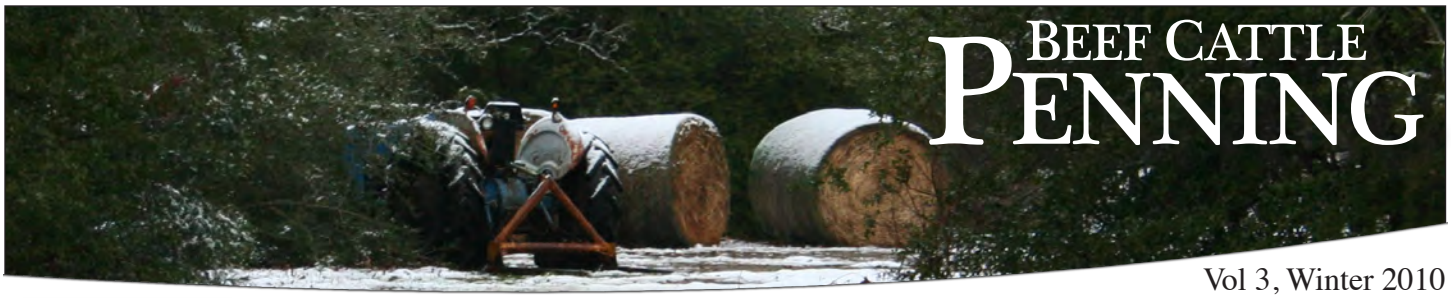

Beef Cattle Penning

Vol 3, Winter 2010

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As the winter issue of Beef Cattle Penning is being distributed, cow-calf producers are in the middle of the winter feeding season and looking for warmer weather and green grass. A year ago we faced extremely dry conditions across the state and this winter we are extremely wet. The cold wet winter this year has been tough on the cows and ranchers, but most will not complain because of the drought that we faced last year. Above average rainfall is setting up conditions for a big crop of internal parasites and even though the rains have been plentiful, the effects of the previous year's droughts still linger. This issue of Beef Cattle Penning will include the following topics: Control of Internal Parasites in Cow-calf Operations, Managing Pastures after Drought, and Pieces in the Bull Fertility Puzzle.

In This Issue:

Upcoming Events:

**Look for "Beef Tips" in issues of Pennings. Each segment will provide you with up-to-date BQA tips on raising beef cattle. Brought to you by the Texas Beef Quality Producer Program.*

BEEF TIPS

AgriLIFE EXTENSION
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Control of Internal Parasites in Cow-calf Operations

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In beef cattle operations internal parasites may be a source of lost profits. The cows look fine but they don't produce to their potential. Internal parasites vary with geographic locality, season, age of cattle and management practices. Most infections are a combination of several worm species, but Ostertagia ostertagi, the brown stomach worm, stands out as being more important than others. The significant aspect of Ostertagia infection is damage to the stomach lining of both adult and young cattle. The result is cattle with depressed appetites, therefore decreased milk production, and low weaning weights. In high numbers the parasite can cause clinical disease, weight loss and diarrhea, but even in comparatively low numbers, it reduces cattle's ability to efficiently convert forage into milk or meat. The economic importance of this parasite wasn't fully appreciated until availability of anthelmintics with good efficacy against this parasite.

In most of Texas control of internal parasitism should be based on the prevention of disease caused by Ostertagia. The strategy most likely to be effective is based on disrupting the parasites survival mechanism where by larvae cease development in the stomach lining when pasture conditions are unfavorable for survival or transmission (arrested development). When pasture conditions become favorable the arrested larvae resume development and begin laying eggs. The pasture transmission of this parasite occurs during the winter and spring in Texas. Controlling Ostertagia requires treatment with anthelmintics that kill the arrested larvae or has residual activity to kill incoming larvae over a period of time. Treatment during the late spring / summer using a benzimidazole or macrolide anthelmintic may accomplish this goal (Table p.3). Because Ostertagia is a common parasite, most cattle develop resistance to clinical disease after repeated exposure. However the goal of modern production is optimal productivity, not just freedom from disease. When young cattle are not sufficiently exposed to Ostertagia to stimulate a protective resistance, disease can be seen in older cattle when they are eventually exposed to large numbers of larvae in the pasture.

[continued on p.2]

[Control of Parasites, continued from p.1]

There are two basic reasons to administer an anthelmintic. One is to aid an individual animal by increasing production of meat, milk, or reproductive efficacy. The other is to lessen numbers of infective parasites in the environment so "at-risk" animals won't be exposed to the level of infection that leads to disease. With some parasites, treatment with an anthelmintic effective against adult worms only won't really help the individual. However, if the drug is effective against larvae in arrested development, it will not only help the individual cow or calf but also lower the pasture exposure to the next crop of calves.

The dry weather conditions during the spring and summer of 2009 followed by an especially wet fall and winter 2009, 2010 will probably lead to an especially dangerous spring and autumn in 2010. Many cattle are nutritionally stressed they did not pick up a moderate load of parasites last year and are grazing forages normally avoided. Clinical Ostertagia infections were seen as far back as last October and are continuing through out the winter. This parasite thrives in the cool wet conditions of the past several months and with poor nutrition clinical parasitism as well as the usual economic losses are expected. Adequate nutrition usually enables cattle to tolerate a few worms but now even moderate numbers of worms cause problems in the nutritionally stressed animal. Late spring early summer deworming is the usually best time of the year to treat cows in Texas. Perhaps this year treating yearling and two year old cattle earlier (late March or April) may be justified and on some farms these animals may require treating now but will still require nutritious feed to thrive.

The most common parasitic worm egg encountered in calves is Cooperia. Because eggs of this parasite are indistinguishable from Ostertagia, they are often confused. From the number of eggs, Cooperia is usually the dominant internal parasite in calves. However, when compared to Ostertagia, it's less significant. Calves will spontaneously rid themselves of this infection by 12 to 15 months of age. In general, Cooperia are not easily killed by the macrolide (ivermectin and cousins) and have become prominent as more important internal parasites are controlled. Another worm, Haemonchus in cattle is closely related to the species that is absolutely devastating to sheep and goats. Older cattle become immune to disease caused by Haemonchus, but calves are fully susceptible to the parasite. Female Haemonchus produce thousands of eggs each day and are avid bloodsuckers causing bottle jaw, and anemia. Summer pastures grazed by calves can have billions of infective larvae and become killing grounds. A North American report of Haemonchus resistant to both macrolide and benzimidazole anthelmintic in stocker calves is cause for concern. Because the development from worm eggs excreted onto the pasture, to the infective larval stage and the moisture necessary for the larvae to exit the fecal pat and ascend the forage is similar to that of pasture regrowth following grazing. Because each female Haemonchus produces at least 5000 eggs per day only a few worms at the beginning of summer grazing can cause a rapid buildup of pasture larvae.

Evidence strongly suggests, during most years, cows and suckling calves older than two months will benefit from treatment with an anthelmintic (macrolide?) in the early summer in the south. Fifteen to 50 additional pounds of calf at weaning or a cow breeding earlier when treated for internal parasites is the expected goal. Treatment can be done when cows are pregnancy checked, the calves vaccinated, or other activities. When calves are weaned and moved to another pasture, treatment will aid in the transition to earning their own living. In addition cows, especially first calf heifers, in high rainfall or areas where flukes are resident benefit from deworming entering the winter. Remember, no matter how effective the anthelmintic it will not increase gain if the cattle are not provided with sufficient nutritious palatable forage.

Which anthelmintic is best for cattle is a common question and it cannot be answered with a simple answer. Should we use an oral, injectable or pour-on compound? The answerer will vary with which worms you are trying to control and when. For instance in low stocking densities cow calf operations ecto parasites (primarily horn flies or lice) may be a major concern and the use of a pour-on macrolide will control Ostertagia and lice or flies. On the other hand, lightweight stocker or replacement calves are more adversely affected by intestinal and stomach worms and an injectable macrolide or a white dewormer will be a better choice.

Where liver flukes are encountered in cattle the administration of an anthelmintic has more to do with

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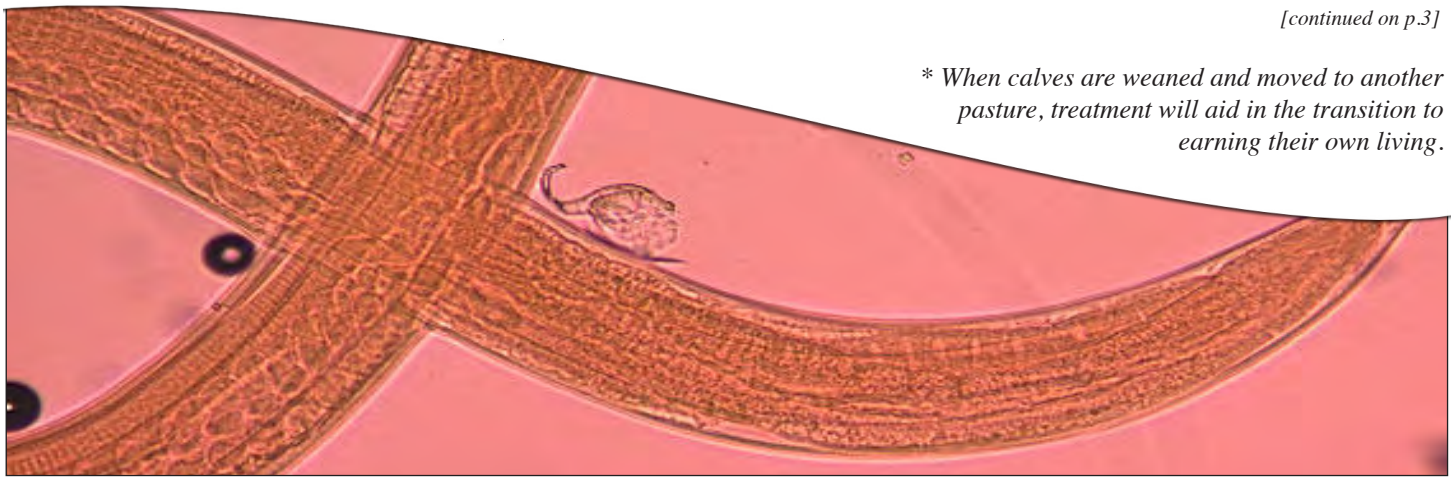


** When calves are weaned and moved to another pasture, treatment will aid in the transition to earning their own living.*

[Control of Parasites, continued from p.2]

protecting snails from infection than for the well being of cattle themselves. Albendazole (Valbazen) and clorsulon (Ivomec plus) are effective against adult common liver flukes whereas only albendazole has effect against the deer fluke. The transmission of both flukes from pastures in Texas occurs primarily in the spring and usually ceases as temperatures rise and snails aestivate (hibernate) during the summer. Because the drugs are only effective against adult worms, (it takes 3 to 4 months to become adults in cattle) it seems reasonable to treat in the autumn to lessen the availability of fluke eggs in the pastures to subsequently infect snails. To be certain treating cattle for Fascioloides, the deer fluke, will not affect the transmission of the parasite, as cattle are dead end hosts. White-tailed deer are the normal hosts of Fascioloides and are tolerant of the infection. However, cattle producers in the geographic area where this parasite is common believe that treating cattle will gain an extra years production from adult cows.

Treatment for Fasciola will lower the intensity of infection to which the snails are exposed but even if 100% of the flukes in cattle are killed other animals such as rabbits, feral swine and even horses sustain the infection from year to year. The most important economic aspect of Fasciola infection appears to be an impairment of the ability of the liver to break down sex steroids which lowers fertility. The damage occurs early in the infection and at that time the drugs are not effective against the worms. As with most parasites there is a direct relationship between the numbers of parasites present and the likelihood of disease. So if cattle are infected by low to moderate numbers of flukes (<100) the only economic importance may be the condemnation of the liver at slaughter.

During most year's cows and suckling calves more than two months of age will benefit from a treatment with an anthelmintic entering the summer. The advantage is increased weaning weights due to increased grazing of pasture resulting in elevated milk production. This treatment can be done at the time the cows are pregnancy checked, the calves vaccinated or other activities. When calves are weaned and moved to another pasture, treatment will aid in the transition. Stocker and replacement calves, especially on permanent pastures are at high-risk, therefore treatment before introduction to the pasture then a follow up treatment one to three months later, depending on the anthelmintic used. If anthelmintic resistance is seen it will be manifest in this age group especially if the cattle come from multiple sources and are pastured where similar calves have previously grazed. An evaluation of the efficacy of anthelmintics in newly arrived calves during the quarantine period following a vigorous attempt at worm removal may help stave off problems in future years. Cooperia is not generally controlled by macrocyclic lactones although they are extremely effective against other nematodes and many ectoparasites. Despite approval by

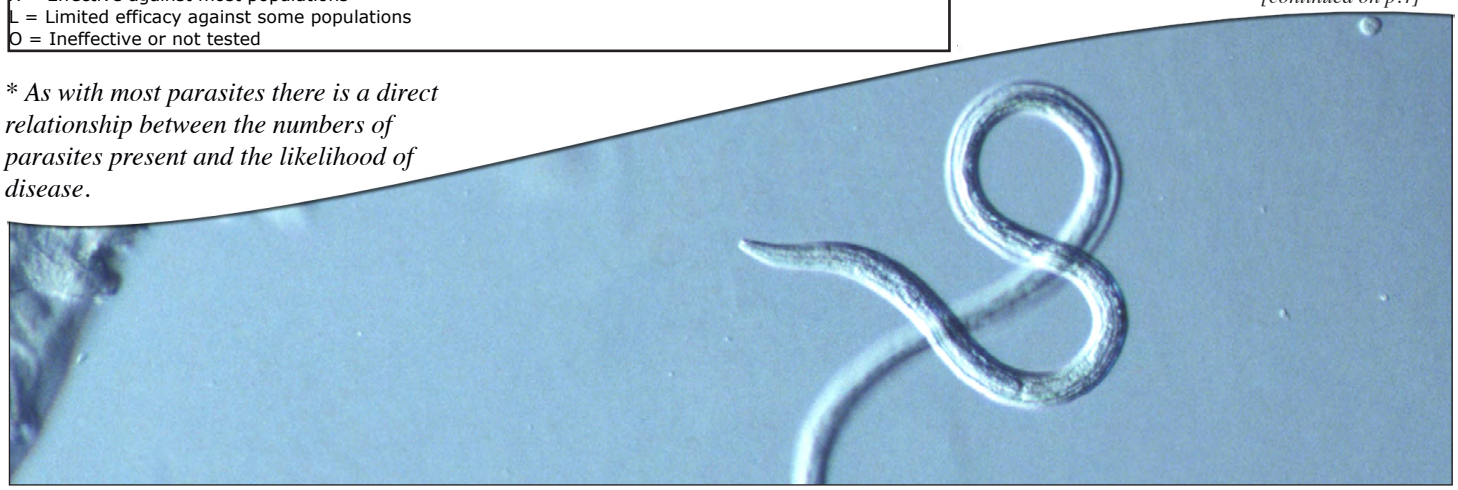
[continued on p.4]

Table: Spectrum of activity of anthelmintics against selected cattle parasites

Parasite drug	ABZ	FBZ	OFZ	LEV**	MOR	IVR	EPR	DOR	MOX	*CLO
Abomasum (true stomach)										
Ostertagia	X	X	X	X	X	X	X	X	X	
Ostertagia L4	X	X	X	O	O	X	X	X	X	
Haemonchus	X	X	X	X	X	X	X	X	X	
Trichostrongylus	X	X	X	X	X	X	X	X	X	
Small Intestine										
Cooperia	X	X	X	X	X	L	L	L	L	
Nematodirus	X	X	X	X	X	L	L	L	L	
Moniezia	X	X	X	O	O	O	O	O	O	
Large Intestine										
Oesophagostomum	X	X	X	X	X	X	X	X	O	
Lungworm										
Dictyocaulus	X	X	X	X	O	X	X	X	X	
Liver Flukes										
Fasciola	X	O	O	O	O	O	O	O	O	*X
Fascioloides	X	O	O	O	O	O	O	O	O	O

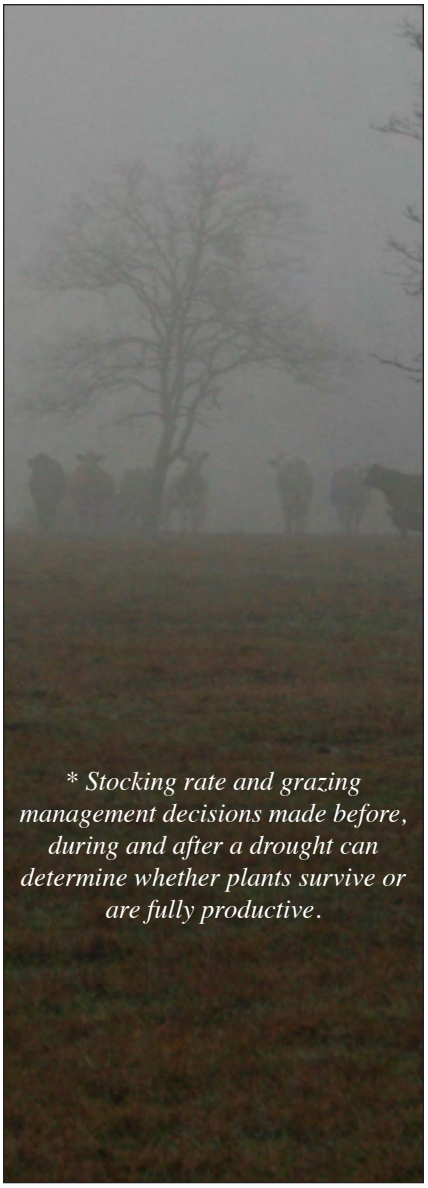
BENZIMIDAZOLES; ABZ Albendazole (Valbazen), **FBZ** Fenbendazole (Safegard, Panacur), **OFZ** Oxfendazole (Synanthic), **LEVAMISOLE/MORANTEL; LEV****Levamisole (Totalon, Levamisole, Levasole, Prohibit), **MOR** Morantel (Rumatel), **MACROLIDES; IVR** Ivermectin (Ivomec, Ivomec plus, Phonectin, Double Impact, ProMectin, Ultramectin, Ivercide, Ivermectin, Promectin, Normectin) some of these products are labeled but have not all been tested for efficacy under controlled conditions. **EPR** Eprinomectin (Ivomec Eprinex), **DOR** Doramectin (Dectomax), **MOX** Moxidectin (Cydectin), ***CLO** Clorsulon (Ivomec Plus dose)
**Levamisole is currently not available
X = Effective against most populations
L = Limited efficacy against some populations
O = Ineffective or not tested

** As with most parasites there is a direct relationship between the numbers of parasites present and the likelihood of disease.*



[Control of Parasites, continued from p.3]

the Food and Drug Administration there is evidence that some of the generic macrolide pour-on products have poor efficacy when compared to the original products. On farms where fluke infections occur treatment of cows and calves in the autumn or early winter with products that control flukes and gastrointestinal nematodes is recommended. Cows on ranches in high rainfall areas may benefit from deworming as they enter the winter.



** Stocking rate and grazing management decisions made before, during and after a drought can determine whether plants survive or are fully productive.*

Managing Pastures after Drought

Dr. Bruce Carpenter
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Last summer's growing season was brutal for most pastures in Texas. But, like all droughts, this one finally ended. Warmer regions of the state may even have a little green in them from fall moisture and cool season species. However, regarding warm season grass species, their readiness for regrowth and grazing next spring will depend on how they were "treated" last summer and fall. Warm season grasses may still be in a weakened state. If so, light stocking will be needed in order to allow next spring's green leaf material time to replenish carbohydrate food reserves in root systems. When dealing with drought, some of a livestock producer's most important decisions concern stocking rates and grazing management. The effects of these decisions go far beyond survival of a current drought and can greatly influence recovery afterward. Depending on forage management system (native range or introduced forages), there may be other options that may be available to "help" grass plants recover next spring. These might include fertilizer, weed control, and brush control. If fertilizer is an option, be sure to use soil test recommendations.

Manage grazing before, during and after drought. The best time to plan for drought is during non-drought years. A rotational grazing system can improve overall plant health by allowing rest from grazing. Usually, plants will be more vigorous and their root systems better developed if you use a rotational grazing system. When a drought occurs, damages are minimized because the plants are in better condition, and have more root reserves. This also aids in recovery. Provide longer rest periods during drought, or during recovery by increasing either the number of pastures within the system or shortening the length of stay in a single pasture. Regardless of grazing system, animal numbers will likely need to be reduced. Pay attention to the distribution of livestock in a pasture. Try to use the entire pasture uniformly to help lengthen rest for desired forage plants. You can sometimes move animals into areas that are usually not grazed by strategically placing fencing or salt, supplement, mineral and temporary watering facilities.

Remember: During drought, plants may go dormant before the end of the growing season. Therefore, they will be dormant for a longer period than normal and will depend on the food stored in the roots earlier as they begin to grow and recover. During a drought year, the plants may rely on stored carbohydrates for as long as 9 to 10 months or more, leaving only 2 or 3 months to recharge their root reserves for the coming year. This makes it even more important for green leaf material to remain long enough to produce and store adequate food reserves. If you have introduced pastures with cool season annuals and warm season perennials (i.e. ryegrass over coastal bermuda), remove animals before spring green-up of the perennial bermuda.

Stocking rate and grazing management decisions made before, during and after a drought can determine whether plants survive or are fully productive. If droughts are common in your area (such as in West and South Texas), conservative stocking rates will provide adequate "unused" carryover forage that can be used for a time, But if conditions worsen, you eventually will have to de-stock or buy feed.

Build in flexibility. When developing a long-term drought management plan for stocking rates, herd mix can be a useful tool. In areas where droughts are common, consider breeding herds that constitute no more than 50 to 70 percent of the total carrying capacity of the ranch during normal years. Consider yearlings or stocker animals to comprise the remainder. Eventually, when drought returns (and it will), begin initial stock reductions with those animals. This will protect the integrity of the breeding herd - at least during less severe droughts

Monitor forage supply and demand:

Simply stated, forage supply must exceed livestock demand. If animals eat into critical forage residue, nothing remains

[continued on p.5]

[Managing Pasutres, continued from p.4]
to protect the soil and the plant roots. Long-term carrying capacity for livestock, wildlife and the ranch may be severely reduced long after a drought ends. Some examples of ecological damage are:

- More rainfall runs off when there is too little plant and litter cover on the soil surface, leaving less moisture in the ground for plant production.
- Erosion increases, removing soil needed for plant production.
- Organic matter and thus, soil fertility decreases.
- The plant root mass eventually becomes depleted, reducing the plant's ability to recover after grazing or extreme environmental conditions.
- Undesirable plant species invade.

During a dormant period (i.e. drought), it important to determine the supply of standing forage available for: 1) livestock consumption, and 2) residue. Future forage production depends on having healthy plants that can survive drought and recover quickly when favorable conditions return.

To help determine how much forage you have, see Extension publication B-1646, How Much Forage Do You Have? Another Extension publication, E-62, Rangeland Drought Management for Texans: Livestock Management, also provides information on taking a forage inventory.

To help protect forage resources, you need to maintain a proper stubble height, which is the amount of residual forage left after grazing. Different classes of rangelands have different optimal levels of plant residue (Table 1). Grazing exclosures and permanent photo monitoring sites are effective tools for monitoring residual forage levels. For more information on these tools, see Extension publication L-5216, Range Monitoring With Photo Points.

Stocking rate and grazing management decisions made during drought affect not only current conditions, but also the recovery rate of plants after the drought ends. Keep in mind that the decisions you make before and after a drought are just as important as those made during drought. Consider these strategies when dealing with drought:

- Maintain as much carryover forage on the ground as possible.
- Keep the herd composition flexible.
- Implement a grazing system that allows periodic rest of pastures
- Make stocking adjustments early.
- Balance forage supply and demand before, during and after drought.
- Protect the soil by maintaining minimum forage levels.
- Refrain from fully restocking after the drought until the forage has recovered completely.

Table 1. Optimal amounts* (pounds/acre) of ungrazed forage for different types of rangeland.

Desert	Shortgrass	Midgrass	Tallgrass
250	300-500	750-1000	1,200-1,500

*Leave the higher amounts ungrazed if improvement is desired or if droughts are frequent.

Figure 1. Range Forage Residue and Production (From Hanselka, 2001)

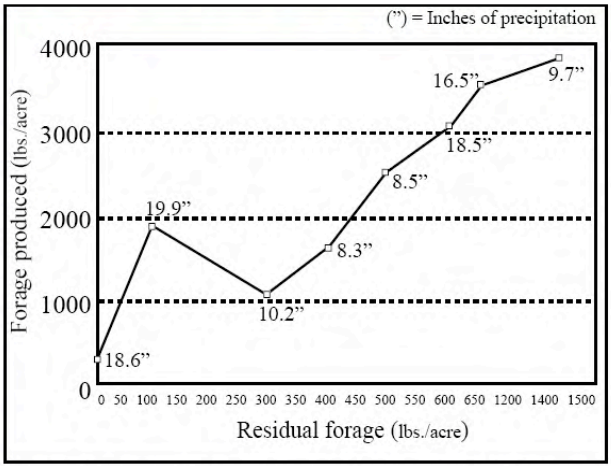

Figure 1 depicts the effect of residual forage and it's affect on regrowth of native range grasses. On introduced perennial forages, like coastal burmudagrass, similar management is needed during drought. Typically we think of bermudagrass as being quite resistant to grazing, and this is true, when regrowth is possible with adequate rainfall. However, when plants become more and more stressed with worsening drought conditions, more residual bermudagrass stubble should remain. A good rule of thumb is to leave at least 2" of stubble height for bermudagrass during drought. Further management steps post-drought may include weed spraying, fertilizer, etc. in order to help plants build up depleted nutrient reserves. Figure 2 depicts how above ground forage residue affects below ground root development and growth potential for warm season perennial range grasses.

Figure 2. Stubble height and root vigor

[continued on p.6]

Pieces in the Bull Fertility Puzzle

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Decisions regarding sire selection are among the most important that any cattleman will make. If a bull is to become a successful breeder, he must possess certain characteristics. Some of these are inherent, some may be acquired, and some will be determined by management. The following summarizes some of the factors which may influence fertility of herd sires:

* **Proper nutrition and herd health**
* **Structural correctness - eyes, feet, legs, skeleton**
* **Properly functioning genitalia**
* **Adequate scrotal circumference**
* **Semen quality**
* **Proper birth weight for calving ease**
* **Age at puberty**
* **Libido and Serving Capacity**
* **Social interactions**
* **Newly discovered proteins present in the semen (FAA)**
* **Unknown factors?**

Breeding Soundness Examinations can be useful in estimating a bull's fertility since many (but not all) of these factors are evaluated.

The following discussion will focus on how these factors may affect and/or interact with each other, and with management, to influence fertility in the bull.

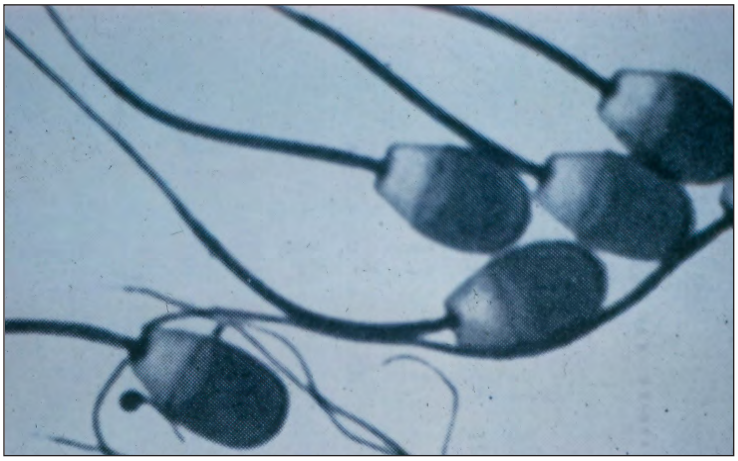
Decisions regarding sire selection are among the most important that any cattleman will make. Herd sires can influence everything from percent calf crop weaned, to the quality of the steak purchased from the grocery meat case. One-half of each calf's genetic material is contributed by his sire. But yet, under natural service conditions, in order for a sire to be a genetic asset he must first be able to find, travel to, and successfully impregnate estrus cows. Typically, this can translate into 20 to 60 weaned calves every year. The intent of this review is to discuss some of the factors which may determine and/or influence reproductive function in the bull. If a bull is to become a successful breeder he must possess certain characteristics, some of which are inherent. Others may be acquired, and others determined by management. These can include: structural correctness; health and physical strength; normal, properly functioning genitalia; adequate scrotal circumference; semen of good quality and quantity; high libido; copulatory proficiency; and perhaps, a certain social rank. Other factors have only recently have been elucidated. Others probably remain unknown.

Nutrition of herd sires is particularly import during developmental stages since a good nutritional plane can hasten puberty in young bulls. Severe underfeeding of young bulls can cause irreversible testicular damage. Undernutrition in older bulls may impair ability to travel, and decrease sperm production and libido. Conversely, getting bulls excessively fat can produce similar effects on libido and structural soundness.

Good breeding management is always accompanied by a properly designed **herd health** program. A veterinarian who is familiar with the specific diseases common to the geographic region should be consulted. Usually, when discussing the subject of reproduction, we tend to think of the reproductive diseases as those which cause abortion in the female, and that are sexually transmitted venereal diseases. Examples of these might be Campylobacteriosis (vibrio) or trichomoniasis (trich). IBR is another common reproductive disease. It can be transmitted by either nasal or genital contact. It may cause respiratory problems as well as abortion in females. The introduction of non-virgin bulls with unknown health histories, can be a vector for the spread of venereal diseases. Again, consult with your veterinarian if you plan on purchasing and introducing older bulls into the breeding herd.

Even a condition like foot rot might be considered a "reproductive disease" if it were to impede a bull's ability to service females. So in summary, healthy bulls make better breeders.

The Breeding Soundness Examination (BSE). During this procedure, many of the afore mentioned factors are evaluated in an effort to estimate a bull's potential fertility. It is a recommended practice, and it is probably still the most effective means of estimating fertility on a practical level. The conventional BSE does not evaluate every factor which is known to, or suspected of, influencing fertility; nor does it guarantee fertility. It merely provides a fair estimate of a given bull's fertility potential. It can provide a good assessment of what actual semen quality and production was like at a single point in time. That point is about 60 days prior to the examination, since it takes about 60 days for spermatogenesis and maturation to become completed in the testis. Therefore, it is



** Semen evaluation will usually consist of microscopic examination of spermatozoa for motility, concentration and normality.*

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[Bull Fertility, continued from p.6]
recommended that BSE's be given about 30 to 60 days before the start of the breeding season. A BSE given at the end of the breeding season may be used to determine if any decreases in semen quality have occurred. A BSE is most often performed by a veterinarian who is familiar with semen evaluation techniques. However, any herdsman will probably visually evaluate some of the components of a BSE whenever he sees his bulls. The first component of a BSE is an evaluation for structural correctness.

Structural Correctness. This includes a general evaluation of the skeleton, particularly the feet and legs. Can the bull walk and get around okay today? Might he have trouble in the future, say from being too straight in the hocks? The mouth and teeth are usually evaluated, as are the eyes. Good eyes are especially important for bulls. Research indicates (5) that the primary stimulus for a bull to seek estrus females is his ability to first visually locate groups of sexually active females (i.e. females that are being mounted by others in the herd).

Scrotal Circumference is also evaluated, since bulls with larger testicles produce more sperm cells. Scrotal circumference is measured with a tape. A suggested minimal scrotal circumference is 30 cm at 15 months of age or younger, and 34 cm at 2 years of age or older. In addition to enhanced sperm production, research has also shown that bulls exhibiting larger scrotal circumferences, reach puberty sooner, and also sire daughters that reach puberty at earlier ages. Scrotal circumference is moderately heritable and therefore progress can be made through selection. At some point during the BSE, the accessory glands (prostate, etc.) will be examined rectally. The sheath and prepuce can be evaluated visually. The penis, will be evaluated during semen collection procedures. Abnormalities of the sheath, prepuce or penis can preclude copulation or make it painful to the bull.

Semen Evaluation will usually consist of microscopic examination of spermatozoa for motility, concentration and normality. There are also new procedures which utilize test kits containing reducible dyes (color change) to test sperm motility and concentration. Following the BSE the bull will either be classified as satisfactory or unsatisfactory as a potential breeder.

Additional factors may also influence fertility in the bull. Some of them might be indirectly measured during a BSE. Others probably will not be assessed at all during a BSE. **Age at Puberty** might be a factor. Certainly not all breeds, or individuals within breed, mature at equivalent ages. Generally, the British breeds are earliest, followed by Continental and American breeds. Purebred Bos indicus types are the slowest to reach puberty.

Calving Ease could be considered as a reproductive trait in bulls since birth weight is known to usually be the main cause of calving difficulty. Females that experience difficult births have reduced calf survivability and have lowered chances of rebreeding. In cows that do become pregnant, those that experience calving difficulty will usually display a longer post-partum time to breed back.

Libido and Serving Capacity. Again, neither libido nor serving capacity is typically assessed during a conventional BSE. Libido has been defined as sexual aggressiveness whereas, serving capacity has been defined as copulatory proficiency. It is possible for bulls to possess good libido but still not be able to properly service a female. Both libido and serving capacity are distinct elements of reproductive function and unfortunately, their correlation to BSE parameters appears to be weak or nonexistent (7). In other words, bulls may possess good semen but may still lack the ability or desire to service females.

It is possible to objectively measure libido and serving capacity in bulls. A variety of methods have been evaluated (2,5,8). Essentially, groups of bulls are given the opportunity to service females in either of two ways: 1) restrained females, or 2) non-restrained estrus females. The number of attempted and completed services during a 20 to 30 minute period is recorded. Each method has certain advantages and disadvantages. Use of non-restrained females requires estrous synchronization which in turn, requires relatively large numbers of non pregnant but cycling females. Response to synchronization treatment is also a consideration. Use of females restrained in specially designed service crates requires fewer animals, but may not always sufficiently stimulate serving activity in Bos indicus influenced breeds (9). As stated, serving capacity appears to be a measurable component of bull fertility. However, procedures for its measurement are not always practical in many commercial ranching situations. Simple observation of mating activity in the pasture is better than nothing, but it has shown a generally poor relationship to serving capacity results obtained with standardized testing procedures.

There are probably several factors at work in determining what a bull's serving capacity is. Serving capacity appears to be a moderately heritable trait (3) that is somewhat genetically determined. Serving capacity can vary between individuals and possibly even sire-lines (5). Libido is dependent, to a degree, upon the male hormone, testosterone, which is produced by the testis. However, it appears that once relatively low "threshold" concentrations of circulating testosterone are achieved, that concentrations beyond this level do not impart higher libido. In other words, high testosterone is not necessarily related to high libido.

Age, breed and prior sexual experience may all interact to influence how a bull displays his inherent serving capacity during testing (5,6).

Bull performance in serving capacity tests can be used to predict fertility under natural mating situations. Higher pregnancy rates and/or improved conception patterns have been observed for higher serving capacity bulls evaluated in pasture mating studies (4,10,11).

Social Ranking. In multiple-sire pastures, socially dominant bulls may obtain access to more females. This is probably acceptable if that bull is also of high fertility. However, problems might arise if a bull were socially dominant, yet still lacked reproductive function. For example, a socially dominant bull with poor semen quality. Social ranking does not appear to be related to either semen quality, libido, or serving capacity.

[continued on p.8]

[Bull Fertility, continued from p7]

Social dominance orders within a mix of bulls may be subtle and, once established, are usually maintained without aggressive fighting. Fighting among bulls may simply indicate that the social dominance order has yet to become established. Age can be a factor in social dominance. For managers interested in using younger bulls, manipulating the age mix, so that yearlings and two-year-olds do not compete with older bulls may be the best way to minimize lost breeding opportunities for younger bulls.

Fertility Associated Antigen (FAA). Recently a family of proteins present in the semen and/or on the sperm membrane, have been identified by researchers at the University of Arizona (1). These proteins, called heparin-binding proteins (HBP), are thought to enhance the sperm's ability to penetrate and fertilize an egg (ovum). Fertility Associated Antigen (FAA) is the marker for these proteins. Pasture mating trials comparing bulls of similar semen quality have shown that bulls with detectable FAA were 17% more fertile thanbulls with no detectable FAA. Bulls without FAA are not sterile, they are simply less fertile (assuming they are otherwise equal in BSE results and serving capacity) There is a commercial test available for FAA (www.reprotec.us). So long as the bull is pubertal the results are valid for his lifetime. The Repro Test® is a "chute-side" test kit that can easily be included with a routine breeding soundness examination, improving the accuracy of that procedure. The test costs about $40 per bull. A drop of fresh semen is placed on a lateral flow cassette. A color change indicates an FAA positive bull and results are available in 10 to 20 minutes. A single test is good for the life of a bull, but the Repro Test® is not recommended for frozen semen intended for AI. Extenders that are added during semen processing can cause interference with test antibodies. Still, AI sires can be tested using fresh, unextended, unfrozen semen.

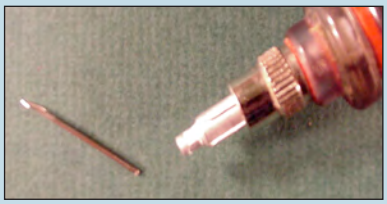
Subsequent research has examined interactions between FAA and serving capacity. Researchers at the University of Arizona and at Texas A&M (12) have compared bulls of similar semen quality, but of differing serving capacities and FAA profiles. They reported significant differences in pregnancy rates among certain classes of bulls. Those bulls with high serving capacity and FAA positive, produced 87% pregnancy rates. Those bulls with high serving capacity and FAA negative produced 78% pregnancy rates. Bulls low in serving capacity, but FAA positive, produced 68% pregnancy rates.

To summarize this overall discussion, a bull's fertility is influenced by a variety of factors. Conducting yearly breeding soundness exams can help predict what his fertility may be. Using the FAA test may help further the accuracy of conventional breeding soundness examinations.

BEEF TIPS

The goal of is to provide producers with the most current BQA information that can be applied to any operation.

4. When giving injections, needles can break, separate from the barrel of the syringe, and remain in the animal. While this is extremely rare, consumer safety is seriously compromised if the animal enters the food chain.



Best Management Practices to prevent broken needles include:

1. Restrain animals properly
2. Do not straighten and use bent needles again. Replace Immediately.
3. Change needles when they get dull or after 10 head, whichever comes first.
4. If you have a problem with bent needles (even after proper restraint), step up to a larger diameter needle (Ex. 18 to 16 gauge).
5. Develop a standard operating procedure for dealing with broken needles in cattle:
   - A. If the needle remains in the animal, mark the location where the needle was inserted.
   - B. If a broken needle cannot be removed at the ranch, contact a veterinarian immediately to have the needle surgically removed.
   - C. If a broken needle cannot be extracted from the tissue, record the animal's ID to ensure that it is never sold or leaves the ranch and does not enter the food chain.

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Winnie, TX

May 27, 2010 - Winnie Stowell Community Building
Registration - 3:30 pm
Program - 4:00 pm
Program should conclude around 9:00 pm
Free dinner included!

Winne Stowell Community Building
335 South Park
Winnie, Tx 77665

Please RSVP by May 20 to:
TSCRA at 800-242-7820 or the Jefferson Co. Extension Office at 409-835-8461

Greenville, TX

March 9, 2010 - Fletcher Warren Civic Center
Registration - 9:30 am
Program - 10:00 am
Program should conclude around 3:00 pm
Free lunch included!

Fletcher Warren Civic Center
5501 S. Business Hwy 69,
Greenville, Tx 77665

Please RSVP by March 2nd to:
TSCRA at 800-242-7820 or the Hunt Co. Extension Office at (903) 455-9885

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