

July 31, 2026

David Hallauer
District Extension Agent, Crops & Soils

How a Grass Plant Grows – and Why It Matters...

I've written multiple times about various production factors – or problems – associated with grass production. It's easy to focus on a single factor or 'issue' affecting stands, but it's also important to know why that plant may be responding as it is. Often that's due to how it grows.

Plants use their leaves to capture sunlight, converting it to plant-usable energy via photosynthesis. Some is used in the production of plant parts (leaves/stems/seeds). Some is used up in the growth and development process. Anything left is accumulated in roots or in the plant's crown. It's a seamless process as long as it's not disrupted – that's when issues can arise.

The 'balance' of the energy processes determines the health and vigor of each individual plant. In other words, if all the energy is used in growth and development and none is left to replenish root systems, an imbalance can occur. That may not start out as too big of a deal. Maybe we were dry after harvest and didn't get much recovery. Maybe grazing was shorter than intended and we consumed a lot of the leaf factory that was going to be used for regrowth. We may not see it at first, but the stand may start to lose some vigor. Research has shown that a plant having 50 percent of its leaf area removed will have two to four percent of its root growth stopped. That's the sweet spot, but if you increase removal to 70 percent, almost 80 percent of the plant's root growth stops. That *can* be a big deal, and if additional stressors are, individual plants and eventually the health of the entire stand can be at risk of becoming compromised.

This time of the year can be a 'critical' period for grass stands. Our harvest management plays a big role - how much foliage did we remove at haying and how quickly is it regrowing? Is grazing pressure appropriate so the 'solar factory' keeps working like it should? Are other factors affecting the ability of stands to respond? Are insects (fall armyworms are the one we always think about, but grasshoppers feed on grass, too...) adding 'injury' to the factory? Are weeds taking over and getting better use of the sunlight energy than our grass plants – and stealing moisture along the way? If the plant's factory operations remain in balance, all is well. If even a small part of the factory is 'shut down' for some reason, it can likely respond well. The problem occurs when multiple things start affecting the plant – or the plant was compromised to begin with. At that point, stressors can start to pile on.

In some cases, there's not a lot we can do. In others, our knowledge of how that plant is responding can help us make decisions as we face other challenges through the growing season. It can also help us better understand how that plant may respond this fall or even next year. Take a look at stands now and see how the factory might be performing.

Ross Mosteller
District Extension Agent, Livestock & Natural Resources

Post Breeding Season Bull Management

In a past conversation with a good friend, we shared the challenges of dealing with breeding bulls in the off season. Bulls are an important part of the cowherd, but they do need to be managed when not actively servicing cows. Fortunately, bulls do not require intense management during the post breeding season period, so planning will ensure they are ready for service when needed.

In most spring calving herds, the breeding season begins in the spring or early summer. Maintaining a 60- to 90-day breeding season can be one of the most important management tools for cow-calf producers. A uniform, heavier, and more valuable calf crop is the reason that the bulls get pulled off the cowherd. After breeding season bulls can sometimes become an unwanted guest that producers would like to forget about for the remainder of the year.

Goals for the post breeding season window include the following principles. Keep feed costs at a practical minimum and target maintaining bulls in moderate condition. Feed to support continued growth of young bulls. Minimize the chance of injuries by maintaining bulls in larger bull pastures or lots where hierarchical dominance can be established safely. Make sure bulls are fertile and fit for the next breeding season turn out. Market any bulls with issues during the past breeding season.

To accomplish these goals producers should sort and appraise the bulls following the breeding season. Mature herd sires, in good condition, should be grouped together on pasture. The second group should include young bulls that still have a requirement for growth and bulls that are thin or need special care. Finally, producers should identify and cull the bulls that are old, crippled, inferior breeders, or have poor genetics.

All bulls should have access to a vitamin and mineral mix, like what is been given to the cow herd at that time. Mature bulls in good condition need access to around 2% of their body weight in dry forage per day to maintain. Whereas the yearlings and thin bulls should have access to higher-quality pasture, hay, or silage to increase body condition. If space and feed is available, the thin conditioned cull bulls may take advantage of some compensatory weight gain.

Bulls should be de-wormed and vaccinated on the same herd health program as the cow herd. If a bull's fertility has been questioned, it is a good idea to have a breeding soundness exam conducted after pulling bulls. This can save the expense of carrying an infertile bull into an upcoming breeding season.

Keep in mind that it is not a sign of poor management or bad genetics if a bull loses body condition during the breeding season. The good breeding bulls are active and hardworking, which can lead to some condition loss. However, if they cannot gain body condition while they are not working and grazing moderate to high-quality forage, their female progeny may not be able to either. These are good candidates for culling as well.

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Laura Phillips
District Extension Agent, Horticulture

Become a Master Gardener

There is still time to join our Extension Master Gardener program this September! If you love to garden, or if you have never gardened but always wanted to, this is the program for you.

The Extension Master Gardener program, or EMG, is a staple of K-State Research and Extension. The program offers extensive horticulture training on topics ranging from lawn care and to soil fertility, to common plant diseases. These topics are supplemented with hands-on gardening practice and volunteer work. Beyond the learning experiences, EMG programs actively work to embed themselves in their communities and create collaborative and welcoming environments.

The EMG training runs from September through November with a total of 40 hours of training. Each session is taught by different specialists from K-State who share their expertise with our groups. All trainings are recorded and posted online for those who cannot participate in real time. After training, all Master Gardeners complete 40 hours of volunteer work, focusing on educating and inspiring others in their community. Each year you stay in the program we will provide advanced training in an area of gardening that interests you and continue to do public service work in our communities.

You can email lauraphillips@ksu.edu or call any of our offices to learn more about the program or sign up.

Look out for Iron Chlorosis

This time of year, it is really easy to spot trees with iron chlorosis. Take a drive through any neighborhood, and you will usually see at least one or two trees with this ailment – generally pin oaks. Iron chlorosis is the term we use for iron deficiency in plants. Chlorosis refers to a lack of chlorophyll, the part of the leaf responsible for its green color, and trees need iron to create chlorophyll. Iron chlorosis means that the leaf is turning yellow because it does not have enough iron to form all the chlorophyll it needs. Since trees rely on chlorophyll to photosynthesize and produce food for them, a tree with iron chlorosis will slowly starve, weakening the tree and possibly leading to death of the tree.

Iron chlorosis is easy to spot because the veins of the leaves usually stay green while the rest of the leaf turns yellow. This sets it apart from most other nutrient deficiencies. It can affect all types of plants, but it is most common on pin oaks. If you notice your tree has this issue, you may think that your soil needs more iron. Generally, our soils have sufficient iron, the problem is that plants cannot access it. When your soil pH is higher than 7.2, the iron becomes insoluble and plants cannot pick it up.

To remedy iron chlorosis, there are several things you can try. If your tree is in really bad shape and needs immediate rescue, you will want to spray the leaves with iron sulfate or iron chelate solution. We call this a foliar application, and it is fast acting but temporary. After you spray the tree, the leaves should absorb the iron and turn a darker green. However, the iron will not move beyond the leaves that you spray it on. That means when the leaves fall off in autumn, new growth next spring will have the same issue. Therefore, we only recommend a foliar application if you are worried about your tree surviving the season.

For a longer term solution, you can do either a soil treatment or a trunk injection. While lowering the pH of the soil would provide the ideal solution, it is unlikely that you can lower the soil pH significantly to depths of 18-24 inches, where tree roots are. Instead, you can add iron sulfate or chelated iron to the soil around it. In most of the Meadowlark District, chelated iron will be superior as it works in higher pH soils. If your soil is above 7.2, you will want chelated iron with EDDHA, which, although more expensive, will not become immobile in high pH soils.

If you have bare ground around your tree, you can add the chelated iron to the soil. If you have a lawn, you will want to deep feed the iron either with liquid injection using a hydraulic sprayer or drilling holes 15 to 18 inches deep around the canopy and adding the iron. This soil treatment is usually effective for 2 to 3 years.

The last option is trunk injection. This is best done by a professional arborist who can use the proper drill to minimize tree wounding and knows the right depth to drill the holes for the injections. These applications usually last several years as well.

If you have questions about iron chlorosis, please reach out to me for more information!



Healthy maple leaf on the left, and a leaf with iron chlorosis on the right

Teresa Hatfield
District Extension Agent, Family and Community Wellness

Gut Health: Why Your Gut Matters More Than You Think

Probiotics, prebiotics, fiber...what does it all mean?

There is a lot of discussion about gut health and its importance to overall well-being. With so many products, supplements, and conflicting messages available, it can be difficult to know where to begin.

Gut health is a popular topic for good reason. Scientists have discovered that the health of your gut is closely linked to both physical and mental health. Your gut microbiome, along with adequate fiber intake, plays an important role not only in digestive health but also in immune function, heart health, and even brain health.

Your body hosts trillions of microorganisms, and most of them live in your intestines. These microorganisms help digest food, absorb nutrients, and produce certain vitamins, including vitamins K and several B vitamins. They also help protect against chronic disease by producing anti-inflammatory compounds that support overall health.

So, what exactly are probiotics and prebiotics?

- **Probiotics** are living microorganisms, often referred to as "good bacteria." They are naturally found in fermented foods and beverages such as yogurt, kefir, sauerkraut, sourdough bread, and kimchi. Probiotics are also available as dietary supplements. However, keep in mind that supplements are not reviewed by the Food and Drug Administration (FDA) for effectiveness, and it may be difficult to know whether the microorganisms are still alive by the time the product is consumed.
- **Prebiotics** are substances that serve as food for the beneficial bacteria in your gut. They help support the growth and activity of healthy microorganisms. Good sources of prebiotics include fruits, vegetables, legumes, beans, whole grains, nuts, and seeds.

For most people, the best approach is to obtain probiotics, prebiotics, and fiber from the foods they eat rather than relying on supplements. Drinking plenty of water is also important for digestive health. Limiting added sugars and artificial sweeteners may be beneficial since excess sugar can promote the growth of less desirable microorganisms. Regular physical activity helps keep your digestive system functioning properly and supports nutrient absorption.

If you need to take antibiotics for an illness, remember that they can kill beneficial bacteria along with harmful bacteria. Eating a balanced diet rich in probiotic and prebiotic foods may help support your gut microbiome during and after treatment.

Many Western diets fall short when it comes to fiber intake. Fiber is important because it has been associated with lower rates of obesity, cardiovascular disease, certain cancers, and type 2 diabetes. It also helps regulate blood sugar levels and supports a healthy gut microbiome.

Adults should aim to meet the recommended daily fiber intake. Men ages 31 to 50 need about 31 grams of fiber per day, while women in the same age group need about 25 grams per day.

Interested in learning more? K-State Research and Extension offers educational resources that can help answer your questions about gut health and healthy eating. Contact our office at **785-364-4125** or thatfield@ksu.edu for more information.

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Cindy Williams
District Extension Agent, Food, Nutrition, Health and Safety

No news this week.