

Morrow County SCARLET & GRAY News

Volume 15 Issue 1 • November 2018/December 2018/January 2019

Take charge of your health Farmer & Farmland Owner Income Tax Webinar to be held Jan. 7

Join a FREE, fun Walk with a Doc program in Morrow County starting in November – look for details on our website at morrow.osu.edu or contact Candace Heer, FCS Educator at OSU Extension 419-947-1070 or heer.7@osu.edu

During the walk, you will:

- Learn about important health topics
- Have your questions answered by local doctors
- Build new friendships
- Enjoy an informal, relaxed and fun walk at your own pace

How to Join:

Show up to the walking location or sign up through Dining with Diabetes at your local OSU Extension – Morrow County at 419-947-1070
Walks begin November 2018

In addition to the walk OSU Extension will recognize National Diabetes Month in November by offering a free class for those with diabetes or caring for someone with diabetes...

Dining with Diabetes:

Take Charge of Your Diabetes During the Holidays

Class Date: Wednesday, November 28, 2018

Time: 6:30 p.m.

Location: Ag Credit Building 2nd Floor

Conference Room, 5362 US Highway 42,

Mt. Gilead OH

Register at: 419-947-1070

Cost: FREE



Are you getting the most from your tax return? This two-hour webinar will focus on income tax issues for farmers and farmland owners.

It will be held on Monday, January 7, 2019 from 10 a.m. to 1 p.m. at OSU Extension - Morrow County, Ag Credit 2nd Floor Conference Room. Pizza and drinks will be provided.

Topics to be covered include:

- New Tax Law Changes - Tax Cuts and Jobs Act
- Modified Tax Brackets
- Farm Equipment Depreciation
- Section 179 Expensing
- Changes in Deductibility for Meals, Entertainment, Memberships, Etc.

• Corporate Tax Rate Changes and Implications for Small Farm C-Corps

• Qualified Business Income (QBI) Deduction (Section 199A Deduction or Pass-Through Entity Deduction)

Presenters:

• Barry Ward, Director, OSU Extension Income Tax Schools



• Chris Bruynis, Extension Educator, Ag & Natural Resources, Ross County

• Dave Marrison, Extension Educator, Ag & Natural Resources, Cochocton County

Patricia K Davies, Morrow County Auditor, will also be there to talk about CAUV.

Please RSVP to OSU Extension - Morrow County (419-947-1070) or Ag Credit (419-947-1040) by Jan. 2, 2019.

Current Resident or

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Permit #19
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THE OHIO STATE UNIVERSITY
 COLLEGE OF EDUCATION, HEALTH AND HUMAN SERVICES
 Ohio State University Extension
 5362 US Highway 42
 Suite 101
 Mt. Gilead, OH 43338

Holiday Wreath Make and Take

November 14 at 6 p.m.

5362 US Hwy 42, Mt. Gilead, OH
2nd Floor Conference Room

Come make a wreath with the OSU Extension Morrow County Master Gardener Volunteers! Fresh evergreen wreaths will be provided with an assortment of decorations to create a beautiful Thanksgiving, Christmas or Winter wreath to enjoy all season long.

There is a \$15.00 registration fee to cover the cost of the wreaths and decorations.

Please preregister with OSU Extension - Morrow County by Nov. 12.
The class is limited to 25 participants.
Contact Carri Jagger at 419-947-1070 or email jagger.6@osu.edu

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AGRICULTURE



What Path Will You Choose?

By John F. Grimes,

OSU Extension Beef Coordinator

Based on reports from USDA and industry analysts such as Cattle Fax, it appears that the aggressive expansion of the U.S. beef cowherd will peak in 2019 and level off in the early part of the next decade. From the time the most recent herd expansion began in 2014, producers will have added over 3 million beef cows to the nation's herd. Our primary protein competitors, pork and poultry, have also been in expansion mode recently which adds more competition for the consumer's food dollars.

For all of my adult life, I have heard agricultural economists talk about the "cattle cycle". The cycle is often reported in approximately 10-year increments and a wide variety of economic, environmental, and political effects can greatly influence each cycle. Current and future cattle cycles will face increasingly varied and complex factors that affect the economic health of the beef industry. The next cattle cycle will be impacted by factors such as drought, trade policies, domestic and foreign economies, competition from pork and poultry, sustainability concerns, and the development of meat substitutes.

What does all of this mean for you as a cattleman? I believe there is no time like the present to position yourself for success during the next cattle cycle. Maybe you are satisfied with the economic performance of your cattle enterprise and do not expect to make any changes to your operation. However, doing the same thing repeatedly and expecting a different result does not seem to be a sound strategy. The path you chose to follow with your cattle enterprise will determine how successful it will be during the next cattle cycle.

Quite possibly your operation is at or near its maximum capacity for herd size for your available resources. Are you operating at maximum reproductive efficiency? Females that do not become pregnant during a targeted breeding season should be culled and replaced with a bred female. Attempting to rebreed the open female will

result in the accumulation of another approximately 18 months of expenses before she can provide a feeder calf available for sale to generate income for the herd. A relatively small investment in pregnancy diagnosis methods such as palpation, ultrasound, or blood testing can help you identify the females that need to be removed from the feed bill.

If you are looking to add replacement females to your herd to maintain or expand its current size, consider the purchase of bred heifers or young bred cows as opposed to raising your own replacements. The typical cowherd in Ohio typically numbers less than 20 cows. Industry surveys show that the typical annual replacement rate is 15-20%. This would result in the typical Ohio producer keeping back 3-4 heifers annually as replacements. It is my observation that these heifers can be difficult to manage for the average producer due to the lack of extra facilities or space to manage them separately from the mature cows. The purchase of bred heifers removes nearly one

year's worth of management considerations in the production process for the typical herd.

The market is currently sending a clear message that buyers are demanding more for their feeder calf purchasing dollars. Significant discounts are occurring in the market place for feeder calves that are not weaned 45-60 days, castrated & healed, dehorned, and given two rounds of a modified live vaccine for the shipping fever complex. Historically, producers have felt that they were not financially rewarded for the extra management practices. However, the attitudes of feeder calf buyers are changing. Stocker and feedlot operators are becoming more reluctant to take greater financial risks with calves without extra health protection. This reluctance may be expressed in some cases as premiums or other times as discounts.

Ohio is blessed with many acres of grasslands and typically adequate amounts of rainfall. Cow-calf enterprises commonly consume the vast majority of these grassland acres. However, other enterprises offer significant potential uses for grasslands. Backgrounding or stockering feeder calves to put on extra weight prior to entering the finishing phase can be an effective use of forages. High quality forages can be utilized to finish beef for grass-fed beef programs. There are opportunities for producers to raise replacement heifers and make them available to cow-calf producers throughout the region. Each of these enterprises can generate additional income but will require extra marketing skill by the producer to maximize the profit potential.

It is my opinion that the "rules of engagement" to be involved in the beef cattle business are rapidly changing. Regardless if you are a part-time producer that works off the farm, a producer where cattle are a part of a larger, diversified farming operation, or the owner of a full-time beef enterprise, the continuation of your current business model should be re-evaluated. While history can teach us some valuable economic lessons, we must recognize that the beef industry will be impacted in the future by unique economic and social changes. Will you choose a path that increases your chances for success?

MGV still have fall bulbs for sale

The bulbs that the Master Gardener Volunteers are selling are of top quality. They are grown in Holland and were just recently dug and shipped to the US. We planted a few of last year's left overs at the Ag Credit building and all of them came up and were absolutely beautiful. You don't want to miss out on this opportunity to purchase great quality bulbs and support a local organization. The bulbs can be purchased at the OSU Extension Office, 5362 US HWY 42, Mt. Gilead, Ohio from 8:00-4:30, Monday - Friday.

Fall Bulb Prices: Tulips, Daffodils 10 bulbs/Pack \$8.00; Grape Hyacinths and Crocus 20 bulbs/Pack \$8.00; Alliums 10 bulbs/Pack \$6.00.

2018 Income Tax Schools

Plan now to attend a 2018 OSU Extension Income Tax School! These schools are offered at nine convenient locations throughout Ohio in November and December. Select one that fits your schedule.

The two-day schools are designed for individuals who have some experience preparing and filing federal and state tax returns. They are considered to be intermediate level classes.

Instruction will focus on recent tax law changes and on the issues that you may en-

counter when preparing 2018 tax returns. Highly qualified instructors will explain and interpret tax regulations and recent changes in tax law.

Check out our locations and details. For questions, email Julie Strawser or call 614-292-2433.

Keep up-to-date on our tax school events by subscribing to our OSU Tax School List-Serv by visiting <https://lists.osu.edu/mailman/listinfo/OSU/incometaxschools>.

Seed Quality Issues in Soybean

Let's face it -- we've had historic rains in parts of Ohio during 2018 and we are now observing many late season issues that come with this. Seed quality is one of them and the symptoms or warning signs that there could be issues are on the stems. The stems in some fields are heavily colonized with a mix of disease pathogens that cause Anthracnose, Cercospora, and pod and stem blight (Figure 1). The bottom line is that all of these diseases can be better managed with higher levels of resistance but ultimately during 2018 -- we had a perfect storm, lower levels of resistance combined with higher than normal rainfall conditions and add in the presence of a new insect pest, stink bugs. Below I've outlined the general conditions of the crop and for each disease, the distinguishing characteristics.

- Discolored, moldy seeds along with shriveled seeds are very evident in some field. Some reports indicate that it is worse around the edges but not in all cases. Sometimes the pods look fine until they are cracked open and others the outside of the pod is a definite give away.

- Fungi in the genus *Cercospora* can cause two different diseases, frogeye leaf spot which also affects and stems and seed is caused by *Cercospora sojina*; and purple seed stain is caused by a complex of species, the most common has been *C. kikuchii*. The symptoms of frogeye leaf spot during the season were well documented this year, but on stems and pods they are not well described. In our experience, the gray to black smudges on seed and yield the conidia of this pathogen. For *C. kikuchii*, the first symptoms can appear on the petioles during the reproductive phases. These appear as purplish to reddish streaks which turn darker after leaflets drop but the petioles can remain on the stems. On seed, dark reddish purple blotches will appear.

- Diaporthe pod and stem blight including *Phomopsis* were very apparent this year. Some of the stems I collected this season were just pure fruiting structures. This is a complex disease, in that there are several closely related fungi that can infect soybeans throughout the growing season. These sometimes appear as black dots in a row on the stem, but some species are more randomly placed over the surface of the stem or pods. They are flask like structures that hold the overwintering spores. We have documented several different species causing substantial losses

in Ohio over the past 3 years.

Anthracnose -- this has been very rare in Ohio but this year I did find it on petioles early on some susceptible varieties. This is another one that looks like a black dot, but this fungus, *Colletotrichum truncatum* and related fungi have hairs (setae) that are around the fruiting structures. A moist chamber and a microscope can help sort out the differences. Pods can have lesions that are large brown and irregularly shaped.

- Opportunists -- based on some plating we have done over the past week, there are many secondary fungi that have been able to colonize these seeds. It will take us a few weeks to identify everything to verify that are opportunists and not pathogens, but let's just say it is pretty ugly even for a mycologist.

All of these fungi can affect seed health. Fields that have a high incidence should not be used for seed, but should be fine for feed but best in low quantity. To my knowledge there are no animal toxins associated with these fungi like we see for head scab. For fields with low incidence, many seeds will be asymptomatic so when a fall germination test is done, the percentage of moldy seed maybe high. Some of the seed may have some mycelium on the outside layers but have not reached the young soybean. Over the winter, under dry conditions, the mycelium (fungus) on these outside seed tissues will die and then those seed will appear normal in a germination test. The point here is to keep the seed dry to prevent any further colonization of the seed.

These fungi ALL overwinter on crop residue which then serve as inoculum for the 2019 soybean crop. This is especially important for the no-till continuous soybean fields. There are a few management strategies that can be done for 2019.

a) Don't plant the same variety back in the same field -- Rotate varieties and look for those with better resistance scores than your current one.

b) Do something to help break down the residue, it doesn't need to be a lot, but some light tillage to bury some of the residue will go a long way.

c) Rotate to wheat, barley, or corn. These are non-hosts for this group of pathogens and planting something else in that field will go a long way to reducing inoculum for when soybeans are put back in that field.



AGRICULTURE



Biodegradable Mulch: Your Next Production Tool?

Vegetable extension-research personnel from Ohio, Kentucky, Tennessee, and Iowa met on October 5, 2018 to discuss ongoing work and to plan follow-up activities ... all toward helping improve short- and long-term farm success. Biodegradable mulch (BDM) was among the most talked-about topics. Dr. Annette Wszelaki of the Univ. of Tennessee led the BDM discussion and she provides comments for VegNet readers below. Also, note that Dr. Wszelaki will expand on these comments and summarize the large amount of research that her and other teams in various states have been doing with BDM, including on commercial farms, at the OPGMA-led Ohio Produce Network Meeting in Dublin, OH in January-2019. That presentation will be an excellent opportunity to gain a thorough update on BDM and its possible place in your toolbox.

Comments and Photos by Dr. Annette Wszelaki, Professor and Commercial Vegetable Extension Specialist, Univ. of Tennessee

Plastic mulches provide many advantages for vegetable production, such as weed and disease management, earliness of harvest, increased yield and quality, and moisture retention. However, plastic mulch use is not without disadvantages, including the cost, labor and environmental issues associated with plastic mulch disposal. Biodegradable mulches (BDMs) offer a potential alternative if they can provide similar advantages to plastic mulch without the disadvantages.

BDMs can look similar to traditional polyethylene mulch (i.e., stretchy and black or white-on-black) or in the form of paper (brown or black, sometimes with creping to give it stretch). They can be laid with a standard mulch layer. BDM's are designed to cover the soil during the production season, and then begin to degrade as harvest nears. At the end of the season, BDM's can be tilled directly into the soil. There they will degrade into carbon dioxide, water, and the bacteria and fungi that eat them. The degradation rate varies depending on environmental conditions, but by spring, most remnants will have disappeared.

At the University of Tennessee, we have been working with BDM's on a variety of crops (tomatoes, pumpkins, and peppers) for 10 years. We have found comparable yields and quality to traditional plastic mulch with these crops, but not all biodegradable mulches and crop responses are equal!

Want to learn more about biodegradable mulches? Come to the session **Could biodegradable mulches replace plastic in your production system?** at the 2019 Ohio Produce Network in Dublin, January 16-17, 2019. In the meantime, please contact Annette Wszelaki (annettew@utk.edu or 865.974.8332) or visit www.biodegradablemulch.org for more information. Many thanks to Jenny Moore, Jeff Martin, the East TN Ag Research and Education Center Farm Crew, and many students along the way for their contributions to this project.

Feeding Strategies to Increase Lamb Performance, Carcass Characteristics, and Consumer Acceptability

By Brady Campbell, Program Coordinator, OSU Sheep Team

For most producers, maintaining high standards of animal welfare and increasing production efficiencies rank among the most important factors involved in livestock production. While focusing on production efficiencies, what can producers do in order to help make their livestock more efficient? We know that excess fat on the carcass of an animal is considered inefficient as excess fat will be trimmed off, disposed of during the fabrication process, and does not contribute to final lean yield. In the case of lamb, excess fat can be a challenge as fat is associated with flavor and in turn the overall acceptability of the product. In order to produce a product that is acceptable for consumers from both a flavor and palatability standpoint, producers have access to different management strategies that can be implemented in order to change the performance and carcass characteristics of fed lambs. In order to determine the effects of these strategies, Murphy et al. (2003) conducted an experiment to compare different energy (feed) sources and the use of ionophore supplementation.

In this experiment, 96 Hampshire x Dorset crossbred lambs were used to determine the effects of energy source by feeding and comparing three different diets including high concentrate (HC), high forage (HF), and a combination of concentrate and forage (MIX) feeds in addition to ionophore supplementation (monensin; at a rate of 176 mg per kg of feed). A total of 48 wether lambs were harvested at approximately 130 lbs. to evaluate the effects of energy source and ionophore supplementation on lamb carcass

characteristics and product palatability.

In comparing lamb performance based upon energy source, lambs fed HC and MIX diets had a greater average daily gain (0.66 and 0.63 lbs.) when compared to lambs fed the HF diet (0.45 lbs.). Lambs fed the HC diet had a more desirable feed efficiency ratio (gain/feed; 0.231 lbs./lbs.) when compared to lambs fed the HF diet (0.139 lbs./lbs.), with lambs fed the MIX diet falling in-between (0.181 lbs./lbs.). When evaluating days on feed, lambs fed the HF diet spent more days on feed (106 days) as compared to the lambs fed the HC and MIX diets (68 and 77 days). Dry matter intake was the lowest with lambs fed HC diet (2.84 lbs./day) as compared to lambs fed MIX and HF diets (3.51 and 3.22 lbs./day). In addition, no differences were shown when comparing ionophore supplementation.

When comparing carcass characteristics, lambs fed HC and MIX diets had thicker body walls when compared to HF fed lambs. HC and MIX diet fed lambs also accumulated a greater amount of kidney and pelvic fat when compared to HF fed lambs. Therefore, HF lambs would provide less wasteful product (fat) when compared to HC and MIX fed lambs. However, the rib eye area of HC and MIX fed lambs were greater than the HF fed lambs (1.02 and 0.97 vs. 0.88 in.2, respectively). No differences were found in back fat when comparing the three dietary treatments. Unlike the previous section, ionophore supplementation had an effect on lamb carcass characteristics. Lambs supplemented with ionophore had a greater dressing percentage when compared to the control lambs (59.2% vs 56.1%). Also, lambs supplemented with

ionophore had less back fat when compared to the control lambs (0.19 vs. 0.24 in.).

Rather than just stopping here, Murphy and others took their research one step further. In order to ensure that the treatments placed upon the animals were acceptable from a consumer standpoint, a portion of the lambs (48 wethers) were used to conduct a sensory panel. First, muscle samples were subjected to Warner-Bratzler shear force testing. In sampling the loin, results indicated that lambs fed MIX and HF diets were more tender than compared to HC fed lambs. After this, the sensory panel was implemented on the same muscle cut. Results from the taste panel showed that there were no differences in juiciness; however, there was a difference in tenderness, with lambs fed HC diet being least tender, MIX diet being the most tender, and HF diet falling in-between. In both the Warner-Bratzler shear force test and sensory panel, no differences were seen as a result of ionophore supplementation.

From a performance standpoint, lambs fed the HC diet had the highest average daily gain, feed efficiency, and spent the fewest number of days on feed. However, taking into account carcass quality and consumer acceptability, HC fed lambs had more fat and also showed an increase in muscle toughness. In addition, the implementation of ionophore supplementation did not demonstrate any negative effects on lamb performance, carcass characteristics, or sensory attributes. Therefore, the implementation of ionophore supplementation may be of most benefit when feeding heavier lambs on HC diets.

Beef and 'Bobs' – Maximize Cattle Production and Help Bobwhites on Your Land

By Nick Schell, Wildlife Biologist, Natural Resources Conservation Service

You're probably familiar with the northern bobwhite and its decline. The bobwhite, or what many of us call quail, has seen its population dip by more than 80 percent across large sections of its range during the past 60 years.

Farmers can greatly help the species with a few tweaks to their cattle operations.

Why Are Bobwhites in Decline?

Bobwhites are an "edge" species, meaning they seek brushy habitat where crop fields intersect with woodlands, pastures, and old fields. But this type of habitat is tough to find. The rise of non-native forage for cattle and advanced agricultural equipment that leaves behind fewer weeds and brush have both decreased available habitat.

In many ways, cattle and bobwhites have become mutually exclusive. But it doesn't have to be that way.

Benefiting Beef and 'Bobs'

To help reconnect cattle and quail, USDA's Natural Resources Conservation Service is working with cattle producers to replace non-native forage grasses, like fescue, with native warm-

season grasses that create productive and palatable grazing options for livestock while benefiting quail and other wildlife species.

By replacing non-native forages with native ones, producers can benefit from pastures that are more resilient to drought and more resistant to endophyte, a fungus found in fescue that impacts herd health. Operations that rely only on common cool-season forages, such as fescue and orchardgrass, may find it increasingly difficult to stay above the bottom line.

We're recommending that you go "old school" by grazing on native forages.

Working Lands for Northern Bobwhite

In addition to establishing native forages, the Natural Resources Conservation Service provides producers with assistance to plan and implement a variety of conservation practices. For example, we help producers establish field borders as well as plant trees, shrubs and hedgerows, which help create that "edge" habitat that quail need.

We also help producers improve grazing systems, offering assistance with prescribed grazing and installing cross fencing. And we help producers manage for the plants they want with



Bobwhites seek brushy habitat where crop fields intersect with woodlands, pastures, and old fields.

practices like prescribed burning and herbaceous weed control. All these practices enable you to manage for good habitat for bobwhite and forage for cattle – at the same time.

More Information

To learn more about these practices, download our new "Working Lands for Northern Bobwhite" fact sheet and the Ohio specific information sheet for the 2019 Bobwhites In Grasslands Project sign-up.

If you're interested in getting assistance, contact your local USDA Service Center. USDA accepts applications for conservation programs on a continuous basis.



AGRICULTURE



Understanding how to prevent and treat Polioencephalomalacia (PEM) in sheep and goats

Polioencephalomalacia (PEM) is also known as cerebrocortical necrosis (CCN) and is a relatively common nutritional disorder in sheep and goats. A common name for this disease in sheep and goats is "polio"; however, it has absolutely no relationship with the infectious viral disease found in humans (poliomyelitis). Cases of PEM can be successfully treated if detected early in the disease course, making recognition of early symptoms a critical issue for sheep and goat producers.

Causes of PEM

The most common cause of PEM is thiamine deficiency. Thiamine is a B vitamin (vitamin B1) that plays a critical role in all cells, acting as a cofactor for several key enzymes involved in glucose metabolism. Thiamine is especially important for proper brain function as the brain relies on glucose as its major source of energy. Since the brain controls nearly all bodily functions, adequate thiamine levels in the brain are of critical importance for normal health and well-being. Thiamine is not produced in animal cells but is produced by rumen microbes, which provide the major source of thiamine to adult sheep and goats. Milk-fed lambs and kids must get thiamine preformed from their diet to meet requirements. But then as they transition to becoming ruminants, they rely on their rumen microbes to synthesize thiamine as their thiamine source. The incidence of polio tends to be higher in lambs and kids during the period when they transition to becoming full ruminants.

Inadequate thiamine levels are not the only cause of PEM in sheep and goats, but it is responsible for the vast majority of cases observed. Another cause of PEM documented much better in cattle is excessive sulfur intake from sources including water, feed ingredients, and forage. Elevated dietary sources of sulfur in sheep and goat diets include by-product feeds of the ethanol industry such as wet or dry distiller's grains with solubles. The sulfur content of these feeds may vary according to the processing plant or even the batch, as much of the additional sulfur content in these by-products results from addition of acidifying agents such as sulfuric acid during the production process. The usage of these sulfur-rich products varies across ethanol plants, so blanket statements regarding ethanol by-product feeds as being high in sulfur cannot be made. Sheep and goats also consume cruciferous or brassica forages such as turnips, rape, mustard and oil seed meals; products which can be high in sulfur as well.

PEM can also be triggered by amprolium therapy for coccidiosis. Amprolium effectively competes with thiamine for uptake into the brain which therefore can induce PEM. Therefore, animals on amprolium therapy should be watched carefully for polio. Induction of PEM with amprolium is uncommon but not rare.

Symptoms of PEM

Thiamine deficiency and/or high sulfur levels within the brain cause destruction of neurons and swelling of the brain, which can be diagnosed by histological examination of brain tissue. There-

fore, PEM symptoms are manifest as neurological, with early symptoms being partial to complete blindness with the head held erect. This may also be associated with unilateral (uneven) ear droop and/or unusual/exaggerated gait. It is common for the pupils to be dilated and for the eyes to tear. PEM affects animals of all ages but is most common in young lambs and kids transitioning from a milk to solid diet, and especially so in those fed a high-grain diet. PEM is also found in adult small ruminants of either sex at any age but more commonly associated with changes in diet (change in the plane of nutrition, pasture type, pasture to forage feeding, forage feeding to grain addition, etc.). PEM symptoms are similar regardless of age. Early blindness symptoms lead within hours to a day to loss of body control, inability to stand, and seizures. In more advanced states, animals commonly arch their heads back as far as possible. PEM symptoms may present itself similarly to listeriosis and even ketosis. However, thiamine therapy is relatively benign, so it is best to treat with thiamine as a precaution.

Treatment of PEM

Many cases of PEM response to prompt administration of thiamine (minimum dose of 10 mg/kg bodyweight).

Effective but slightly more risky therapy would be to inject the first dose slowly intravenously (IV) followed by another dose provided intramuscularly (IM). Animals occasionally respond rapidly to the initial dose, although slow recovery to standing may take up to 5 days with full recovery evident after 2-3 weeks. The recommended dosage should be given twice per day for 2 days followed by once daily injection for 5 days. Vitamin B complex formulations can be purchased containing thiamine, but it is highly recommended that producers have a bottle of concentrated thiamine on hand (250 to 500 mg/mL) at all times. Concentrated formulations of thiamine are a prescription product, so be sure to work with your veterinarian on any PEM treatment program. Additional therapeutic value may be found by administration of anti-inflammatory drugs to reduce brain inflammation along with thiamine administration. Consult your veterinarian for information on the safe and effective use of anti-inflammatory drugs.

Animals with PEM may take several days to stand on their own, so it is important isolate all cases and provide supportive care to encourage water and feed consumption (provide both grain and forage free choice to encourage standing and feed consumption). Animals that have been down for a few days may require a little assistance and retraining to get them standing. In cases that are more advanced, thiamine therapy may not be able to overcome brain trauma that has occurred and euthanasia may be indicated.

Prevention of PEM

Most cases of PEM are isolated and sporadic in nature and are associated with changes in feed of some sort. Therefore, it is difficult to develop an effective prevention program for these cases, although making gradual dietary transitions will

certainly reduce the incidence of PEM along with many other health concerns. In circumstances when PEM becomes common such as in feedlot lambs that are in transition to a high or exclusively grain diet, the risk may be reduced by providing adequate dietary fiber. Lamb/kid finishing diets that are low in fiber may need to be adjusted to raise dietary neutral detergent fiber (NDF) above 15%. Another consideration in situations of high PEM incidence would be to make sure that part or all this NDF is provided in a physical form that encourages rumination, such as forage with a chop length greater than 3 inches. Addition of feed grade thiamine can also be made to the diet, but this therapy can be expensive and its

efficacy has not been thoroughly evaluated in growing lambs or kids.

Summary

PEM is a common nutritional disorder in sheep and goats that commonly leads to mortality without intervention. As with many disorders and disease conditions, early detection is key for successful treatment. Producers should work with their veterinarian to specify a treatment plan and to be sure to have a bottle of concentrated thiamine on hand at all times. Most PEM cases are isolated and sporadic in nature; however, a higher incidence may occur in lamb/kids on finishing diets. In these cases, the first action should be to increase dietary fiber as a preventative measure.

Are Your Sheep Consuming Enough Calcium?

By Melanie Barkley, Livestock Extension Educator, Penn State Extension

(Previously published on the Penn State Extension, Animals and Livestock page)

Minerals are essential to support skeletal and nervous system functions. But, have you balanced your current mineral program lately with the forages and other feeds that your sheep are consuming?

Most forages and a good quality mineral mix meet nutritional requirements of mature ewes. But, ewes will need additional mineral supplements, particularly during the last third of gestation.

The only way to truly evaluate a mineral program is to start with testing forages and other feeds consumed by the sheep. Assess nutrient levels using wet chemistry analysis rather than near-infrared (NIR). Not only do you need to evaluate mineral levels in feed rations, but you should also compare ratios of some nutrients. Calcium levels become particularly important during late gestation. Lambs begin to grow rapidly during the last third of the pregnancy, and the ewe requires more calcium in her diet. Consider a 150-pound ewe's requirements that increase from 2.4 grams per day at maintenance levels to 6.5 grams per day in early gestation and then 8.8 grams per day in late gestation if she is carrying twins.

Many forages will meet nutritional requirements of ewes at maintenance and possibly even through mid-gestation. However, rations may need closer inspection to best balance nutrients for late gestation, lactation (milk production), or for growing lambs. Legumes are much higher in calcium than grasses and could better meet calcium requirements. But, simply changing forages is not the answer to better meet nutritional requirements! Keep in mind that the sheep's ration needs balanced with other nutrients as well as protein and energy.

Another major consideration when looking at calcium is the ratio of calcium to phosphorus in the sheep's ration. The recommended ratio of calcium to phosphorus from the Sheep Production Handbook is 2:1, with higher levels tolerable up to 7:1 if the ration contains adequate amounts of phosphorus.

In the instance of a ewe carrying twins in late

gestation, calcium levels that are too low can result in hypocalcemia, also called milk fever. Clinical signs include weakness, lack of appetite, muscle tremors and inability to stand. Most shepherds would consider pregnancy toxemia as the issue. However, ewes in good body condition that are consuming adequate levels of energy in their feed should not develop problems with pregnancy toxemia. So, the next consideration should be hypocalcemia. Consult your veterinarian for treatment procedures, which will likely involve administering calcium intravenously to treat the deficiency.

Incorrect calcium to phosphorus ratios can also lead to urinary calculi in rams and wethers. As the calcium to phosphorus ratio approaches 1:1, the incidence of urinary calculi increases greatly. This results when mineral deposits block the urinary tract. Affected sheep have difficulty urinating and often stomp their feet or kick at their belly. This condition is sometimes called water belly because the blocked urinary tract can cause the bladder to rupture and result in death. This issue often affects feedlot lambs, but can be prevented by adding ammonium chloride at a rate of 0.5% of the total ration. The ammonium chloride acts by acidifying the urine, which helps to prevent the mineral deposits from developing. A constant supply of clean, fresh water and access to salt also helps to prevent urinary calculi.

In young and rapidly growing animals, calcium works along with phosphorus and vitamin D to produce strong bones. A lamb can develop rickets from deficiencies or imbalances of any of these nutrients, although it is most often caused by phosphorus or vitamin D deficiencies. Rickets appears as swollen ends of the leg bones and lameness. Fractures often occur when lambs suffer from rickets.

Calcium and the calcium to phosphorus ratio are critical to sheep nutrition, but calcium is just one of many minerals important to the overall health of the flock. Always consult PEM or "Polio" in Small Ruminants

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AGRICULTURE



Dangers of Harvesting and Grazing Certain Forages Following a Frost

As cold weather approaches, livestock owners who feed forages need to keep in mind certain dangers of feeding forages after frost events. Several forage species can be extremely toxic soon after a frost because they contain compounds called cyanogenic glucosides that are converted quickly to prussic acid (i.e. hydrogen cyanide) in freeze-damaged plant tissues. Some legumes species have an increased risk of causing bloat when grazed after a frost. In this article I discuss each of these risks and precautions we can take to avoid them.

Species with prussic acid poisoning potential:

Agronomic species that can contain prussic acid are listed below in decreasing order of potential risk of toxicity after a frost event:

- Grain sorghum = high to very high toxic potential
- Indiangrass = high toxic potential
- Sorghum-sudangrass hybrids and forage sorghums = intermediate to high potential
- Sudangrass hybrids = intermediate potential
- Sudangrass varieties = low to intermediate in cyanide poisoning potential
- Piper sudangrass = low prussic acid poisoning potential
- Pearl millet and foxtail millet = rarely cause toxicity

Species not usually planted for agronomic use can also develop toxic levels of prussic acid, including the following:

- Johnsongrass
- Shattercane
- Chokeycherry
- Black cherry
- Elderberry

It is always a good idea to check areas where wild cherry trees grow after a storm and pick up and discard any fallen limbs to prevent animals from grazing on the leaves and twigs.

Plants growing under high nitrogen levels or in soils deficient in phosphorus or potassium will be more likely to have high prussic acid poisoning potential. After frost damage, cyanide levels will likely be higher in fresh forage as compared with silage or hay. This is because cyanide is a gas and dissipates as the forage is wilted and dried for making silage or dry hay.

Young, rapidly growing plants of species that contain cyanogenic glucosides will have the highest levels of prussic acid. After a frost, cyanide is more concentrated in young leaves and tillers than in older leaves or stems. New growth of sorghum species following a non-killing frost is dangerously high in cyanide. Pure stands of indiangrass can have lethal levels of cyanide if they are grazed when the plants are less than 8 inches tall.

Toxicity Symptoms

Animals can die within minutes if they consume forage with high concentrations of prussic acid. Prussic acid interferes with oxygen transfer in the blood stream of the animal, causing it to die of asphyxiation. Before death, symptoms include excess salivation, difficult breathing, staggering, convulsions, and collapse.

Ruminants are more susceptible to prussic acid poisoning than horses or swine because cud chewing and rumen bacteria help release the cyanide from plant tissue.

Grazing Precautions

The following guidelines will help you avoid danger to your livestock this fall when feeding species with prussic acid poisoning potential:

- Do not graze on nights when frost is likely. High levels of toxic compounds are produced within hours after a frost, even if it was a light frost.

- Do not graze after a killing frost until plants are dry, which usually takes 5 to 7 days.

- After a non-killing frost, do not allow animals to graze for two weeks because the plants usually contain high concentrations of toxic compounds.

- New growth may appear at the base of the plant after a non-killing frost. If this occurs, wait for a killing freeze, then wait another 10 to 14 days before grazing the new growth.

- Don't allow hungry or stressed animals to graze young growth of species with prussic acid potential. To reduce the risk, feed ground cereal grains to animals before turning them out to graze.

- Use heavy stocking rates (4-6 head of cattle/acre) and rotational grazing to reduce the risk of animals selectively grazing leaves that can contain high levels of prussic acid.

- Never graze immature growth or short regrowth following a harvest or grazing (at any time of the year). Graze or greenchop sudangrass only after it is 15 to 18 inches tall. Sorghum-sudangrass should be 24 to 30 inches tall before grazing.

- Do not graze wilted plants or plants with young tillers.

Greenchop

Green-chopping frost-damaged plants will lower the risk compared with grazing directly, because animals are less likely to selectively graze damaged tissue. Stems in the forage dilute the high prussic acid content that can occur in leaves. However, the forage can still be toxic, so feed greenchop with great caution after a frost. Always feed greenchopped forage of species containing cyanogenic glucosides within a few hours, and don't leave greenchopped forage in wagons or feedbunks overnight.

Hay and silage are safer

Prussic acid content in the plant decreases dramatically during the hay drying process and the forage should be safe once baled as dry hay. The forage can be mowed anytime after a frost if you are making hay. It is very rare for dry hay to contain toxic levels of prussic acid. However, if the hay was not properly cured and dried before baling, it should be tested for prussic acid content before feeding to livestock.

Forage with prussic acid potential that is stored as silage is generally safe to feed. To be extra cautious, wait 5 to 7 days after a frost before chopping for silage. If the plants appear to be drying down quickly after a killing frost, it is safe to ensile sooner.

Delay feeding silage for 8 weeks after ensiling. If the forage likely contained high levels of cyanide at the time of chopping, hazardous levels of cyanide might remain and the silage should be analyzed before feeding.

Freezing also slows down metabolism in all plants that might result in nitrate accumulation in plants that are still growing, especially grasses like oats and other small grains, millet, and sudangrass. This build-up usually isn't hazardous to grazing animals, but green chop or hay cut right after a freeze can be more dangerous. When in doubt, send a forage sample to a forage testing lab for nitrate testing before grazing or feeding it.

Species That Can Cause Bloat

Forage legumes such as alfalfa and clovers

have an increased risk of bloat when grazed one or two days after a hard frost. The bloat risk is highest when grazing pure legume stands, and least when grazing stands having mostly grass.

The safest management is to wait a few days after a killing frost before grazing pure legume stands – wait until the forage begins to dry from the frost damage. It is also a good idea to make sure animals have some dry hay before being introduced to lush fall pastures that contain significant amounts of legumes. You can also swath your legume-rich pasture ahead of grazing and let animals graze dry hay in the swath. Bloat protectants like poloxalene can be fed as blocks or mixed with grain. While this an expensive supplement, it does work well when animals eat a uniform amount each day.

Hunters On The Land? Recreational User's Statute Protects Landowners From Liability

By Peggy Kirk Hall, Associate Professor, Agricultural & Resource Law

A question we often hear from landowners is "will I be liable if a hunter is injured on my property?" Ohio's Recreational User's Statute is an excellent risk management tool for farmers who so often have hunters stopping by and asking for permission to hunt on the farm. The law provides immunity for landowners of non-residential land who allow people to engage in recreational activities on the land without charging a fee for the activity. The law states that by granting permission, the landowner is not extending any assurance to a recreational user that the premises are

safe for entry or use.

To receive the law's liability protection, it's important for a landowner to meet the following requirements:

1. Grant permission to a person to engage in a recreational activity such as hunting, fishing, hiking, snowmobiling, four-wheeling, or other recreational activities.
2. Don't charge a fee or benefit for the use, except that the law does allow a lease payment fee.

Read more about the law in our new bulletin, *The Who, What, When, and Where of Ohio's Recreational User Statute: What Landowners Need to Know*.

Changes made to Ohio's prohibited noxious weeds list

By Peggy Kirk Hall, Associate Professor, Agricultural & Resource Law

New changes to Ohio's prohibited noxious weeds list took effect last Friday, September 14th. In a previous blog post, we explained that the Ohio Department of Agriculture (ODA) was considering an update to the list as part of a mandatory five year review of all administrative rules. ODA ultimately added 13 new species to the list, and removed 3 species.

Added to the list of prohibited noxious weeds are:

- Yellow Groove Bamboo (*Phyllostachys aureosculata*), when the plant has spread from its original premise of planting and is not being maintained.
- Field bindweed (*Convolvulus arvensis*).
- Heart-podded hoary cress (*Lepidium draba* sub. *draba*).
- Hairy whitetop or ballcress (*Lepidium apelianum*).
- Perennial sowthistle (*Sonchus arvensis*).
- Russian knapweed (*Acroptilon repens*).
- Leafy spurge (*Euphorbia esula*).
- Hedge bindweed (*Calystegia sepium*).
- Serrated tussock (*Nassella trichotoma*).
- Columbus grass (*Sorghum x alnum*).
- Musk thistle (*Carduus nutans*).
- Forage Kochia (*Bassia prostrata*).

• Water Hemp (*Amaranthus tuberculatus*).
Removed from the list are:

Wild carrot (Queen Anne's lace) (*Daucus carota* L.); Oxeye daisy (*Chrysanthemum leucanthemum* var. *pinnatifidum*); Wild mustard (*Brassica kaber* var. *pinnatifida*).

Still on the list are:

Shatter cane (*Sorghum bicolor*); Russian thistle (*Salsola Kali* var. *tenuifolia*); Johnsongrass (*Sorghum halepense*); Wild parsnip (*Pastinaca sativa*); Grapevines: when growing in groups of one hundred or more and not pruned, sprayed, cultivated, or otherwise maintained for two consecutive years; Canada thistle (*Cirsium arvense*); Poison hemlock (*Conium maculatum*); Cressleaf groundsel (*Senecio glabellus*); Musk thistle (*Carduus nutans*); Purple loosestrife (*Lythrum salicaria*); Mile-A-Minute Weed (*Polygonum perfoliatum*); Giant Hogweed (*Heracleum mantegazzianum*); Apple of Peru (*Nicandra physalodes*); Maretail (*Coryza canadensis*); Kochia (*Bassia scoparia*); Palmer amaranth (*Amaranthus palmeri*); Kudzu (*Pueraria montana* var. *lobata*); Japanese knotweed (*Polygonum cuspidatum*).

The revised list can be found online at <http://codes.ohio.gov/oac/901%3A5-37>. Readers may recall that the Farm Office's Ag Law Library has a law bulletin on Ohio's Noxious Weed Laws.