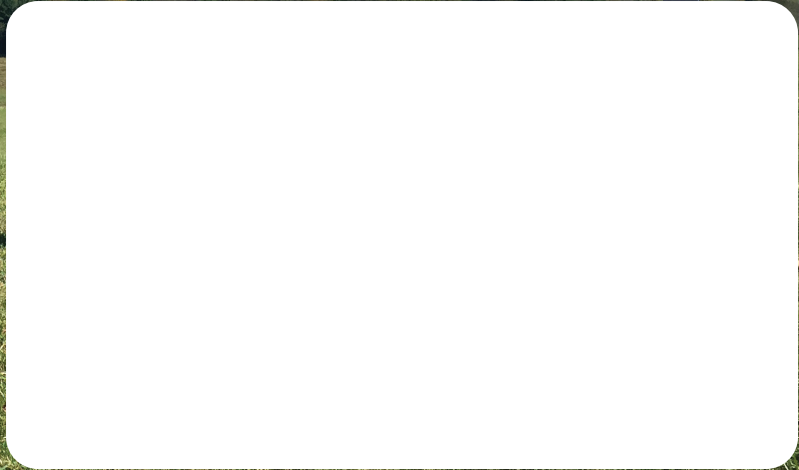


SINCE



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AGRONOMY & BEEF BULLETIN
May 2025



1929



SINCE

TUBERCULOSIS IN CATTLE - IT'S NOT TOTALLY GONE

Bovine tuberculosis is still found worldwide, even though many countries have greatly reduced or even eliminated the disease from their cattle herds.

Bovine tuberculosis is a cattle disease caused by the organism *Mycobacterium bovis* (*M. bovis*). Tuberculosis (TB) has been a major disease of humans for centuries (human strain, *M. tuberculosis*). That bacteria is spread primarily between people. The clinical conditions caused by the two tuberculosis strains are similar. This short summary is focused on the zoonotic strain found in cattle *M. bovis*. This bacteria can be a significant disease risk and can be transmitted to people from cattle by the inhalation of the bacteria or by drinking unpasteurized milk. In rare circumstances, people can contract the disease by eating undercooked meat from infected animals.

This bacterial strain has a thick waxy capsule and causes chronic debilitating infections in many animals not just cattle. Spilling over into other species such as deer, pigs, sheep, goats, cats, dogs, opossums, raccoons, foxes, and coyotes is possible. Wildlife reservoirs make control programs very challenging. A few upper mid-Western states have endemic infections in deer, and this complicates eradication efforts for beef and dairy herds. (Armadillos are occasionally found positive for a cousin bacterial strain, *M. leprae*, leprosy, along the border between the US and Mexico.) In Europe some badger populations are infected, and this wildlife reservoir is greatly slowing their TB control and eradication efforts.

Bovine tuberculosis is still found worldwide but many countries have greatly reduced or even eliminated the disease from their cattle herds. Today, nearly all the US is free from this disease. In disease-free states, testing usually only occurs for sales or shows that cross state borders. Most cattlemen in the Mid-Atlantic region have gotten more lax regarding TB as the Eastern States have been free of this disease for a number of years. Unfortunately, despite getting very close to totally eliminating this disease in US cattle, we never quite got there in the early 1990's. Since that time, there has been a steady increase in the geographic locations where the disease can be found. Just a few weeks ago a steer was diagnosed with TB at slaughter at a Pennsylvania facility. Trace backs led to a farm in Indiana. Further testing revealed several more positive cases and that entire herd was humanely destroyed. Other major cattle states currently trying to eliminate this disease include: Michigan, Minnesota, California, New Mexico, and Texas. Pennsylvania producers and veterinarians need to be vigilant and maintain high biosecurity standards or this complex and challenging disease may creep back into our herds.

Cattle primarily shed the bacteria from nasal secretions, feces, or milk. On occasion, the bacteria can be found in urine, semen or vaginal secretions. The bacteria can survive for months in the environment under favorable conditions. Cold, dark, and moist conditions promote the organism's survival while dry, warm, sunny conditions promote the organism's inactivation. The disease is a chronic debilitating disease, characterized by weight loss, weakness and a low-grade fever. The lymph nodes, especially in the head and upper air way, become enlarged, caseous, or at times calcified. In the US most animals are asymptomatic and are found via testing and culling of test positive animals or control programs in exposed herds. The other common detection method is via surveillance by federal inspectors from slaughterhouse specimens.

In the field the screening test is a tuberculin skin test. Typically in cattle this is a caudal tail fold skin test. An accredited veterinarian oversees and reads the test. 0.1 ml of tuberculin is injected intradermally. Animals that are sensitized to the bacteria develop a delayed hypersensitive reaction or swelling. The accredited veterinarian would check tested animals in 72 + 6 hours and report all significant swellings as a suspect. A state or federal veterinarian would then be notified and conduct more specialized tests (typically the Comparative Cervical Tuberculin or a limited number of specific blood based tests) to determine if the reaction is a true positive or a hypersensitivity reaction due to a similar but different, non-pathogenic bacteria. It is very important that all suspects be carefully tested with another test to accurately rule out *M. bovis*. A few newer ELISA and blood tests are being developed but are not widely available nor as valid as the skin test.

At this time there is no effective vaccine and no cost effective, practical way to successfully treat infected animals. Animals known to be infected are humanely euthanized and their remains must be disposed of properly. Accurate records and traceable animal ID's are needed as a positive test triggers an investigation back to the home farm. It is extremely important to all Ag stakeholders that the source of infected animals is found and controlled as quickly as possible. Quick, accurate responses and trace-backs are necessary for public health, access to domestic and foreign markets, and herd profitability.

In the past, test and slaughter, as well as test and segregation strategies, were successful in virtually eliminating the disease. These same strategies, if enforced vigorously, should also be effective in limiting the advance of *M. bovis* back into more of the US herd. Excellent biosecurity, as well as strategic testing and eradication programs, will also help in the longer-term goal of ultimately eliminating the disease from US cattle.

FEEDING MARKET STEERS FOR SHOW

Providing proper nutrition to your market steer is very important for that steer to reach its full potential at the market show. Making sure that the steer receives appropriate protein, energy, and minerals allows the steer to not only grow to reach market weight but also ensures that the steer develops muscle and reaches an appropriate fat cover for show day. Proper nutrition starts by selecting appropriate concentrates, roughages, and minerals for your steer and providing good-quality water daily.

Concentrates

Concentrate is another name for grain. Most grain mixes range from 12–14 percent protein, with many exhibitors feeding a 14 percent grain mix. Many grain mixes also add a fat source to provide additional energy for developing fat cover. Regarding commercial feeds, 3–4 percent fat is very common. Start calves on grain by feeding 1 lb. of grain per feeding 2 times per day and increase by ½ lb. per day every 1–2 days until the steer consumes 2–2.25 percent of his body weight in concentrates. This percentage can be decreased if steers do not need to grow as quickly to reach their ideal finished weight by the show date. Also, if feeding a commercial steer feed, feeding instructions are provided on the label.

Additives in Concentrate Feeds

Commercial concentrate feeds often include two additives to maintain steer health. The first additive is a coccidiostat that prevents coccidiosis, an internal parasite that causes diarrhea. If severe, coccidiosis can result in death. The feed label on commercial feeds intended to control coccidiosis will indicate that the feed is medicated with either Rumensin or Bovatec. The second additive is a yeast product. This product is added to prevent digestive upsets and ensure the calf meets an expected daily feed intake. While neither of these additives are essential, they help ensure proper digestive health throughout the feeding period.

Roughages

Most show steers consume hay to provide the roughage portion of the diet. Steers should receive roughage each feeding to keep the rumen functioning well for digestion. The goal with feeding hay is to prevent the rumen from becoming too acidic. This causes an issue called acidosis which can result in the animal eating less than desired.

For the first few days after purchasing a calf, consider feeding only high-quality grass hay to allow the calf time to adjust to his new environment. Concentrates can then be gradually added to the daily diet beginning with the 1 lb. per feeding suggested above.

Water

Always provide clean, fresh water. Be sure to scrub water buckets on at least a weekly basis to encourage water consumption. Poor-quality water or not enough water can affect feed intake. Reduced feed intake will in turn affect animal growth rate.

Vitamins and Minerals

Commercial feeds are formulated to meet the vitamin and mineral requirements of animals when fed as directed. Therefore, you do not need to provide additional minerals if you are feeding according to the label. However, some custom grain mixes do not include vitamins and minerals. In these cases, be sure to provide access to a high-quality, salt-and-mineral mix formulated for growing cattle consuming concentrates. Many commercial steer feeds typically are 90 percent dry matter. Be sure to feed steers at the same time each day to maintain feed intake.

If manure becomes too loose, rations may need to be adjusted by decreasing the amount of concentrate and/or increasing the amount of roughage. As the steer reaches its appropriate market weight, feeds may need to be adjusted so that the steer reaches or maintains its desired fat cover. Always make feed changes gradually!

For more information on feeding market steers, contact your local 4-H educator or a livestock educator.

Penn State Extension

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Augusta Co-Op's own award winning formula grain mix for beef cattle being fitted for show! Now updated with Actigen, a natural product to improve digestive health and animal performance. Contains ingredients such as Zinpro and other chelated minerals to provide just the right amount of bloom and finish on your show animals all in one convenient package.



Crude Protein – min 12.5%
Crude Fat – min 4.0%
Crude Fiber – max 7%
SKU - SHOWPRO



THE SKINNY ON WHAT YOUR HAY BALES REALLY WEIGH

Your hay bales might be shedding weight faster than you'd expect.

Ask five farmers how much their hay bales weigh, and you'll probably get five different answers — none of which are backed up by a scale ticket.

"That's because most folks think they know their bale weights, but more often than not, they're guessing," says University of Missouri Extension state forage specialist and associate dean Rob Kallenbach. "And when you're buying hay by the bale instead of by the ton, those guesses can cost you real money."

Kallenbach says MU Extension specialists often ask people to estimate bale weights during events. "Time and time again, we see folks overestimate bale weights, sometimes by a couple hundred pounds," he says. "That can lead to errors of 15% to 20%, which is a pretty steep tax if you're buying. Worse yet, it can lead to thinking you've got enough hay for the winter when you really don't."

Many of those wrong guesses come from what Hamilton calls "neighbor talk." If one neighbor says his bales are 1,100 pounds, the next one assumes theirs must be about the same. "That's a risky way to do business," says Hamilton. Newer balers tend to pack hay tighter than the old ones, and other factors — baler settings, forage species, how dry it was when it got rolled up and storage conditions — can change the final weight. "The reality is your hay bales might be shedding weight faster than a steer on Ozempic," says Kallenbach.

There's only one surefire way to know what hay weighs. Put it on a scale. However, most buyers and sellers don't have a scale big or handy enough to weigh bales. Plus, few sellers allow the buyer to weigh the hay before buying. "So, you have to make an educated guess," says Hamilton.

Dennis Hancock, who directs the U.S. Dairy Forage Research Center in Madison, Wis., developed a method to give an idea of what bales weigh based on their size and how tightly they're packed. "The tricky part is bale density — it varies a lot," says Kallenbach. "For instance, a loosely packed 5-by-5 bale would have about 880 pounds of feed; a tightly packed one has nearly 1,200 pounds." He gives a simple way to estimate bale density:

- Loose bales that depress and don't spring back. Probably 9 pounds of dry matter (DM) per cubic foot or less.
- A little firmer but still gives when you press it. Around 10 lbs. DM per cubic foot.
- Good and solid, but you can still dent it with a spike. About 11 lbs. DM per cubic foot.
- You can barely get the hay spike in. Likely 12 lbs. DM per cubic foot or more.

To know how many cubic feet are in a round hay bale, you need to know its volume. That takes a bit of math. First, divide the diameter (or height) in feet of the bale by two. Square that number. Then multiply that by 3.14 and then multiply that result by the bale width in feet. The result is the volume of the bale in cubic feet.

For example, a 5-foot by 5-foot bale has 98 cubic feet of hay: $(5/2)^2 \times 3.14 \times 5 = \sim 98$. Loosely packed bales have a density of 9 pounds per cubic foot of hay, which equates to 880 pounds of dry feed. A tightly packed bale at 12 pounds/cubic foot would have almost 1,200 pounds of dry feed. Hancock's figures are rough estimates, but they're better than no estimate at all, says Hamilton.

"It's easy to misjudge bale weights, and those mistakes add up," says Kallenbach. "Whether you're buying hay or figuring out how much you've got stored for winter, a little math and a little common sense can go a long way toward making sure you don't come up short."

Beef Magazine

Table: Dry matter (DM) weight of common large round bale sizes at different densities					
Bale Width	Bale Height	Bale Densities			
		9	10	11	12
ft		lbs/ft ³ (DM)			
4.0	4.0	450	500	550	600
4.0	5.0	710	790	860	940
4.0	6.0	1,020	1,130	1,240	1,360
5.0	4.0	570	630	690	750
5.0	5.0	880	980	1,080	1,180
5.0	6.0	1,270	1,410	1,560	1,700

FIRST-CALF HEIFER NUTRITION

The weeks post-calving are critical to the future of your cowherd.

Takeaways:

- The young cow simply can't eat as much as a mature cow.
- First-calf heifers direct nutrients toward growth before reproduction.
- Each heat cycle missed equates to 40 lbs. of lost weaning weight.

Those heifers that just dropped their first calves represent the new generation of your cowherd. Obviously since you've got them this far, you're doing some things right as a cow-calf producer.

But now's not the time to let off the gas. Don't short your heifers on feed after calving—especially don't skimp on energy. That's the advice of Rick Rasby, Extension nutritionist at the University of Nebraska, Lincoln.

"The young cow sees enough challenges between calving and the beginning of the breeding season, so don't let her slip nutritionally," said Rasby. "In many situations, they get plenty of protein but their energy needs are often not met."

Intake is the key

The pounds of protein or energy needed by the first-calf heifer compared to a mature cow at the same stage of gestation or lactation are not all that different. However, the ratio between energy and protein in the diet needs to be carefully looked at and adjusted.

"The difference is in the amount feed or forage they can eat," Rasby explained. "The young cow simply can't consume as much compared to a mature cow."

And the feed intake window that opens just prior to calving through the week or so after calving is a critical consideration in first-calf heifer nutrition.

University of Nebraska research indicates that a first-calf heifer experiences a 17% decrease in daily feed intake during the three weeks before calving. Therefore, nutrient density has to be higher because intake is restricted. Her normal intake capacity isn't reestablished until about one-week post-calving.

"The first-calf female post-calving needs to consume a diet that is at least 62% TDN (total digestible nutrients or energy) and 10-11% crude protein, depending on level of milk production," added Rasby.

Nutrient partitioning

The relationship between a heifer's nutrient intake, body condition, and rebreeding success is also confounded by how the heifer partitions nutrients immediately post-partum. USDA Agricultural Research Service studies conducted at Miles City, MT, show cattle direct nutrients in the following order:

1. Basal metabolism
2. Activity
3. Growth
4. Basic energy reserves
5. Established pregnancy maintenance
6. Lactation
7. Additional energy reserves
8. Estrus cycles and pregnancy initiation

Simply put, Mother Nature tells the heifer to direct nutrients toward growth before nutrients are directed towards reproduction. Therefore first-calf heifers undergo an average 3-4 week longer period of postpartum anestrus than mature cows.

John Paterson, ruminant nutritionist from Bozeman, MT, said it makes economic sense to have your heifers on an upward plane of nutrition moving into the breeding season. He emphasized that with each heat cycle missed, a beef producer can miss out on 40 lbs. of gain in her weaned calf.

"We want those heifers to be in a position after calving where they can show estrus as early as possible and re-breed on that first post-calving cycle," Paterson said. "And each cycle missed equates to a significant amount of money left on the table at weaning."

"First-calvers represent your future brood cows and we know they require more labor and management, along with higher quality feeds," said Rasby. "But if we've done our homework with due diligence, they'll reward us by being productive cows for a long time."

Beef Magazine

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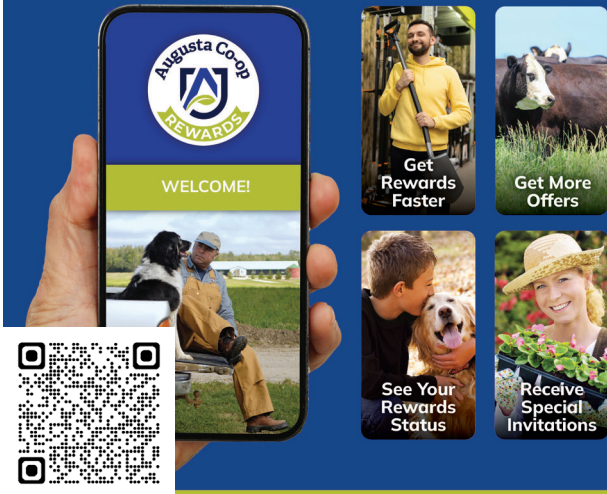


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A1 “Basic” Mineral

The 'Basic' tier has basic weatherization to help prevent mineral from clumping. Contains a blend of oxide and sulfate mineral sources.

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- A1-9449 “Stocker” option
- A1-9450 w/Rumensin – Use for grinding in feed on farm. Rumensin for coccidiosis control and feed efficiency.
- A1-9451 w/Garlic – Garlic as a fly control option.

A1 “Choice” Mineral

The 'Choice' tier has improved weatherization to help prevent mineral from clumping. 50% organic selenium, 50/50 blend of sulfate and Intellibond mineral sources.

- A1-9452 Hi Mag
- A1-9453 Hi Mag w/Clarify for fly control

A1 “Prime” Mineral

The 'Prime' tier provides the best weatherization to help prevent mineral from clumping, 100% organic selenium, 50/50 blend of sulfate and organic mineral sources.

- A1-9454 Hi Mag
- A1-9455 Hi Mag w/Clarify for fly control

Product Name	SKU	Ca %	P %	Salt %	Mg %	Vit A IU/lb	Vit E IU/lb	Cu (ppm)	Zn (ppm)	Se (ppm)	Mineral Sources				Fly Control		Medicated?	Weatherization?	
											Oxides	Sulfates	Intellibonds	Organics	Organic Se Source?	Garlic	Clarify		Rumensin
A1 Basic Hi Mag	A1-9448	13.5-16.2	2 (min)	20.2-24.2	10	150,000	50	500	2500	26	+	+							Good
A1 Basic	A1-9449	12.6-15.1	4 (min)	21.6-25.9	5	154,300	50	500	2500	26	+	+							Good
A1 Basic w/ Rumensin	A1-9450	12.6-15.1	4 (min)	21.6-25.9	5	154,300	50	500	2500	26	+	+					+		Good
A1 Basic w/ Garlic	A1-9451	13.3-15.9	2 (min)	20.2-24.24	10	150,000	50	500	2500	26	+	+			+				Good
A1 Choice Hi Mag	A1-9452	12.6-15.1	2 (min)	18.0-21.6	12	204,300	100	1000	3500	26		+	+		50%				Better
A1 Choice Hi Mag w/ Clarify	A1-9453	12.5-15.0	2 (min)	18.0-19.6	12	200,000	100	1000	3500	26		+	+		50%		+		Better
A1 Prime Hi Mag	A1-9454	10.8-12.9	3 (min)	17.1-20.5	12	250,000	200	1500	3500	26		+		+	100%				Best
A1 Prime Hi Mag w/ Clarify	A1-9455	10.8-12.9	3 (min)	17.1-20.5	12	250,000	200	1500	3500	26		+		+	100%		+		Best