## **MANAGE FESCUE TOXICITY** A SPECIAL SUPPLEMENT TO RANGE & PASTURE STEWARD

## Stockers benefit from fescue management



If Bob Hall has his way, he never sees a fully developed fescue seed head on his farm.

The Georgetown, Kentucky, stocker operator does have predominately Kentucky 31 fescue pastures. He has experience with toxic endophyte-infected fescue and its effect on cattle. He's heard the

researchers say there's five times more toxin in the mature seed head than in the leaves and stems.

"We try not to let fescue go to seed anywhere," Hall says. "Otherwise, the cattle get hot and stay in the shade instead of grazing."

Stocker gains go south in a big way, too — not what he has in mind.

Hall will turn 350 stockers through 110 acres of pasture. It's an eight-month grazing system, from mid-March to late November. He adds cattle as grass increases and delivers them as they hit target weight. Cattle come in weighing 600 to 625 pounds and leave at 825 to 875 pounds.

"I do this all by myself, so I want healthy cattle," he explains. Lighter calves carry more risk of health problems that might require doctoring.

The cattle deal isn't Hall's day job. For more than 50 years, that's been leading Hallway Feeds, Lexington, Kentucky, which specializes in equine nutrition. The company has fueled 11 Kentucky Derby winners.

At home, though, Hall is the cattleman he's been all his life, on the farm where he was raised. Last year, his stockers generated 750 pounds gain per acre. That's a function of management.

#### **GRASS AND GRAZING MANAGEMENT**

While Hall's predominant grass is KY31 fescue, those pastures also have orchardgrass and bluegrass. About every three years, he'll frost-seed red clover at 6 pounds pure live seed per acre, typically about March 1. It costs about \$20 an acre, he says, "But you can get that back several times because of the improved cattle gain."

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### Protect your herd — and your bottom line — against toxic fescue

If you run cattle in the fescue belt, there's a good chance fescue toxicosis is harming your herd and your pocketbook.

Researchers estimate 85 percent of the 40 million acres of tall fescue in the United States (mostly the variety Kentucky 31) contains endophyte-infected fungus that causes such poor performance and health problems in our beef herds. Scientists from the U.S. Department of Agriculture Agricultural Research Service estimate almost 1 in 5 cows and heifers in the United States in 2009 were exposed to toxic endophyte-infected fescue.

Endophyte-infected fescue limits grazing livestock performance in several ways, including:

- Elevated body temperatures
- Reduced feed intake and weight gains

- Poorer conception rates and lower calving percentages
- Reduced milk production and lower weaning weights
- Other health issues, including lost hooves and docked tails

Researchers peg the annual financial hit to the cattle industry at \$1 billion — \$338 million of that comes from reduced weaning weights in the cow-calf sector.

Given today's cattle economics, producing low-cost pounds of gain is more important than ever. It's easy to understand why tall fescue management strategies warrant your attention. This special supplement to Range & Pasture Steward discusses seedhead suppression — a management approach developed by Dow AgroSciences to help manage fescue's toxic impact.



Only a fence and herbicide treatment separate these two calves, but there's a big difference in their health. The slick calf on left grazed fescue treated with Chaparral<sup>™</sup> herbicide; the calf on the right with the longer hair coat grazed untreated fescue.

## One herbicide, one application, two important benefits

Effective weed control? Reduce fescue's toxic impact? That's the beauty of an early spring application of Chaparral<sup>™</sup> herbicide: You don't have to pick just one. Chaparral delivers effective weed control that grows more low-cost forage and fescue seedhead suppression for fewer toxic effects.

Seedhead suppression can provide the starting point for more effectively managing fescue toxicosis. Alkaloids produced by the endophyte concentrate in the seed head at a rate five times higher than in leaves or stems. Reducing or eliminating those seed heads can help decrease the incidence and severity of fescue toxicosis.

"Research across the fescue belt shows that a spring application of Chaparral controls a wide mix of broadleaf weeds and prevents most tall fescue plants from developing seed heads," explains Scott Flynn, Dow AgroSciences field scientist. "By suppressing seed heads to prevent their consumption, Chaparral helps mitigate fescue toxicosis in beef cattle grazing operations."

Toxins in tall fescue peak in the seed head when the seed head is most palatable (generally mid- to late June). The period of highest concentration does not coincide with the visible symptoms of fescue toxicosis because of the toxins' residual effects. Animals consume high concentrations in the spring and then suffer from heat stress when the effects are exacerbated by high summer temperatures, resulting in a cascade of effects (Table 1).

Apply Chaparral as early as three weeks prior to seed head emergence and as late as the early boot stage, with later applications preferred over earlier applications. This keeps the plants in a high-quality vegetative state, while taking infected seed heads out of the grazing picture.

When applications of Chaparral<sup>™</sup> herbicide are timed for optimum seedhead suppression, they will control winter annual weeds and other early season broadleaves - such as buttercup; poison hemlock; biennial musk, bull and plumeless thistle; wild carrot; and buckbrush — says Pat Burch, field scientist with Dow AgroSciences. "The residual control Chaparral provides will control several species that emerge after application, including ragweed, cocklebur, chicory and horsenettle," he says.

#### **APPROPRIATE EXPECTATIONS**

Just as producers can expect to see a difference in the appearance and performance of their cattle when they effectively manage fescue toxicosis, they also can expect to see a change in their pastures, too.

"The early application timing somewhat intensifies the effect Chaparral has on certain grass species, including tall fescue," Flynn says.

"Producers will note grass yellowing, which can last at least a couple of weeks," Burch adds. "However, tall fescue that has been treated with Chaparral for seedhead suppression remains leafy and maintains higher forage quality longer through the season."

Because most seedhead production is suppressed, plants won't produce stems — resulting in a noticeable

#### **TABLE 1**

Summary of the effect of endophyte-infected tall fescue on cattle.\*

Performance Metric	Effect on Production
Pregnancy rates	Decreased 15 to 40 percent
Milk production	Decreased 25 percent
Weaning weights	Decreased 65 to 85 pounds
Time spent grazing	Decreased 20 percent
Forage intake	Decreased 25 to 40 percent
Average daily gain	Decreased 0.3 to 1.2 pounds per day
Water usage	Increased 25 percent
Body temperature	Increased 1 to 4 degrees

<sup>†</sup>Patterson et. al., 1994

Data derived from multiple research trials where pastures contained 70 percent or more endophyte-infected tall fescue.

change in the appearance of tall fescue pastures and a reduction in pasture biomass.

"The good news is the lost biomass is mostly unpalatable stems and toxin-laden seed heads," Burch explains. "Removal of the toxins can help improve the appetites of grazing cattle. Producers likely will need to reevaluate stocking rates." A rotational grazing program can help boost forage utilization.

Research trials show that improved per-head gains due to removal of endophyte-infected seed heads offset the reduction in carrying capacity (Table 2). Additionally - depending on weed pressure - the positive forage response to the removal of weedy competition may offset some or all of the lost carrying capacity.

In University of Kentucky trials on endophyte-infected fescue, cattle grazing pastures where Chaparral<sup>™</sup> herbicide was applied to control weeds and suppress seed heads gained 0.58 pound per day more (two-year average) than those grazing untreated pastures. Stockers on fescue treated with Chaparral had an average daily gain of

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Ten weeks after an application of Chaparral<sup>™</sup> herbicide on a Missouri ranch, the treated fescue (left) remains in its vegetative state, while the untreated fescue has produced stems and seed heads where the harmful endophyte is most prevalent.

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TABLE 3						
Effect of seedhead suppression on stocker cattle and forage quality of pastures grazed. Data was collected from 2009 through 2012 on three separate studies conducted by the USDA-ARS Forage						
	Location	ation 205-day Adjusted Weaning Weight		Cow Pregnancy Rates		
I		Treated	Untreated	Difference	Treated	Untreated
	Farm 1	473 pounds	418 pounds	+55 pounds	95 percent	80 percent
	Farm 2	483 pounds	463 pounds	+20 pounds	95 percent	70 percent
	Farm 3*	476 pounds	459 pounds	+17 pounds	Equal at 91 percent	
*Heavy spring grazing on treated and untreated paddocks resulted in seedhead suppression through grazing. Thus, the untreated paddock behaved similarly to the suppressed paddock. Adapted from Boyer et al., 2015.						
	Data was collected from three different locations owned by Whitesell Land and Cattle Co. At each location, the pastures were split into two paddocks so that half the herd would be on a paddock treated with Chaparral <sup>®</sup> herbicide (tall fescue, seed heads suppressed), and the other half would be on a paddock treated with GrazonNext <sup>®</sup> HL herbicide (nonsuppressed seed heads).					

Label precautions apply to forage treated with Chaparral or GrazonNext HL and to manure from animals that have consumed treated forage within the last three days. Consult the label for full details. \*\*\*Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow. Chaparral and GrazonNext HL are not registered for sale or use in all states. Contact your state pesticide regulatory agency to determine if a product is registered for sale or use in your state. Always read and follow label directions. ©2017 Dow AgroSciences LLC

*Effect of seedhead suppression on stocker cattle and forage quality of pastures* grazed. Data was collected from 2009 through 2012 on three separate studies conducted by the USDA-ARS Forage

#### TABLE 2

Animal Production Unit. <sup>¥</sup>					
	Treated with Chaparral™ herbicide	Nonsuppressed seed heads			
2009 to 2010					
Steer ADG	2.1 pounds	1.48 pounds			
Crude protein	14.4 percent	11.6 percent			
In vitro dry matter digestibility	78.6 percent	71.7 percent			
2011 to 2012					
Steer ADG	2.1 pounds	1.74 pounds			
Crude protein	14.2 percent	9.9 percent			
In vitro dry matter digestibility	72.2 percent	66.4 percent			
2013 to 2014					
Steer ADG	2.29 pounds	1.96 pounds			
Crude protein	18.6 percent	14.8 percent			
In vitro dry matter digestibility	76.1 percent	72.6 percent			

\*Aiken et al., 2012; Goff et al., 2012a; Goff et al., 2012b

2 pounds in two years of grazing studies (Table 2). "There is no way to relieve fescue toxicosis as long as animals are grazing hot fescue," Flynn notes. "But using Chaparral to suppress seed heads is an effective management tool to mitigate its effects. It can be an excellent option where weed control is needed or where a simplified approach to fescue management is desired."

For more information on using Chaparral to suppress tall fescue seed heads, contact your Dow AgroSciences Range & Pasture Specialist. You'll find contact information enclosed with this mailing or at RangeAndPasture com/fescue

# Stockers benefit from fescue management

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Hall started rotational grazing about 20 years ago. He keeps the stockers in two herds, one of 65 to 70 head and another of 120 to 130. Each herd rotates through its own five or 10 pastures. Both herds have access to one more.

Hall moves the cattle depending on grass growth. The big herd typically moves every three or four days, the smaller herd every six or seven days. On average, he figures 65 cattle will properly graze 1 acre per day.

"If there's 6 inches of grass left when I move, then the cattle were in there a day too long," Hall says. "The more you leave, the quicker you can come back because the grass grows faster.

"If you can't graze a field in a week, the field is too big or you don't have enough cattle."

That rapid rotation is Hall's first defense against mature fescue seed heads. Intensive grazing keeps fescue seed heads from forming or, if they begin to form, allows cattle to consume seed heads early in the boot stage. At that point, seed heads are still low in toxicity.

Hall wants uniform grazing across a pasture. That's a benefit of his intensive rotational grazing — usually.

"If they didn't eat something the first time, they're not going to eat it the next time through," he says. "So I mow, and it's all uniform. But, I try to put enough cattle in there so I don't have to mow."

#### WEED CONTROL AND SEEDHEAD SUPPRESSION

Hall's other option for managing seed heads comes in combination with his weed control. For several years, he used Chaparral<sup>™</sup> herbicide to control weeds and suppress fescue seed heads.

"You can grow weeds or you can grow grass," he says. "You get more gains growing grass.

"The main thing you see with Chaparral is the grass stays in a vegetative state. It improves the grazing, and the grass is grazed more uniformly."

He typically applies Chaparral between April 20 and May 1, after pastures have been grazed, before boot stage.

The herbicide will kill clover growth for at least the spring, but it's a trade-off for weed control. A year after herbicide application, his clover seeding works fine. In 2017, Hall followed the herbicide application with urea fertilizer at 125 pounds per acre.

"That really increased the [grass] production and made up for any clover I was going to grow," Hall says. "I believe



this will work. The grass doesn't have a chance to get stunted, and it comes out fast."

#### **PASTURE CONVERSION**

Also in 2017, Hall began the process of converting KY31 fescue pastures to novel endophyte fescue. A year earlier, he established novel endophyte fescue following soybeans on a new farm he bought. He's used both MaxQ fescue and BarOptima Plus E34 fescue.

In these new varieties, different, beneficial endophytes replace the one in KY31 that causes toxicity. Seed companies tout the new fescues for better stand persistence than endophyte-free varieties and improved cattle performance compared to KY31.

To replace existing KY31 stands with the novel endophyte fescue, Hall sprayed in the spring with Chaparral<sup>™</sup> herbicide to control weeds and suppress fescue seedheads. After summer grazing, he sprayed the fescue with glyphosate on Aug. 10 and again Sept. 1. He drilled the BarOptima into the sod soon after.

"Weed control is important," Hall says. "You want to get a field cleaned up before you go any further. Then the only thing to kill [with glyphosate] is the grass."

Hall hopes to have a stand to graze by late in the summer of 2018. He's looking forward to it, based on his experience with his first stands following the soybeans.

"I like the BarOptima a little better," Hall says of his first stands. "It has a narrower, finer leaf that's softer."

In 2017, Hall weighed a handful of steers after 100 days on his first stand of BarOptima. In that period, they averaged 2.9 pounds average daily gain. That's 0.75 to 1 pound per day better compared to his KY31, he says.

"They were out grazing when cattle in other pastures were in the shade," he says.



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