

GOLDEN TRIANGLE AG UPDATE

Photo by: Kim Woodring, MSU Extension Toole County

*Up-to-date research-based information from Golden Triangle
MSU Extension Ag Agents*

IN THIS ISSUE

NEW AGENT IN HILL COUNTY

GRASSHOPPER MANAGEMENT QUESTIONS

JOHNE'S DISEASE

ESTABLISHING FORAGE CROPS

RESEARCH CENTER UPDATE

New Agent in Hill County

by Colleen Buck, MSU Extension Hill County

Hello Fellow Agriculturalists,
Although new to Hill County, I am not new to Extension. My name is Colleen Buck and for the past six years I have been the Agriculture and 4-H Agent in Sheridan County. If you are having trouble determining where that is, think of Plentywood or as far east and north as you can go and still be in Montana and not North Dakota or Canada. As you probably know, Sheridan county leads the state in durum production and it also grows an exceptional amount of pulse crops and spring wheat and even a few oil seeds on a continuous cropping system. I have lived in Montana most of my life and can claim that I have lived in all 4 corners and now the central part of the state.

I hold a dual Bachelors degree from the University of Wyoming in Agribusiness and Animal Science with a focus in Livestock Production and I hold a Masters degree from New Mexico State University in Ruminant Nutrition. Needless to say, there was a steep learning curve into crops when I started with Extension in Sheridan County, but if you aren't continually learning new things, how does one grow?

I started in Hill County the end of March and I am settling into the position. I am excited to have the opportunity to work with the people of Hill County. I am looking forward to collaborating with the other great agents in the area to bring you new, innovative, research based and informative programming. I have already had questions on trees and soils and I have even guest lectured at MSU Northern on Ruminant Nutrition in the short time here. If you are ever in Havre and would like to introduce yourself, please stop by the office. If you would like me to come look at crops, livestock, trees or gardens, give me a call and we can set something up. My email address is colleen.buck@montana.edu and the phone number for the Extension office is 406-400-2333.

Grasshopper Management Questions & Answers

by Tyler Lane, MSU Extension Chouteau County

Why did we see high populations of grasshoppers in Montana in 2020? Favorable weather conditions have promoted grasshopper pest populations. In 2019, a cool wet spring delayed hatching which resulted in high percentage hatch survival rates. In addition, vegetation was highly productive in 2019 especially sweet clover. As a result, grasshopper populations grew without being noticed or managed.

Why should I be concerned in 2021? A dry summer in 2020 and an open fall promoted a high egg lay which will result in large hatches this spring. If a drought continues in Chouteau County, populations will continue to increase. Grasshoppers are a boom and bust species. As long as we have arid conditions, populations will continue to increase.

Will a wet spring break the cycle? The answer is yes. Prime conditions for decreasing populations begin with warm, early springs followed by a hot period, followed by a minimum of one week of cloudy wet weather. Warm early springs promote embryo development. A hot period in early spring promotes hatching and one week of cloudy wet weather promotes fungal pathogens on grasshoppers.

When should I start monitoring for grasshoppers? I would begin on May 1st. The grasshoppers of most concern (Two-striped, Migratory and Packard grasshoppers) all hatch close to May 15. Another monitoring rule of thumb is that embryos will continue development when the soil temperature rises between 50-55 degrees Fahrenheit. Eggs will typically hatch 14 days later.

I saw grasshoppers way before the soil temperature reached 50-55 degrees. Should I be concerned? The answer is most likely no. Catch the grasshopper and determine if it has wings. Winged grasshoppers are adults that have overwintered and will not cause any harm to the crop.

How do I monitor for grasshoppers? Visualize a square-foot area from a distance and count the number of grasshoppers jumping out. Divide the number of grasshoppers by the number of sites and multiply by nine to estimate density per square yard. Be sure to completely disturb the square foot area because 1st and 2nd instar nymphs often will not jump.

Is it true that the migratory grasshopper is often the most harmful species to cereals? Yes, it can travel very long distances, destroy seedlings, defoliate crops throughout the growing season and clip cereal grain heads before harvest.

How do I tell a harmful grasshopper from a non-harmful grasshopper? Harmful grasshoppers are spurthroated which means they have a spine on the throat. Slantfaced grasshoppers have slanted faces that are pointed in profile or they have disproportionately large heads.

What would be a good step by step management order if grasshoppers continue to exceed economic threshold levels? First, spray grass borders and neighboring rangeland at beginning of egg hatch using Dimilin. Second, use Dimilin on field borders (a minimum of 150 feet). Lastly, spray contact insecticides if populations exceed economic threshold. Be sure to rotate insecticide groups to prevent resistance. Remember, Dimilin can be mixed with the knockdown insecticide to provide 30 total days of crop protection.

9. Where can I find more information for grasshopper management in cropland including economic thresholds? Information is available at <https://chouteau.msuextension.org/agriculture/grasshoppers/index.html>

Johne's Disease

by Karen Forseth, MSU Extension Teton County

Pronounced "Yo-knees", Johne's disease is also known as paratuberculosis. This bacterial disease primarily affects the small intestines of cattle and other ruminants. There is no vaccination and no treatment for Johne's.

The bacterium, *mycobacterium avium* subspecies *paratuberculosis*, is primarily spread between animals through feces. In cool, wet environments the bacterium can survive up to a year in feces in and around a barnyard. It can also be passed by an infected cow through colostrum, milk or in utero. Animals less than 6 months of age are the most susceptible to being infected by the bacterium. Unfortunately, the clinical symptoms may not be seen until two or more years after the initial infection. This is especially concerning for seedstock producers raising animals to sell for breeding. An infected animal can also shed the bacterium without showing clinical symptoms. Clinical signs of the disease include diarrhea and weight loss, despite a normal appetite. The bacterium causes the intestinal walls to thicken, reducing the absorption of nutrients.



Photo by: Adriane Good,
MSU Extension Pondera County

There are several preventative measures that can be taken to help reduce the spread of Johne's. The Montana Department of Livestock suggests that you:

1. Implement a biosecurity plan that identifies sources of disease risk and strategies to avoid disease introduction.
2. Inquire about the Johne's status of a herd when purchasing new animals; important consideration must be given to bulls because they are with cows at a time that calves are highly susceptible.
3. Raise newborns in a clean environment.
4. Avoid manure contamination of feed and water sources.
5. Identify and remove infected animals.
6. Maximize disease resistance through good nutrition and parasite control.
7. Pasteurize pooled milk fed to calves."

Diagnosis of Johne's according to the Montana Department of Livestock:

1. Herd screening tests and diagnostic individual animal tests are available.
2. Blood, feces, and/or tissues can be tested.
3. Testing programs should address both clinically ill animals as well as sub clinically infected animals (asymptomatic carriers of bacteria.)"

To help mitigate the spread of Johne's, the Department of Livestock has developed a program to: "Minimize the spread of Johne's disease through animal sales and movement. Identify positive animals/herds and implement management practices to eliminate the disease. Support non-infected herds by identifying biosecurity practices to prevent the introduction of the disease into their herds. Create a market opportunity for participating herds to advertise their involvement in the program."

For more information, please contact your local MSU Extension office or veterinarian, or the Montana Department of Livestock at <https://liv.mt.gov/Animal-Health/Diseases/Johnes-Disease>.

Establishing Forage Crops

by Adriane Good, MSU Extension Pondera County

Springtime means planting time in north central Montana, and forages are no exception. While there are millions of opinions on how to successfully establish alfalfa or annual forage crops, 2 principles remain true. One, a failed or poor stand is always expensive, and two, proper soil fertility and pH, seeding depth, and seeding rates are necessary for success.

Ensuring your soil has the proper fertility and pH can be an easy way to improve both the yield and quality of your forage crops. To ensure you have the correct balance of nutrients in your soil, and therefore are efficiently using fertilizer, it is important to soil test before you fertilize. If you're having difficulty figuring out exactly how much fertilizer you need to apply based on your soil tests, check out the "Fertilizer Guidelines for Montana Crops" booklet, which should be available from your local MSU Extension office. Ideal soil pH for forages ranges from 6.5 to 7. With acidity problems starting to develop in parts of the triangle, acid tolerant forages may have to be included in your seeding plan, depending on your soil pH.

Seeding depth can also have an impact on your forage stand. The ideal depth to seed alfalfa is $\frac{1}{4}$ - $\frac{1}{2}$ inch deep with the soil packed over it. Soil type can have an impact on your seedling emergence, so it's important to seed a little shallower in heavy soils. Annual forages need deeper seeding depths than alfalfa does. Small grain forages, like wheat and barley, require a seeding depth of 1 - 1 $\frac{1}{2}$ inches. Warm-season annuals, like corn or sudangrass, need a seeding depth of 1-2 inches for proper emergence.



A well established sorghum sudangrass crop that was grown in Pondera County. Photo by: Adriane Good, MSU Extension Pondera County

Of course, perfect seeding depth won't make up for other seeding shortcomings. Regardless of what type of forage you are planting, you can use the germination percentage and the pure live seed percentage on a certified seed tag to adjust your seeding rate. Follow the steps in the box below to find your adjusted seeding rate. It's also important to calibrate your drills to ensure that what you think is going into the ground, is actually going into the ground.

Seeding Rate Calculation

Step 1:

$(\% \text{germination} \times \% \text{purity}) / 10,000$
= PLS Index

Step 2:

PLS seeding rate / PLS Index = lbs
bagged seed per acre

Example:

$90\% \text{ germination} \times 99.5\% \text{ purity} /$
 $10,000 = 0.8955$

$10 \text{ lb/acre} / 0.8955 = 11.17 \text{ lbs}$
bagged seed per acre

Maintaining ideal soil fertility and pH, seeding depth, and seeding rates are just a few ways to help your new forage stands succeed. For more tips on planting a new forage stand, call or email your local MSU Extension agent.

Research Center Update



Current construction activities for the Greenhouse and Headhouse at WTARC. Construction activities are on track to be completed by early June 2021

Field day schedules for 2021

Date	Time	Research Center	Location
Tuesday, June 29, 2021	3:00 p.m.	Northern Agricultural Research Center	Havre
Wednesday, June 30, 2021	3:00 p.m.	Southern Agricultural Research Center	Huntley
Thursday, July 8, 2021		BART/POST Farm	Bozeman
Tuesday, July 13, 2021	8:50 a.m.	Central Agricultural Research Center	Moccasin
Wednesday, July 14, 2021	10:00 a.m.	Western Triangle Agricultural Research Center	Conrad
Thursday, July 15, 2021	11:00 a.m.	Northwestern Agricultural Research Center	Creston
Tuesday, July 20, 2021	9:00 a.m.	Eastern Agricultural Research Center	Sidney
Thursday, July 29, 2021	4:30 p.m.	Western Agricultural Research Center	Corvallis