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Breeding Soundness Exams are Vital to a Successful Breeding Program

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Breeding season is just about here for spring calving herds. It is time to make those ever so important breeding decisions that will improve your calf crop for next year. What genetic and physical improvements need to be made? What sire breed would best complement my cow base? How many bulls are needed to correctly cover my cows? Do I need to use two different sire breeds? These are all very relevant questions that need to be answered as we approach the spring breeding season. Nonetheless, without a proper Breeding Soundness Exam (BSE), these decisions may not matter. The greatest bull with bad semen will not produce calves.

The breeding soundness exam should be performed 30 to 60 days before the start of breeding season. It is important to allow sufficient time to replace questionable bulls. This time allotment will also allow stressed animals to recover and be tested again before the beginning of the breeding season.

The physical examination includes evaluating body condition, feet and leg structure and the general health of the individual bull. The external evaluation of the reproductive tract includes evaluation of the testes, spermatic cords and epididymis.

Scrotal circumference is an important measure since it is directly related to the total mass of sperm-producing tissue, sperm cell normality and the onset of puberty in the bull and his female offspring.

The semen is collected and evaluated for motility and morphology. This will ensure that the largest percent of the sperm is moving in a forward motion and that there are very few abnormal shapes.

After completion and only when the bull has been deemed a "satisfactory breeder" will you benefit from your pre-breeding season selection decisions. After your bulls are with the cows, it is a good management practice to keep an eye on them through the breeding season. Sometimes bulls will fail to get some cows bred, especially after heavy service. Bulls may come up lame or may develop some unforeseen reproductive injury. In any case, they will need to be replaced immediately to help keep your calving season within the ideal 60 to 75 days.

Remember that a bull is only as good as his semen. A cow is responsible for half the genetic material in only one calf each year, while the bull is responsible for half the genetic material in 20 to 50 calves. The bull's ability to locate cows in estrus and breed them is clearly vital to a successful breeding program.

Legumes – An Option to Save Nitrogen Fertilizer Costs?

Dr. Dirk Philipp, Assistant Professor

Beef farmers struggle to come up with the financial resources to fertilize their pastures to keep cattle operations viable. As you may have read in the January issue of this newsletter and surely know from your own experience, fertilizer prices are at an all-time high, and there's little hope they will come down ever again. Moreover, the pending lawsuit between Oklahoma and Arkansas regarding the future of poultry litter application has put many farmers in limbo as to what extent this kind of fertilizer might be available in the future.

Legumes may be an option to lower fertilizer costs while improving forage nutritive value of pastures. However, one word of caution right at the beginning: There's certainly no silver bullet available to easily offset high fertilizer prices. While many now think legumes can do the job, introducing legumes requires patience, improved grazing management practices and some experimenting on your own.

Forage legume species have the ability to fix atmospheric nitrogen through a symbiotic relationship with bacteria that colonize their roots. These bacteria are responsible for converting nitrogen into forms usable by the host plant. About 30 to 95 percent of the total plant nitrogen requirement may be provided this way. It is important to know that nitrogen transfer to grasses usually occurs indirectly from leaf drop or plant death of legume plants, and much less through intermingling plant roots. Significant redistribution of fixed nitrogen is mediated by animals grazing legumes and depositing dung and urine within the same pasture. However, while nitrogen fixation of legumes in a pasture might be sizable, actual nitrogen transfer to the pasture grass will be much lower. For example, in a white clover-fescue mixture, the annual nitrogen fixation might be between 80 and 160 lbs/acre. The annual transfer, however, may only be 20 to 40 lbs/acre.

When considering legume species for your pastures, you should choose those legume species that fit your production objectives best. There are annual and perennial legumes that differ in growth habit, reproductive cycles and management requirements. A few producers have utilized white and red clover in the past, but there are many more legumes species to consider. We recently initiated a study at the Batesville Research Station with the goal to provide producers with information on persistence and contribution of nitrogen of various legume species. During the next three years, we will monitor forage yield, soil quality and economics, among other factors. Annual legumes used in our study include 'Yuchi' arrowleaf clover, 'Dixie' crimson clover (picture), common hairy vetch and 'Denmark' subterranean clover. For perennial species we selected 'Ameristand 403T' alfalfa, common kura clover, 'Cinnamon Plus' red clover and 'Durana' white clover.

Crimson clover established on pasture slope.

Although we just started last fall, initial results show that crimson clover, arrowleaf clover and hairy vetch were relatively easy to establish while, for example, white clover and kura clover may need considerably more effort. In our study, we planted the legumes into existing bermudagrass pastures using a no-till drill with 7-inch row spacing. Our planting depth was approximately 0.5 inch, but smaller seeds like those of white clover should probably be planted even shallower.

Crucial for successful legume establishment is the correct pH and appropriate soil fertility levels of phosphorus and potassium. Especially the latter is a very important plant nutrient and should be applied according to soil test recommendations. Most clovers prefer near neutral pH, so lime should be applied about six months prior to planting to leave time for soil pH adjustment if necessary. Extremely important for establishment of legumes is the inoculation of seeds with Rhizobium bacteria prior to planting. Each legume species requires a particular strain, so producers should pay close attention to obtain the correct inoculant for their seeds.

Most producers may look for legumes being used in mixtures. Thus, grazing management becomes more challenging due to the different morphology of legume plants compared with grasses. Unlike grasses that evolved under grazing, legumes generally need rest between grazing cycles to restore energy reserves in their roots, especially in perennial species. There are also differences among legumes in growth patterns that need to be taken into consideration for laying out a management strategy. The objective should be to maintain a balance of legume and grass during the growing season. Maintaining the height of the pasture sward will determine that balance. In general, a minimum of 36 percent legume stand in a mixture is necessary to make a significant contribution in yield and nitrogen supply. While grazing in spring should commence at a sward height of at least 10 inches, mixtures should then be kept to a grazing height of 4 to 6 inches, otherwise the grasses in the mixture might shade out the legumes.

Establishing and managing legumes in your pastures requires a broad knowledge about varieties available, fertilizer requirements and grazing strategies. Interested producers can select from a host of publications available on our website (http://www.aragriculture.org/forage_pasture.htm) to learn more about the utilization of forage legumes. You may also contact your county agent if you have further questions and come see us during the Batesville Research Station Field Day!

Get Your Horse Physically Fit for Maximum Performance

Dr. Steve Jones, Associate Professor

The weather is warming up, and many of us are thinking about spending time in the saddle. Whether you are preparing for competition, trail riding or training a young horse, the horse will be a more willing partner mentally if you get him in shape physically. Horses that have received limited exercise for an extended period of time should not be expected to perform the same tasks as when they were highly conditioned. A planned exercise program will not only get your horse in shape to perform his or her assigned task but may also prevent injury. Any time you exercise a horse, there is stress on the bones and tendons. The skeletal system needs to be prepared for the intensity of work to be performed.

In general, a conditioning program should begin with lower speed, long distance exercise. This is commonly referred to as long, slow distance work. The distance will need to increase from a negligible amount to longer distances. Long, slow distance work does not refer to how far a horse goes. Rather, this type of work refers to the amount of time (days) a horse is exposed to low heart rate, aerobic exercise. This early phase of cardiovascular conditioning should take place over a period of 30 days. Exercise will consist of walking, trotting, extended trot, loping and some cantering. These exercises are categorized as "aerobic" because the horse's heart rate will almost always be less than 150 beats per minute. Exercise contributes to skeletal maintenance, because bone will lose its strength if not used. Care should be taken to go slow so that proper skeletal strength is built during early stages of conditioning.

Although it only takes about one month to develop a significant amount of aerobic, cardiovascular fitness in horses, effects on tendons and bones often take much longer. Therefore, the horse person is challenged to spend enough time in the legging-up phase to help prepare the skeletal system for the intensity of work to which a horse will later be exposed. Excess muscular fatigue can certainly contribute to lameness. Both quality and consistency of movement become compromised during fatigue, and the end result is lameness or a significant soreness of some kind. So, effective conditioning programs do not and should not result in highly exhaustive work during each workout. To improve cardiovascular fitness, the work must eventually involve some exercises that will cause the heart rate to move into the range of 150 to 180 beats per minute.

The next step is specificity of exercise. Specificity of exercise is a concept which is of extreme importance. Put simply, this concept says that if you want to be a fast runner, you must train by running fast, or if you want to be a good long distance swimmer, you must train by swimming long distances. You cannot become a fast runner by swimming long distances, nor a swimmer by running. Although that sounds very simplistic on the surface, the consequences are far-reaching. For example, if a horse runs a mile today at a 4-minute pace, his body will respond by storing fuel and rebuilding tissue so that he can run a 4-minute mile tomorrow with greater ease. However, he will not be fit to run a mile at a 2-minute pace. The exercise he performed in training specifically geared him for running a 4-minute mile. In conclusion, a horse must be exposed to the requirements in his or her specialty. Cutters must be able to run, stop and turn for 2½ minutes. Barrel horses must be able to maintain their speed and turn for the entire duration of the pattern. A trail horse must be able to cover the distance desired, plus climb, trot or canter as needed.

Conditioning of the performance horse can and will be influenced by a variety of factors: body condition, nutrition level, environment and purpose of the training. An exact recipe cannot be used for all horses, because horses differ in ability, behavior and strength. But there are two fundamental considerations – cardiovascular, aerobic conditioning and specificity of exercise. It boils down to getting the horse physically fit first and then training him or her specifically for the performance event.

Electronic Animal Identification Systems at Livestock Auction Markets

Dr. Tom R. Troxel, Professor

Kansas State University recently completed a study to determine livestock market manager perceptions about animal identification systems, to determine the estimated costs of adopting animal tracking systems in auction markets and to assess factors related to adoption of animal ID systems in auction markets. To accomplish these objectives, a national survey of livestock auction markets was conducted in the winter of 2006. A total of 1,166 survey forms were mailed and 189 were returned, resulting in a response rate of 16 percent. A number of the survey's findings are listed.

- Livestock market operators only moderately understand the NAIS program standards, how to adopt the NAIS practices and the costs of adopting the NAIS at their facilities.
- Many livestock market operators view the NAIS as a threat to their business. However, 20 percent view it as an opportunity.
- In ranked order, livestock operator concerns with the adoption of electronic animal identification tracking technology were cost of technology, reliability of system, cost of operating, cost of necessary facility renovation, impact on speed of sale, additional expertise needs and data confidentiality.
- Managers of facilities that annually sell a large volume of livestock tend to have a higher level of understanding of how to adopt the NAIS practices and are more knowledgeable about NAIS standards than operators of small-volume facilities. This suggests operators of smaller auction markets are an important target to provide more information about the NAIS.
- Livestock market operators who have operating RFID reader systems, as well as those who have registered their

premises, are more likely to perceive the NAIS as an opportunity to their business than livestock market operators who have not completed these activities. Auction markets that see opportunities with having electronic animal ID systems have been early adopters. Markets that have not adopted electronic animal ID information technology will need to have their perceptions changed regarding potential value before they are likely to adopt.

- Livestock market managers tend to be highly concerned about adversely affecting sale speed with the adoption of individual electronic animal identification systems. Furthermore, the more volume the auction market sells, the greater the manager's concern about animal ID systems slowing speed of commerce.
- Affect on sale speed for those livestock markets that have already adopted electronic animal identification and tracking systems is generally less than the perceived impact on speed of sale of those that have not adopted the technology.
- Livestock market operators who have adopted RFID technology indicate that new computers and software may need to be purchased; however, sale speed usually does not change with use of an RFID system, and new employees typically do not have to be hired to manage an RFID reader system.
- At the time of this survey, about 56 percent of livestock market operators have registered their premises with the NAIS.
- Only 49 percent of livestock market respondents who viewed the NAIS as a threat had registered their premises compared to 79 percent of livestock market managers who viewed the NAIS as an opportunity.
- Only 14 percent of livestock market respondents had adopted RFID reader systems.
- Large-volume markets are more likely to adopt RFID technology than small-volume markets.
- Facilities that have registered their premises are more likely to adopt RFID technology than those that have not registered their premises.
- Fifty-five percent of livestock market managers stated they would provide an RFID tagging service for customers if the NAIS were fully implemented.
- Eighty-five percent of livestock market respondents plan to charge a fee for RFID tagging; however, a number of managers are uncertain of the rate they will charge.
- Twenty-seven livestock market survey respondents have adopted electronic animal identification systems, all of which were RFID reader systems.
- Based on estimated annual costs, economies of scale exist in RFID system adoption, i.e., large-volume livestock markets have lower costs per head. Most auction markets would have annual costs associated with RFID systems of less than $0.30 per head of cattle sold, with large-volume markets having annual costs that could be less than $0.11 per head of cattle sold.
- Preconditioned and RFID-tagged cattle brought a statistically significant and economically important premium of $2.96 per hundredweight, when compared to cattle that were not preconditioned or RFID tagged at one of three livestock markets where sale data were collected. At the other two sales where sale data were recorded, average premiums paid for RFID-tagged cattle were not statistically different from zero.
- Livestock market managers, on average, expect to charge $3.34 per head for RFID tagging, excluding the cost of the RFID tag.
- Most livestock markets (90 percent) would experience annualized costs of less than $5.00 per head for an RFID tagging service.

Parents' Perceptions of Life Skills Gained by Youth Participating in the 4-H Beef Project

Dr. Steve Jones, Associate Professor

The 4-H beef project is an excellent way to learn about an important industry in Arkansas and the rest of the nation. Raising a beef animal can be a lot of fun and can help a young person undergo personal growth and learn skills that will help him or her become a more responsible person. Kids learn many important life skills through their experiences with animals. Responsibility is the most frequently mentioned life skill gained in an animal project. The development of life skills through experiential learning is the cornerstone of the 4-H program. In Arkansas, the number of 4-H'ers enrolled in 4-H animal projects has continued to grow, despite a decline in the number of farms. What life skills are youth really gaining by participating in the 4-H beef project? Why not ask their parents?

In a recent study at Texas A&M, parents of youth involved in the 4-H beef project were asked why they encouraged their children to be involved. The data that were reported reflect the parents' responses to questions/statements concerning their children's participation in the 4-H beef project.

Parents were asked to determine if participating in the 4-H beef project influenced the development of certain attributes in their children. The top five life skills were "accepting responsibility," followed by "setting goals," "developing self-discipline," "self motivation" and "knowledge of the livestock industry." In addition, 54 percent of the respondents to the beef project survey said the beef project was essential in the development of "accepting responsibility" in their children.

Also, 47.8 percent of these respondents said that participating in the 4-H beef project was essential in teaching the life skill of "setting goals." An additional 38 percent said that participating in the 4-H beef project was essential in their children's "knowledge of the livestock industry."

They also indicated that there is indeed a low to moderate, positive relationship between years of participation and life skill development. This suggests that the longer children actively engage in the project, the more likely they are developing life skills that will, hopefully, make them more productive as adults.

Developing Your Pasture Brain

Dr. John Jennings, Professor

It's no secret that costs of nearly every input for pasture production have increased drastically over the past year. I say nearly every input because the main input that hasn't increased in cost is your pasture management skill. You could call it your "pasture brain." Since it is still an economical input, you should try to use your pasture brain at every opportunity. The more you use it, the stronger it gets. A good way to exercise and develop your pasture brain is to question everything you do with your pastures, even if you are sure you are doing it right. You may find you are right on the money with some practices but either haven't made time to try others or didn't feel comfortable doing something you haven't done before. In this article are some questions that should give your pasture brain a good workout.

Cows need to graze 365 days a year, but do you have grazeable pasture all year? If not, think about what type and amount of forage you have in spring, summer, fall and winter. Inventory your forages. Good forage composition should be about two-thirds cool-season forage and one-third warm-season forage in north Arkansas, and in south Arkansas, a ratio of half and half to two-thirds warm-season and one-third cool-season forages works well. Do you have warm- and cool-season forages to provide grazing during all seasons? Forage is still the cheapest feed for grazing livestock.

Do you have seasons when pastures typically fall short of supplying enough grazing – maybe during summer drought, late fall, even winter? Do you rotationally graze your pastures? Rotational grazing can improve utilization of forage from 35 to 65 percent and improve forage performance. That can be very important in years when you cut back on fertilizer due to high costs. Rotational grazing can extend the growth of forage longer into a drought period than allowing cows to continuously graze. Rotating pastures twice a week can provide 40 percent more grazing days per acre than rotating pastures twice a month. Changing from continuous grazing to rotational grazing can have more impact on extending your grazing season than any other single practice.

Do you use soil tests to guide fertilizer applications? Soil test recommendations include recommendations on when to apply fertilizer for the best forage growth. They are also basically free in Arkansas. In Missouri, the cost is $15 per sample. Can you afford not to use free soil tests? Soil tests show which fields need fertilizer the most and which ones need less. So even if you have a limited fertilizer budget, you know where it will do the most good.

Do you make efforts to control weeds? Rotational grazing can make your cows clean up many grazeable weeds, and judicious use of herbicide can control those not grazed. Annual ryegrass, if well managed, can crowd out many of those spring weeds like buttercup, cheat and little barley while supplying excellent spring pasture.

Do you feed hay more than 60 to 70 days a year? If so, is it because you enjoy feeding hay during cold, wet, muddy weather? Stockpiling bermudagrass or tall fescue to graze in late fall and winter can save about $20 per cow compared to the cost of hay (not counting the cost of feeding the hay) and can shave weeks to months off the hay feeding season. Strip-grazing the stockpiled forage saves about $10 per cow more than uncontrolled continuous grazing and nearly doubles the number of grazing days from the stockpiled forage. Moving a single electric fence polywire takes about 30 minutes twice a week. How long does it take you to feed hay each day?

Do you grow winter annual forages such as wheat or ryegrass? Winter annuals can reduce days of hay feeding in late winter and provide excellent supplemental forage. Arkansas research showed that limit grazing cows two days per week on ¼ acre of winter annual pasture per cow and feeding hay the other days was as good as feeding cows a complete balanced ration. Did I also mention that ryegrass can help control certain weeds and provides spring pasture when bermudagrass is still dormant?

Do you grow legumes? Clover reduces fescue endophyte effect on livestock, reduces nitrogen fertilizer need, adds spring grazing and improves forage quality. Research in Texas showed that arrowleaf clover grown on bermudagrass sod fixed enough nitrogen and produced enough forage to replace over 110 pounds of fertilizer nitrogen per acre. At current prices, that equals $72 per acre. Many legumes require higher soil fertility than most grasses, but some can grow well even at low soil fertility levels. Did I mention that soil tests show the fertility levels of pastures and can serve as a guide to determine where legumes might grow best?

Answering these questions should stimulate your pasture brain. Changing forage management practices will stimulate it even more and will begin to stimulate the neighbor's pasture brain as well. So get up and start exercising!

Age and Source Verification: Implications for Cow-Calf Producers

Brett Barham, Assistant Professor

Arkansas Age and Source Verification program ear tag.

As many foreign markets reopen to U.S. beef, there is increasing demand for Source and Age Verified cattle. These export markets have required that age and source claims be documented and verified through a recognized USDA program. These programs include the USDA Process Verified Program (PVP) or a USDA Quality System Assessment (QSA), two separate programs that will meet the export requirements of all of our trading partners. Once a producer has decided to market his or her animals as source and age verified, the difficult question is which program is the best one to use.

Role of PVP and QSA Programs in Exporting Beef

USDA has established Beef Export Verification (EV) Program requirements for selling beef internationally. These requirements outline the specific requirements for each country, including what products may be exported, processing regulations and stipulations for the cattle producing the beef. In the case of Japan, a specific requirement is that the beef be from cattle of 20 months of age or less. For most other countries (Hong Kong, Mexico, Canada and others), the age requirement is 30 months or less. These EV age regulations must be met through cattle from a USDA Process Verified Program that requires age verification or from a USDA QSA Program that requires age verification. Simply put, beef is not eligible for export to Japan unless it comes from cattle less than 20 months of age and from cattle certified through a PVP or QSA program.

So What Does This Mean to Me – a Cow-Calf Producer?

Age and Source Verification have taken on a new meaning. For calves to be truly Source and Age Verified, they must be enrolled in a PVP or QSA program as previously described. Simply stating "source and age verified" may quickly become equivalent to stating the cattle "have had all their shots." It has been established that a signed affidavit will not substitute for documentation provided through a USDA-approved PVP or QSA.

Arkansas Source and Age Verification Program

Arkansas cattle producers are fortunate that the Arkansas Department of Agriculture has sought and received approval for a state-sponsored source and age verification program. This program is available to all Arkansas cattle producers free of charge. The program is administered through the Arkansas Livestock and Poultry Commission.

The key item in this new era of source and age verification is records and documentation. Here are basic recommendations for records to keep and procedures to perform:

1. Tag all calves with a unique number in your herd at or near birth. Ideally, all cows should also be identified.
2. Keep detailed calving records such as the IRM Red Book or Arkansas Herd Inventory Program Herd Book (AG87; available at your county Extension office). This includes calf ID, dam ID, calving date and sex of calf. At the very least, record the date the first calf was born, the day the last calf was born and the number of calves born each season. Keep records in a safe, readily accessible location.
3. Keep records of all cattle sales.

Records need to be kept for three years after birth of the animal. Producers will need to show the actual records to auditors when requested.

Cattle that are destined for the Arkansas Source and Age Verification program will need to be tagged with an RFID (electronic) ear tag, which can be purchased once you have been accepted into the program.

The Arkansas Source and Age Verification program will entail yearly audits of your records. Here are some questions you might be asked during your audit:

- What is the size of your operation – number of acres and cattle?
- If you purchase animals, how do you keep them separate from calves born on your ranch?
- What is your calving season?
- How many calves do you market each year?
- What processes and procedures do you have in place to verify animal age?
- What records do you keep to verify animal age?
- What records do you keep to verify animal source?
- What records do you keep to verify source of animals sold/shipped each year?
- Will you show me your cattle and how you take an individual calf back to age records?
- How do you train other people in your operation on your methods of identification and record keeping?

Summary

Do you have to enroll your cattle in a QSA or PVP program right now? No, that is up to you as an individual. It will be important to continue to keep up with the situation as programs and opportunities are constantly evolving. Source and age verification is an excellent way to differentiate and add value to your calves at marketing. It does require more recordkeeping and possible extra expenses, but for most producers, the increase in value of the calf outweighs the expense of the program. For more information on source and age verification programs, contact your local county extension office.