strengths, weaknesses, opportunities, and threats of the business? What is the potential of the farm in the future?

**What Do Your Heirs Think?** Have you taken the time to ask your kids about their thoughts about the family farm? What are their hopes and dreams for the farm? Would they be interested in owning or managing the farm in the future? If they had to take over the farm today, what would they be the most concerned about? What changes need to be made for them to have a continuing interest in the farm? What are some of their weaknesses that they need to address before they farm on their own in the future? And what is their expectations for an appropriate time for management control to be transferred?

**What Elephants Are in the Barn?** Many times, there is hesitation to discuss the future of the farm because of the "undiscussable" family topics. Communicating about difficult issues can be tough. Stress, family baggage,

generational or gender differences, and involvement from relatives not involved with the farm can make these discussions even tougher. Our team encourages families to analyze their communication issues and stressors and take time to identify the elephants in the barn that may be holding you back from having crucial conversations. Here are some examples of “elephants.” I don’t trust my new daughter or son-in-law. If I leave the farm to my child what happens to it in a divorce? I want to leave the farm to my son who has been working here for thirty years but I don’t want my other children to be left out. How can I be fair to all my children? My spouse and/or business partner don’t agree on what should happen, so we have decided not to talk about it. What happens if my spouse remarries after I die?

**Tape Measure of Life-** Where are you on your tape measure of life? I had a farmer tell me one day as he measured to cut a board he realized that he had already put 70 inches of his life in the rearview mirror. He said according to statistics he only had 7 inches left so he decided to retire while he still had time to enjoy it!

**Help for You-** Our farm succession team is here to help you as you develop your plan for the future. Check out [farmoffice.osu.edu](http://farmoffice.osu.edu) or [go.osu.edu/farmsuccession](http://go.osu.edu/farmsuccession) for resources and announcements of upcoming farm succession programs. Have a good and safe day!

### ***ODA to Offer Pesticide Testing in Coshocton County***

OSU Extension in Coshocton County is pleased to announce the Ohio Department of Agriculture will be hosting pesticide and fertilizer applicator testing sessions in Coshocton County on March 17 and April 14 from 8:00 to 5:00 p.m. each day. **The March 17 held today was sold-out and only a few spots remain for the April 14 testing date.** These exam sessions will allow individuals to take a private or commercial pesticide applicators examination. The testing will be held in Room 145 in the Coshocton County Services Building with COVID-19 safety protocols enforced. Pre-registration is required and can be made by accessing the Ohio Department of Agriculture’s Pesticide Regulatory program at:

<https://agri.ohio.gov/wps/portal/gov/oda/divisions/plant-health/pesticides>

More details can also be by calling 614-728-6987 (option 1) or via email at: [pesticides@agri.ohio.gov](mailto:pesticides@agri.ohio.gov)

***“May the best day of  
your past be the worst  
day of your future.”  
Irish Blessing***