

NIKKI'S NEWSLETTER

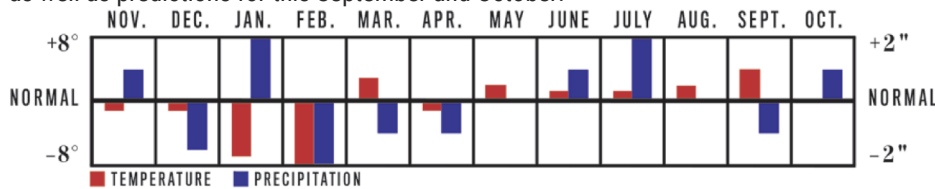


Marshall County's Agriculture & Natural Resources Update

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September is here and fall will be upon us shortly. As grain producers enter harvest season, it's time to talk grain storage. With operating loans as high as they are, I thought you might appreciate the article on grain storage decisions on pages 2-3. For my beef producers entering fall calving season, I wanted to further address one of the obstacles currently "bugging" you (fly pun intended). Pink Eye has become such a big issue for some producers, I figured the topic warrants three whole pages. See pages 5-7. For my horticulturalists, check the fall vegetable gardening article and upcoming programs on page 4 and below.

It wouldn't be an issue of Nikki's News without a mention of the weather. I have been trying to wrap my head around how crazy the weather this year has been. So, I did a little research. I borrowed the chart below from the farmers almanac. It does a great job of displaying "normal" temperatures (red) and precipitations (blue) for Benton each month starting in November of 2022, as well as predictions for this September and October.



Moving forward, the next big weather event to plan for is the first fall frost and freeze. Checkout the article on page 9 for more info on when and how to prepare.

Citation: Yankee Publishing Inc. (n.d.). Long-range weather forecast for Benton, KY. Almanac.com. <https://www.almanac.com/weather/longrange/KY/Benton>

Marshall County ANR Agent

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RECIPE OF THE MONTH

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Lunch Break Gardening Series



October's Topic:

Herbs

Join Johnnie Davis as she shares her experiences growing, gathering, preserving and cooking with herbs!

Join us during your lunch break for a gardening workshop!

\$12

Includes a boxed lunch from a local restaurant

1st Wednesday Monthly
12:15-12:45pm
at the Marshall County Extension Office



RSVP by Sept. 29th
Call 270-527-3285

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Interest Rates and Grain Storage

Grain 2

Dr. Grant Gardner, Uk Economist

For the 2023/24 marketing year, higher interest rates will negatively impact producers' costs for holding grain in storage, especially for producers utilizing operating loans. This article examines the operating loan interest cost of storing grains at different interest rates and lengths of time and how to calculate operating loan interest costs when the grain is stored. The article also provides charts to depict the change in operating loan interest cost of storing corn, soybeans, and wheat. For example, an increase in the interest rate from 4% to 10% will increase the storage costs of corn stored for five months by 162.5% or \$0.13/bushel.

The Federal Reserve began increasing the Federal Funds rate in February 2022 to combat inflation. When the Federal Reserve raises the Federal Funds rate, the prime rate increases. The prime rate is used as a reference interest rate for many types of loans, including operating, term, and credit card loans. On July 27, 2023, the prime rate reached 8.5%, the highest since 2001. Speculators believe further increases of 0.25-0.50% will occur before the end of the year. Kentucky lenders have recently mentioned operating loan rates of 9.5%, indicating that the operating loan rates could reach 9.75-10.00% before year-end.

Higher interest rates impact every aspect of a farming operation. Still, as they pertain to marketing strategies, they are likely most impactful on producers using operating loans to hold grain in storage. Typically, operating loans are variable interest rate, meaning they are not fixed but increase when the prime rate changes; however, some lenders have started offering fixed-rate operating loans to provide customers with cost certainty. Operating loans are used to pay for inputs until grain can be sold and the operating loan paid back. There is an interest cost for holding grain in storage compared to selling at harvest and paying down operating loans. Grain in storage typically allows producers to increase profit through marketing strategies that utilize market or basis carry. However, the operating loan interest costs need to be accounted for when interest rates are elevated.

The operating loan interest cost on a dollar-per-bushel basis can be calculated by multiplying the harvest price by the interest rate and dividing the number of months the crop is stored by 12. For example, a producer that holds corn harvested in October until March (5 months), has an operating loan interest rate of 10% interest and is expecting a harvest price of \$5.00/bushel would have operating loan interest costs of storage of $\$5.00 \times 0.10 \times (5/12)$.

Figures 1, 2, and 3 show the impact of the number of months of storage and interest rates on corn, soybeans, and SRW wheat operating loan storage costs. Harvest prices are assumed to be \$5.00/bu for corn, \$12.00/bu for soybeans, and \$6.00/bu for SRW wheat. The storage costs increase the longer grain is stored. Additionally, costs increase as the price of the commodity increases, i.e., interest costs are higher for soybeans than corn or SRW wheat.

The table at the bottom of each chart can be used to estimate increased operating loan interest costs for grain held in storage due to climbing interest rates. Following our previous example, if corn is harvested in October for March delivery (5 months) and the interest rate is 4%, operating loan interest costs of storage for \$5 corn would have been \$0.08/bu. When the rate increases to 10%, closer to current rates, the operating loan interest costs of storage are \$0.21 per bushel. This result indicates an increased operating loan interest cost of \$0.13/bu (\$0.21 minus \$0.08), a 162.5% increase due to a 6% increase in interest rates.

In conclusion, high-interest rates increase the storage costs for producers holding grain via an operating loan, affecting each operation's bottom line and potentially negating the price benefits of storage. Storage costs are rising with interest rates which should be accounted for in your grain marketing decisions. It is worth noting that the impact of higher rates could be mitigated/stopped by paying your operating loan off early or using cash reserves instead of loans, respectively.

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Interest Rates and Grain Storage

Dr. Grant Gardner, UK Economist

Figure 1: Impact of Interest Rate Increases on Corn Storage Costs

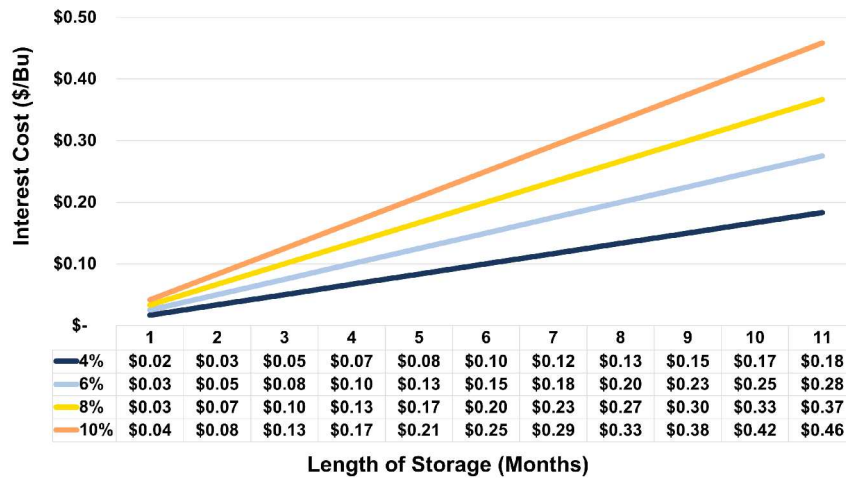


Figure 2: Impact of Interest Rate Increases on Soybean Storage Costs

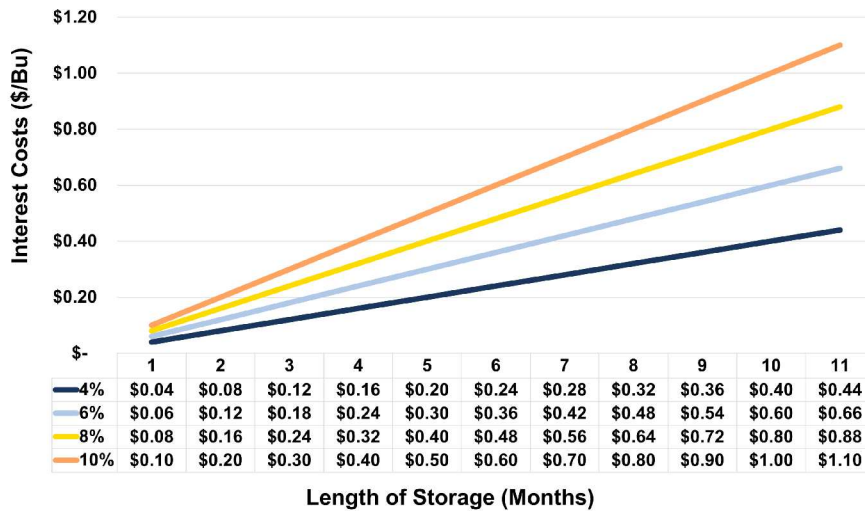
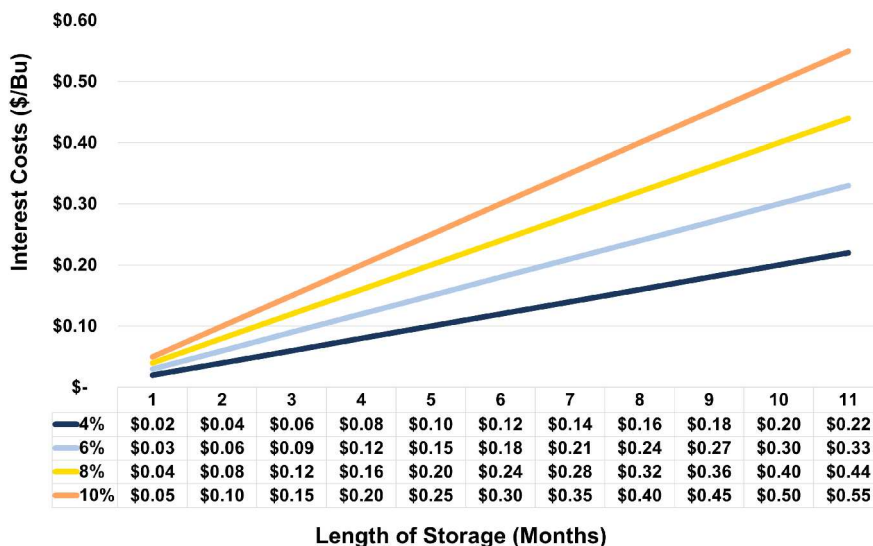


Figure 3: Impact of Interest Rate Increases on SRW Wheat Storage Costs



Rick Durham, UK Extension Horticulture Specialist

As the summer warmth begins to wane, you don't have to bid farewell to the joys of cultivating your garden. This time between seasons offers a golden opportunity to plant a vibrant fall vegetable garden, promising an uninterrupted flow of produce throughout autumn. Alternating balmy days and brisk nights support a variety of cool-season vegetables for your family to enjoy.

Some of the best quality vegetables are produced during fall's warm days and cool nights. These environmental conditions add sugar to late-season sweet corn and cole crops, such as cauliflower and cabbage, and add crispness to carrots. Fall vegetables harvested after early September consist of two types: the last succession plantings of warm-season crops, such as corn and bush beans, and cool-season crops that grow well during the cool fall days and withstand frost.

When planting a fall garden, group crops the same way you would in the spring; plant so taller plants don't shade out shorter ones. To encourage good germination, fill each seed furrow with water and let it soak in. Keep the soil moist until seeds have germinated. Be aware that cool nights slow growth, so plants take longer to mature in the fall than in the summer. You may use polyethylene row covers to extend the growing season of frost-sensitive crops, such as tomatoes, peppers and cucumbers. This helps trap heat from the soil and protect the crop from chilly night temperatures. Often Kentucky experiences a period of mild weather after the first killing frost. If you protect frost-sensitive vegetables at critical times in the fall, you could extend the harvest season by several weeks.

Once these vegetables die due to lower temperatures, you may be able to plant cool-season crops in their place. Leafy greens like lettuce and spinach may grow into November or December under polyethylene row covers if outside temperatures do not drop below the teens. Be sure to allow for ventilation on sunny days to prevent overheating.

You may successfully seed or transplant the following vegetables now for fall harvest: beets, Bibb lettuce, broccoli, Brussels sprouts, cabbage, carrots, cauliflower, collards, endive, leaf lettuce, kale, mustard greens, spinach, snow peas and turnips. For more information about horticultural topics or classes near you, contact the Marshall County Cooperative Extension Service.

Master Gardener Library Series

September's Topic:

Houseplants



13th at Hardin &
20th at Calvert City
10-11:00am



Horticulture Webinar Wednesdays
University of Kentucky
College of Agriculture, Food and Environment
Cooperative Extension Service

SEPTEMBER CLASSES

Wednesdays
12:30 p.m. ET / 11:30 a.m. CT

September 6
Carex for the Mid-Atlantic Region
- Sam Hoadley

September 13
Hydrangea Selection and Care

September 20
Backyard Fruit: Clean up Today to Keep Diseases Away

September 27
Tabletop Mushrooms

Register Here:
<https://tinyurl.com/23SEPHWW>

Pinkeye Prevention

Livestock 5

Dr. Michelle Arnold, UK DVM

Infectious Bovine Keratoconjunctivitis (IBK) or “Pinkeye” is a costly and exasperating disease for the beef producer and industry. For the producer, the economic costs of pinkeye include lower average weaning weights, pinkeye treatment and labor costs, and discounts received for calves with corneal scars. Despite ongoing research to combat this disease, prevention has proven difficult because of the complicated interaction of pathogens (bacteria), host (cow/calf), and environmental factors that result in pinkeye’s development and its fast spread. Frequent observation of the herd allows early recognition and prompt treatment of affected eyes, resulting in better healing and less transmission to herd mates. However, preventing a pinkeye outbreak does not start with the first bad eye of the season. Once pinkeye cases begin, it is highly contagious and the bacterial pathogens spread rapidly by direct contact and by mechanical vectors, especially face flies. In an outbreak, on average 10% of calves and 3% of cows in a herd are affected in 30 days or less. Although knowledge gaps exist in our understanding of immunity in the bovine eye, prevention starts early by maximizing the herd’s ability to fight disease, and through reduction of sources of eye irritation, injury, and transmission. Pinkeye prevention for individual herds is best accomplished with the help of your local veterinarian because there is no “one size fits all” approach to control.

Recent research is changing much of what we thought we knew about the bacterial cause of pinkeye (the “pathogen”). Previously, the cause was thought to be invasion of the bacterium *Moraxella bovis* (*M. bovis*) because, in research trials, it was the only bacterium recovered from diseased eyes that resulted in pinkeye when placed in healthy calves’ eyes. However, we now know *M. bovis* colonizes the eyes at a young age and is part of the normal flora (the “microbiome”) of the eye. Cattle are the only known reservoir of *M. bovis* and adult cows harbor this organism year-round without problems. However, *Moraxella* bacteria have two known virulence factors, pili and cytotoxin, that change this organism from a harmless inhabitant to an aggressive pathogen. “Pili” are hairlike projections on the bacterial surface that enable attachment to a damaged or injured cornea. After attachment, “cytotoxin” is the poison released by the bacterium that kills corneal surface cells and the white blood cells recruited to fight infection in the eye, resulting in erosions that coalesce to form a corneal ulcer. After these virulence factors are triggered, these “hot” bugs spread within the herd and can cause a full-blown pinkeye case within 24 hours of infection. New molecular diagnostic techniques including PCR and next generation sequencing (NGS) are now being used to analyze the DNA of other organisms present in normal and diseased eyes to get a better understanding of how each contributes to disease and to aid in vaccine development. Studies reveal that two more organisms, *Moraxella bovoculi* and *Mycoplasma bovoculi*, are found in over 90% of pinkeye cases. *Moraxella bovoculi* is an extremely diverse bacterium that also has pili and cytotoxin, and it carries multiple genes that code for antibiotic resistance. To make the picture even more complicated, there are genetically distinct strains of *Moraxella bovoculi* that do not play any role in pinkeye. *Mycoplasma bovoculi* causes low level corneal irritation and damage but does not have pili or toxin. Because of this complex mixture of organisms, it is difficult to make an effective, protective vaccine against the pathogens associated with pinkeye.

“Host” factors that contribute to pinkeye development include immune deficiencies due to poor nutrition, lack of trace minerals, inadequate hydration, and sub-par vaccination status. Meeting nutritional requirements, providing vitamins and trace minerals, establishing a comprehensive vaccination program including the respiratory viral disease infectious bovine rhinotracheitis (IBR), and parasite control are all exceptionally important in improving the cow’s or calf’s innate ability to fight pinkeye. No scientific evidence supports feeding excessive levels of any vitamin or mineral, including Vitamin A, to prevent diseases of the eye. However, if trace mineral levels (especially selenium and copper) are very low in an animal, immune function is severely impaired. Cool, clean drinking water (instead of stagnant creek or pond water) improves intake and provides the necessary fluid for tear production to protect the corneal surface. This is exceptionally important in dry, dusty, and/or windy conditions. Tears are essential to wash away pathogens and tear proteins include antibodies to fight infection. Do not forget to regularly check and clean automatic waterers, especially in the summer. Other host factors unrelated to management can contribute to pinkeye. White-faced cattle, particularly Herefords, are more prone to the disease, likely due to enhanced reflection of UV radiation on the cornea. Reported heritability of pinkeye is low to moderate so any control through genetics is unlikely or will be slow, at best.

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Pinkeye Prevention

Dr. Michelle Arnold, UK DVM

Environmental factors contributing to pinkeye are those that can irritate or injure the eye's corneal surface and predispose the eye to infection, include ultraviolet rays from the sun, face flies, dust, seed heads and tall weeds. UV radiation promotes formation of "dark cells" in the cornea; these are damaged cells that are targets of *M. bovis* attachment. Dust particles, seed heads, tall weeds, and sharp stubble can scratch the corneal surface. Face flies irritate eyes when feeding, with abrasive blotting mouthparts that rasp, scrape, and penetrate the conjunctival tissues, triggering tear and mucus production that feed the insects. Bacteria in the secretions of pinkeye-infected cattle can survive on or in face flies for 2 to 3 days and infect other animals when the flies feed again. Cattle display "fly avoidance behaviors" including head throws, tail flicks, and bunching together with heads directed inward when face flies feed. Preventing eye damage with good face fly control, removing irritant seed heads and weeds, and by providing shade for UV protection reduces the opportunity for pinkeye to strike.

Face fly control is challenging and is not the same as horn fly control. Face flies are "blotters" that feed on tears instead of "piercers" that feed on blood as horn flies do. Fly control methods that depend on insecticides delivered in the bloodstream have no effect on face fly numbers. Face flies spend only a few minutes at a time on or around the head, which is a difficult area to protect. They are also strong fliers and may move two miles or more during their life so they can easily transfer pinkeye from herd-to-herd and farm-to-farm. Face flies can be partially controlled with feed-through insecticides such as IGRs (insect growth regulators), offered in feed or mineral. Both horn fly and face fly females lay their eggs in very fresh manure. IGRs can reduce the number of fly maggots developing to adults, provided the IGR is started early enough in the spring and cattle consume a sufficient daily dose. IGRs should be started in mid-spring, 30 days prior to fly season, and removed 30 days after fly season is over. Supplemental adult fly control is still needed to control adult flies moving in from nearby herds. Adult face flies can be somewhat controlled with repellents and insecticides applied directly to the face and eyes of cattle.

Insecticide impregnated ear tags or forced-use dust bags provide the most consistent reductions in face fly numbers. Back rubbers with fly flyps or fly bullets tied at 4-6" intervals along their length and placed in forced-use areas like mineral feeders or entrances to water sites will consistently deliver insecticide to the face. The goal is to reduce face flies to less than 10 flies per head. The Veterinary PestX Database available at <https://www.veterinaryentomology.org/vetpestx> is a tremendous resource to identify insecticide ear tags, dusts, feed-throughs, pour-ons, sprays, and premise treatments and their mode of action (MOA) group to control almost any type of cattle pest (see Figure 2). Fly control products must be rotated annually to a different MOA to preserve effectiveness. Repeatedly exposing face flies to insecticides in the same MOA group or to sublethal doses and killing most, but not all flies, allows survivors to develop resistance to all insecticides within the same MOA group. That genetic resistance can then be passed to their progeny.

Insecticide Impregnated Ear Tags		
Active Ingredients	MOA Group	Brand Names
15% coumaphos + 35% diazinon	1B	Corathon; 2 tags
coumaphos + diazinon	1B	Co-Ral Plus; 1 tag for horn fly, 2 tags for face fly suppression
20% pirimifos-methyl	1B	Dominator; 2 tags
20% diazinon	1B	Optimizer / X-Terminator
40% diazinon	1B	Patriot; 2 tags
permethrin	3A	Atroban Extra, Apollo, Deckem, Ear Force, Gard Star Plus, New Z Permethrin, Permethrin Insecticide Ear Tags, Super Deckem II (10%); 2 tags
beta-cyfluthrin	3A	Cylence Ultra (8%) CyGuard 15%; 2 tags
10% zeta-cypermethrin	3A	PythoN Magnum, ZetaGard; 1 tag
10% lambda-cyhalothrin	3A	Saber Extra, Excalibur; 2 tags

Figure 2: Example of Mode of Action (MOA) groups. The group number represents the MOA followed by a letter that relates to chemical structure. In the example above, there are 2 different MOA groups: 1B (organophosphates), and 3A (synthetic or synergized pyrethroids).

While fly tags can be an effective method to reduce face flies, it is important to use 2 tags (one in each ear) for optimal control of face flies. Some manufacturers offer "insecticide cattle strips" that can be slipped onto the shaft of an existing ID tag, alleviating the need for two tags in one ear. Read the label and look for tags that "control" face flies, instead of those that "aid in control" and observe the length of time control of face flies is expected. Additional insecticide products will be needed for late season fly control when the tags begin to lose effectiveness. All insecticide ear tags should be removed at the end of the season to decrease development of resistance and, most importantly, rotate fly tags to a different mode of action (MOA) each year (see Figure 3).

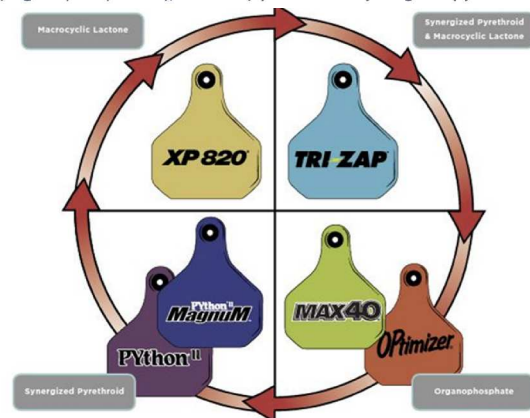


Figure 3: Example of fly tag rotation system (Y-tex Corporation). [UK does not specifically endorse any fly control product; example above is for illustration only]

Pinkeye Prevention

Dr. Michelle Arnold, UK DVM

Other non-chemical fly control methods can prove useful such as sticky fly traps placed around high animal traffic areas, or wherever livestock congregate in pastures (Figure 4). There are reports that garlic powder mixed in mineral helps reduce face fly numbers although there is little research to verify its success. Early detection of animals with the first clinical signs of pinkeye (excessive tearing, squinting, and blinking) and then prompt, effective treatment is essential to reducing spread to herd mates and limiting scar formation in the eye. Long-acting prescription antibiotics such as long-acting oxytetracycline (LA-300®) or tulathromycin (Draxxin®) are specifically labeled for pinkeye treatment. If those two antibiotics lose effectiveness, a veterinarian may prescribe florfenicol (Nuflor®), ceftiofur (Excede®), or other antibiotics to be used in an extra-label manner for treatment. Injectable antibiotics are considered the best option because of their long duration of activity and effectiveness in eliminating bacteria, enabling the cornea to heal. Other remedies may reduce pain and allow healing, but the bacteria can be shed for weeks if not eliminated. When severe ulceration exists, the cornea may need extra protection with either a patch, a third eyelid flap, or the eyelids may need to be sutured (stitched) together. Remember, preventing spread by recognizing and treating affected animals as soon as they show the first symptoms is crucial in controlling a disease outbreak. Active cases of pinkeye with excessive tearing attract flies that widely spread the aggressive bacteria. Additionally, topical application of a fly repellent to the face of an affected animal and quarantine away from the herd will also help reduce spread.



Figure 4: Fly trap made with fly paper wrapped around a protein tub with chicken wire, placed near water and mineral sites. Photo courtesy of Gregg Brann, Grazing Specialist, TACD, and Synergistic Grazing Management Consultant [<https://gregbrann.com>]

Pinkeye vaccines, whether commercial or autogenous (custom-made), will usually help reduce the number of affected animals or lessen the severity of clinical signs but cannot be completely relied upon to prevent pinkeye. Immune responses to pinkeye vaccines have been shown to be protective in some studies where animals are vaccinated with pili of a certain type and then challenged with a similar strain. A high degree of diversity among genes coding for pili is likely responsible for why some herds see a benefit from vaccination while other herds do not; if the vaccine strain stimulates immunity to a pilus type that is also present in the herd, there should be good protection. In clinical trials, approximately half reported significant protection from commercial pinkeye vaccines. When commercial vaccines are ineffective, an “autogenous” or custom-formulated vaccine can be manufactured from bacteria cultured from affected eyes within a certain area. To make a vaccine, all samples for bacterial culture must be taken early in the course of disease; preferably when the eye is just beginning to tear excessively and before any medications are used. These autogenous vaccine formulations, especially those that include *M. bovoculi* antigens, often show beneficial results in the field. Autogenous vaccines do lose effectiveness within one to two years as mutations and unpredictable recombinations create new bacterial strains and a new batch of vaccine must be made from new cultures. Timing is very important with pinkeye vaccine administration. Peak immunity occurs 1-2 weeks after the booster (2nd) dose and most vaccines require 2 doses, 1-2 weeks apart. Therefore, the optimal pinkeye vaccine program must begin 4-6 weeks before ‘pinkeye season’ starts.

In summary, pinkeye is one of the most common diseases of cattle and is of major economic importance to Kentucky cattle producers. Although research is ongoing to understand this complex disease, the keys to prevention and control of pinkeye still rely on the basics of maximizing the herd’s immune status, face fly control and maintaining as irritant-free environment as possible. Vaccines, either commercial or autogenous, will help but cannot be completely relied upon to prevent pinkeye. Once cases begin, antibiotic treatment decisions are best made with your veterinarian who will consider effectiveness and cost of the antibiotic, withholding times, and provide a prescription for the product. For more information on insect control, ask your local county extension agent for the UK Extension Publication “ENT-11: Insect Control for Beef Cattle”.



Figure 4: Corneal ulceration in the early stages of pinkeye. Photo from *Veterinary Clinics of North America, Food Animal Practice* 26 (2010), page 489.



Save the Date!



Marshall County Adult Farmer Beef and Forage Meetings

Adult Farmer Educator, Jeff Futrell, has teamed up with Extension Agent, Nikki Rhein, to offer another beef and forage series at the Extension Office. Join us!

**Starting October 17th
Tuesday Nights (Mostly)
6:30-7:30pm
Marshall Co. Extension Office
1933 Mayfield Hwy.
Benton, KY 42025**

KEEPING IT

Wild!



SUSTAINING KENTUCKY'S NATIVE WILDLIFE.

2023 Conservation Writing and Jim Claypool Art Contest

Sponsors: Kentucky Farm Bureau Federation // Kentucky Association of Conservation Districts // Kentucky Division of Conservation

The Marshall County Conservation District is kicking off the annual Jim Claypool Conservation Art Contest! Winners from each grade in each elementary school receive cash prizes with the top three entries in the county receiving additional prizes. The first place county winner is then entered in the state competition. Entries are due by December 1st. For more information, please call 270.527.2606



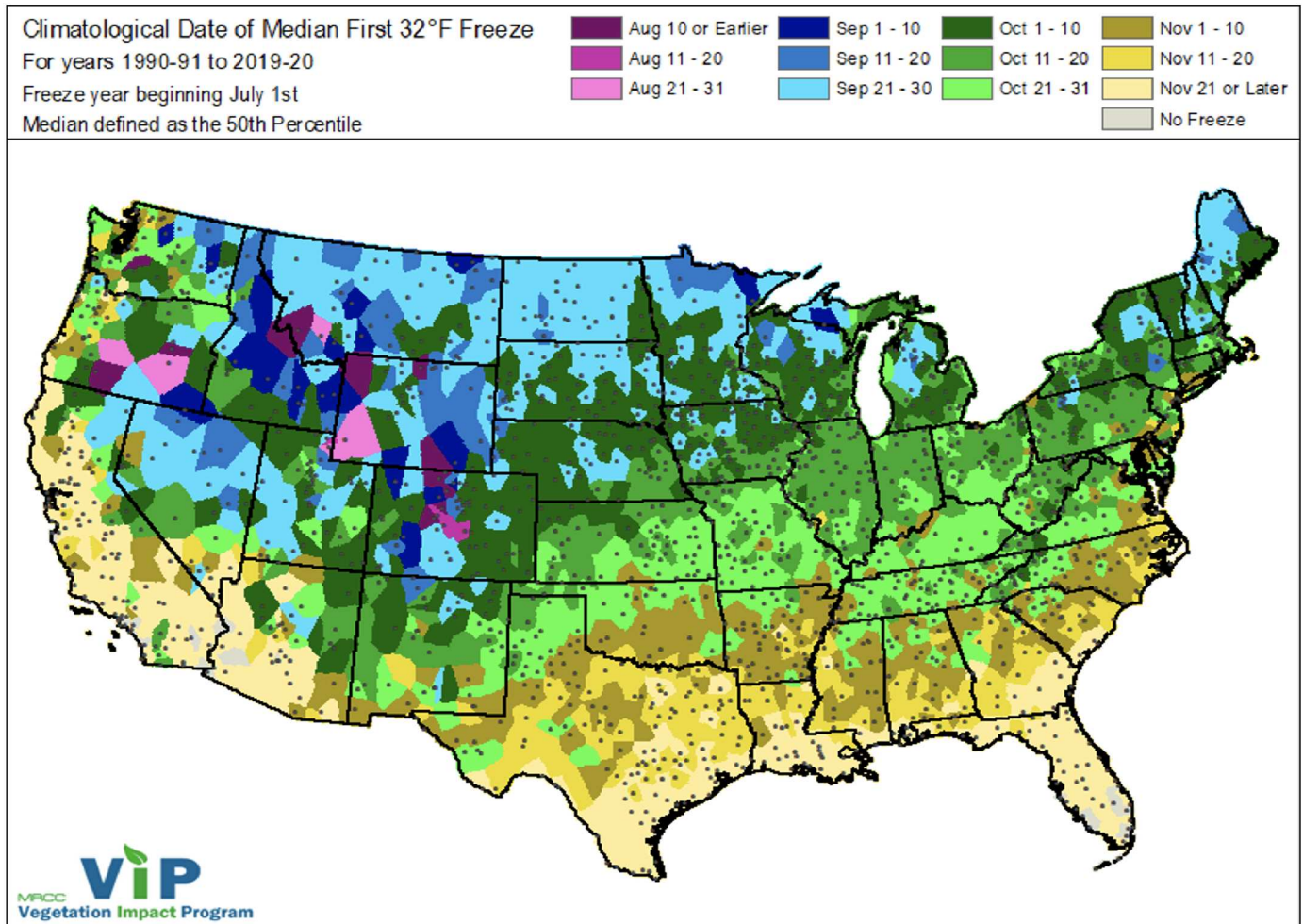
Tracking the 1st Fall Freeze General 9

Derrick Snyder, National Weather Service

As the calendar moves into October, nights continue to become longer, leaves begin to turn color, and first frosts and freezes begin to occur. The first freeze of the fall typically marks the end of the growing season. As shown on the map below, most locations across the Commonwealth typically see their first freeze of the season during the latter half of October into the early days of November.

Frost can often develop on plants even when thermometers show the temperature to be a few degrees above freezing. This is because most thermometers are mounted several feet above the ground, and the temperature a few inches from the ground can be colder than what a thermometer reads. This most often occurs on clear nights with calm winds.

To protect your plants from frosts and freezes, consider taking preventive measures like covering them with tarps or blankets in the evening before temperatures drop. This can help trap the ground heat and provide insulation. Additionally, placing mulch around the base of plants can help retain soil warmth. If possible, relocate potted plants indoors or to a sheltered area. Watering the plants before the onset of frost can also provide a slight protective effect, as water releases heat as it freezes, helping to moderate the immediate environment around the plants.



Recipe of the Month



Ingredients:

- 1 tablespoon flour
- 1 teaspoon dried sage
- 2 tablespoons garlic powder
- 1/2 teaspoon ground thyme
- 1 teaspoon salt
- 4 boneless center cut pork chops
- 2 tablespoons oil
- 1/2 large onion thinly sliced
- 2 thinly sliced red apples
- 1 cup unsweetened apple juice
- 2 tablespoons brown sugar (optional)

Apple Sage Pork Chops

Directions:

Wash hands with soap and warm water, scrubbing for at least 20 seconds. Gently clean all produce under cool running water. Mix flour, sage, garlic, thyme, and salt together in a small bowl. Sprinkle 1 1/2 tablespoons of the mixture over both sides of the pork chops. Remember to wash hands after handling raw meat. Heat oil in a large skillet over medium-high heat. Sear pork chops for 2 to 3 minutes on each side. Pan will smoke a little. Remove pork chops from the pan and set aside. Reduce heat to medium. To the same skillet, add onion and cook for 2 minutes, or until soft. Add apples, and continue cooking until tender, about 2 minutes. Add apple juice, brown sugar, and remaining spice mixture and stir to dissolve. Return pork chops to the skillet by nestling them in the pan. Bring the liquid to a boil, reduce heat to low, and simmer for 5 minutes or until the pork is cooked through and reaches 145 degrees F on a food thermometer. Refrigerate leftovers within 2 hours.

Nutritional Analysis:

310 Calories 10g total fat, 1.5g saturated fat, 50mg cholesterol, 660mg sodium, 35g total carbohydrate, 3g fiber, 25g total sugars, 7g added sugars, 22g protein, 6% DV vitamin D, 2% DV calcium, 6% DV iron, 15% DV potassium

Kentucky Apples

SEASON: Early summer through December

NUTRITION FACTS: Apples are high in fiber and contain a good amount of vitamin C and potassium.

SELECTION: Look for firm, crisp, well-colored fruit. Avoid those with shriveled skin, bruises, worm holes, and decayed spots. Always handle apples gently to avoid causing bruises, blemishes, or other defects.

STORAGE: Use those with bruises or skin breaks as soon as possible. Apples that are slightly underripe should be stored in a cool place to ripen. Once ripe, apples will keep a week or longer stored in the refrigerator vegetable drawer or in a plastic bag.

PREPARATION: Raw apples will darken when the cut surface is exposed to the air. Protect cut or peeled apples from darkening by squeezing a bit of lemon juice on the cut surface.

Kentucky Proud Project

County Extension Agents for Family and Consumer Sciences
University of Kentucky, Dietetics and Human Nutrition students

Source: FruitsAndVeggies.org

March 2022

Buying Kentucky Proud is easy. Look for the label at your grocery store, farmers' market, or roadside stand.

PlateltUp.ca.uky.edu



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University of Kentucky
College of Agriculture,
Food and Environment
Cooperative Extension Service

For more information go to:

<http://marshall.ca.uky.edu/AgNaturalResources> or follow us on Facebook @marshallcountyanr

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