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<http://clark.ca.uky.edu/>

Clark County

Agriculture and Natural Resources Newsletter

August 2024



A Word from the Agent . . .



Unfortunately, the month of July was very dry which caused numerous issues with hay fields, pasture fields, and row crops, but now is the time to really start preparing for fall and winter. I really hope for some more rains in the future, so the fall is easier

than this summer.

Like every August, the Clark County Extension Office is preparing for fall events, and in this newsletter, you will find numerous classes whether you need quick CAIP education to complete your project or maybe you need a leg up for a great fall hunt.

Also remember, fall is a great time to soil sample your pastures and fields. The soil lab usually isn't backed up with samples, and the fall is a great time to apply phosphorus and potassium for the 2025 growing season.

Finally, the central KY Ag Agents are doing another hay contest. If you have hay you would like to have tested, please give me a call at the Clark County Extension Office (859) 744-4682. The hay sampling is free, and I will take the sample for you. Just call to schedule a time.

Levi Berg

Clark County Extension Agent
for Agriculture and Natural Resources

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Forage Management Tips for August

- Do NOT graze cool-season pastures closer than 3 to 4 inches. This will help to conserve soil moisture and prevent overheating of the crowns.
- If drought conditions limit pasture growth, close off pastures and feed hay in a sacrifice area.
- Graze warm season annuals or perennials to allow cool season grasses to recover and to avoid endophyte-infected fescue.
- After first good rain in August, seed winter annuals (such as small grains, ryegrass, crimson clover, and brassicas) for late fall and early spring grazing.
- Plant alfalfa after first good rain in August to allow sufficient size going into winter and reduce potential for sclerotinia damage.
- Consider renovation of cool-season grass pastures that have thinned.
- In mid-August to early September, exclude livestock from pastures to be stockpiled and apply 60 lb N/A and any needed lime, P and K.

KEEPING YOU
Informed

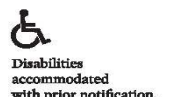


Cooperative
Extension Service

Agriculture and Natural Resources
Family and Consumer Sciences
4-H Youth Development
Community and Economic Development

MARTIN-GATTON COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT

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Nitrate Levels in Drought-Damaged Forages

By: Chad Lee, Ray Smith, Michelle Arnold and Cynthia Gaskill
University of Kentucky

Dry conditions often cause nitrates to accumulate at high levels in forages. Nitrate levels need to be checked in drought damaged forages before feeding to livestock or horses.

Sample Technique

A proper sample must be taken for accurate determination of nitrate levels. The results from the test are only as good as the sample and handling of that sample. The following are some guidelines to follow.

Harvest at least one (1) pound of fresh weight for each sample. The plants should be cut at the intended harvest height. (Note: We suggest harvesting forages at three (3) inches or more above the soil surface. Nitrates tend to accumulate in the lower stems. By keeping the cutting height above three inches when harvesting forages, nitrate levels in the harvested plant should be reduced).

Collect a representative sample from each field. Usually five or more locations across a field will serve as a representative sample. Plants from the five or more locations in the field should be combined into one sample for nitrate testing.

If multiple fields are in question, or crops at different growth stages are to be tested, submit samples from the different fields or crops as separate samples. Growth stage, the date when fertilizer nitrogen was applied, and the extent of freeze damage all could affect nitrate levels in the plants.

Relatively dry plants (eg, corn stalks, hay) should be stored in paper bags and mailed in cardboard boxes overnight to the testing laboratory. Moist plants (eg, silage, fresh forage) should be placed in plastic bags and

immediately put in a cooler with ice packs. Either deliver the samples directly to the laboratories the same day or ship overnight on ice packs. If moist plant samples will be stored overnight before shipping, then they should be stored in a freezer in plastic bags.

Note: Storage of moist plant samples in plastic bags at room temperature will result in bacterial growth and reduction of nitrate to nitrite, resulting in inaccurate nitrate results.

During the handling process, nitrate levels could decrease in the plant sample, especially if they are stored overnight at room temperature. If a period of time has occurred between harvesting and testing the samples, then you could expect that nitrate levels reported would be less than nitrate levels in the field.

Testing Laboratories in Kentucky

The two veterinary diagnostic laboratories in Kentucky that perform nitrate testing on forages are the University of Kentucky Veterinary Diagnostic Laboratory (UKVDL) and the Murray State University Breathitt Veterinary Laboratory. Both are accredited by American Association of Veterinary Laboratory Diagnosticians. However, the two laboratories use different methods for their analyses. The UKVDL methods and techniques are consistent with most testing laboratories across the country and the feeding thresholds are consistent as well (Table 1). The UKVDL recently passed a national nitrate/nitrite proficiency testing program, which confirms the accuracy and repeatability of their testing methods. Click here for more information on that proficiency test. Breathitt Veterinary Laboratory uses a different method and has different feeding thresholds and guidelines (Table 2).

Table 1:

Nitrate Levels and Feeding Options for cattle from University of Kentucky Veterinary Diagnostic Laboratory Recommendations (updated table)

Total Dietary Nitrate (NO ₃) in dry matter	Feeding Guidelines
<5,000 ppm (0.5%)	Generally safe for cattle. Be cautious with pregnant and young animals when nitrate concentrations approach 5,000 ppm and dilute with other feeds.
>5,000 but <10,000 ppm (>0.5% but <1%)	Dilute with other feeds and introduce slowly. Consider options to reduce nitrate in fresh forage (ensiling, delayed harvest, other). Limit to a maximum of 50% of the total dry matter in pregnant animals.
>10,000 ppm (1%)	Very dangerous, can cause acute nitrate poisoning and death in cattle. Do not feed.

Note: All sources of dietary nitrate, including feeds, forages, supplements, and water should be taken into consideration when determining total dietary nitrate concentration. Representative sampling is crucial for proper interpretation of results.

Also: Nitrite, a breakdown product of nitrate that can be found in forages, is much more toxic than nitrate, and much lower levels of nitrite can cause poisoning and death.

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Table 2
Nitrate Levels and Feeding Options from Breathitt Veterinary Laboratory Recommendations

Nitrate (NO ₃) in dry matter	Feeding instructions	
0.0 - 0.20%	0 - 2,000 ppm	Safe to Feed
Over 0.20%	Over 2,000 ppm	Toxic: Do not feed

Note: The guidelines from Breathitt are specific to samples tested at Breathitt and cannot be applied to samples tested at any other laboratory.

Costs for Testing

The UKVDL in Lexington, KY performs a forage nitrate panel that includes both nitrate and nitrite analyses for \$17.25 per sample and \$10 accessing fee. Turn-around-time for test results is generally 1 to 3 business days after receipt of samples. The UKVDL accepts samples directly from veterinarians, farmers, and extension agents.

The Breathitt Veterinary Laboratories in Hopkinsville, KY provides nitrate and nitrite testing on forages for a fee of \$14.25 per sample for nitrate, \$12 per sample for nitrite, and a \$10 accession fee for each accession or submission. The turn-around-time for test results from the Breathitt lab is usually 1 to 2 business days. Contact the Breathitt Veterinary Laboratory for more information about their sample submission process, specific

guidelines testing guidelines and interpretation of results.

Other Laboratories

Several commercial laboratories, such as Dairy One Forage Laboratory, conduct the nitrate testing as well. However, be aware that nitrate levels can be reported a variety of ways and the method of expression can differ between laboratories. Nitrate can be reported as nitrate (NO₃), nitrate-nitrogen (NO₃-N), or potassium nitrate (KNO₃). These numbers are NOT equivalent, as they represent different chemical structures. Make sure the feeding guidelines used for a particular result match the type of analysis performed. To convert between the different methods of reporting, use the conversions in Table 3.

Table 3:
Conversion options for different reporting methods.

Method of expression	Chemical designation	To convert to NO ₃ , multiply by	To convert to NO ₃ -N, multiply by	To convert to KNO ₃ , multiply by
Nitrate	NO ₃	1.00	0.23	1.63
Nitrate-nitrogen	NO ₃ -N	4.40	1.00	7.20
Potassium nitrate	KNO ₃	0.61	0.14	1.00

Forage nitrate results can also be reported using a variety of units. The most common units of measurement are parts per million (ppm) or percentage (%). Results are usually reported on a dry matter basis. To convert from ppm to %, move the decimal point four places to the left (eg, 5,000 ppm = 0.50%)

Points:

1. Keep moist samples frozen or on ice until shipped, and ship samples as soon as possible. This avoids the possibility of nitrate reduction during storage and transportation.
2. Be sure to know the specific guidelines of the testing laboratory you are using.
3. **Note:** Horses are much less sensitive to nitrate than are cattle or other ruminants, and can tolerate much higher concentrations of nitrate, but exact threshold values have not been established. Horses are extremely sensitive to nitrite, so any preformed nitrite in forages can pose a significant risk. Please consult with a veterinary clinical toxicologist for interpretation of nitrate/nitrite concentrations in horse feeds.

Laboratory Contact Information:

University of Kentucky Veterinary Diagnostic Laboratory
1490 Bull Lea Road
Lexington, KY 40511

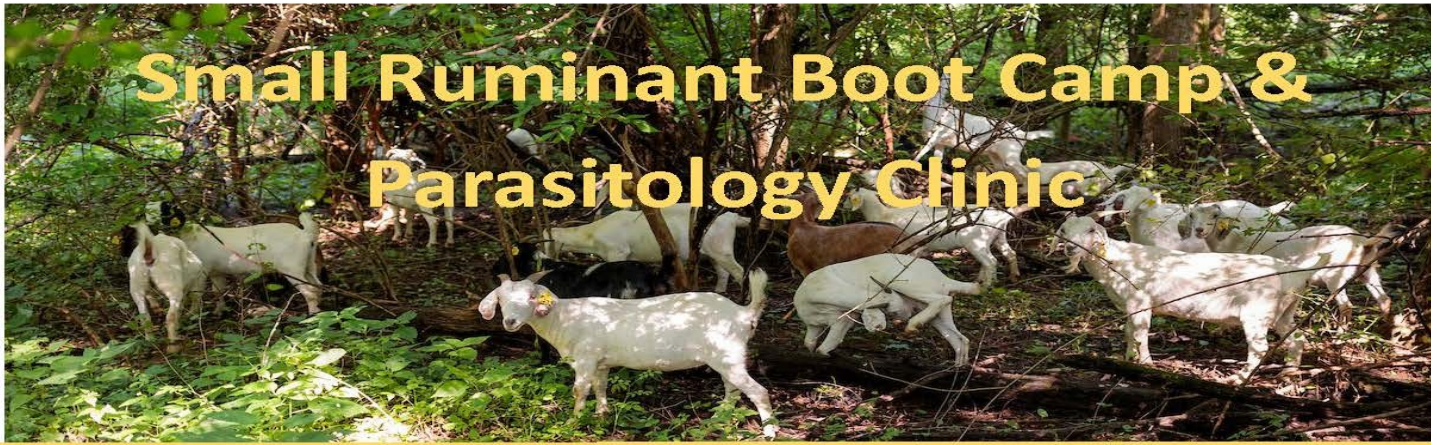
Phone 859-257-8283
Fax 859-255-1624

Contact for nitrate questions: Dr. Deborah Maples
deborah.maples@uky.edu
859-257-7112

Murray State University Breathitt Veterinary Center
PO Box 2000, 101 MSU Drive
Hopkinsville, KY 42241-2000

Phone 270-886-3959
Fax 270-886-4295

Contact for nitrate questions: Dr. Ramesh Gupta
270-886-3959



Small Ruminant Boot Camp & Parasitology Clinic

Register at <https://www.kysheepandgoat.org/product-page/small-ruminant-boot-camp-and-famacha-srqa-certification>

Registration limited to 20 households

Price: \$35– includes 1 FAMACHA certification and lunch

Additional lunches- \$10 each

Registration Deadline: Sept 6

Hosted By:



Online

Participants will receive links to three video lectures prior to the in-person clinic:

Parasitology 101- Aug 19

Dewormers and Treatment Strategies- Aug 24

Rotational Grazing for Parasite Resistance- Sept 2
(Videos are required for certification)

In-person Clinic, 9:15am-4:15pm, Sept 14th,
Grayson County Extension Office, 64 Quarry Road,
Leitchfield, Kentucky 42754

Nutrition and Health Connections

Why Do Fecals?

Lunch

Parasite Q & A

Body Condition Scoring and FAMACHA Presentation

Fecal Flotation and Fecal Egg Count Presentation

Hands-on Workshops for FAMACHA and Fecal Egg Counts

Hoof Trimming

SRQA Basics

Sponsored By:




Beef Quality Care and Assurance Training

Tuesday, August 6
9:00 am
Clark County Extension

NO Charge!

Upcoming CAIP Classes:

There will be several classes offered this fall that will meet the CAIP Educational requirement. Listed below are some that are upcoming. Only one class is needed to meet the CAIP education requirements.

- CAIP Education (Forages): **August 7**, at 6:00 pm
- CAIP Education (Facilities): **August 27**, at 6:00 pm
- CAIP Education (Beef): **September 17**, at 6:00 pm

 Cooperative
Extension Service

Wildlife Food Plots 101

At The Clark County Extension Office
1400 Fortune Dr. Winchester, KY

AUGUST 15TH, 2024
AT 6:30PM

Guest Speaker:
Dr. Matt Springer,
UK Wildlife Specialist

MEAL PROVIDED!

REGISTER BY CALLING :
(859) 744-4682

MORE CONTACT INFO:
levi.berg@uky.edu

**COME LEARN THE BASICS
OF WILDLIFE HABIT NEEDS
AND HOW YOU CAN
DRAW MORE WILDLIFE TO
YOUR PROPERTY WITH
FOOD PLOTS**

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LEXINGTON, KY 40546



Disabilities
accommodated
with prior notification.

2024 CENTRAL KENTUCKY HAY CONTEST

Is your hay the best?

Testing provides nutritional value of hay to assist in balancing rations, and can result in reduced feed cost, increased animal performance, and information to improve forage stands.

Free analysis to determine hay quality and livestock needs.

Clark County Extension Office
(859) 744-4682
to sign up.



**DEADLINE TO REGISTER:
OCTOBER 7, 2024**

RECIPE

What's
Cooking?



Italian Turkey Sausage and Peppers

3 red bell peppers	6 cloves garlic, chopped	2 tablespoons Italian seasoning
2 green bell peppers	2 tablespoons olive oil, divided	8 4-ounce links of Italian turkey sausage
1 yellow bell pepper	2 teaspoons garlic powder, divided	1/4 cup shredded mozzarella cheese
2 large tomatoes		
1 large sliced red onion		

Wash and **slice** the peppers and tomatoes; **place** in a large bowl. **Place** sliced onions and chopped garlic cloves in a small bowl and **set** aside. In a separate small bowl, **combine** 1 tablespoon of olive oil, 1 teaspoon of garlic powder, and Italian seasoning. **Drizzle** oil mixture over peppers and tomatoes, and lightly toss. **Slice** each sausage link into 5 or more pieces. **Heat** 1 tablespoon of olive oil and the remaining garlic powder in a large skillet over medium-high heat. **Add** sausage and **cook** until browned. **Add** peppers

and tomatoes. **Reduce** heat to medium-low; **cover** and **simmer** 15 minutes; **stir** as needed. **Add** onions and chopped garlic; **cover** and **cook** an additional 5 minutes. **Sprinkle** with mozzarella cheese. **Cover** and **simmer** until cheese melts.

Yield: 6 1-cup servings

Nutritional Analysis:
380 calories, 21 g fat, 5 g saturated fat, 110 mg cholesterol, 730 mg sodium, 17 g carbohydrate, 3 g fiber, 8 g sugars, 0 g added sugars, 32 g protein.