GARDINER ANGUS RANCH

The GAR REPORT

May 2002 PROUD TO BE A FOUNDING MEMBER OF U.S. PREMIUM BEEF.

Editor's note:

The Gardiner Angus Ranch Sale Report will headline this issue of the GAR Report. Although you likely will read the same report elsewhere, we want to take a moment to express our thanks. Every customer, past and present is important to us. We sincerely appreciate your confidence in GAR genetics.

We have reprinted a heat detection article written by Henry Gardiner almost 20 years ago. We think it's even more important today than it was 20 years ago. Our friend and colleague, Dr. Bill Beal, Virginia Tech, has contributed a timed insemination and ultrasound article we feel is very pertinent for success in any breeding program.

Other items of interest found in this issue is the discussion of economy of scale as it relates to the seedstock business. We have reprinted with permission from Troy Marshall's Seedstock Digest, April 22, 2002.

We appreciate the enthusiastic responses we continue to receive from our readership and encourage questions.

Three years, 12,000 head sold using GAR delivery rights = $720,880 total premiums paid! Avg. $60.07 per hd. on these GAR influenced cattle sold through U.S. Premium Beef®

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If you have industry related questions or specific issues that may be addressed in the GAR Report, please submit to:

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April 6, 2002 — A Historic Day At Gardiner Ranch

Joe Davis, Davis On The Highlands, KY, and Autrey DeBusk, VA, purchased Lot 34, one of the top selling bulls in the sale for $15,000.

Chris Earl, Mgr., Sunny Valley Farm teamed with Oak Tree Angus, Yorkville, IL, to purchase GAR Preciaion 939 for $100,000. Dr. Gary Minisch, Blacksburg, VA, serves as a consultant.

The registered seedstock industry frequently is criticized for producing and marketing genetics with little or no long-term consumer value. Yet as marketing environments that reward measurable quality evolve, beef producers with an eye on the end product survive and flourish.

On April 6, 274 buyers from 29 states and Mexico made purchases from the largest sale offering ever at Gardiner Angus Ranch. At the end of the day 950 total head, including 99 calves at side of dams, grossed $3,273,500 for an average of $3,445.

Almost 100 head of bulls were added to the sale offering this year for a total of 370 bulls being offered. Three bulls tied for high-selling honors at $15,000. Lots 34, 93 and 340, sold to Davis On The Highlands/DeRoyal Angus, KY, Genex, WI, and Todd Trask, SD, respectively. Lot 34, a Precision son, Lot 93, a SAF Focus son, and Lot 340, sired by B/R New Design 036, were the favorites of many cattlemen with carcass numbers ranking them in the top 1% & 2% of the breed. Charlie Goad, WI, and Larry Hood, AL, took home Lots 35 and 341, respectively. These two lots were full brothers to Lots 34 and 340. Lot 5, the first Pinnacle son to sell, was purchased by Clyde Moore, NC, for $10,000. Lot 19, another Precision son that is a full brother in blood to GAR Yield Grade, sold to Leroy Born, TX for $10,000. Lot 400, the last bull to sell of the day, was also the highest scanning son of Focus for %IMF and REA and out of Kahn's GAR 706 cow, sold to Michael Price, VA for $10,000. Three Precision sons, Lots 15, 74 and 298, all sold at $8,500 to Rick Hubbell, NM, Roscoe Harvell, AL and Tehama Angus, CA, respectively. Five bulls sold to 5 buyers in 3 states for $7,500, selling to long time customers and friend, Donnell & Kelli Brown, Carl Sadler, both top Texas firms, as well as Lee Hereford, VA and fellow Kansas cattleman, Melvin Schooler. Roscoe Harvell rounded out his purchases with Lot 73 for $7,500.

The female portion of the sale was the strongest ever at Gardiner Angus. Topping the sale was Lot 401, GAR Precision 939, a Precision daughter out of GAR EXT 614 sold to Sunny Valley Farm and Oak Tree Angus, Yorkville, IL, for $100,000. 614 has posted one of the best ultrasound records of any cow in the Angus breed. Her siblings and their successes currently read like a "who's who" in the Angus breed and the Sunny Valley-Oak Tree partnership intend to make 939 a premier brood matron in their herds. Autry DeBusk, Ewing, VA, purchased Lots 403 and 402 for $45,000 and $22,000 respectively. The pair are full sisters to Lot 401. Sunny Valley had the winning bid on Lot 421, the top selling cow/calf pair at $22,000. Gray Farms, OH, purchased the 2nd high selling pair, Lot 425 at $11,500, a RR Scotchcap 9440 daughter out of the noted GAR Precision 303 cow. Three Trees Ranch, GA, purchased Lot 411, another

(An Historic Day continued from page 1)

Long time customer and friend, Donnell Brown, RA Brown Ranch, Throckmorton, TX purchased Lot 2 for $7,500.

of the 2001 donor, for $17,000. Sired by VDAR Lucys Boy out of a Precision dam, 2118, is the first daughter to sell at GAR out of the great 706. Three Trees also had the winning bid for the top selling bred heifer, Lot 631 at $14,000, again a 706 daughter with years of productivity ahead. Long-time friend and partner, Don Meador, Dreamcatcher Ranch, TX, purchased the top selling spring ET heifer taking home Lot 728, a Precision daughter out of an EXT dam, for $15,000. Maplecrest Farms & RB Cogburn, OH, teamed up to purchase Lot 578, an impressive Pinnacle daughter that sold bred to GAR Evas Exceptional for $10,500.

Clyde Moore, NC, had the winning pen on the top selling pen of bred commercial heifers at $2,750 each for 8 head.

Again this year, GAR offered 5 young quarter horses. Leon Heron, TN, had the winning bid for the top 2 fillies at $2,750 and $2,000 respectively.

VOLUME BUYERS:

Females: The Luling Foundation, TX, 34 head registered females; Leroy Hill, AL, 54 head commercial heifers; John Kimzey, TX, 21 head of commercial heifers; Clyde Moore, NC, 16 head commercial heifers; Daryl Sales, KS, 11 head of registered females, as did Tony Alt, IN and Alvis Miller, TN at 11 head; Cliff Keller, AL, 10 head registered females.

Bulls: Leroy Hill, AL, 26 bulls; Alico, Inc., LaBelle, FL, 20 bulls; Sam Hands, KS, 18 bulls; Lonnie Horwood, 15 bulls; Chris Scharbauer, TX, 11 bulls; John Thatcher, CO, 10 bulls; Bravo Cattle Co., TX, 8 bulls.

SALE SUMMARY

370	Bulls Totalled	$1,524,500	Avg.	$4,120
378	Females	1,539,000	Avg.	4,071
99	Com. Fem.	200,900	Avg.	2,029
5	Reg. Qtr. Horses	9,100	Avg.	1,820
950	Total Head (including 99 calves at side of dams)	3,273,500	Avg.	$3,445

ADDITIONAL NOTES OF INTEREST:

(1) The first 170 bulls to sell averaged $5,036
(2) The descendants of GAR Precision 1680 grossed $948,000
(3) The sale was completed in 7 hours
(4) Breakdown of top states for buyers include: TX (53); KS (52); OK (27); MO (22), CO (15); KY (11) and OH (11)

Management of Artificial Insemination Based on Twenty-One Heat Detection Signs

— By Henry Gardiner, 1983

Artificial insemination (AI) is probably one of the best tools available today for the cowherd owner, either commercial or purebred, who wants to improve his cowherd and increase his net profits. In the last several years, we have seen the development of AI technology so that almost any herd can use AI. These improvements include portable corral systems, portable nitrogen jugs, and heat synchronization. On the basis of sire evaluation data that are now available for most breeds, much of the "unknown" can be removed in making genetic improvements by using progeny-tested AI sires that have known values. AI techniques make it possible to use the best bulls of the breed, no matter what size herd you own. Purebred breeders cannot be competitive if they do not use AI, and commercial breeders can be much more profitable if they have a well-managed AI breeding program.

Good heat detection is a must in any AI program. Many people use a detector animal as an aid in heat detection, but these animals are really unnecessary. A detector or "gomer" bull will cost about $600, plus another $100 for feed and vet bills. In our last breeding season, we bred 500 head of females using AI. We probably would have needed at least 10 gomer bulls, if we had to use them. That is $47,000 worth, which is quite a bit of money to spend unnecessarily. (Even $700 is too much to spend, if it is not necessary.) But even with a detector animal, complete visual observation is important.

We have been using AI as the only method to breed our replacement heifers since 1964. They are never put with a clean-up bull. If they don't settle in 50 days, they are sold. AI settles over 95% of our 200 registered cows. The only method of heat detection that we have ever used is visual observation. We use a total of about 21 different signs or combinations of signs to indicate that a female is in some stage of estrus.

Upon reviewing our own AI breeding records of our replacement heifers for the last 9 years, I have determined that we are detecting estrus in about 98% of the heifers during the first heat period of our AI breeding season. The records on 1518 heifers show that there were 36 heifers that were not observed to be in heat through three heat cycles. Of these 36 heifers, 14 were examined and found to be pregnant; the other 22 were apparently not cycling for one reason or another. The remaining 1482 heifers were inseminated during the 50-day breeding season, and 1449 heifers were bred during the first heat cycle. This left 33 head (or a little over 2% of the heifers that we were breeding) that were neither detected in heat nor bred during the first heat cycle. Thus, of the 1518 heifers bred over a 9 year period, about 1% were pregnant at the start of the breeding season; 1.5% did not cycle during the 50 day breeding season; and about 2% were probably cycling but were not detected during the first cycle.

In the 9 years covered by our records, the lowest percentage of heifers detected in heat was 95% and the highest was 100%. It is also possible that some of the 2% that were detected in heat on the second and third cycle were not cycling on the first cycle, so our heat detection percentage could be a little higher than I am figuring it.

I have heard it said that a person who is a good "heat detector" could tell if a cow is in heat by the look in her eye. This is not one of the signs we use, but it is not too much of an exaggeration. To develop good heat detection techniques, you should develop a system of checking that disturbs the herd as little as possible. For example, an expert heat detector would not go into the herd with a load of feed, and you should not be in the truck that does the feeding. A routine should be developed that allows you see the entire herd without upsetting or disturbing the animals. (This is not the time to bring your favorite blue heeler along for some exercise.) Your cows should not be terribly hungry as you start your checking. The cowherd should be located in a relatively small area not far from the breeding chute. Of course, all cows should have some kind of easily read individual identification, such as a numbered ear tag, a brand, or both.

As I mentioned earlier, we have about 21 different signs that we look for as we check through a herd. Some signs indicate that a cow is just starting to come into heat, some will tell you that she is presently in heat, and some will tell you that that cow was in heat a few hours ago and is now ready to be inseminated. No one cow will show all 21 of these signs at one time. Observation of just one of these signs will alert the detector that he has a candidate to be bred or at least watched more closely over the next few hours.

LIST OF 21 HEAT DETECTION SIGNS

Early Signs before the Cow is in Standing Heat

1. A small string of mucus is sometimes seen dripping out of a cow that is usually lying down. If the cow has not been seen in heat earlier, and shows no other sign of having been in heat, she will probably be in heat in a day or two. This type of early mucus is not too common and should not be confused with the

more copious mucus seen when a cow is in heat. Check this cow closely the next 2 days.

A heifer bawling repeatedly when her herd mates are quiet is one of the first signs that she is coming in heat. This heifer's number should be written down, and she should be checked closely. If she is sorted out to be bred 12 hours later, based only on this sign, she may be bred a little too early. This s a pretty sure sign that this heifer is coming into heat. This sign is observed quite often among heifers but not very often among cows.

The female that is coming into heat is more alert and observant. She is looking around watching for other cows or heifers to show signs of heat.

The female that is coming into heat walks in a rapid, business-like way. Where other cows will saunter along, she will step right out like she has things to do and places to go.

A female standing, when all of her herd mates are lying down, is a "prospect" to watch more closely.

Signs to Look for in a Female During Standing Heat

Sniffing much like a bull does as he checks cows. She will attempt to ride other cows not in heat.

The most obvious sign of all is when the cow stands still when other cows mount her. If there are several cows in heat in the herd at one time, they will usually be together if they are in the same stage of heat. If there are a large number of cows in heat in the herd, there will probably be more than one cluster of cows riding each other. Heat detection is quite a bit more difficult when only one female is in heat. A detector animal would be of help at this time. If there is only one cow in heat, her herd mates will accommodate her by occasionally riding her, but the activity is not as vigorous or continuous as when you have two or more in at the same time.

When a cow rides other cows in heat, it is one of the signs she is in heat. How do you tell if the cow doing the riding is in heat or not? This can usually by determined by watching their activity for a few minutes. If you do not see other signs of heat in the cow doing the riding, she is probably not in heat. If in doubt about the status of the individual, sort her out into the open with the other cows in heat. If she is in some stage of heat she will stay close to them; if she is not in heat she will not show a continuous interest in them. If she has been in heat a few hours earlier, she will usually show other signs of this heat. If you are still in doubt whether she has been in heat or not, the inseminator can put her in the breeding chute and insert a breeding tube into her. A female that has been in heat will have a vagina that is a little more lubricated and a more dilated cervix. Quite often a cow that has just been in heat will expel a string of mucus as the breeding tube is inserted. Any inseminator with very much experience should be able to tell if the cow has been in heat or not.

Occasionally, a heat detector will encounter an oversexed female that will be with the in heat group for two days or three days. This is usually a cow that has been in heat just prior to this time. Closer checking will assure that she is not back in heat, and in a day or two she will stop showing any interest in the in-heat group. You will also encounter the short-cycle cow that will come back in heat in a week or 10 days after she was seen in heat. These cows may have a cystic ovary. Check with your vet. He may suggest a shot of gonadotropin-releasing hormone (GnRH).

The cow standing in heat gives a lot of signs. She will place her head on the back or rump of another cow. She may throw her head as if to mount. When she mounts another cow, a copious string of mucus will often be expelled. While she is on top of another cow, she will give vigorous pelvic thrusts and work her tailed and rump much as a bull does as he breeds a cow.

Mucus on the side of the tail or rump indicates the cow is in heat.

We usually sort the cows or heifers in heat into a separate pen to hold them until time to breed them. If this pen is adjacent to where the other animals are kept, cows that are coming into heat will come up to this fence and watch very intently as the cows inside the pen ride each other. They will walk back and forth along the fence trying to get inside.

If you took an aerial photograph of a group of cows, the ones in heat could be determined by the fact that they would be standing much closer together. Under normal conditions, a cow will not stand very close to another cow unless she is in heat. If they are touching each other or are only a few inches away from each other, they are probably in heat.

When four to five month old bull calves start to chase cow in heat. They are a little too aggressive in heat detection. They quite often will start chasing a cow that is already bred. I have inseminated these cows and then had them calve to earlier breeding dates. Last year when visiting Rio Vista embryo transplant facilities, they said that the recipient cows were heat checked after the embryo was put into the cow. Those cows that came back into heat were noted but not rebred. They found that 10% of the cows that they had detected as in heat were actually pregnant. Passing an inseminating tube through the cervix could cause an abortion, but I have done this by mistake and had the cow go ahead and calve to and earlier breeding date.

Signs that a Cow had Just Gone Out of Heat

We breed our cows in December and January. This gives us only about nine to ten hours of daylight and 14 to 15 hours of darkness each day. Because some heat cycles last only 12 hours, some cows will be in heat and back out without ever having been seen in heat. Quite a few of the females that we breed and settle are not actually observed in heat, but it is rather easy to tell that they have been in heat during the night.

A matted hair coat is the main indicator that a cow has been in heat the night before. This indicator will vary from one night to another and from one cow to another, but it is almost always present to a certain degree unless it has rained or snowed. This, of course, is caused by the hair coat getting damp or wet while the female is being ridden vigorously. As this dampness dries, strands of hair are matted together. The hair is almost always matted over the top of the shoulders, which is probably caused by the nose of the cow being placed repeatedly in this area as she rides the cow in heat. This portion of the body should always be checked for this sign. Other cows will exhibit this very sweaty or matted hair all over their bodies. If it is below freezing during the night, these cows will appear to be the most "frosty". But if it has rained or snowed during the night, all of these signs will have been erased.

The hair on the tail and rump will be slightly matted where mucus has dried.

There may be mud on the hips or hair rubbed off where other cows have ridden.

If the animal is branded up high on the hip, the brand will be red. We brand all of our replacement heifers with a hot iron brand up on the top of the hip. Each heifer has an individual herd number branded on her 6 weeks before the breeding season. By the time we are heat detecting, the scab on this brand is started to peel. When a heifer is ridden repeatedly, the brand will turn bright red as all or part of the scab is knocked of. This will stay red for a few hours and then darken and scab over again. Using the status of the brand as a heat indicator works best with fresh brands, but it sometimes is an aid on older cows as well.

If most of the herd is standing but one or two are lying down; these should be checked. They may be very tired from riding each other all night.

As mentioned earlier, mucus will often be expelled when the breeding tube is inserted into a female that has recently been in heat.

If you are not sure if a cow has been in heat, have the inseminator pass a breeding tube into her. The vagina of a cow recently in heat will be slicker and the cervix more dilated than a cow that has not been in heat within the last few hours.

As you check cows, if you see a string of blood on a cow's tail or rump, you can be pretty sure that cow was in heat two days or three days earlier. I used to think this was a type of menstruation and that, if the cow had not been bred, this was a sign that she did not conceive. This is not true; it is an indication that she was in heat two or three days earlier. It will occur whether she settles or not.

This is a rather lengthy discussion about signs to look for in heat detection. You may get the idea that we spend a great deal of time checking heat. I have heard other breeders comment that their heat detectors spent two hours with their cows in the morning and two

hours more in the afternoon. If all they were doing was checking heat in one group of cows, I think they were wasting a lot of time. Fifteen to twenty minutes should be long enough for the initial heat check. This time should be spent just moving through the group of cows as quietly as possible, making sure that you see each cow individually and writing down the number of the cows that you need to get into the breeding pen.

We usually have our cows in a group of at least 100 (up to 250) in a bunch. It is probably as easy or easier to detect heat in this size group as in smaller groups because groups of this size will rarely have only one cow in heat at a time. As I have indicated, those cows that come in heat by themselves are more difficult to detect. Since we are breeding in the winter, we are also feeding. This type of arrangement words into an AI program very nicely. Moving the hay truck to the edge of the pasture helps to bunch the pen. We used to use horses, but using the feed wagon and walking them in is much quieter and safer. The footing at this time is often frozen or wet, thus dangerous to ride a horse on.

After all the cows to be bred have been brought in, the hay is fed to the cows. This is an ideal time to walk by all cows and check each one carefully. You may think you have seen them all pretty well, but you will find several more cows that have the signs that tell you that they need to be bred. You had not looked at them carefully enough up to this time.

If your cows are not synchronized, you should average about five percent of each group in heat each day. If you are not getting about that many bred each day, your management alarm bells should start ringing. Among the first questions that you should ask are:

- Are my cows getting enough to eat?
- Are they in good enough condition to cycle?

These questions should really be asked 60 days before the breeding season started. You may think you cannot afford to feed your cows more, but actually you cannot afford not to feed them well to assist them to become pregnant. If you cannot feed them enough to cycle, then you should get out of the cow business because whether you breed with bulls or AI, you are not going to get enough cows bred to stay in business. To be successful, you must get them bred quickly. A 60-day or less calving season makes many of your other management jobs much easier. A short calving season can probably add more pounds to your calf crop than the best bull in the country. But a well-managed AI program can give you a short calving season and also let you use the best bull in the country.

We have used prostaglandin to help synchronize part of our cowherd. We artificially inseminate, as we detect cows in heat, for five days before we inject the remaining cows with LutaLyse (a commercial prostaglandin preparation). Some breeders use LutaLyse to bypass heat detection; breeding is done 80 hours after these shots are given. This method would have not worked very well for us, as shown in table 1. We use synchronization to get more cows bred sooner, not to avoid heat detection. We are pleased with our results.

Table 1 – This table shows the number of cows artificially inseminated each day in a group of 288 cows that were given a LutaLyse shot on the fifth day. All cows were observed in heat before they were inseminated.

Day in heat cycle	1st cycle	2nd cycle	3rd cycle	4th cycle
1	14	7	4	2
2	11	6	3	0
3	6	7	5	3
4	11	11	4	3
5 (shot c)	22	7	5	2
6	11	10	4	2
7	6	12	7	1
8	115	24	10	4
9	40	6	3	
10	12	10	6	
11	10	10	5	
12	0	2	0	
13	1	5	2	
14	0	3	2	
15	4	0	1	
16	2	1	1	
17	2	2	1	
18	0	3	1	
19	5	2	1	
20	3	2	0	
21	1	2	0	
No. Inseminated	277	132	65	17
% Of herd	96%	44%	22%	6%

In this table 100 head of the 288 cows were 2 year olds nursing their first calf. All but nine of the 2 year olds were bred in the first 21 days. There were 277 head out of the 288 cows that were bred the first cycle or 96% that were inseminated the first cycle.

Twelve late-calving cows were added to this herd at the beginning of the second cycle. Thus, from that time on the group in table 1 had 300 cows.

On the fifth day of the first cycle, the 224 cows that had not already been bred were given a shot of LutaLyse.

Table 1 shows that we started with 288 cows, 100 of which were 2 year olds nursing their first calf, and the rest were older cows. We heat detected for five days and bred 64 of those older cows. We then gave the remaining 224 cows a LutaLyse shot and continued to breed as we observed the cows in heat. In the two days after the shot, we bred a total of 17 cows. On the third day, we had 115 cows in heat; we settled 73 cows that day (63% of those bred). In the next three days we bred a total of 63 cows. Thus 80 cows out of the 195, or 41% of those bred, were bred at times different from the 80 hour "standard". I do not think we would have had a very good conception rate, if we had bred all 224 cows at 80 hours. In our first 21 days breeding in this group, the conception rate was 60%. The percentage was lowered due to poor semen from one bull to which we bred 39 head and settled on 41%. A better collection from this bull was used on the second and third cycles, and we settled the second cycle at 74% rate and third cycle at 71%.

IN SUMMARY THE 21 SIGNS THAT AID IN HEAT DETECTION ARE:

Early Signs Before the Female is in Standing Heat:

- A small string of mucus dripping out of a reclining cow a day or two before she is in heat.
- Bawling when all other herd mates are quiet.
- The cow is more alert and observant.
- She walks in a rapid, business-like way.
- If she is standing when all other herd mates are lying down.

Signs to Look for in a Female in Standing Heat

- A cow may walk through her herd mates sniffing as a bull might do as he checks cows.
- She will attempt to ride other cows not in heat.
- The best sign is when the cow stands still when other cows mount her.
- She will place her head on the back or rump of another cow, and when she rides another cow copious strings of mucus will often be expelled.
- This mucus can often be seen on the side of the tail or rump.
- She will attempt to get with other cows in heat.
- Cows in heat will group together and stand closer to each other than they normally will stand.
- Several bull calves following one cow and attempting to ride her.

Signs that a Cow has Just Gone Out of Heat

- Wet or matted hair especially over the top of the shoulder.
- The hair on the tail or rump may be slightly matted where mucus has dried.
- There may be mud on the hips or hair rubbed off the hips where other cows have ridden.
- If there is a fresh brand on the hip, it will be bright red for a few hours.
- A cow that has been riding all night while in heat may be tired by morning and be one of the few cows that will be lying down.
- If the cow has been in heat, mucus will often be expelled when a breeding tube is inserted.
- A slick vagina when the breeding tube is inserted can be an indicator.
- A string of blood on the side of the tail or rump is an indicator that the cow was in heat 2 or 3 days earlier. If you did not detect her, you missed her.

Timed insemination programs for cattle — Why couldn't we do this 10 years ago?

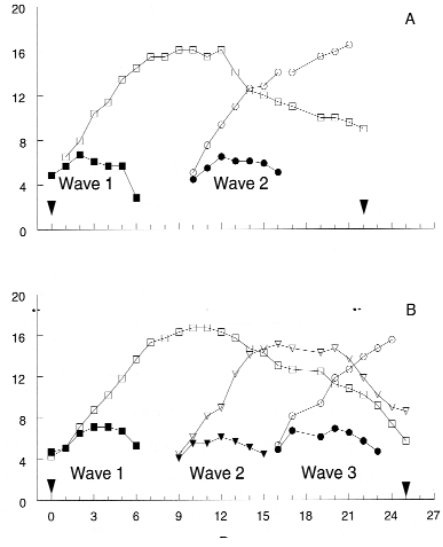
By W.E. Beal, Department of Animal and Poultry Sciences, Virginia Tech)

The evolution of estrous synchronization programs has been a continuous process for the past 50 years. Within that continuous process there have been flurries of activity centered around the availability of new pharmaceutical products or new research methods, like ultrasonography. In the last 15 years the use of ultrasound has enabled us to understand the wave-like development of follicles that occurs during the estrous cycle. At the same time we have learned to control or synchronize those "follicular waves" through the use of gonadotropin-releasing hormone (GnRH). The ability to synchronize follicular development in a group of cows prior to using prostaglandin (Lutalyse", Estumate" or Prostamate") to synchronize estrus is the key to the elimination of heat detection and a successful timed insemination program.

FOLLICULAR WAVES

Development of follicles during the bovine estrous cycle occurs in waves of growth during which several follicles begin growing until a single, dominant follicle (DF) becomes larger than subordinate follicles (Figure 1). The dominant follicle inhibits growth of other follicles. Over time the DF loses the ability to inhibit other follicles and a new follicular wave is initiated. However if the corpus luteum has regressed (end of cycle), then the DF matures and ovulates. Estrous cycles of most cows consist of two or three waves of follicular development with the last wave giving rise to the ovulatory follicle.

Figure 1. Schematic diagram of waves of follicular growth during the bovine estrous cycle (A, 2-wave cycle; B, 3-wave cycle; arrows indicate time of ovulation). Lines with open symbols represent the dominant follicle and lines with solid symbols represent one of the many subordinate follicles.



GONADOTROPIN-RELEASING HORMONE

GnRH is a naturally-occurring hormone that causes the release of luteinizing hormone (LH). GnRH is sold as a pharmaceutical product under the tradenames: Cystorelin, Fertagyl or Factrel.

The injection of GnRH and the LH surge that follows causes the dominant follicle to ovulate and form a luteal structure (like the CL). If GnRH is administered during the cycle, the DF is not mature and breeding would be unsuccessful, but a new follicular wave is initiated. If the CL has been regressed by administering prostaglandin, the injection of GnRH will cause a timed ovulation that is fertile.

Given the different responses of follicles to GnRH, the drug can be used as a tool for estrous cycle control in either of two ways:

If a CL is present: GnRH induces a new wave of follicles

If a CL is not present: GnRH will induce ovulation 27 hours later

Controlling the time of emergence of a new follicular wave and synchronizing the follicular wave status of animals within a group is the newest technique used to improve the synchrony of estrus and precise timing of ovulation. Treatment of all animals at the beginning of an estrus synchronization treatment induces the synchronous emergence of a new DF such that at the end of the treatment (usually 7-9 days later) all animals in the group have a DF at the same stage of development. When the CL is regressed, by prostaglandin administration, the synchrony of estrus is remarkably "tight" and the option of inducing a timed ovulation is more realistic because all animals in the group have a large follicle at the same stage of development.

The most popular estrus synchronization/ovulation control treatment that combines the use of GnRH and prostaglandin is called "Ovsynch."

Ovsynch incorporates one GnRH injection 7 days prior to prostaglandin (synchronization of follicular development) with a second GnRH injection (ovulation control) 48 hours after prostaglandin-induced regression of the CL. The system is expensive and labor intensive (3 to 4 time handling), but it eliminates the need for heat detection. All animals are bred at 8-18 hours after the second GnRH injection. The system will induce estrus and ovulation in some non-cycling cows. Pregnancy rates for dairy cows usually range from 25 to 45% following Ovsynch treatment.

Ultrasound: A tool for improving reproductive management of cattle

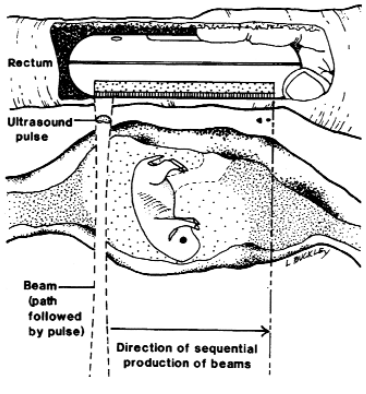
By W.E. Beal, Department of Animal and Poultry Sciences, Virginia Tech)

The use of an ultrasound machine allows the ultrasound technician to literally "climb inside the cow" to look at ovaries or the uterus. It goes beyond what is possible with traditional rectal palpation and improves the ability to determine the reproductive status of a cow. The following are the principal areas in which ultrasound use is improving reproductive evaluations.

Examination of the ovaries and uterus: "Looking" at the ovaries of a cow or heifer with ultrasound can improve upon the age-old technique of rectal palpation by hand. Palpating ovaries through the rectum of a cow is sort of like feeling the faces of Presidents forged on coins in your pocket. Conversely, if you take the coin out and look at it - you can tell if it is Washington, Jefferson or Lincoln. Using ultrasound to image ovaries makes it similarly easy to distinguish normal structures on an ovary, like a follicle or corpus luteum (CL). The ultrasound also facilitates the diagnosis of abnormal ovarian structures, such as luteal or follicular cysts which may be keeping a cow from having normal estrous cycles. In this way ultrasound use by technicians doing reproductive herd checks or just checking "problem cows" can improve their ability to correctly assess the reproductive status of the cow.

The ultrasound allows embryos to be detected earlier (20 to 25 days) than by palpation. Furthermore, the heartbeat of an embryo can be visualized to insure the embryo is alive. Pregnancy detection with ultrasound has advantages over rectal palpation from day 20 to 80, however, after that time many of the advantages of ultrasound diminish.

Fetal sex determination: One of the most talked about uses of ultrasound technology is for determining the sex of a fetus at 55 to 85 days of pregnancy. In the hands of a skilled technician ultrasound is greater than 99% accurate in determining sex of a fetus. Most often this information is used to merchandise purebred cows or heifers. A cow known to be pregnant carrying another heifer would be a great deal for a buyer looking to build a herd. Another potential use of fetal sex determination is in making culling decisions. If a cow that might be culled is carrying a heifer calf, culling could be delayed until that calf could be delivered. In either situation knowing more about the cow's pregnancy status allows the producer to make better decisions about that cow.



Studying a lesson of the cattle feeding industry

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Everyone is aware of the shift of the cattle feeding industry away from the Midwest and into the Central Plains (NE, KS, OK, CO, and TX), and the list of reasons that explain why this change occurred (Packing plants, environmental concerns, etc.). However, it is rarely mentioned that the advantages created by size and scale were not as much about improving efficiencies of production as they were about altering the size of operation that was viable as a stand alone entity. Certainly, the larger feedyards were able to put in steam flakers, maximize use of labor and equipment, and gather marketing might, etc., but more importantly they created a business model that was willing to accept lower returns based on increased volume. The Midwest has advantages in terms of feed costs, and because of synergies created between cattle feeding and other Ag enterprises many Midwest farmer feeders can still feed cattle quite cost effectively with other regions of the country. However, many farmer feeders elected to end their cattle feeding enterprises because they were not willing to accept similar rates of return that the larger entities were willing to accept. It was not possible to consistently make $50-$100 per head feeding cattle and the smaller returns were not deemed to be worth the time and effort. The large feeding complexes were based around business models that had $20/head profits as their goal. Seedstock producers and cow/calf producers can find themselves in a similar situation quite easily, partially because they have such a large fixed cost asset base the economic realities of size and scale can be even more pronounced. The seedstock industry has historically been built around the concept of high margins on few numbers. There are many seedstock producers who will go out of business selling $1,500 bulls not because they cannot produce a $1500 bull for $1,400 but rather because a $100 profit on 40 bulls doesn't equate to a very good standard of living. These producers must average $2,500 or more to justify the time and investment, and as a result are in a very precarious financial position from year to year. Up to this point, the seedstock industry is experiencing consolidation as big producers get bigger, but in large part this is being done to gain efficiency or increase the prices they receive. As the market becomes more and more saturated, there is an inevitable downward trend in prices. If there is someone who is willing to accept $200/head profit then everyone will have to adjust to those new dynamics in time. As a result, those operations who offer more volume will assume less risk than smaller operations and as a result will be able to continue to leverage economies of scale in marketing, and production. This will increase the risk of smaller operations, who will be faced with having to maintain higher margins in an increasingly competitive environment. Every operation must include in their strategic planning a consideration of size that they need to be to be economically viable in the present and in the future. Each operation must ask itself will it be able to maintain the margins they are currently experiencing or will they be forced lower? If one cannot be confident of maintaining margins, than they must decide to expand or change their operation. For many producers this will mean joining (becoming a cooperator) with larger operations and eliminating the marketing and capital requirements of developing the product past weaning. For others who do not rely on their cattle to make a living, or who enjoy the lifestyle enough to accept substandard rates of returns. Size and volume must now be an important part of every business plan in the seedstock industry. Small operations can still be extremely viable but they must be centered on programs designed to provide a higher margin product line.

The four keys to success in the cattle business. (Taken from a conversation with a successful producer who wishes to remain anonymous). The first key is perhaps the most difficult, find the capital to get started and the money needed to ensure that the operation can survive the first difficult years. Find out where your expertise lies and utilize it, money follows passion. Secondly, determine the proper location or environment for your operation. Location often dictates direction. Thirdly, seek out and listen to the experts in your field those who are the most successful never stop learning. As you grow hire the best people available. The cattle business has only three significant assets, cattle, people and land, you must take care of all three. Lastly, get out of the way of your ego! Listen to your customers, take the input of your partners, and give your employees the freedom to achieve and recognition when they do. In a competitive environment, you have to be a sponge for new ideas and a student of both your competitors, associates, and customers. Every successful operation is built around a vision that is created by and believed by everyone who is involved with it and comes in contact with it. There is no shortage of work ethic in agriculture but there is a shortage of people working smart. There will be a portion of your responsibilities that someone else can do more effectively than you can. The key is not the amount of effort you expend but placing your efforts where they create the most impact.

Editor's Note: We would like to compliment Troy Marshall, Editor & Publisher, Seedstock Digest, on the quality and content of his weekly e-mail newsletter. For those interested, you can receive The Seedstock Digest weekly through subscription only.

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