Growth-promoting implants are used to increase the growth rate and feed efficiency of growing and finishing cattle by about 3% to 5%. Implants function by supplying very small amounts of compounds that act like naturally occurring hormones, thereby increasing muscle growth and reducing fat deposition. Because fat requires more energy to deposit than muscle, gains and feed efficiency are increased.

Research at the University of Arkansas Livestock & Forestry Research Station and the Southwest Research & Extension Center indicates the relationship between growth rate and implant response. When cattle are on a high plane of nutrition and gaining well, one expects the implanted calf to have all the necessary nutrients to get all the benefits from the implants, but with limited nutrients added performance from implants may be limited. Use of this technology is an important way to decrease breakevens and increase profitability of the stocker cattle enterprise.

When calves grazing wheat pasture at the LFRS near Batesville were implanted with a product that supplies a combination of testosterone- and estrogen-like compounds (Component TE-G; VetLife), gains were increased by 0.37 lb/day (from 2.36 to 2.73 lb/day for non-implanted and implanted steers, respectively) or by nearly 40 pounds over the 100-day grazing period. At the same time, steers and heifers at the SWREC near Hope were implanted with estrogen-like compounds (Synovex-S and Synovex-H, from Fort Dodge Animal Health; for steers and heifers, respectively). Over two years, gains of cattle on a high plane of nutrition were increased by 0.35 lb/day (from 2.15 lb/day for non-implanted cattle to 2.5 lb/day for implanted cattle), while gains of cattle on a low plane of nutrition were increased by 0.40 lb/day (from 0.89 lb/day for non-implanted cattle to 1.29 lb/day for implanted cattle). Performance was increased by 15% to over 40% by implanting; this is a benefit to the producer that will have definite impact on the bottom line. Value of gain (the value of each additional pound of gain adjusted for price slide) over the last five years has averaged over $95/cwt. So, if gains are increased by 40 pounds over a 100-day grazing period, profits will be increased by about $37 per calf!

In the past couple of years, I have been approached by people uninvolved with agriculture and even some ranchers who believe use of implants is affecting the sexual development of our youth, increasing cancer risks and other assorted and sundry maladies. There are also many health care professionals and educators spreading this belief with no scientific data to corroborate.

Here are some facts to consider. Estrogen content of beef from a non-implanted steer is 6 nanograms/lb; from an implanted steer, 14 nanograms/lb; from an open mature cow (where most of our hamburger comes from), 31 nanograms/lb. Compare these numbers with the estrogen content of some common vegetables: potatoes, 225 nanograms/lb; peas, 340 nanograms/lb; and cabbage, 10,880 nanograms/lb. The estrogen content of beef is closer to zero than it is to the values we see from vegetables, and it is very unlikely that there is any impact of the estrogen content of our diet on our health or development of young people. Implants provide tremendous benefits to the profitability of the beef industry with absolutely no risk to the safety of our food supply and are essential to our duties in feeding the world’s expanding population.
FAQs on Fescue Answered By Research

Dr. John Jennings, Professor-Forages

During producer meetings and through other events, many questions have come up regarding the use and management of toxic fescue as well as some myths or misconceptions about the fescue endophyte. Arkansas has about two million acres of fescue, and most of it is infected with the toxic fescue endophyte.

The toxic fescue endophyte is a fungus that grows inside the fescue plant. It produces toxins that reduce livestock growth, but provides benefits to the plant, making it more tolerant of drought, overgrazing and pest attack. Recent research has focused on replacing the toxic endophyte with a nontoxic novel endophyte to improve animal growth, while maintaining good plant persistence. In this article are answers to some frequently asked questions about fescue and fescue toxicity based on Arkansas research conducted by Dr. Ken Coffey, Dr. Paul Beck, Dr. Mike Looper and Dr. Chuck West.

**Question:** Aren’t fungus-free fescue and NE (novel endophyte) fescue the same?

**Answer:** No. Fungus-free fescue contains no endophyte. It provides good animal performance but has poor persistence under grazing and stressful growing conditions. The NE (novel endophyte-infected) fescue has a nontoxic endophyte that provides both good animal performance and good plant persistence.

**Question:** Do fields planted with the NE fescue revert back to toxic fescue after a few years?

**Answer:** No. The toxic endophyte cannot spread from plant to plant, so a NE fescue plant will never become a toxic fescue plant. However, if toxic fescue seed is spread into a NE fescue field, it can become established and spread in the field. Toxic seed can be carried in on equipment, by feeding mature toxic fescue hay and by cattle that have consumed toxic fescue seed in pasture or hay within two days of going into the NE fescue pasture.

**Question:** What effect does toxic fescue (E+) have on my cows?

**Answer:** Recent research shows that the toxic fescue affects reproduction rates of spring-calving herds much more than fall-calving herds. Spring-calving herds with calving rates (63-day breeding season) of only 44% when grazing toxic fescue year-round. Converting 25% of the pasture to NE fescue improved spring calving rates to 80%. Fall-calving herds maintained calving rates of over 95% whether on toxic fescue year-round or if 25% of the pasture was converted to NE fescue.

**Question:** What effect does toxic fescue have on my calves?

**Answer:** Spring-born calves are more affected than fall-born calves. Spring-born calves on toxic fescue had adjusted weaning weights 73 pounds lower than calves on 100% NE fescue. Converting 25% of the pasture to NE fescue only improved weaning weights by 10 pounds. Fall-born calves on toxic fescue had adjusted weaning weights 49 pounds lower than their spring-born counterparts on 100% NE fescue. Converting 25% of the pasture to NE fescue improved fall-born calf weaning weights by 26 pounds or more simply, converting 25% of the pasture gained 53% more calf weaning weight.

**Question:** Does fescue hay become less toxic during storage?

**Answer:** Yes. Levels of ergovaline, the toxic alkaloid produced by the endophyte, has been shown to decline by 23% in hay at Batesville and 79% at Fayetteville between June or July harvest and sampling in February.

**Question:** Can I reduce fescue toxicity by maintaining mixed pastures with bermudagrass?

**Answer:** Yes, but not entirely. Calves weaned from cows grazing bermudagrass pastures mixed with either endophyte-free fescue or orchardgrass weighed 48 to 52 pounds per head more than calves weaned from bermudagrass/toxic fescue mixed pastures. Cows on the bermudagrass pastures mixed with orchardgrass or endophyte-free fescue also had greater body condition scores and body weights than cows on the bermuda/toxic fescue force.

**Question:** Does rotational grazing reduce the fescue toxicity?

**Answer:** No. Studies on cow/calf production on bermudagrass pastures mixed with endophyte-free fescue, orchardgrass or toxic fescue showed no difference in cattle performance for pasture rotation frequencies of twice a month or twice a week. Rotating pastures twice a week did not improve persistence of the orchardgrass or endophyte-free fescue compared to rotating pastures twice a month. This was a well-managed study in which the pastures were not overgrazed. In overgrazing conditions, just maintaining nontoxic forages is difficult, so in an indirect way, rotational grazing may reduce fescue toxicity if it reduces overgrazing and maintains nontoxic forages.

These are just a few FAQs I have heard lately. For more information on managing fescue toxicity, novel endophyte fescues and forage management, contact your local University of Arkansas Extension office.
One of the demonstrations associated with “300 Days of Grazing” is improving grazing management. Improving grazing management allows increased utilization of the available forage, thus helping extend the grazing season. Research demonstrated increasing the pasture rotation frequency from twice a month to twice a week increased the number of grazing days by 40%.

Many livestock producers have permanent cross fences on the farm, but all too commonly the gates are open and livestock roam freely. The first step in improving grazing management is to shut the gates and confine the livestock to one pasture at a time and begin rotating among the existing pastures.

The second step is to subdivide the existing pastures with electric fence. Electric fence offers many benefits over traditional barbed or woven wire. One big advantage is cost. In improving grazing management demonstrations, electric fence costs approximately $0.30 per foot – a $0.73 per foot cost savings over traditional fence, not including labor. Other benefits of electric fence include its durability, its ease of construction and maintenance and its light weight and ease of transport.

Electric fence is a psychological barrier, not a physical barrier like barbed wire or woven wire. Therefore, the effectiveness of any electric fence depends on the fence’s ability to deliver an unpleasant shock when touched. The ability of the fence to deliver that shock depends on two main things: 1) the energizer and 2) the grounding system.

At the heart of an electric fence system is the energizer, also called the charger. There are several factors to consider when selecting which energizer will be best suited for your individual operation. What will be the power source for the energizer? What size energizer is needed? What is the impedance of the energizer? What are the energizer’s warranty and service after the sale?

The three main sources of powering an energizer are 1) 110V or 220V plug-in, 2) battery or 3) solar. Plug-in main power units are the most cost-effective per joule. They are usually the most practical for permanent systems, require less maintenance and are available in higher joule ratings than battery- or solar-powered units. Battery- or solar-powered units work well in remote locations where a power outlet is not available.

Battery-powered units will cost more per joule than plug-in units, plus there is an additional battery cost. Deep-cycle batteries, which can discharge slowly and completely, should be used for powering these energizers.

Solar power units are the most expensive per joule. Solar panels can be used with battery-powered energizers to keep the battery charged. However, solar panels can be expensive, often costing as much or more than the energizer.

The joule rating determines what size energizer is needed. A joule is the amount of power that pushes the electrical pulse down the fence wire. When comparing energizers, check to see if the unit is rated in stored joules or output joules. Stored energy is the amount of energy stored in the capacitors of the energizer. The output joule is the amount of energy delivered to the fence and is about 30 percent less than stored energy. A general rule of thumb is 1 output joule is needed per 3 miles of wire. This is dependent of the type of wire being used, quality of the insulators, the grass/weed load on the fence, etc.

Most of the energizers on the market today are low impedance. Impedance means leakage. So, a low impedance energizer will have the ability to resist leakage caused by minor shorts or vegetation on the fence. For an energizer to be considered low impedance, the duration of the pulse must be less than 0.003 of a second. The duration of pulse for better quality energizers will be 0.0003 of a second. Having a very short duration of pulse eliminates the risk of fire, because no heat is built up on the wire.

Before making the final selection of an energizer, check the manufacturer’s warranty. Warranties will vary in length and items covered. Some manufacturers offer a two-year warranty, while others have a one-year warranty. Some units cover lightning damage. Like anything else, the unit may need to be serviced. Ask the retailer if the unit can be repaired “in house” or if the unit will have to be shipped off for repairs. What is the average turnaround time on units that need to be repaired? In the event the unit needs to be serviced, are loaner units available?

A proper grounding system is the most important step in having an effective electric fence. Eighty percent of electric fence problems can be eliminated with proper grounding. The ground rods serve as an antenna for collecting soil electrons.
The better the grounding system, the more electrons collected, which enables the energizer to deliver a powerful shock.

Galvanized ground rods of ½ inch or larger diameter should be used. Three feet of ground rods are needed per output joule. For units that require more than one ground rod, space the rods 10 feet or more apart and connect ground rods to the energizer with one continuous wire. The ground rods should be placed in area that holds moisture, such as a drip line on the north side of a building.

In summary, electric fence is an effective way of controlling livestock. Take the time to research energizers. Do not let price alone be the deciding factor: remember, the energizer is the heart of the system. If the energizer is not of sufficient quality, then the whole system fails. The energizer must be grounded properly to work efficiently. Even the best energizer will not function properly if the grounding is inadequate. Take time to talk with your neighbor or other producers who are using electric fence and learn some of the dos and don’ts.

Arkansas 4-H Horse Activities Benefit From Plum Creek Grant

Arkansas 4-H horse activities will benefit from a $5,000 grant from the Plum Creek Foundation. Workshops, clinics and competitions are conducted statewide and are open to any interested child. This grant will guarantee the equine 4-H program will be able to extend educational opportunities to all children – even those who do not own or have access to horses – in pursuit of our goal to spread the joys of horsemanship.

The funds will also help provide education materials and supplies, help pay for a computer system to tabulate scores, trail equipment, show supplies and handheld radios for show personnel and trail guides to communicate. The grant was provided to the Arkansas 4-H Foundation, a nonprofit organization that supports the educational mission of the Arkansas 4-H program, which is part of the University of Arkansas Division of Agriculture.

“Plum Creek recognizes the importance of The Arkansas 4-H Foundation within the community, and we are proud to play an important role in ensuring the future success of this valuable organization,” said Richard Stich, senior wildlife biologist for Plum Creek. Plum Creek is the largest and most geographically diverse private landowner in the nation with approximately 7 million acres of timberlands in major timber-producing regions of the United States, including 747,000 acres in Arkansas. For more information, visit www.plumcreek.com.

Is Beef From Naturally-Managed Cattle Better Than Beef From Conventionally-Managed Cattle?

The next time you go to the grocery store, take notice of the amount of meat counter space offering all-natural and possibly organic products. Public concern over food safety, nutrition and farm animal well-being is creating supply chains that provide consumers more choices for how they want livestock managed before they enter the food supply.

Terms such as “natural” and “organic” have taken on the personification of being “healthier” or “safer” because livestock marketed as such have not received growth promotants or antibiotics (general guidelines for natural) or they meet more strict guidelines for organic, which includes organic management of pastures (no herbicides, no synthetic fertilizers). The question remains, “Are these alternatively managed sources of protein ‘healthier’ or ‘safer’?”

A study was recently published in Arkansas Animal Science (the annual research update for the University of Arkansas, Division of Agriculture’s Department of Animal Science) comparing naturally-branded products to conventionally-fed commodity beef. This study compared steaks purchased from five different natural-brand programs to steaks from two commodity beef packers. These steaks were subjected to tests for tenderness and fatty acid analysis, and a panel of consumers rated each steak for beef flavor, tenderness and juiciness.

All of the products compared were similar in moisture content, marbling and color characteristics. There were greater cooking losses observed with commodity beef. Consumers rated steaks from commodity beef juicier than the natural products. Comparison of tenderness by Warner-Bratzler shear force or the consumer panel indicated natural or commodity beef products were equally tender. Texture, flavor and overall impression from eating commodity or natural beef was similar. Natural beef is generally perceived as healthier by consumers; however, the steaks compared in this study did not differ in saturated, monounsaturated or polyunsaturated fats.
Overall, this study showed that the only way consumers would be able to distinguish natural beef from commodity beef would be by reading the label. In addition, the fatty acid analysis indicated that the natural product was not healthier than conventional beef.

If interested in learning how management affects beef quality and consumer interest in meat choices, consider attending the upcoming Beef Quality Conference on April 9 at the UA Community College in Morrilton, Arkansas. More information about the conference is available at http://www.uaex.edu/news/january2011/0114BeefConference.htm.

Supplementing Pasture for Dairy Cows

D. Wayne Kellogg, Professor

Pastures are a great asset on dairy farms in Arkansas. During the early growth stage, the pasture provides an excellent source of protein. Indeed, well-fertilized grasses or grass-legume mixtures should contain well over 20% protein. How should this excellent resource be utilized to the greatest advantage? Two topics should be considered to optimally use pasture for dairy cows.

First, the combination of stocking rate and pasture rotation are important. The herbage available depends on these factors. Depending on the type of pasture, cows can consume the most dry matter while grazing ryegrass, bermudagrass or fescue if the plants are 8 inches tall (summer annuals, such as pearl millet or sudangrass, must be taller than this before grazing). Then, cows should be removed when the stubble height is only 3 to 4 inches tall (6 to 8 inches tall for summer annuals) and offered another pasture that has had opportunity for regrowth.

Clipping of pasture may be helpful to permit uniform regrowth. The time for regrowth permits pastures to regain the optimum height for grazing, but it also permits the plants to establish strong root reserves.

Obviously, the number of cows per acre will determine how long grazing can occur before rotation. If continuous grazing is practiced, the minimum stubble height should be much higher – perhaps as much as 50% taller – to maintain root reserves.

The second topic is supplementation. Dairy cows need a readily available energy source along with pasture. In Florida, a “winter” experiment was conducted with ryegrass/clover pastures. Increasing the grain mixture from 1 pound for 3.5 pounds of milk produced to 1 pound of grain for 2.5 pounds of milk produced caused a decrease in forage intake, and milk yield remained at about 44 lb/day. Overstocking was a greater factor because dry matter intake of pasture was reduced as much as 8 lb/day per cow when additional supplement was fed, and milk yield decreased. If pasture were limited or if grain were inexpensive, this might be profitable. Thus, it would seem that the old “rule of thumb” still holds: provide 1 pound of supplement mixture for every 4 pounds of milk for Holsteins. For Jerseys, or other cows with higher fat and protein in milk, the supplementation rate should be 1 pound of grain for 3 pounds of milk. By-products that contain readily digested fiber, such as soybean hulls and whole cottonseed, may fit better with high-protein pastures than starchy feeds such as corn – which works well with lower quality pastures.

Pastures are a great resource in Arkansas, but quality of the forage changes with the season. Flexibility is needed in stocking rate and in providing supplementation.