

OFF THE HOOF

KENTUCKY BEEF CATTLE NEWSLETTER AUGUST 2019



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

Cooperative Extension Service
University of Kentucky

Beef IRM Team

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Timely Tips

Dr. Les Anderson, Beef Extension Professor, University of Kentucky

Spring-Calving Cow Herd

- Fescue pastures don't generally produce much this month. If you are lucky and had some rain with this heat, you may have some forage going into the usually dry months. Keep rotating pastures to permit calves to continue gaining weight. Keep minerals available at all times.
- Bulls should have been removed from the cow herd by now! At the very latest, pull them by September 1. They should be pastured away from the cow herd with a good fence and allowed to regain lost weight and condition. It is a good time to evaluate physical condition, especially feet and legs. Bulls can be given medical attention and still have plenty of time to recover, e.g., corns, abscesses, split hooves, etc.
- Repair and improve corrals for fall working and weaning. Consider having an area to wean calves and retain ownership for postweaning feeding rather than selling "green", lightweight calves. Plan to participate in CPH-45 feeder calf sales in your area.

Fall-Calving Cow Herd

- Dry cows should be moved to better pastures as calving time approaches. Cows should start calving next month. Yearling heifers may begin "headstart" calving later this month. Plan to move cows to stockpiled fescue for the breeding season, so it will soon be time to apply nitrogen fertilizer.
- Prepare for the fall-calving season (usually September). Get ready, be sure you have the following:
 - record book
 - ear tags for identification
 - calf puller

- castration equipment

General

- Provide shade and water! Cattle will need shade during the hot part of the day. Check water supply frequently – as much as 20 gallons may be required by high producing cows in very hot weather.
- Select pastures for stockpiling. Remove cattle and apply nitrogen when moisture conditions are favorable. Stockpiled fescues can be especially beneficial for fall-calving cows after calving. Reproductive rates are highest in fall-calving cows grazing stockpiled fescue.
- Avoid working cattle when temperatures are extremely high – especially those grazing high-endophyte fescue. If cattle must be handled, do so in the early morning.
- Do not give up on fly control in late summer, especially if fly numbers are greater than about 50 flies per animal. You can use a different “type” of spray or pour-on to kill any resistant flies at the end of fly season.
- Keep a good mineral mix available at all times. The UK Beef IRM Basic Cow-Calf mineral is a good choice.
- Cattle may also be more prone to eat poisonous plants during periods of extreme temperature stress. They will stay in “wooded” areas and browse on plants that they would not normally consume. Consider putting a roll of hay in these areas and/or spraying plants like purple (perilla) mint which can be toxic.
- Take soil samples to determine pasture fertility needs. Fertilize as needed, this fall

Geez, what a mess!

Dr. Les Anderson, Extension Beef Specialist, University of Kentucky

Have you ever looked at your cow-calf operation and had the thought “Geez, what a mess?! Even if we don’t want to admit it, often our lack of organization and planning sometimes really hinder our opportunity to succeed especially in our cattle operations.

An example; it’s September. Have you pulled your bull? If a bull pen is not available, is your breeding season over? The first step in becoming an efficient, profit-possible operation is controlling the calving season.

How do we transform the calving season? A great example of controlling the calving season occurred on a farm enrolled in the UK Farm Program. This producer had huge Limousin-cross cows (1700-1800 pounds), calved all year long (see table The Beginning), 16 of 17 cows calved and 13 calves were weaned from 2015 calvings. This producer wanted to move to a fall-calving herd because of his time commitments to his grain enterprise.

Steps taken:

- Determined the reproductive status of the herd; he had calving dates and we estimated the date of their next calf by rectal palpation.
- Evaluated the physical characteristics of the cows (feet/legs, udder quality, age, temperament) and developed a plan. The cow that calved in January 2015, was pregnant and calved in December

The Beginning	2015
Total Cows Exposed to the bull	17
Number of Calves born in:	
January	1
February	
March	1
April	1
May	
June	2
July	
August	
September	6
October	1
November	2
December	2
Date of First Calf	1/14/2015
Date of Last Calf	12/22/2015
Calving Season Length	342
Total # of Calves Born	16
# of cows that did not calve	2
# of Calves that died	3
Total # of Calves Weaned	13*

**One cow calved twice in 2015*

2015, so one cow weaned two calves from 2015 calvings. She was culled after she weaned the second calf.

- The bull was sold.
- Cows calving from March – October were held for fall breeding.
- 3 cows that did not wean a calf and three “done” cows were sold.
- Two heifers bred to calve in September were purchased.
- One of the November-calving cows was kept and we advanced her breeding by inserting a CIDR device for 7 days about 14 days after she calved.
- Estrus was synchronized for AI in the two heifers and 10 remaining cows. In general, the cow herd was too big so proven AI sires moderate in size, acceptable in calving ease. Developed a crossbreeding plan.
- Heifers were vaccinated against BRD using a modified-live vaccine and boosted about 30 days before breeding. Cows vaccinated using a killed-virus about 30 days before breeding. All females were also vaccinated against Lepto including hardjo-bovis.
- Dewormed all females at the time of vaccination.
- Began feeding the IRM mineral.
- Body condition score was 5+ at calving in all females so the nutrition program was not changed.

The transformation of this farm was remarkable. The calving season was reduced to 60 days or less and this short season has been maintained. The herd pregnancy rate has been good but some of the cows have been aborting so an additional vaccination against BRD and Lepto at weaning will be added. Several replacement heifers were kept (2 in 2015, 5 in 2016, 7 in 2017, 7 in 2018) to increase stocking rate and to enable culling of the older, bigger, less productive cows. Open and “done” cows were sold each year. We used AI to get predictable genetics and to make crossbreeding easier. About 50-75% of the herd conceived to AI each breeding season.

Results	2015	2016	2017	2018
Total Cows Exposed to the bull	17	13	18	24
Number of Calves born in:				
January	1			
February				
March	1			
April	1			
May				
June	2			
July				
August			3	5
September	6	6	9	11
October	1	4	4*	5
November	2	2		
December	2			
Date of First Calf	1/14/15	9/10/16	9/2/17	8/15/19
Date of Last Calf	12/22/15	11/9/16	10/18/17	10/2/18
Calving Season Length	342	60	46	48
Total # of Calves Born	16	12	16	21
# of cows that did not calve	2	1	2	3**
# of Calves that died	3	0	1	1
Total # of Calves Weaned	13	12	15	20

*One cow had twins. **3 cows diagnosed as pregnant,

	2015	2016	2017	2018
Total cows	17	13	18	24
#calves born	16	12	17	21
calving%	94%	92%	88%	88%
# weaned	13	12	15	20
%weaned/cow exposed	76%	92%	82%	83%
total WW (lbs)	5281	5184	6270	9414
WW/cow exposed (lbs)	311	399	369	393
date first calf	1/14/15	9/10/16	9/8/217	8/15/18
date last calf	12/22/15	11/9/16	10/14/17	10/2018
CS length	342	60	36	48
% in desired window	56%	100%	100%	100%
AI%		50%	75%	59%

Just think about how much more efficient, how much easier this management system is now. This producer has to monitor calving for 50-60 days increasing the opportunity of a higher calf survival rate. Winter

feeding is easier and more efficient because the cows are on the same production cycle. Controlling the calving season has helped increase the total pounds of production and the pounds of calf weaned per cow exposed. Even though this producer is only marketing 15-20 calves per year, he was able to put together two marketing groups and increase the market value of his calf crop.

The key to this transformation was a little planning. Once the problems were identified, a plan was developed and then implemented. A solid plan helped control the calving season increasing production efficiency on this farm.

Don't Forget Beef Bash 2019

Dr. Les Anderson, Extension Professor and Ben Crites, IRM Coordinator, University of Kentucky

You've got to see this one! The University of Kentucky and the Kentucky Cattlemen's Association are busy planning a fall educational event with something for everyone. Circle Thursday, September 26th on your calendar and join us at the UK C. Oran Little Research Station in Versailles for an afternoon with the cows, grass, and fellowship.

We have hosted Beef Bash at the UKREC in Princeton since 2008. For those of you that have not been able to attend, our goal is to have a more "user-friendly" field day – more interactive and less structured. You can come and go as you please, attend various demonstrations of your choosing, look at cattle exhibits, visit with commercial exhibitors, visit with other producers, or study various educational exhibits. Your choice. The name "Beef Bash" implies that we want you to have an enjoyable time while you learn.

Educational Opportunities. You can see our cattle operation which provides animals for beef research. Education opportunities will abound and will be scattered throughout the entire research station. Many stations will host researchers from the across CAFE will be share their research and it relevance to the Kentucky Beef Industry. ANR Agents will share successful beef programming ideas and their impact on beef productivity. Extension Specialist will discuss state educational programming and impact. Finally, we will discuss the management program or our cow herd; our goals, plans, and procedures.

Commercial exhibits. A large tent in the staging area will house commercial exhibits and serve as the focal point of all activities. You can visit with various company representatives as you please and make plans for purchasing products for weaning calves or wintering the cow herd. Information on many new products will be available. Take your time and visit a while.

Hands-on Demonstrations. Various "how-to" demonstrations will be conducted throughout the day. You can attend those that interest you and ask questions in a less formal environment. Examples of demonstrations may include: bull selection, estrous synchronization technology, ration balancing, freeze-branding, alternative fertilizers, fencing and water, etc. We'll spend more time "doing" and less time speech making.

Social: Visit with the leadership of the Kentucky Cattlemen's Association and the University of Kentucky. The Dean and Associate Deans of the UK College of Agriculture are planning to attend and look forward to visiting with you. Bring any prospective agriculture students, especially those interested in Animal and Food Sciences with you. The beef Extension specialists and researchers will, of course, be available to visit and answer questions. We want to hear from you and get to know you.

KCA will be represented with leaders from across the state, especially the western part. This event has been a fantastic opportunity for KCA leadership to interact not only with UK personnel but also with other

industry leaders. Come and visit with other cattlemen from across the state and be a part of making KCA the voice for all Kentucky cattle producers.

Make plans now to spend some time with folks who are interested in the same things that you are – improving our position in the beef industry. Mark September 26th on your calendar and bring a neighbor. These are difficult economic times, but we'll keep moving forward with meaningful research and continue to build an even stronger cattlemen's organization. We need you!

Registration begins at 8:30 a.m. EST, with programs and tours starting at 9 a.m. EST. A lunchtime meal will be made available to purchase. No preregistration is required. Participants will receive a free pair of cotton-knit gloves.

For more information, please contact Ben Crites (859)-257-7512 or benjamin.crites@uky.edu

Applied Reproductive Strategies for Beef Cattle – Knoxville *Dr. Justin Rhinehart, Beef Extension Specialist, University of Tennessee*

Registration is now open for the 2019 Applied Reproductive Strategies in Beef Cattle symposium. Hosted by the Beef Reproduction Task Force and the University of Tennessee, the ARSBC symposium will be Aug. 20-21 at the Hilton Knoxville in Knoxville, Tennessee.

Considered one of the premier national events in beef cattle reproductive management, the meeting has a long history of providing the latest information on the application of reproductive technologies and includes a range of topics related to cow herd reproduction — such as nutritional interactions, management and male fertility. This year's conference will feature a variety of topics surrounding beef reproductive health, including synchronization, heifer management and development, genomic selection and more. Conference attendees will also be invited to attend a special reception and awards ceremony, visit the industry trade show, and interact with the newest technology in reproduction in hands-on lab simulations.

The meeting is open to anyone with an interest in beef cattle reproduction, including producers, technicians, veterinarians and professionals in related industries. Attendees may preregister for \$190 until July 20, after which registration will be \$215. Registration at the door will be available at \$250. Participation in the hands-on sessions on Day 2 is optional and available for an additional \$50.

A block of rooms has been secured at the Hilton Knoxville for a special room rate of \$97 per night. This special rate will be available until July 26 or until the group block is sold out.

The meeting is organized by the Beef Reproduction Task Force, a multi-state Extension group made up of specialists from Kansas State University, the University of Missouri, Iowa State University, South Dakota State University, the University of California–Davis, the University of Idaho, Texas A&M University and New Mexico State University.

For additional information about this year's meeting, contact [Justin Rhinehart](mailto:Justin.Rhinehart@utk.edu), University of Tennessee Institute of Agriculture associate professor and beef reproduction specialist, 931-486-2129; or [Sandy Johnson](mailto:Sandy.Johnson@ksu.edu), K-State Department of Animal Sciences and Industry associate professor and extension beef specialist, 785-462-6281.

<http://www.appliedreprostrategies.com>

Frequently Asked Questions about Harmful Algal Blooms (HABs) in Farm Ponds used to Water Livestock

Michelle Arnold, DVM-Ruminant Extension Veterinarian (UKVDL)

Water is the most essential nutrient in the diet of cattle and during hot and dry weather, it is especially important to monitor water quality if using farm ponds for livestock.

What is a “harmful algae bloom” or “HAB”? During periods of hot and dry weather, rapid growth of algae to extreme numbers may result in a “bloom”, which is a build-up of algae that creates a green, blue-green, white, or brown coloring on the surface of the water, like a floating layer of paint (see Figure 1). Blooms are designated “harmful” because some algal species produce toxins (poisons) when stressed or when they die. The majority of HABs are caused by blue-green algae, a type of bacteria called “cyanobacteria” that exist naturally in water and wet environments. These microorganisms prefer warm, stagnant, nutrient-rich water and are found most often in ponds, lakes, and slow moving creeks. Farm ponds contaminated with fertilizer run-off, septic tank overflow or direct manure and urine contamination are prime places for algae to thrive. Although blooms can occur at any time of year, they happen most often in the warmer months between June and September when temperatures reach 75 degrees or higher and ponds begin to stagnate. HABs can reduce water quality and intake, but more importantly, they can be deadly when ingested by livestock. Windy conditions can push algal blooms along water edges, increasing the risk for livestock to ingest algae when they drink.

Are all algal blooms poisonous to cattle? Of the more than 2000 species of blue-green algae identified, at least 80 are known to produce toxins (poisons) that can affect animals and humans (see Table 1 for the most common toxins). Blue-green

algae toxins are released when algal cells are damaged and die in the water (for instance, after water is treated with an algaecide such as copper sulfate), or when ingested water reaches the animal’s digestive tract and algal cells are disrupted, releasing the toxins. The most common species of blue-green algae in North America associated with livestock poisoning are *Anabaena* (also known as *Dolichospermum*), *Aphanizomenon*, *Oscillatoria*, and *Microcystis*. *Microcystis* is the most common bloom-forming



Figure 1: Pond in Scott County-Photo courtesy of Dr. Michelle Arnold, University of Kentucky

genus, and blooms are typically a greenish, thick, paint-like (sometimes granular) material that accumulates along shores. If an algal bloom is noticed, testing of water samples with the algae is recommended because it is impossible to tell visually if a water source contains blue-green algae or not, or to determine which specific species is present without laboratory identification. Be aware that just having a blue-green algae bloom present in a pond does not automatically mean toxins are being produced but it is best to assume the water could be dangerous if used for livestock drinking water.

What are the most common signs of poisoning in cattle from blue-green algae? Livestock are most at risk when drinking contaminated water or licking algae from their hair coat. Most cattle exposed to blue-green algae toxins die quickly and are often found dead very near the water source. Cyanobacterial toxins

Table 1 Cyanotoxin structures, toxicological effects, and known producers

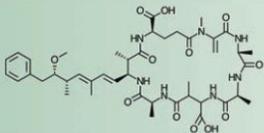
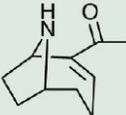
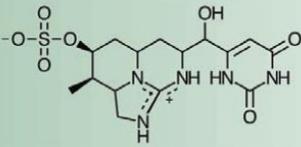
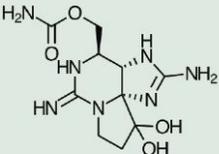
Toxin	Structure	Organ	Genera
Microcystin		Liver (possible carcinogen)	<i>Microcystis</i> <i>Anabaena</i> <i>Planktothrix</i> <i>Anabaenopsis</i>
Anatoxin - a		Neurotoxin (nerve synapse)	<i>Anabaena</i> <i>Planktothrix</i> <i>Aphanizomenon</i> <i>Cylindrospermopsis</i>
Cylindrospermopsin		Liver (possible kidney, genotoxic and carcinogen)	<i>Cylindrospermopsis</i> <i>Aphanizomenon</i>
Saxitoxin		Neurotoxin (sodium channel blocker)	<i>Anabaena</i> <i>Aphanizomenon</i> <i>Cylindrospermopsis</i> <i>Lyngbya</i> <i>Planktothrix</i>

Table 1 From : A Water Utility Manager's Guide to Cyanotoxins. Accessed 8/13/19 at <https://www.epa.gov/sites/production/files/2016-06/documents/water-utility-managers-guide-cyanotoxins.pdf>

("cyanotoxins") primarily harm the liver and/or nervous system and have been implicated in both human and animal illnesses and deaths worldwide. Some algae produce potent neurotoxins (toxins affecting the nervous system), most often the toxin Anatoxin-A, that may cause cattle to exhibit muscle tremors, difficulty breathing, wobbly gait, seizures, profuse slobbering, diarrhea, and rapid death within minutes to hours. Other algae types produce hepatotoxins (toxins affecting the liver), most commonly the microcystin toxin, that can cause sudden death or a more delayed onset of death after signs of liver failure develop, including lethargy, diarrhea, and weakness. Cattle that survive the acute stages of liver damage may develop photosensitization,

a skin condition in which white (light or non-pigmented) areas of skin along the back, face, sides of udders, muzzle, underside of tongue, lips, eyelids, and ears will become red and swollen then will become crusty and peel. The only treatment for exposure to any cyanotoxin is supportive care and medications to alleviate the symptoms.

Are humans affected by these toxins, too? Human poisoning associated with cyanotoxins most commonly occur after exposure through drinking contaminated water or after participating in water recreational activities. Exposure can result in a number of symptoms in people including skin rashes; eye, nose, mouth, or throat irritation; allergic reactions; headache and malaise; and gastrointestinal upset including abdominal pain, nausea, vomiting, and diarrhea. In humans, it is believed the toxin must be ingested for fatalities to occur. For protection of human health from exposure to the algae and any of the toxins, many states use the World Health Organization (WHO) guideline level of 100,000 algal cells/ml water or a microcystin toxin level of 6 parts per billion (ppb) for a Recreation Advisory and beaches will be closed if the microcystin toxin level reaches 20 ppb. For more information, visit the EPA website to view "A Water Utility Manager's Guide to Cyanotoxins" at <https://www.epa.gov/sites/production/files/2016-06/documents/water-utility-managers-guide-cyanotoxins.pdf>

How do I test water for blue-green algae toxins? Unfortunately, testing water for the actual toxin is problematic because toxins are not uniformly distributed in the water source, testing can be quite expensive, and there are many blue-green algae toxins for which no diagnostic tests exist. The Kansas State Veterinary Diagnostic Laboratory accepts water samples for blue-green algae identification by microscopy and will

also test for the amount of microcystin, the most common toxin. When sampling water, make sure to wear gloves and collect at least 500 mls (16 ounces) of water approximately one inch below the water surface. Samples should be refrigerated before and during shipping but do not freeze. Please visit their website <http://ksvdl.org> and search under “algae” for further information regarding sampling, shipping and pricing. The Indiana Department of Environmental Management released a “Blue-Green Algae Sampling Resource List” in 2014 of companies that provide blue-green algae sampling and analysis services. The list can be found at http://www.in.gov/idem/algae/files/bluegreen_sampling_services.pdf . Many algal blooms in Kentucky are composed of harmless green algae which may look like underwater moss, stringy mats or floating scum. There are a couple of simple field tests a pond owner can do to quickly assess the likelihood of blue-green algae in the water. The instructions from the Kansas Department of Health and Environment for the “Jar and Stick Tests” may be found at http://www.kdheks.gov/algae-illness/download/Jar_Test.pdf . Remember these field tests are not even close to 100% accurate so follow-up testing is recommended to definitively determine what algae species are present.

How do I prevent poisoning from Blue-Green Algae? For livestock and pets:

1. Always assume that a blue-green algal bloom is toxic.
2. Provide constant access to clean, clear fresh water and fence off or otherwise prevent access to stagnant, scum-covered ponds. Fencing off surface water sources and providing alternative clean water sources is the best option for healthy cattle for many reasons, not just HABs.
3. Do not allow animals to contaminate the water with feces and urine. Prevent fertilizer or manure runoff from entering water sources. Phosphorous is particularly important in fueling cyanobacteria growth (see Figure 2).

If a water source is treated with an algaecide such as copper sulfate, prevent animal access to the water for at least a week or longer to allow degradation of any released toxins in the water. It is best to wait until the pond is no longer stagnant and test the water before allowing animals to drink from it.

4. Creating and maintaining natural buffers such as grass strips, trees and shrubs between farmland, housing developments and waterways can help filter out excess nitrogen and phosphorus before they reach the water.

Humans:

5. Do not swim or allow children or pets to swim in water with scum layers or blooms. Avoid jet-skiing, windsurfing, tubing, or water-skiing over scum or blooms.
6. Do not use untreated water for drinking, cleaning food, or washing camping gear.

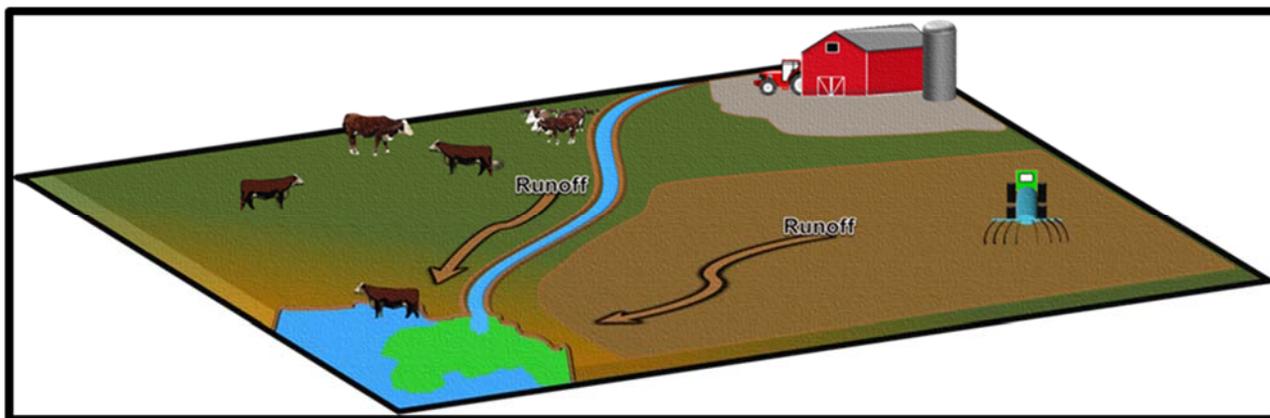
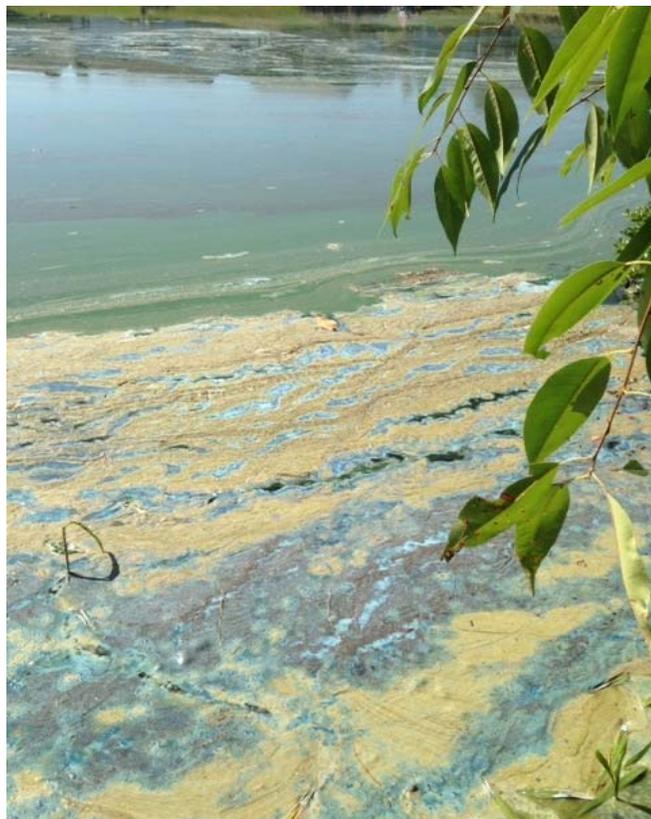


Figure 1 : Cattle contribute excess nutrients to surface water by urinating and defecating in or around ponds and streams. Excess nutrients can also enter waterways as runoff from fertilized fields or manure laden pastures. Figure by Donnie Stamper, Biosystems and Agriculture Engineering, University of Kentucky.

7. Do not boil water to remove blue-green algae; this will not remove algal toxins.
8. If you come into contact with a bloom, wash your skin and hair thoroughly. If your pet comes into contact with a bloom, wash it thoroughly with clean water to prevent blue-green algae ingestion when your animal licks itself.
9. Do not eat fish or shellfish caught or harvested in a bloom area.
10. Respect any water body closures by public health authorities.



Grant County Anabaena bloom. Photo courtesy of Mark Martin at KY Division of Water



Livestock pond in Scott County: Planktothrix-Anabaena bloom. Photo courtesy of Mark Martin at KY Division of Water

Kentucky Beef Cattle Market Update

Dr. Kenny Burdine, Livestock Marketing Specialist, University of Kentucky

In some ways, USDA's July Cattle Inventory report brought some welcome news to cattle producers. Flat beef cow inventory and a decrease in beef heifer development suggested that the expansion phase of this cattle cycle may finally be over. I have always put more stock in the January inventory number, but this is the first report that clearly suggests a halt in expansion. Beef cow numbers were unchanged from a year ago and beef heifer development was actually down a little more than 4%.

Most all other estimates line up with this general overview. A slight decrease in the expected size of the 2019 calf crop is also good news for cow-calf operations who continue to struggle to see attractive returns to labor and capital. Cattle-on-feed numbers remain above 2018 levels, but this is largely a function of last year's calf crop. A summary table from the inventory report can be found below.

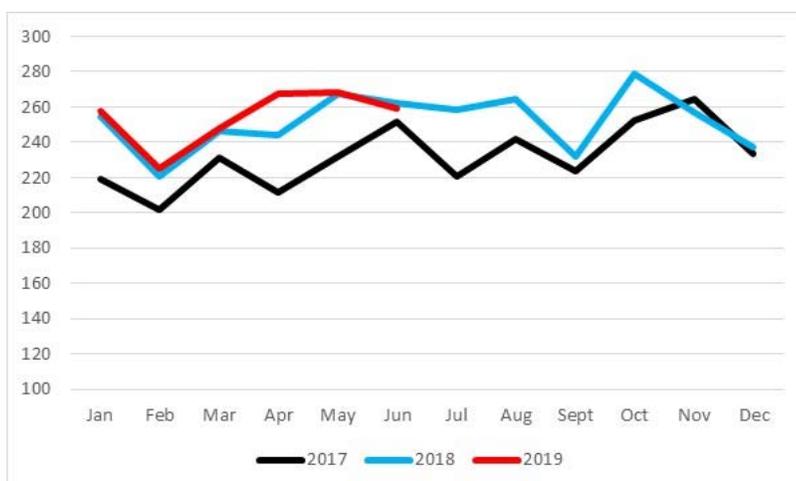
USDA July 1, 2019 Cattle Inventory Estimates

	2018 (1,000 hd)	2019 (1,000 hd)	2019 as % of 2018
Total Cattle and Calves	103,000	103,000	100
Cows and Heifers That Have Calved	41,800	41,700	100
Beef Cows	32,400	32,400	100
Milk Cows	9,400	9,300	99
Heifers 500 Pounds and Over	16,300	16,400	101
For Beef Cow Replacement	4,600	4,400	96
For Milk Cow Replacement	4,200	4,100	98
Other Heifers	7,500	7,900	105
Steers 500 Pounds and Over	14,500	14,700	101
Bulls 500 Pounds and Over	2,100	2,100	100
Calves Under 500 Pounds	28,300	28,100	99
Calf Crop	36,403	36,300	100
Cattle on Feed	13,300	13,600	102

Source: NASS, USDA

Heifer retention is usually the focus of discussions about beef cow inventory, but I want to talk for a minute about cow slaughter. Beef cow slaughter was up more than 8% for 2018, which was much more than expected given the size of the cow herd. This was an early sign that herd expansion was coming to an end. This general trend has continued as beef cow slaughter is up 2% for the first six months of 2019. I think we can trace a lot of this back to drought in the Southern Plains from 2011-2013. Weather forced beef producers to cull very hard for a few years and the result was a younger cow herd. That has caught up with us now as a larger share of our cows are older, which means we are being forced to cull this cow herd harder. A summary graphic of cow slaughter can be found below.

Monthly Commercial Beef Cow Slaughter (1,000 head)



Source: USDA-NASS, Livestock Marketing Information Center

Finally, there is still a lot we don't know about the impact of fire at the Tyson Plant in Kansas. It sounds like the damage was substantial and the plant is unlikely to be back on line soon. This was a very large plant that accounted for a significant share of fed cattle slaughter. So, there is no way to paint a pretty picture of this. Cattle markets are going to be impacted as that supply has to be absorbed by other plants. CME© live cattle futures for 2019 contracts were limit down on August 12th and 13th (when I wrote this article). August feeder cattle futures fell by \$11 per cwt over those two days. Markets will adjust over time, but this is a significant shock on a market that is already struggling.