K-STATE Research and Extension | Meadowlark District

November 3, 2023

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Why 50 Degrees?

There are lots of 'rules' we operate by during the corn growing season. Soil temperatures should be 50 degrees (and climbing) when we plant. Optimum fungicide application window is between tassel and early reproductive stages, and this time of year, fall anhydrous applications should be delayed until soil temperatures cool below 50 degrees. They're all good 'rules' and all have reasoning behind them, but have you ever wondered what that reason is?

Take the soil temperature recommendation for fall anhydrous applications. There's nothing necessarily *magical* about 50 degrees (at a four-inch depth). The conversion process of nitrogen from a form with less possibility of being lost through the winter to one with a greater possibility doesn't cease at 50 degrees (it *does* slow significantly at 40 degrees) – it just slows. In fact, any time soil temperatures are above freezing, conversion can occur (if wheat is growing, conversion is occurring), with nitrogen transitioning to a state more susceptible to loss.

Why then do we shoot for 50 degrees? One reason is the ability to spread out our application workload by applying a fertilizer product with a reduced loss potential under appropriate temperature and moisture conditions. If our typical fall weather pattern results in decent moisture plus consistent cooling of soil temperatures to 50 degrees with a continued downward trend through the fall, N conversion to a more loss prone state will be held to a minimum, reducing the potential for losses through the winter. To monitor soil temperatures in-field, use a soil thermometer to check temperatures at a four-inch depth in mid-late morning. For continuously measured soil temperatures (including temperature trends), check out the Kansas Mesonet Soil Temperature page at https://mesonet.k-state.edu/agriculture/soiltemp/ .

If Mother Nature doesn't cooperate and soil temperatures remain elevated (or increase) following application, loss potential increases as well. When this occurs, more and more 'stable' N is converted to a form of nitrogen at greater risk for loss, potentially leading to economic and environmental concerns.

If you're making a decision on whether to apply or wait, there are a number of great agronomic explanations – and recommendations - to help you minimize nitrogen losses. One of the best is from KSU Nutrient Management Specialist Dr. Dorivar Ruiz-Diaz in the October 26th edition of the KSU Agronomy eUpdate online at: https://eupdate.agronomy.ksu.edu/ or upon request at any District Office. Drop me a line if you are interested.

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Ross Mosteller
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Swath Grazing

Growing up "making hay" was one of my favorite summer activities, and that was when small square bales had more popularity. Growing older, I've begun to think about ways to cut this cost out of the livestock enterprise. Our neighbors to the north have done more work in the area of swath grazing. Rather than recreate the wheel, I'll share excerpts on this topic from an article originally written by Adele Harty, former SDSU Extension Cow/Calf Field Specialist.

Feed makes up the largest expense on a cow/calf operation. In addition to the initial expense, producers need to consider the storage and waste associated with winter feeding. As expenses increase, and producers evaluate more-efficient management techniques to lower production costs, one alternative may be to incorporate swath, or windrow grazing. Swath grazing can be utilized with various crops and can improve utilization of the crops for feed, while decreasing fuel, harvest and feeding costs and also improving soil health.

Swath grazing is the practice of cutting hay, small grains or forage crops and leaving them in windrows for livestock to graze during the winter months. Rather than having the expense of baling the hay, moving it off the field and feeding it in the winter, the feed is left in windrows, and cattle are allowed access to a limited number of windrows at a time as a means to reduce winter feed costs and increase soil fertility.

Swath grazing has its benefits in the Midwest, where colder temperatures and snow accumulation regularly occur. If utilizing a small grain crop, such as, but not limited to, millet, sudan or sorghum, swath grazing may provide an additional opportunity to utilize the forage. A study conducted at Iowa State University evaluated forage quality and utilization of swath grazing on the cow herd. Millet and sorghum were harvested in late July as a hay crop, allowed to regrow, and the regrowth was cut and raked in late December for a swath grazing trial.

Cows in their third trimester of gestation were moved from corn stalk residue to the swaths, where they grazed in a similar method to intensive grazing. Cows were given enough swaths to graze for three days at a time, and then fencing was moved and cows were given access to the next section. The logistics of moving fencing during the winter can be a challenge, so take that into consideration, as ground temperature will affect fencing being moved during the rotation. A reliable winter water source will be vital to the success of this system and could increase labor and time requirements.

The nutrient value of the feed did decline toward the end of February when cows were switched over to a TMR; however, they saw no detrimental effects to the calves as a result. Cows were able to utilize the feed with up to 12 inches of snow accumulation and temperatures of -20 degrees Fahrenheit. Forage utilization was up to 70%, which makes swath grazing a cost-effective option in comparison to putting the forage in bales.

With swath grazing, operating equipment and overall labor decrease, as harvesting and moving bales or manure hauling are minimal. The study also found that grazing this crop residue had minimal impact and did not affect regrowth of a perennial forage crop, thus allowing grazing to occur on a hay field or permanent pasture. Swath grazing increases soil health through manure and urine distribution. In a dry year, it helps create a potential seedbed and improved filtration by breaking soil crust, fully trampling all the non-eaten materials, and spreading out dung piles, making them less fly friendly. This also provides a food source for soil microbes, thus increasing fertility of fields in the long-term.

Reference: Dahlke, G. R., (2022) Swath Grazing Forage Sorghum and Pearl Millet Observations Regarding Quality and Utilization as Winter Feed, Iowa State University Animal Industry Report 18(1). Doi.

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Laura Phillips
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When do I prune my trees?

This time of year, there is one question that I get asked a lot: is now a good time to prune my trees? In most instances, the answer is no. The best time to prune your trees is going to be late winter to early spring. Think February or March.

When we start to think about tree physiology, it begins to make sense why pruning is best done in cold weather. Just under the bark of a tree are tiny veins, known as the phloem and xylem. The xylem moves water and nutrients from the soil upwards, and the pholem moves food downwards. Surprisingly, these veins take up a relatively small space in a tree, and are found in the outer rings of a tree's trunk and branches.

When you prune a tree or woody shrub, you are creating an open wound. Anything that cuts through the bark will also cut through these veins, leaving them open to harmful bacteria and fungus, putting the tree at risk for infection. If we prune our trees in the cold, dry weather means there is less chance of fungus or bacteria floating around to infect the tree's wound compared to our hot, humid summer.

So why not prune in early winter? This has to do with a tree's reaction to open wounds. When we get an open wound, we keep it clean and our bodies know to regrow the skin in that spot, slowly closing the wound. Unlike us however, trees do not heal but seal. They will form a callous tissue that slowly starts to cover the wound and reduce the risk of infection. While they can seal wounds in the dormant season, they recover from wounds faster in the growing season. By pruning right before the tree enters its growing season, we limit the amount of time the tree has an open, exposed wound. Additionally, when a tree gets pruned in its growing season, it not only tries to seal the wound, but, depending on where the tree is cut, the tree may try to make up for its lost limb by sending out new shoots in that area. If we prune a tree in the fall before it goes dormant for the year, it will try to send out new growth. That new growth will not have time to mature and harden off before winter, and will die back once our frosts hit, stunting the tree's growth.

While it is clear that late winter or early spring is the best time to prune your trees, there are a few caveats. Dead or diseased branches can be removed any time of year. Not only are these branches a hazard to building and people, but a proper and controlled pruning cut will do less damage than a rough wound left behind from a branch snapping in the wind. Additionally, removing branches with a disease or insect infestation can prevent the issue from spreading to the rest of the tree.

The other caveat comes for flowering trees. Flowering trees generally set their buds in late summer or fall for the next spring. If you prune a flowering tree in the spring, you are cutting off its flower buds, and you will not get a fully blossoming tree. And these instances you can wait until the tree is done flowering before pruning.

While it might seem easier to forgo pruning altogether, trees that receive proper pruning, especially when they are young, will be sturdier and less likely to fall or take storm damage. If you are new to pruning, you can find videos and resources available online at kansashealthyyards.org, or check out the recording of our Garden Hour Webinar on K-State Research and Extension's YouTube Channel from March of 2021 where we talked about tree pruning strategies. You can also reach out to your local extension office for more guidance.

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Teresa Hatfield
District Extension Agent, Family and Community Wellness

Hidden Danger of Carbon Monoxide

Carbon Monoxide (CO) is a colorless, odorless, and tasteless gas. When carbon-based fuel burns, such as gasoline, kerosene, natural gas, propane, or wood, it produces CO . CO builds up when not properly ventilated. Because your senses cannot notice this gas, it is a danger to people and animals; it can make you sick and even cause death.

Homes with fuel-burning appliances, like clothes dryers, water heaters, furnaces, fireplaces/woodburning stoves, gas stoves, and homes with an attached garage, are more likely to experience CO issues. Improperly maintained furnaces and gas-powered engines, including space heaters in enclosed areas, also can contribute to dangerously high levels of CO. Four out of five accidental Carbon Monoxide poisonings happen in the home or garages. Everyone has a potential risk for CO poisoning; older adults and people with chronic heart conditions, anemia, or breathing difficulties are more likely to become ill from CO.

It is vital to know the signs of CO poisoning. As CO gas is not seen, smelled, or tasted, look for symptoms of CO poisoning, including headache, nausea, tiredness, dizziness, and confusion. Symptoms may sound similar to the flu. If you feel better when you are away from home, symptoms get worse around fuel-burning equipment, everyone in the house is sick, and you don't have a fever, body aches, or swollen lymph nodes, you could have CO poisoning. If you experience symptoms of CO poisoning or your carbon monoxide detector goes off, seek fresh air, call 911, and wait until the building has been declared safe to renter.

There are things you can do to protect yourself and your family from CO poisoning.

- Install a carbon monoxide detector in your home. Detectors are inexpensive. You can find them at local hardware stores or online. Make sure it has a battery or a battery backup.
- Have appliances that use gas fuel checked by a qualified technician every year; this would include your furnace, water heater, and any other appliances that use natural gas, oil, or coal.
- Do not use portable, flameless chemical heaters indoors.
- Make sure to vent your gas appliances properly.
- Have your chimney checked and cleaned every year. Chimneys can sometimes be blocked, allowing CO to build up inside your home.
- Do not use a gas range or oven for heating. Using the range or oven in this manner can cause CO to build up inside your home.
- Do not burn charcoal inside your house.
- Do not use a portable gas camp stove inside your home.
- Do not use a generator inside your house, basement, or garage. Keep the generator at least 20 feet from any window, door, or vent.
- Have the exhaust system of your car or truck every year. A small leak in the exhaust system can lead to a build-up of CO inside the car.
- Do not run your car or truck inside a garage attached to a house, even if you leave the garage door open.

For more information about Carbon Monoxide poisoning, contact Teresa Hatfield at K-State Research and Extension - Meadowlark District at thatfield@ksu.edu or 785-364-4125.

Resources: Centers for Disease Control and Prevention

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Cindy Williams
District Extension Agent, Family & Community Wellness

No news article this week