

Novel Fescue Stocker Strategy

With the price of light calves starting to drop at the sale barn, having a weaned-calf fescue grazing strategy could make all the difference to the bottom line.

by Ed Haag



Experts began predicting lower light calf prices as soon as the cost of finishing animals in the feedlots began to rise. The big surprise was that they remained high for as long as they did.

“What we are seeing now is that these animals that are really light that are going to the sale barns are fetching a lower price only because order buyers and feedyard people are calculating that these animals will be on feedstuffs for a longer period of time,” says Mike Looper, research animal scientist at the Dale Bumpers Small Farms Research Center, Booneville, Ark.

He notes that as of the beginning of September light harvest animals were selling for around 10¢ per pound less than they were earlier in the season, while heavier animals are retaining their value.

“The spread between light and heavy animals has narrowed and will probably continue to do so,” says

Looper, adding that, rather than being a market aberration, the trend toward seeing a narrower spread between light and heavy cattle is likely to continue, at least until feed prices start to fall into line.

Meanwhile those who own or are buying light calves are faced with a real challenge. Without the option of feeding grain or expensive hay, what can be done to get these calves to a weight that will generate a better return at the sale barn?

“This is when cool-season forage becomes a real asset,” Looper says. “Especially now, with high grain prices, the most cost-effective way to put weight on calves is by grazing perennial grass stands.”

He adds that the advantage perennials have over annuals, as a low-cost forage, is that input costs — which are also rising dramatically — can be amortized over several years.

Because beef producers are faced with an issue that will probably not go away tomorrow, it just makes sense to devise a long-term fall, winter and spring feeding strategy that will effectively exploit resources that are both available and cost-effective, says Looper, adding that could mean grazing fescue.

Fescue, a viable option

Fescue is no newcomer to this task. A nonnative grass, it was introduced into North America from Europe

Table 1: Novel endophyte-infected fescue on weight gain of cattle

	ADG, lb.	Source
Novel	1.3	<i>Nihsen et al., 2004</i> (steers)
E+	0.7	Spring gap
Novel	1.8	<i>Parish et al., 2003</i> (heifers/steers)
E+	0.9	Spring and fall gaps
Novel	0.6	<i>Watson et al., 2004</i> (cows)
E+	0.3	March to September



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Fig. 2: Intensive short-duration grazing of novel endophyte-infected fescue in Oklahoma

- ▶ Establishment cost of fescue (\$257 per acre) was 2.7 times greater than wheat (\$94 per acre).
- ▶ However, with an estimated seven-year stand life for novel fescue, establishment costs of fescue were only 48% of costs for wheat.

Source: Northup et al., 2006.

conventional fescue,” Looper says. “That is because the content of toxic alkaloids is reduced in low-profile regrowth.”

There is fescue, and there is fescue

While UK researchers were able to improve tall fescue’s yield and hardiness when they developed Kentucky 31, they had less success in controlling an ergot toxin-producing fungus (endophyte) that naturally resided inside all fescues prior to the 1970s.

It is estimated that fescue toxicosis costs U.S. livestock producers more than \$600 million each year in lost production.

The most serious signs of severe fescue toxicosis are fescue foot or the delaminating of the hoof, abnormally high body core temperatures, susceptibility to heat stress, increased respiration, low heart rate and reproductive problems. But it is the less obvious symptoms of toxicosis, such as appetite suppression and reduced weight gain that are the real profit robbers for those grazing stockers, says Looper, noting that several recent studies indicate that average daily gain (ADG) can be cut in half when a steer is affected by fescue toxicosis.

In an effort to mitigate these losses, plant scientists in the 1980s released endophyte-free fescue cultivars. As Looper explains, when compared to their infected counterparts in side-by-side feeding trials, the new endophyte-free cultivars outperformed the conventional endophyte-infected fescue in ADG, milk production and reproductive performance. Unfortunately, many forage producers who converted to the new cultivars saw a dramatic drop in drought tolerance and long-term stand viability along with the elimination of the endophyte.

Since then plant scientists have re-

evaluated the symbiotic relationship between the fescue plant and its hitchhiker fungus and have concluded that to retain the optimum stand viability necessary for cost-effective fescue production an endophyte must be present.

Novel fescue expands options

In recent years these same scientists have succeeded in transferring endophytes from wild tall fescue plants, which do not produce ergot alkaloids, into the endophyte-free tall fescue germplasm. The replacement strains, known as beneficial endophytes, are of the same fungal species as their ergot-producing counterparts but are free of toxins. These new fescue cultivars, released by the University of Arkansas (UA) and the University of Georgia (UGA), are referred to as novel endophyte-infected tall fescues.

While still not necessarily equal in forage availability to the conventional endophyte-infected tall fescue, the novel fescue is a definite improvement over the endophyte-free cultivars, says Looper, adding that cultivars infected with beneficial endophytes have been tested extensively in grazing trials with various classes of livestock and proved to be similar in gains to endophyte-free tall fescue.

Looper notes the new novel fescue could be a victim of its own success. “Cattle like it so much that they graze it to the point that it actually becomes limiting,” he says, adding that this minor drawback in the new cultivars is easily remedied by proper management.

One two-year grazing study, comparing weight gain and condition in steers consuming conventional endophyte-infected tall fescue with those grazing novel fescue, was conducted jointly by researchers from

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at the turn of the last century. While tall fescue has always been the most commonly grown in the U.S., other types are available, including meadow fescue, red fescue, chewings fescue and rough stalk fescue.

Until the early 1940s tall fescue production was limited, but with the release of a University of Kentucky (UK) variety, Kentucky 31, the popularity of the cool-season grass soared, soon surpassing all other perennials as the No. 1 beef forage in the nation. Currently, more than 35 million acres of tall fescue (*Festuca arundinacea*, Schreb.) are grown in the United States.

Reasons for its popularity can be traced to the fact that the improved varieties were both versatile and hardy. Known for their ability to establish on a wide range of soils and environments, including drought-prone sites with shallow soil profiles, the new fescue produced a dense, persistent sod that resisted erosion and responded well to heavy grazing.

“You actually see an improvement in the quality when you intensively graze

Fig. 3: Stand persistence of novel endophyte-infected tall fescue

- ▶ Stands >80% in Oklahoma four years after establishment (Hopkins and Alison, 2006).
- ▶ Stand ~65% in North Carolina four years after establishment (Burns et al., 2006).
- ▶ Visual observations from ARS, Booneville station indicate novel endophyte-infected fescue stands with similar persistence (~75%).

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UA and the University of Missouri (MU).

“Our objective was to determine whether cattle grazing these novel endophyte associations showed signs of fescue toxicosis,” says UA research lead Charles Rosenkrans Jr. in the study’s abstract, adding later that the study was conducted at two locations: the UA research facility in Fayetteville and the MU Southwest Research Center near Mount Vernon.

At the Arkansas research station 72 crossbred steers were assigned to one of four pasture treatments: endophyte-free tall fescue (E-); Kentucky 31 tall fescue infected with its native, toxic endophyte (E+); and two novel endophyte-infected tall fescue associations (novel). At the Missouri

research station 54 steers were assigned to one of three pasture treatments: endophyte-free tall fescue; Kentucky 31 and one novel cultivar.

Throughout the grazing period of the study respiration rate, rectal temperature, ADG and hair scores were measured. In addition, blood samples were collected and were tested for physiological markers associated with fescue toxicosis.

After collecting and analyzing the study data, the researchers from both UA and MU concluded that while the cattle grazing E+ tall fescue manifested signs of fescue toxicity, including reduced ADG, the steers grazing the E- and the two novel fescues showed no signs of fescue toxicity. Weight

and physiological markers in both the E- and novel cultivars were similar.

‘Two fescue’ grazing strategy

For Looper, these study results and similar results collected from research conducted at UGA and U.S. Department of Agriculture-Agriculture Resource Service (USDA-ARS) Grazinglands Research Laboratory in Oklahoma confirm that novel fescue can provide stockers with a powerful new grazing tool to counterbalance higher feed prices.

He sees timed grazing routines as a key to using both the conventional and the novel fescues within a single weight gain strategy.

“Most of the tall fescue being grazed still has the toxin-producing endophytes,”

Looper says. “Novel [fescue] can offer the stocker an alternative when the risk of ergot toxicosis is highest.”

Looper notes that ergot toxicity is highest in tall fescue during the spring and summer months when the plant is in its rapidly growing stage. As a cool-season grass this makes sense from a survival standpoint, because the toxins produced play an important role in preventing a fescue stand from being wiped out by those creatures that feed off it when it is most vulnerable. “In grazing fescue in the summer we are asking the plant to do something it isn’t equipped to do,” he says. “That is how we get ourselves into trouble.”

While the ergot toxicity is high in

conventional fescue in the summer months, if it is cut and stockpiled, those same toxins have been found to dissipate over time.

“Once the stand is cut, the alkaloids in the fescue become less stable and over time degraded,” Looper says. “The result is that eventually you end up with the equivalent of an endophyte-free product.”

In the ideal ‘two fescue’ grazing scenario, Looper sees the conventional tall fescue grazed in the winter months and early spring then allowed to grow through the summer months when cattle are shifted to an intensive grazing regimen in the late spring and early summer on novel fescue.

“We have found that the ultimate way to optimize your forage and your ADG is

to cell or intensively graze your cattle for short periods of time,” he says, adding that this reduces waste and encourages uniform grazing.

This can be accomplished by dividing a stand into temporary hotwire paddocks, which can be accessed as necessary.

“Intensively grazing the fescue, and then taking cattle off before any real damage is done, has been shown not to reduce novel fescue’s long-term viability,” he says, adding that the conventional E+ fescue that has been allowed to grow through the summer months can be cut, stockpiled and fed to stockers after the toxins have dissipated in the late fall and early winter months.

