K-STATE Research and Extension | Meadowlark District

October 18, 2024

David Hallauer
District Extension Agent, Crops & Soils

Cereal Rye Impacts on Weeds

There are lots of reasons we like to see cover crops get well established in the fall: grazing days increase, soil erosion mitigation is enhanced, etc… With surface soil moistures across NE Kansas right now in the tank according to the Kansas Mesonet, some of our fall seeded cover crops *might* be a little slow to get started – and even then, might emerge unevenly or at the very least not provide the consistent cover we'd like to see from them.

In addition to the aforementioned reasons we plant cover crops, another benefit we've seen from them is in the area of weed suppression. A study conducted in 2021/2022 across the upper Midwest looked at cereal rye in corn-soybean rotations to get a better idea of these benefits. Their findings are encouraging. If soybeans could be planted into green standing cereal rye, biomass production of the cover crop increased by 33 percent as compared to early termination. This increase in biomass production in turn provided a 44 percent reduction in Palmer Amaranth density as compared to straight no-till.

It wasn't *all* perfect. If stands are compromised in any way, yields in the study were reduced, making planter settings and managing planting time moisture appropriately key factors in making the system work, but the study does show the value to weed suppression a cover crop can provide – including delaying the need for postemergence herbicide applications. It also provides a nice tool for reducing palmer amaranth density to aid with flexibility in timing of postemergence applications as well as providing a mechanism to hopefully help slow resistance to herbicide applications.

With luck, moisture yet this fall will get cereal rye plantings up and going and that weed benefit will be realized. If moisture, herbicide carryover, etc… limit that establishment, however, have a plan in place for preemergence programs and appropriate cover crop termination next spring.

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Ross Mosteller
District Extension Agent, Livestock & Natural Resources

Protein Supplement for the Cowherd

The first killing frost of the season makes it seem like fall is finally here. Many pasture leases run through October, so the traditional summer pasturing of cattle now turns to feeding cows through fall and winter, often on lower quality forages. As the quality of forage declines, protein supplementation needs to be considered. Many factors contribute to what works best for your operation, just know that not all protein sources are equal and thought needs to be given before purchasing the supplement.

Daily energy intake is often the limiting factor to cows while grazing dormant forages, crop residues and other lower crude protein feedstuffs. As forages mature there is an inadequate supply of crude protein which directly effects feed intake and ultimately limits energy intake. Intake declines rapidly as crude protein falls below the 7% mark in a particular feedstuff. This is attributed to a deficiency of nitrogen (protein) in the rumen, which inhibits activity of the rumen microbes. We have to remember that our protein supplementation is often targeted at feeding the "bugs" of rumen microbes.

If the forage diet contains less than about 7% crude protein, feeding a protein supplement generally improves the diet quality and cow performance by improving their forage intake and digestion. This is why cows consuming low-quality forages require additional protein to maximize performance and forage utilization. Protein supplements can be offered in a range of daily feeding to as infrequently as once per week to accomplish this. Every class of livestock, in various production phases, have their own requirements, but a general range is 0.25 to 1 pound of protein per had per day.

Not all protein supplement is created equally. Supplemental protein is available in many forms including cakes, grain mixes, blocks, tubs, or plants such as cover crops. The overall crude protein content varies widely, with crude protein coming from natural protein sources or non-protein nitrogen sources such as urea or biuret. An additional consideration may be the ratio of ruminally degradable protein to rumen undegradable protein, which basically shows a level of utilization of protein directly by the cow versus degradation within the rumen environment.

Non-protein sources, like urea, are generally a less expensive nitrogen/protein source found in cooked molasses tubs and liquid molasses feeds. Urea works best in high-energy diets that contain crude protein levels below 12 percent. If lower quality forages are the main diet, cattle performance can be reduced if urea is supplemented in place of higher quality, natural protein supplements like dried distillers, soybean meal or cottonseed meal. This is likely the result of insufficient rumen undegradable protein in the diet to meet the actual protein needs of the cow. Urea has a rapid rate of degradation in the rumen, which can result in lack of nitrogen use for forage digestion and result in increased nitrogen loss in urine.

All of this can add complexity to developing a protein supplementation strategy, but doing the research and comparing what is actually in supplementation product can pay dividends. Remember, the cow and the rumen microbes both have requirements for protein, which may not be provided by all types of protein supplements. Research has shown that meeting the rumen microbe requirements for nitrogen first with the remaining portion of crude protein being rumen undegradable can result in increased growth or weight gain, increased reproduction, and increased nitrogen or protein utilization.

Determining what is best for your particular situation starts with your feeding situation, knowing what the feed label/total ration nutrient values are and pushing the pencil on the economics of it all. Your local Extension agent should be willing to help you talk through these calculations or the K-State Beef Cow Nutrition Guide C735 https://bookstore.ksre.ksu.edu/pubs/beef-cow-nutrition-guide_C735.pdf is a great reference.

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Laura Phillips
District Extension Agent, Horticulture

Destructive Emerald Ash Borer Found in Nemaha County

Last week, the Kansas Department of Agriculture, in conjunction with K-State Research and Extension, and the Kansas Forest Service, confirmed that the highly invasive and destructive Emerald Ash Borer (EAB) is in Nemaha County Kansas. A live EAB larva was found inside a dying ash tree on a private residence in the county on October 14th, 2024. Officials say the pest had been suspected in the area for several years, but only recently have they found a live insect, which is required to make the detection official.

You may have heard of EAB, which is killing ash trees across the US at an alarming rate. It is an exotic, invasive beetle from eastern Russia and northeastern Asia that likely was brought to the U.S. in infested packing material. The beetle threatens urban and rural forests by killing North American ash species and their cultivars. Kansas Forest Service officials note that at least 70 million ash trees have already been destroyed due to the emerald ash borer, and as many as 9 billion North American ash trees will eventually be functionally rooted out and destroyed from the continent.

The discovery in Nemaha County makes 15 Kansas counties in which the emerald ash borer has been confirmed, including Wyandotte (2012), Johnson (2013), Leavenworth (2014), Douglas (2015), Jefferson (2015), Atchison (2016), Doniphan (2017), Shawnee (2017), Miami (2019), Jackson (2019), Brown (2022), Osage (2022), Franklin (2023) and Lyon (2024).

We believe the presence of these beetles is not limited to these counties, and residents of Northeast Kansas should report suspected EAB infestations to the Kansas Forest Service, Kansas Department of Agriculture, or your local extension office immediately.

To determine if the EAB has made your ash tree its new home, look for symptoms on the bark and in the canopy. Woodpeckers eat EAB larvae, so look for light patches of bark and woodpecker holes. The larvae tunnel under the bark and feast on the cambium, the layer just below the bark responsible for water and nutrient movement in the tree. Their feeding can cause splits in the bark with S-shaped tunnels underneath. When the larvae exit the tree, they leave behind small, D-shaped holes.

As the tree loses its ability to access nutrients and water, branches of the tree will start to die. The tree may respond by sending out new sprouts near the trunk or lower canopy (a process called epicormic sprouting). Often, landowners do not notice their trees are infected for several years until the canopy starts to die back.

Even if your ash trees currently do not have the EAB, landowners are encouraged to create a replacement plan for the ash trees on their property to ensure a continually healthy canopy as ash trees decline. A landscape with many types of trees is more resilient to insect, disease, and environmental threats that exist or could occur in the future.

If you notice the EAB in your ash tree, you need to act quickly to save it. Once a tree has lost over 40% of its canopy, the odds of survival even with treatment are very low. Treatments for the EAB include trunk injection, soil drench, or bark spray. These treatments will need to be applied on a regular basis for the rest of the tree's life. recommend talking to a licensed pesticide applicator. The treatments you can find over the counter will not be as effective as those provided by a licensed applicator.

All Kansans are reminded of the recommendation to avoid bringing firewood from another state or county where emerald ash borer has been previously detected. Use local sources for firewood.

If you are unsure whether your ash tree is infected, it is best to contact either the Kansas Forest Service, Kansas Department of Agriculture, or your local extension office to get more information and have your tree evaluated.

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Teresa Hatfield
District Extension Agent, Family and Community Wellness

How Artificial Sweeteners Can Be a Safe Alternative to Sugar

Many Americans have been diagnosed with diabetes, so much so that it is a public health crisis. Over 38 million people have diabetes, and 97 million people aged 18 years or older have prediabetes. With that in mind, many people turn to sugar substitutes to solve their sweet tooth cravings. Sugar substitutes can be found in various foods, but people may question if they are safe.

Sugar substitutes can be categorized into natural and artificial sweeteners. Artificial sweeteners include saccharin, aspartame, and sucralose. Natural sweeteners like stevia and monk fruit are derived from natural sources. These types of sweeteners are created in a laboratory through chemical processes.

Karen Blakeslee, a Kansas State University food scientist, notes that the U.S. Food and Drug Administration lists aspartame as a possible human carcinogen. However, the product has not been linked to cancer. Blakslee also notes that the level of aspartame that must be consumed to reach even the acceptable daily intake is very high. Blakeslee states, “If you are drinking soda that contains aspartame, a person who weighs 154 pounds would have to drink 9-14 cans each day, just to reach the acceptable intake level”.

According to the American Diabetes Association, the American Heart Association, and the National Cancer Institute, no significant evidence exists that suggests sugar substitutes cause cancer or other serious health problems. Current research also suggests that they are safe. Some people need to avoid aspartame, those with a rare genetic disorder whose body cannot break down the chemical. All products containing aspartame must include a warning label. However, consult your healthcare provider before making significant dietary changes, especially if you have chronic health conditions.

For people who are diagnosed with diabetes, artificial sweeteners can be a huge benefit to maintaining healthy blood sugar control. These sugar substitutes don’t spike blood glucose levels. Thus, they are a safer option for managing blood sugar levels. For those looking to manage their weight, artificial sweeteners can be a good option for weight loss. You can reduce your calories when you replace sugar with a sugar substitute.

While artificial sweeteners offer numerous benefits, it's crucial to remember the principle of moderation. These substitutes can be a helpful tool in reducing calorie intake and managing diabetes, but using them in excess can negate their benefits. Visit the product's website to learn more about a particular sugar substitute. These sites can provide additional information and recipes, helping you make informed and responsible choices about your health.

Resources: K-State Press Release: Oct 10, 2024, K-State food scientist: Artificial Sweeteners are safe within reason, Creating Health & Nutrition: Sugar Substitutes, PenState Extension, KSRE, Dining with Diabetes

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

Are Artificial Sweeteners Safe?

Often in conversations, the question of the safety of artificial sweeteners comes up. Artificial sweeteners---including aspartame, sucralose and others are getting a bad rap. The Food and Drug Administration oversight keeps U.S. safe for consumers. Artificial sweeteners are safe—within reason.

Kansas State University food scientist Karen Blakeslee notes that the U.S. Food and Drug Administration or (FDA) lists aspartame as "possibly carcinogenic to humans, "though that product has never been linked to cancer."

Plus, Blakeslee notes, the level of aspartame that might be consumed to reach even the Acceptable Daily Intake or (ADI) approved by the FDA is very high.

"We need to put this into perspective," Blakeslee said. A person weighing 132 would have to consume about 75 packets of aspartame every day to reach the Acceptable Daily Intake or (ADI) of 50 milligrams per kilogram of body weight per day. Of, if you are drinking soda that contains aspartame, a person who weighs 154 pounds would have to drink 9-14 cans per day, just to reach the acceptable intake level.

The FDA's level of use must be followed by manufacturers that include aspartame or other artificial sweeteners in their foods.

"Too much of any food or ingredient can be a problem (to health)," Blakeslee said. "So, a person would have to consume very large amounts of aspartame for that product to become a problem." Artificial sweeteners are often a better option for people with certain health conditions, such as diabetes, she said artificial sweeteners allow those people to enjoy their favorite sweet treats without the worry of raising their blood glucose level.

Aspartame is about 200 times sweeter than sugar. Aspartame is typically not used in baked goods because it is not heat stable. It can be found in foods such as chewing gum, cold breakfast cereals and dry mixes, such as beverages, powders, pudding or gelatin.

For some, however, aspartame must be avoided. Products containing aspartame must include a warning on their label for those with phenylketonuria or (PKU), a rare genetic disorder in which the body cannot break down phenylalanine.