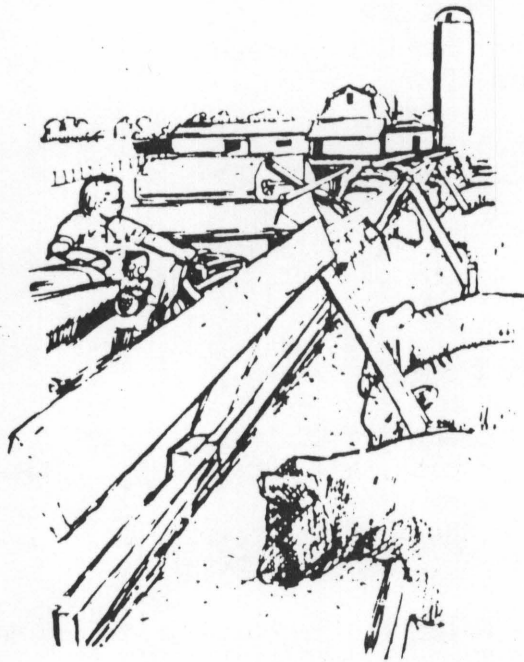


# PROCEEDINGS

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## BEEF HERDSMAN'S SHORT COURSE



WITH EMPHASIS ON

*Selection, Development, Care  
and Merchandising of Breeding Cattle*

March 20-21, 1979

Continuing Education Center  
VPI&SU Campus, Blacksburg, Va.

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## A 12 MONTH HERD MANAGEMENT CALENDAR

by

A. L. Eller, Jr., Extension Specialist, Animal Science

A program of precise herd management is essential for maximizing production and profit with a beef cow herd. If essential management tasks are to be done on schedule, a yearly calendar of work should be set up and followed. Such a calendar should include critical management practices and dates tailored to the individual farm and herd. The points are discussed briefly and suggested dates are given on the next two pages. Use these pages as a work sheet to plan a year-round management program for your herd. Then put tasks to be accomplished on your yearly herd calendar of work.

CALVING - A definite, short calving season is the crux of a tight management system and should be 80 days for cows and 60 days for first-calf heifers. Heifers should start calving 3-4 weeks before mature cows so they can be given the time they need to breed back and be on schedule. No one calving season suits all farms but it appears that the range in calving season in Virginia should be from October 15 to April 30. Your calving season should match pasture and forage programs for maximum profit. FALL (October 15 to January 5), WINTER (December 15 to March 5) and SPRING (February 1 to April 20) seasons are included. Pick a calving season or seasons that best suit. Prior to calving, move heifers and cows into calving quarters where they can be watched. Sort out "heavy" cows weekly. After calving, separate cows with calves from pregnant cows and increase the amount of feed. Ear tag calves and record number, dam, sex, and birth date. Dip navel cords with iodine and watch for scours. Save those babies!

SELECTION - 80-90% of all genetic improvement must come through herd sires. Be selective. Select bulls with superior performance records. Search for new bulls constantly and buy and bring in new bulls well in advance of the breeding season. Select replacement heifers at weaning. Keep about 40% of heifer calves or a heifer calf for every 5 cows in the herd.

BREEDING - You control the length of the calving season by the length of the breeding season. Breed virgin heifers 3-4 weeks ahead of the cow herd. Breed heifers 60 days, cows 80 days. Fertility-test old bulls well ahead of breeding time. Separate cows with first calves from older cows and feed both groups well. Provide ample bull power. Take bulls out on time and pregnancy-check.

FEEDING - Have samples of forage tested through the Virginia Tech lab and use results in planning feed supplies and balancing rations. Take silage samples when filling silos and hay samples when filling barns. Use forage tests! Utilize crop residues early and completely. Start winter feeding before cows begin to lose condition. Maintain condition before calving (cows should gain 1#/day the last 2 to 3 months). Increase feed after calving. Balance rations. Creep feeding early calves until grass may be more efficient than feeding the cow heavier. Only creep calves in summer when necessary. Make maximum use of stockpiled fescue and other pasture. Keep salt and minerals available.

# BEEF COW - CALF MANAGEMENT GUIDE

THREE CALVING SEASONS ARE CONSIDERED HERE. THESE THREE SEASONS FIT MOST COMMERCIAL AND PUREBRED HERDS IN VIRGINIA. PICK THE CALVING SEASON WHICH IS BEST FOR MAXIMUM UTILIZATION OF YOUR FARM AND MANAGEMENT RESOURCES. USE THE WORK COLUMN AT THE RIGHT TO SELECT CRITICAL MANAGEMENT DATES FOR YOUR HERD. THEN PUT THESE DATES ON YOUR CALENDAR.

CALVING SEASONS - COWS - 80 DAYS - HEIFERS - 60 DAYS WORK COLUMN FOR YOUR HERD

MANAGEMENT TASKS	FALL OCT. 15 TO JAN. 5	WINTER DEC. 15 TO MAR. 5	SPRING FEB. 1 TO APR. 20	WORK COLUMN FOR YOUR HERD
<b>CALVING:</b>				
MOVE HEIFERS INTO CALVING PASTURE	SEPT. 1	NOV. 1	DEC. 15	
BEGIN CALVING HEIFERS	SEPT. 15	NOV. 15	JAN. 1	
MOVE COWS INTO CALVING PASTURE	OCT. 1	DEC. 1	JAN. 15	
SORT HEAVY COWS WEEKLY	OCT. 1 & WEEKLY	DEC. 1 & WEEKLY	JAN. 15 & WEEKLY	
BEGIN CALVING COWS	OCT. 15	DEC. 15	FEB. 1	
EARTAG AND RECORD CALVES	AS BORN	AS BORN	AS BORN	
TAKE BIRTH WEIGHTS (PUREBREDS)	AS BORN	AS BORN	AS BORN	
WATCH FOR CALF SCOURS	-----CONTINUOUS UNTIL SPRING GRASS-----			
<b>SELECTION:</b>				
SEARCH FOR AND BUY TOP P.T. BULLS	SPRING THRU FALL	SPRING THRU WINTER	FALL & WINTER	
SELECTION OF REPLACEMENT HEIFERS	AT WEANING-AUG.-SEPT.	AT WEANING - OCT.	AT WEANING - NOV.	
CULL COWS	AUGUST - SEPT.	OCT.	NOV.	
<b>BREEDING:</b>				
FERTILITY TEST BULLS	-----BEFORE BREEDING SEASON-----			
START BREEDING HEIFERS-BULLS IN	DEC. 10	FEB. 10	MAR. 24	
END BREEDING HEIFERS-BULLS OUT	FEB. 5	APRIL 11	MAY 23	
START BREEDING COWS-BULLS IN	JAN. 5	MARCH 7	APRIL 24	
END BREEDING COWS - BULLS OUT	MARCH 26	MAY 26	JULY 13	
<b>FEEDING:</b>				
SEND FORAGE SAMPLES TO LAB	SEPT. - OCT.	SEPT. - OCT.	SEPT. - OCT.	
GRAZE MEADOWS & CROP RESIDUES	SEPT. - DEC.	SEPT. - DEC.	SEPT. - DEC.	
BEGIN WINTER FEEDING	NOV. 15	NOV. 15	NOV. 15	
TURN TO STOCKPILED FESCUE	NOV. 15 - DEC. 1	NOV. 15 - DEC. 1	NOV. 15 - DEC. 1	
INCREASE FEEDING AFTER CALVING	NOV. 15 - JAN. 15	DEC. 15 - MAR. 15	FEB. 1 - GRASS	
CREEP-FEED EARLY CALVES TILL GRASS	DEC. 1 TILL GRASS	JAN. 1 TILL GRASS	ONLY IF NEEDED	
TURN TO SUMMER PASTURE	APRIL 15 - MAY 1	APRIL 15 - MAY 1	APRIL 15 - MAY 1	
PUT OUT SALT AND MINERALS REGULARLY	-----THROUGHOUT THE YEAR-----			
USE SUMMER CREEP FEED IF NECESSARY	JULY 15 TO WEANING	JULY 15 TO WEANING	JULY 15 TO WEANING	
<b>HEALTH:</b>				
VAC. CALVES FOR BLKLG & MAL. EDEMA	-----IN FIRST WEEK, AGAIN 30 DAYS BEFORE WEANING-----			
DEHORN & CASTRATE CALVES	-----IN FIRST WEEK OR BEFORE 3 MONTHS OLD-----			
VAC. HEIFER CALVES FOR BANGS(2-6 MO)	MAR. 1	MAY 1	JULY 1	
VAC. COW HERD FOR LEPTO, BVD, PI-3, IBR (WHEN OPEN 2-3 WKS BEFORE BREEDING)	DEC. 15-22	FEB. 14-21	APRIL 3-10	
VAC. VIRGIN HEIFERS FOR SAME (3 WKS BEFORE BREEDING)	BY NOV. 19	BY JAN. 20	BY MARCH 3	
VAC. CALVES FOR BLKLEG, MAL. ED., IBR, BVD, PI-3 (3-4 WKS BEFORE WEAN)	ABOUT AUG. 1	ABOUT SEPT. 15	ABOUT OCT. 15	



**CALVING SEASONS - Cows - 80 DAYS - HEIFERS - 60 DAYS**

<b>MANAGEMENT TASKS</b>	<b>FALL OCT. 15 TO JAN. 5</b>	<b>WINTER DEC. 15 TO MAR. 5</b>	<b>SPRING FEB. 1 TO APR. 20</b>	<b>WORK COL- UMN FOR YOUR HERD</b>
<b>RECORDS:</b> EARTAG OR BRAND REP. HEIFERS WEIGH & GRADE - BCIA PERF. RECORDS RECORD PERF. REC. ON COW CARDS	OCT. - NOV. JULY 1 BY AUG. 1	OCT. - JAN. SEPT. 1 BY OCT. 1	DEC. - FEB. OCT. 15 BY NOV. 15	
<b>INTERNAL PARASITES:</b> NORM COWS - AT LEAST ONCE A YEAR NORM CALVES (3-4 WKS BEFORE WEAN.) NORM YEARLINGS AT TURN-OUT TIME	-----SEPTEMBER TO NOVEMBER----- ABOUT AUG. 1 APRIL 1			
<b>EXTERNAL PARASITES:</b> POUR ON GRUBICIDE POUR ON OR SPRAY FOR LICE PUT OUT DUST BAGS OR BACK RUBBERS FOR FLYS	SEPT. 1 - OCT. 15 JAN. MAY 1	SEPT. 1 - OCT. 15 JAN. MAY 1	SEPT. 1 - OCT. 15 JAN. MAY 1	
<b>OTHER MANAGEMENT:</b> DEHORN & CASTRATE CALVES PREGNANCY TEST COWS & HEIFERS WEAN CALVES SEED PASTURE WITH CLOVER LY NITROGEN ON FESCUE PART MG. OXIDE MIX FOR GRASS TET- HY (AT LEAST 2 WKS BEFORE CALVING ARTS) ST COWS FOR TB & BANGS PLANT CALVES (STEERS & SLAUGHTER IFERS ONLY) ZERANOL (RALGRO)	-----IN FIRST WEEK OR BEFORE 3 MONTHS OLD ----- JUNE 1 TO WEANING AUGUST - SEPT. MAR. AUG. 1 - 15  OCT. 1  DEC. ---EITHER AT BIRTH AND AGAIN 100 DAYS LATER OR AT ABOUT 100 DAYS OF AGE -----	AUG. 1 TO WEANING OCT. MAR. AUG. 1 - 15  DEC. 1  FEB.	SEPT 15 TO WEANING NOV. MAR. AUG. 1 - 15  JAN. 15  APRIL	
<b>MARKETING:</b> SENDER CALVES YEARLINGS ALL COWS ALL BULLS	AUGUST OR SEPT. JULY TO SEPT. NOV. MAY OR LATER	OCT. AUGUST TO OCT. NOV. JULY OR LATER	NOV. OCT. NOV. - DEC. AUG. OR LATER	

**HEALTH** - Use your veterinarian to advise in setting up your health program. Plan to work cattle through the chute a minimum - twice a year for cows. The suggested health program is planned for calves to be kept past weaning. In Blackleg areas, vaccinate calves for Blackleg and Malignant Edema in the first week of life and again later. Dehorn and castrate as early as possible. Vaccinate the cow herd for 3 strains of Leptospirosis, IBR, PI3, and BVD (if required) annually when open, some 3 weeks ahead of breeding. Vaccinating calves 3 to 4 weeks before weaning for Blackleg and Malignant Edema, IBR, PI3 and BVD (if required) gives best immunity.

**RECORDS** - Identify all replacement heifers, before breeding, with ear tags or brands or both. Weigh and grade calves on performance programs at least 30 days ahead of weaning when 160 to 250 days of age. Weigh yearling heifers at the same time. Record performance data from computer record on cow record cards and use those records!

INTERNAL PARASITES - Worm cows at least once a year. A good time is when you pregnancy-check and pour on for grubs. If conditions require, worm twice a year to coincide with another trip down the chute. Worm calves to be kept 3-4 weeks before weaning. Worm yearlings at turn-out time in the spring.

EXTERNAL PARASITES - Pour on grubicide September 1 to October 15 (for sure before Nov. 1). Repour-on or spray in January for lice (cows and yearlings). Dust bags or back rubbers do a good job on flies in summer if placed where cattle will use them.

OTHER MANAGEMENT - Pregnancy test cows and heifers anytime from 60 days after the breeding season ends on to weaning. Cull all heifers and cows not pregnant. Wean calves on schedule, which in many instances will coincide with feeder calf sales. Reseed clover into pastures in March. Apply N on fescue on schedule. Start getting magnesium supplement into cows beginning 2 weeks ahead of calving season. Use a palatable mixture. Implant steer and heifer calves not to be kept for replacement with Zeranol (Ralgro) either once or twice.

MARKETING - Plan marketings well in advance. Market heavy yearling steers and yearling heifers early. Plan to market part of them in late summer when pasture is at its lowest point. Market cull cows and bulls when it best suits your operation.

### STOCKER-YEARLING MANAGEMENT CALENDAR

Management is just as critical for stocker-yearlings as for cows. This calendar, by month, outlines major management tasks to be accomplished. Level of winter feeding should be planned depending on when cattle are to be sold. If wintered for spring sale, gain should be 200 to 250 pounds or about 1.4 to 1.7 pounds per day. If wintered to be grazed, total gain should be 100 to 150 pounds or 0.7 to 1 pound per day.

- |   |   |
|---|---|
| <b>OCT.</b> - 1. Buy and assemble calves or move in weaned calves from your herd.<br>2. Keep in small lot with good feed and water until thoroughly weaned.<br>3. Treat for grubs and lice with "pour on" systemic material.<br>4. Be alert for signs of shipping fever.<br>5. Start grazing as calves become weaned and start eating well.<br>6. Treat for worms (allow 3 weeks between grub treatment and worming)<br>7. Vaccinate for Blackleg, Mal. Edema, PI3, IBR, and BVD after shipping stress is over. | <b>FEB.</b> - 1. Feed.  |
|   | <b>MAR.</b> - 1. Feed.  |
|   | <b>APR.</b> - 1. Market yearlings for spring sale.<br>2. Turn to grass when grass is tall enough and stock heavy.<br>3. Worm yearlings going to grass.<br>4. Implant yearlings going to grass with Zeranol (Ralgro) or Stilbestrol (DES). |
|   | <b>MAY</b> - 1. Put out back rubbers or dust bags or start spray program to control flies.<br>2. Salt regularly or keep salt-mineral mix free choice.   |
| <b>NOV.</b> - 1. Continue October program.<br>2. Graze remaining grass.<br>3. Sort into groups for feeding according to size.<br>4. Start winter feed program.<br>5. Plan feeding program to fit planned marketing program.   | <b>JUNE</b> - 1. Same as May.   |
|   | <b>JULY</b> - 1. Market some of heavier yearling feeders to bring numbers in line with diminishing pasture.<br>2. Continue fly control program.   |
| <b>DEC.</b> - 1. Feed calves twice daily for high gains, once daily for low gains.  | <b>AUG.</b> - 1. Continue fly control.  |
| <b>JAN.</b> - 1. Feed.<br>2. Pour on or spray for lice.   | <b>SEPT.</b> - 1. Market yearlings.<br>2. Start buying calves.<br>3. Send hay and silage samples to forage test laboratory.<br>4. Buy protein supplement and other needed concentrates.   |

## SELECTING BREEDING CATTLE

by  
G. L. Minish  
Professor of Animal Science, VPI&SU

### Sire Selection

Selection represents the major directional force available to the beef producer for creating genetic change. Herd sire selection will influence over 90 per cent of the improvement made through selection decisions. Fifty per cent of the genes in a herd comes from the last bull used, 75 per cent from the last two, and over 80 per cent from the last three.

Factors to Consider in Sire Selection - The seedstock producer sells genotypes, and the commercial producer phenotypes, so the genetic makeup or breeding value is the impact consideration in selling or buying herd sires. The traits that should receive major emphasis are those that are economically important and highly heritable. What then are the characteristics that should be considered in sire selection?

- A. Pedigree Data - The best time to use a pedigree is before the animal is born. We can examine his pedigree and get some estimate from his sire, dam, grandsire, grandam, etc. about what he is going to be. A performance pedigree with objective information is of particular importance in estimating the breeding value of a calf before birth. Distant ancestors are of little importance; for example, a great grandsire has a relationship of only 12.5 per cent. Table 1 gives an example of performance standards for herd bull selection.

TABLE 1 - Performance Standards for Bull Selection

Item	British	Medium Exotic	Large Exotic
Birth Weight	80	90	100
205 Day Adj. Wt. Lb.	600	650	700
365 Day Adj. Wt. Lb.	1100	1200	1300
365 Day Backfat In.	0.3	0.3	0.3
Frame Size (1-7)	5 (49")	6 (51")	7 (53")
Muscle Pattern	B	B	B
Mature Weight	2000	2200	2400

- B. Performance Data - For traits that are highly heritable (above 40 per cent) and economically important, the bull's own credentials are the best indicators of his breeding value. After the bull is born, the emphasis should shift to the bull's own phenotype and away from the pedigree. The individual traits that should receive major consideration are:

1. Birth Weight - The heritability of birth weight is .48, so significant selection pressure can be applied to this trait. This trait is positively correlated with future growth rate, .39, however this is not the value that should be used to select for growth rate. Table 2 gives the expected calving difficulty with increased birth weights.



TABLE 2 - Birth Weight & Calf Losses in Three-Year-Old Heifers Calving for the First Time

<u>Birth Weight of Calves</u>	<u>No. of Calves</u>	<u>Calves Dead at Birth (%)</u>	<u>Cow Experiencing Calving Difficulty (%)</u>
40-49 lbs.	2	0	0
50-59 lbs.	22	18	5
60-69 lbs.	97	4	12
70-79 lbs.	131	2	18
80-89 lbs.	55	16	40
90-100 lbs.	10	20	30

2. Weaning Weight - The heritability for weaning weight is 30 per cent primarily a maternal trait. Recent research indicates that selection for yearling weight will improve the breeding value for weaning weight more rapidly than direct selection for weaning weight itself.
  3. Yearling Weight - This trait is highly heritable, 60 per cent, and a bull's own performance record is a good indicator of his breeding value for yearling weight. This is the most valuable parameter for predicting the genetic growth potential of a herd sire. Bulls that excell in growth at this point will sire commercial calves that grow more rapidly and efficiently to recommended slaughter weights.
  4. Mature Weight - This trait is positively related to the previously mentioned growth values. Selection for increased growth in the other categories will ultimately result in increased mature weight. Mature sire weight can be used to establish the mature cow size (wt.) desired. Divide the ultimate desired cow weight by .6 to estimate the mature bull weight needed. For example, is you want 1100-1200 pound cows, you need a bull that has a mature weight of 1800-2000 lbs. The optimum slaughter endpoint (choice - yield grade 3) is approximately 90% of the weight of the cow (dam) for steers and 70% of the dam's weight for heifers.
- C. Physical Traits - The physical traits that should be emphasized in today's ideal herd sire are fertility, frame, structure, composition (muscle and fat) and body capacity as they relate to maximum production efficiency.
1. Fertility Traits - The most important rating or score a herd sire can receive is high fertility. Physically, we can examine several traits that reflect a high score for fertility. In order for a bull to cover the country and seek out the cow herd for breeding, he needs an excellent sense of sight, good eyes. Another physical trait of importance is sound feet and a skeleton structured for longevity. Corns, prolapsed soles, or even slight founder can affect a bull's ability to breed a sufficient number of cows in a 60-day breeding season. These are all things we can visually appraise and/or score.

The most important physical characteristic we can examine and/or measure is the scrotal circumference and shape (Figure 1). Scrotal circumference size and shape are closely related to sperm cell production.



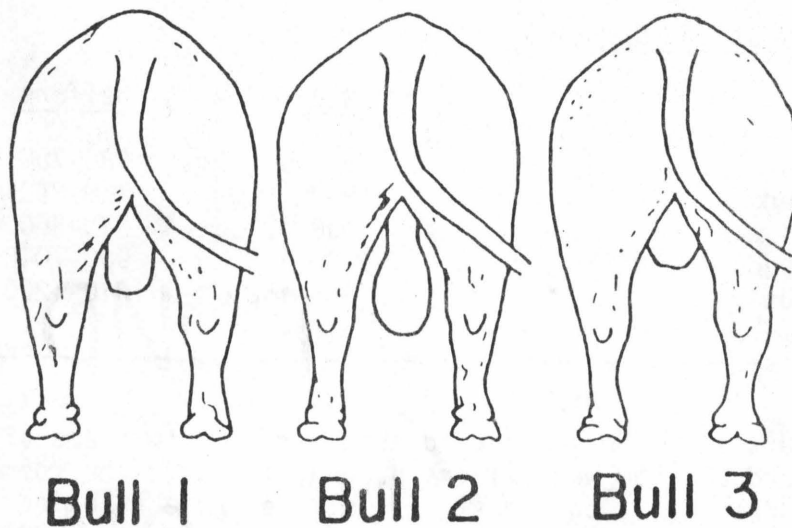


Figure 1

To obtain a valid measurement, it is important to first visually assess scrotal shape. Bull #1 has a straight sided scrotum, often associated with testicles of moderate size. Bull #3 has a tapered or pointed scrotum usually associated with undersized testicles. Bull #2 has a normal shape, with a distinct neck and the scrotum descending down to the hock level.

Most of the bull population one year of age and older would fall into a circumference range of 25-47 cm. The normal for a year old bull is between 32-34 cm.

Few bulls one year of age would classify as satisfactory with a scrotal circumference of 30 cm or less, and 34 cm for a two-year-old or older.

Overfitted or fat performance tested bulls may average 2 to 3 cm larger than those in good condition.

2. Frame - Frame (skeletal size) is rapidly becoming one of the most important traits to evaluate in beef cattle. Visual appraisal of frame size is highly heritable (.6) and the repeatability of scoring cattle for frame runs higher (.8-.9) than any other trait we physically appraise.
  - The reason frame size is so important is its high association in identifying the physiological maturity pattern of cattle on the growth curve. For example, frame size can be effectively used with breed type to predict the optimum slaughter weight to finish feeder calves and the optimum slaughter end point (slaughter weight) for fat cattle to maximize total efficiency and carcass merit (Table 3). For example, a 3 frame Angus steer should be marketed at 975 lbs. to produce maximum lbs. of edible beef per lb. of energy fed to the steer and his dam. This also approximates a carcass composition of low choice, yield grade 2. This is the optimum endpoint on the growth curve for a 3 frame Angus steer, whereas 1075 lbs. would be the weight to slaughter a 5 frame Angus steer.

TABLE 3 - Expected Weights at Low Choice Grade

	<u>Steers</u>	<u>Heifers</u>
Small frame British breeds	850-950	680-760
Average frame British breeds	950-1050	760-840
Large frame British breeds	1050-1200	840-960
Average frame European breeds and Holsteins	1200-1300	960-1040
Large frame European breeds	1300-1500	1040-1200

So, the frame size of bull selected should relate to frame size of the cow herd and how we want the progeny to serve the commercial industry. Currently, a bull that will sire a frame size feeder and slaughter steer of 4-5 can be marketed in the preferred 1000-1200 lbs. bracket and produce maximum production efficiency. This sire may need a 5, 6 or 7 frame, depending upon the present frame size of the herd that he will serve. Figure 2 and Table 4 should help you identify frame size.

TABLE 4 - Frame Evaluation

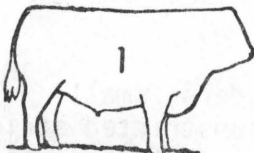
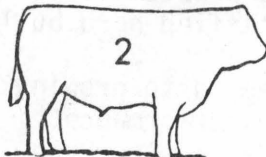
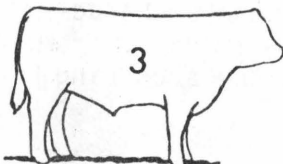
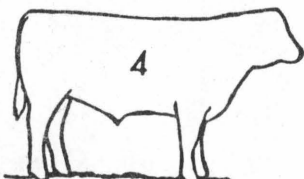
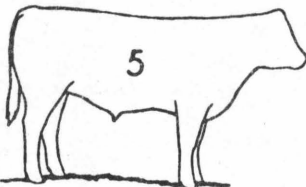

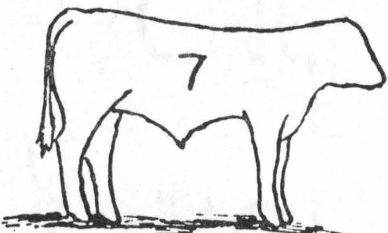
E	<u>AGE IN MONTHS</u>																			
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	<u>HEIGHT IN INCHES</u>																			
1	34	35	36	37	38	39	40	41	41.8	42.5	43	43.5	43.8	44	44.3	44.5	44.8	45	45.3	45.5
2	36	37	38	39	40	41	42	43	43.8	44.5	45	45.5	45.8	46	46.3	46.5	46.8	47	47.3	47.5
*3	38	39	40	41	42	43	44	45	45.8	46.5	47	47.5	47.8	48	48.3	48.5	48.8	49	49.3	49.5
4	40	41	42	43	44	45	46	47	47.8	48.5	49	49.5	49.8	50	50.3	50.5	50.8	51	51.3	51.5
*5	42	43	44	45	46	47	48	49	49.8	50.5	51	51.5	51.8	52	52.3	52.5	52.8	53	53.3	53.5
6	44	45	46	47	48	49	50	51	51.8	52.5	53	53.5	53.8	54	54.3	54.5	54.8	55	55.3	55.5
7	46	47	48	49	50	51	52	53	53.8	54.5	55	55.5	55.8	56	56.3	56.5	56.8	57	57.3	57.5

The base point is 45 inches hip height at 12 months of age for a frame score of 3. Allow two inches for each frame score at the same age. Allow one inch per month from 5 to 12 months of age, 0.50 inch per month from 12 to 18 months and 0.25 inch up to 2 years. Daily adjustment may be made as follows:

$$\text{no. of days over 365} \times .025 + \text{actual height} = \text{adjusted height.}$$

Height for heifers are generally 2 inches less at the same age as those shown above.

Figure 2 - Frame Evaluation

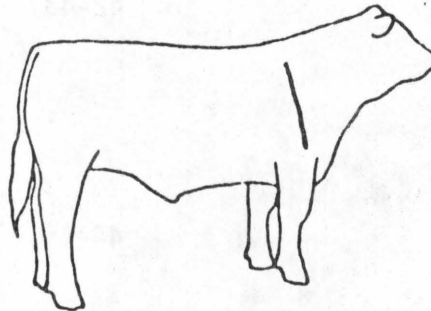
<u>Frame scores</u>	<u>Height measured in inches at hip</u>	
	<u>205 Days</u>	<u>365 Days</u>
	36-37	41-42
	38-39	43-44
	40-41	45-46
	42-43	47-48
	44-45	49-50
	46-47	51-52
	> 47	> 53

3. Structure Traits - Although geneticists and other researchers have down-played the importance of structural traits because they are difficult to measure in a quantitative manner, experience has taught us that a hereditary tendency is clearly evident. Ignoring these traits has resulted in herd sires that physically break down under breeding conditions and daughters that have to be culled from the herd too early.

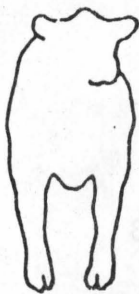
Specific problems include bulls with straight shoulders, small inside toes, toe in considerably and take a short constricted stride. Leg problems of the rear limbs include cocked ankles that give rise to worn off inside toes. Another serious rear limb problem is posty hind legs with straight pasterns leading to many stiffled herd bulls.

Structure problems just mentioned are readily passed on to growing and finishing cattle and these unsoundness and poor performance appear to be related. The old belief that as long as a steer can reach the kill floor has created a poor image for the cattle industry. Herd sires that are predisposed to unsoundness characteristics mentioned and diagrammed below should be eliminated from the test stations, and receive critical scrutiny in the show ring and on the ranch. (Figure 5)

#### Common Abnormalities in Structure



Post-legged and straight shouldered



Toes in - worn off inside toes



Cocked ankles - worn off inside toes

Figure 5



4. Muscling - In the beef business we are in the business to produce muscle and more animal breeding experts will agree that it should be contributed from the sire. Similar to frame, we can definitely move in two extremes - from too little to an excess. The other confounding factor is that cattle can exhibit a high percentage of muscle and it can be expressed in different shapes.

It is my opinion that a herd sire should pass on enough muscle to produce 2 cutability carcasses when the cattle are marketed at the optimum weight for their respective frame pattern. In the chart below (Figure 6) a sire should be preferred with a muscle pattern of example B relating to a cutability of 2.

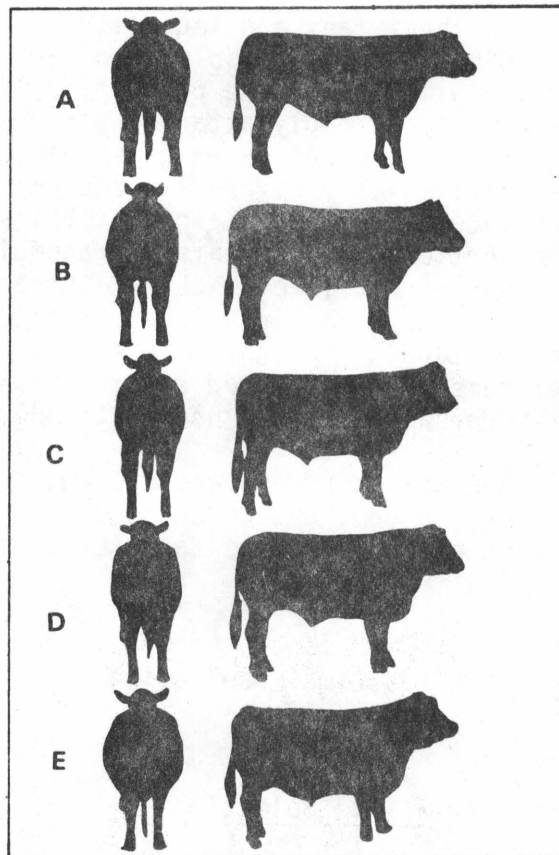


Figure 6

## Female Selection

In our effort to develop and engineer more efficient cattle, sire selection has tended to overshadow the importance of selecting and establishing a highly productive cow herd. The superior beef herd, is most always backed up with a highly reproductive, consistent producing, good milking, large-framed, feminine, sound and uniform cow herd. These herds practice ruthless cow culling and critical selection of replacement heifers. Against this background, if breeders are to make progress in the years ahead, they must focus a great deal of attention toward the selection of the highly productive female.

Individuality or Type - Excellence in type depends upon your goal. If you want to produce functional, highly productive herd bulls or choice feeder calves, you had better buy the best females you can find. Regardless of body conformation, breeding females must be sound in their feet and legs with no evidence of lameness. Females with sound clean bone joints and a good solid foot on each corner will save labor, veterinary bills, and will extend the productive life of the cow. Their mammary system should exhibit a strongly attached udder and no blind teats. Femininity, udder soundness, and development of extra genitalia are of major emphasis in selecting and culling females. Figure 1 gives examples of a feminine, highly fertile appearance and a coarse, lowly fertile cow. The highly fertile cow is in beautiful proportion, and presents a graceful, feminine appearance. She is lean and clean in her face, neck and throat, and is long and smooth in her muscling. She is trim in her brisket, over her shoulders, and is long in her hip and high and wide at her pins. The lowly fertile cow is a coarse fronted, unbalanced, extremely deep-fronted cow that exhibits extra fat and is over conditioned. Her udder also appears nonfunctional.

Figure 2 gives examples of various shaped udders and different formed teats. Today, it is of much more interest to beef cattlemen to cull cows with poor udders and pay attention to using bulls that sire daughters with well-formed functional udders.

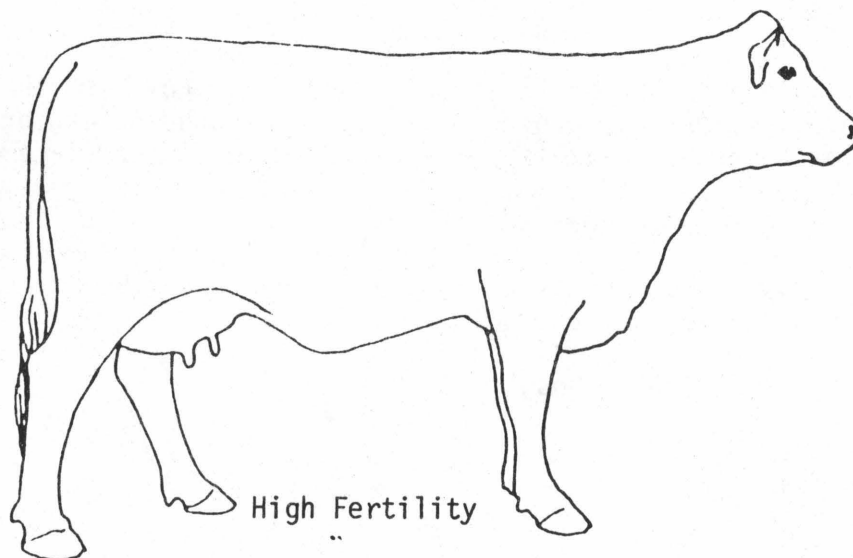
Size is always an asset as long as it is associated with good conformation. Table 1 gives performance standards for female selection.

Table 1 - Performance Standards for Female Selection

Item	British	Medium Exotic	Large Exotic
205 Day Adj. Wt. Lb.	500	550	600
365 Day Adj. Wt. Lb.	650	700	750
365 Day Backfat In.	.3	.3	.3
Frame Size (1-7)	5 (47")	6 (49")	7 (51")
Muscle Pattern	C	C	C
Mature Weaning Wt. Lb.	1100-1200	1300-1400	1400-1500

Figure 1.

Femininity and udder soundness



These two examples should give you some guidelines in selecting heifers that reflect the fertile cow.

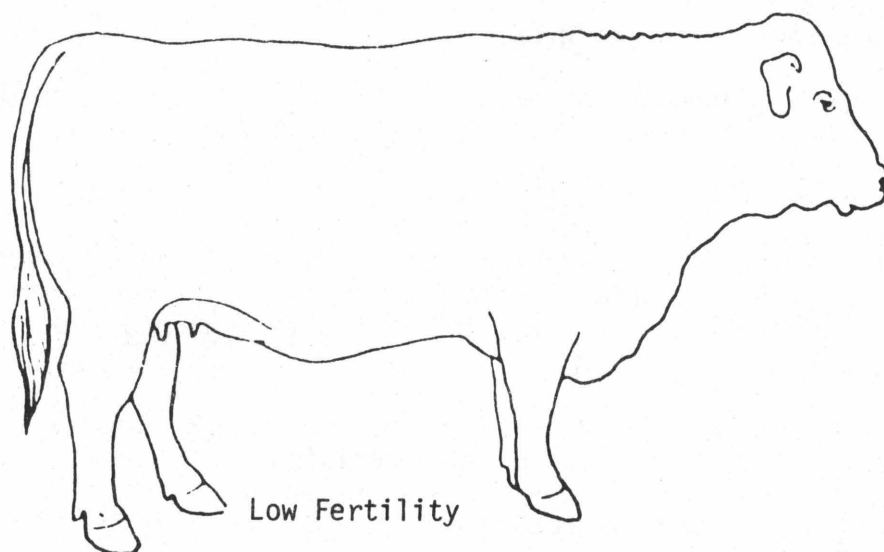
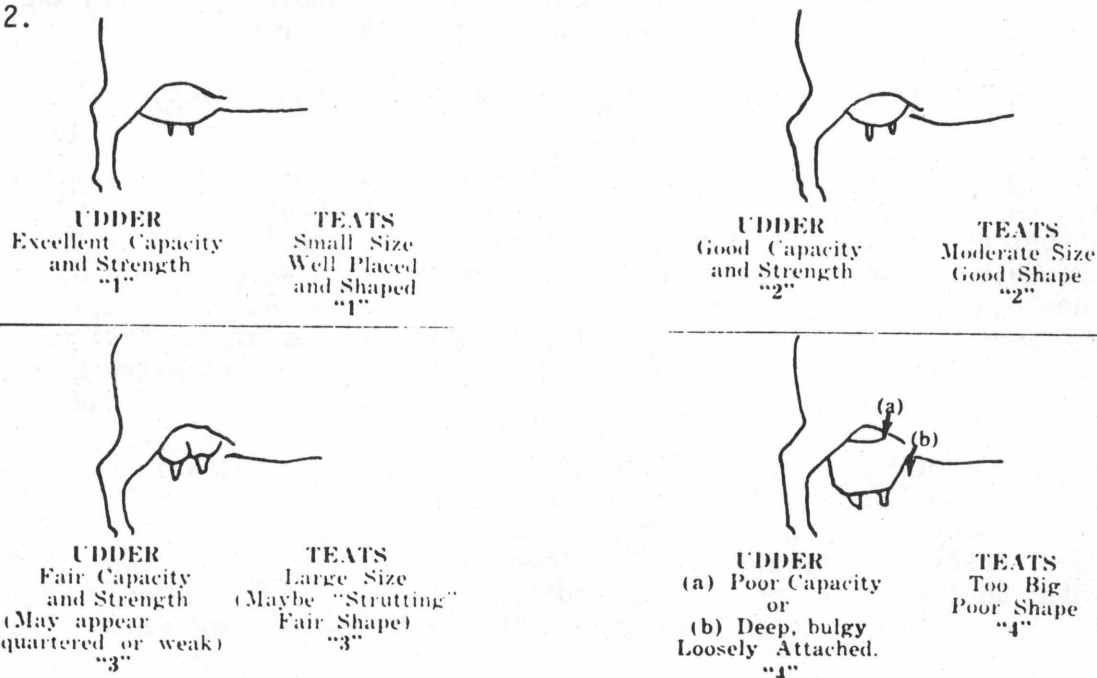


Figure 2.



Replacement Heifer Selection - A young, highly productive cow herd that is making rapid genetic progress depends on progressive selection procedures for replacement heifers. The following is a systematic program for selecting replacement heifers.

- A. Rank All Heifers on 205-day adjusted weights.
- B. Cut off bottom 1/3; consider culling all those under 90 ratio unless circumstances are unusual.
- C. From the top 2/3 remove those that are:
  - 1. Structurally unsound.
  - 2. Small framed.
  - 3. Unfeminine.
  - 4. Overfat.
- D. Rank on 12 month ratios.
- E. Remove those that failed to grow.
- F. Expose to a bull for 60 days; pregnancy check 60 days after breeding; cull those that are open.
- G. Cull again after the first calf.

Criteria for Culling Cows - The progressive breeder who adds young, genetically superior replacements will simultaneously be culling the lower end of his mature cow herd. Ruthless cow culling is a must, and the following guidelines should be followed:

- A. Cull open cows after a 45-60 day breeding season regardless of their records. Pregnancy check to make this decision.
- B. Cull cows with poor progeny records:
  - 1. Poor growth performance ratios under 90 at weaning and/or yearling.
  - 2. Inconsistent records from year to year. Usually vary with the quality of the bull used, indicating little prepotency for performance.
  - 3. Low quality calves with poor visual grades and scores.

Milk Production - The primary goal of any breeding program is to produce cows with the genetic capability to make a profit. In cow-calf operations, increasing the weaning weight of calves has been the primary goal to attain this economic return. Because of the high relationship between weaning weight and milk production, new heavy milking breeds such as Simmental, Maine-Anjou and several of the dairy breeds have been infused into the genetic make-up of our beef herds. This appears good on the surface, but recent data indicates that extra high milk yields negatively effect the total performance and economic merit of the cow.

The average daily milk production during lactation for a beef cow is 12 pounds with a conversion of one pound of calf gain per 10 pounds of milk. As milk yield increases much above this range conversion rate is reduced and feed requirements for the cow increase substantially. Cattlemen also complain about cows that give too much milk because they are predisposed to mastitis, spoiled udders and milk scours in calves. In addition, increased milk yields and weaning weights have



indicated a strong relationship to poor reproductive performance (Table 2). The gross return per calf is higher for the heavier milking cows with the larger calves at weaning, however, when this is adjusted for land and supplement requirement, and conception rate net return favors beef cows that are considered good milkers, averaging 14 pounds per day (Table 3). The recommended average amount of milk that a beef cow should yield per day during lactation is impossible to estimate. It should be determined in a breeding program by the nutritional requirements, the desired calf performance, and the cow's reproductive efficiency.

Table 2 - Milk Production, Weaning Data and Reproductive Performance<sup>1</sup>

<u>Item</u>	<u>Hereford</u>	<u>Hereford x Holstein</u>	<u>Holstein</u>
Total lactation, lbs.	3360	5040	6720
Daily milk yield, lbs.	14	21	28
Adj. wn. wt., lbs.	604	658	763
Rebreeding conception, %	96.2	89.3	59.0
Days post-partum to apparent conception	75	76.5	94.5

<sup>1</sup>Oklahoma State University

Table 3 - Economic Analysis<sup>1</sup>

<u>Item</u>	<u>Hereford</u>	<u>Hereford x Holstein</u>	<u>Holstein</u>
<sup>a</sup> Land requirement percentage	100	110	137
<sup>b</sup> Total cost/female, \$	113.99	123.28	159.02
Return adj. for conception, \$	50.35	45.64	9.58

<sup>1</sup>Oklahoma State Univ.

<sup>a</sup>Expressed as % of Herefords as determined by forage intake in dry lot.

<sup>b</sup>Combination of land and supplement cost.

MPPA is the best procedure for ranking cows in a herd on milking ability.

MPPA for weaning weight ratio is computed with the following formula:

$$MPPA = \bar{H} + \frac{NR}{1 + (N-1)R} (\bar{C} - \bar{H})$$

Where  $\bar{H}$  = 100 the herd average weaning weight ratio

N = the number of calves included in the cows average

R = .4 the repeatability factor for weaning weight ratio, and

$\bar{C}$  = average for weaning weight ratio for all calves the cow has produced.

What conclusion can be reached?

1. Obviously selection for frame weight and type pays.
2. Using birth, weaning, yearling and mature weights, height and fat measurements, ratios, and etc. is the best way to select breeding animals.
3. Set your selection standards and use every tool available to achieve them.

## SELECTING BREEDING CATTLE FOR HERD IMPROVEMENT

David R. Notter

Selection is a powerful tool which we can use to improve beef cattle. The choice of the bulls and heifers that will be used to produce the next calf crop defines the future production of the herd and, given the highly competitive nature of the beef cattle business, defines one's future in the industry as well. Selection decisions are altogether too important to be made on the basis of incomplete information. Picking replacement bulls or heifers that were born "last spring" (Feb. ?; Mar. ?, April ?) and that weight "probably 800 or 850" and that are out of "a pretty good old cow" (all cows are "pretty good old cows") is really not the best we can do. All selection decisions are made on the basis of imperfect knowledge; on the basis of heritabilities of less than 1.0. Therefore, we must use the information we have to the maximum in order to make progress in improving our herds; we must use our eyes and our minds and our pencils to find those animals we truly want to have as breeding stock.

Before beginning any selection program, it is imperative that we have a clear view of the changes we want to make in the herd. When one goes out to buy a bull or sits down to pick out a set of replacement heifers, he should first take a few minutes to think about what the objectives of the selection really are and about how he can best achieve those objectives. One must also be aware of the total impact that a selection decision will have on the herd. This last point primarily relates to whether or not the animals being chosen will leave replacements in the herd. More specifically, if a new herd sire is to be used only to produce market animals, we need not be concerned about the eventual maternal performance of his daughters. However, if these daughters are going to be retained in the herd, their maternal ability is of great importance.

Let us now consider some of the economically important traits of beef cattle and consider their potential usefulness as selection criteria.

Growth rate. Rapid growth is certainly of great importance in beef cattle. The importance of growth rate as a selection criterion arises from four sources. First, rapid growth is an economically important trait, directly reflecting the yield of marketable product. Second, growth rate is a relatively highly heritable trait in which we can make genetic change with relative ease. Third, the growth rate can be measured easily, requiring only periodic weighings. Fourth, and perhaps most important, this trait can be evaluated early in the life of the animal before initial selection decisions must be made. Further, the growth rates of animals from different farms can be compared with relative ease and a fair degree of accuracy in central testing stations. All these factors combine to make selection for increased growth rate an important component of a selection program, although this trait is certainly not the only one of importance. Potential undesirable effects of singleminded, intense selection for growth on calving difficulty and, perhaps, fertility must be recognized and dealt with in the selection program.

Fertility and Calving Difficulty. Selection programs to improve fertility and to reduce calving difficulty will certainly be more difficult to implement than selection programs to increase growth rate. The reproductive traits are

low in heritability and therefore respond slowly to selection. While relatively easy to evaluate, these traits cannot be measured on the young animal and selection must therefore be based upon the performance of relatives (usually the dam or, for calving difficulty, the sire) or must be deferred until one or more calf crops have been produced. These problems of measurement act to further reduce the rate of selection response. Further, information on fertility and calving difficulty accumulates over time such that accurate evaluation of these traits for sires and cows within the herd requires careful and conscientious record-keeping.

These apparent disadvantages to selection for fertility and ease of calving, however, are more than counterbalanced by the extreme economic importance of traits associated with the fertility of the cow and the survival of the calf. This great economic importance dictates that records on the reproductive performance of cows and, if possible, sires should be kept and used heavily in selecting replacement breeding stock.

Milk production. The optimum milk level of a beef cow has been shown to be critically dependent upon the nutritional environment in which she is expected to function and upon the relative costs of forages (cow feed) and supplements (creep feed). For the commercial producer, adjustments in the milk production level of the herd are probably best made by judicious use of dairy breeds in crossing. For the purebred producer, his cows should, at a minimum, produce enough milk to allow their progeny to express their growth potential without supplemental feeding, but should not produce so much milk as to limit reproductive performance in the environment in which the cattle are expected to perform. Clearly, for most environments there exists some optimum, intermediate milk level.

So far we have spoken in general terms. Let us now consider some potential selection programs for specific situations.

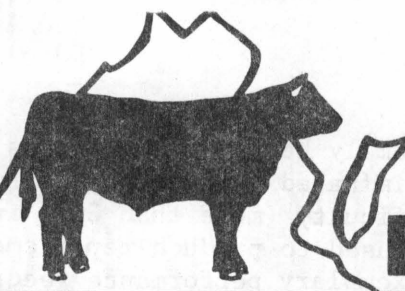
Consider a commercial producer selling weanling or yearling calves and producing his own replacement females. In a system such as this cow fertility and calf survival are of primary importance. Heifers should be expected to calve first at 2 years of age and to calve regularly and without assistance from then on. Pregnancy checking should be done on a regular basis, with open cow culled. Initial heifer selection should give preference to heifers born early in the season. These heifers will be older at the start of the breeding season and will therefore be more likely to calve at 2 years of age. Also, the older heifers will be out of the cows that bred most readily. The weight of the heifers should be given some consideration, but generally only to the extent that weight is indicative of probable conception as a yearling. Heifers out of dams with poor reproductive performance should not be retained. One strategy that is useful, especially when young cull cows are relatively high in price, calls for keeping and exposing perhaps twice as many replacement females as will ultimately be needed. Final culling is done when the heifers are pregnancy checked with all open heifers culled at this time. This system ensures that only bred heifers will be selected to go back into the herd.

Sire selection in commercial herds is often difficult since sires are generally purchased from outside the herd. Sire selection should be based largely upon growth performance, but the use of sires that are extremely large relative to the cows they are to be used upon should be avoided to minimize calving



difficulty. Sires that had extremely heavy birth weights relatively to their yearling weights should be discriminated against, and sires that produce an inordinate amount of calving difficulty (more than 2-3% in mature cows) should be culled. If the sire is to be used to produce replacement heifers, he should be out of a dam with an exemplary performance record. Bulls with exceptionally heavy muscling should probably be avoided. At a minimum, a prospective buyer should expect to be provided with birth weights, weaning weights (B.C.I.A. adjusted), yearling weights (adjusted) and dam summaries for the bulls he is considering.

For the purebred producer, the primary product is the genetic merit of the cattle he sells. It is his responsibility to ensure that the cattle he sells are the right kind; that they will be useful to the commercial producers who are his clientele. Historically, selection in the purebred sector has been almost exclusively for growth rate. The growth performance is almost invariably the merchandising tool and the advertising draw. This is probably largely as it should be. Yet I would argue that within the purebred herd a high level of emphasis should still be placed upon the fertility, ease of calving and maternal ability of the purebred cow. The bulls sold by the purebred breeder are not just sires of market cattle. They are also the sires of the next generation of commercial cows, and it is the responsibility of the purebred breeder to see to it that they can function in that role.



# BEEF

COOPERATIVE EXTENSION SERVICE

SCIENCE & TECHNOLOGY

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## BEEF CATTLE IDENTIFICATION

by

A. L. Eller, Jr., Extension Specialist, Animal Science

A workable system of identification is basic to an accurate beef cattle records program. Purebred herds must keep accurate records for registration purposes. Purebred and commercial cattle must be accurately and positively identified for production records and culling purposes.

### METHODS:

The herd owner must select a method of identification which will be positive, simple, easy to read and economical. The various methods are described as follows:

1. Metal Ear Tags - Self-piercing aluminum or steel ear tags are inexpensive and easy to apply. They work especially well for identifying calves at birth and are the only identification needed up to weaning. This type tag should be placed on the top side of the ear near the head, leaving at least  $\frac{1}{2}$  inch for growing room. If the tag is put into the ear too tightly on the young calf, infection may result.
2. Tattoos - Tattoos are essential on purebreds. Tattooing may be done on the baby calf but is generally more satisfactory if done 3 to 7 months of age. Needed equipment includes the tattoo instrument, a clean rag or cotton, and rubbing alcohol or other cleansing agent for removal of dirt and wax inside the ear, and tattoo ink (paste type). The same number should be tattooed in both ears in the clear area above the top rib of the ear. Once the ear is cleansed, the tattoo instrument is used to perforate the desired number in the skin. Ink is then vigorously rubbed into the perforations with the thumb or forefinger. The tattoo instrument should be disinfected between cattle.
3. Large Rubber-type Ear Tags - There are several types of these easily readable, large, flexible tags on the market. The smaller size tags are excellent for use on young calves up to weaning age, while the large size ones are very good for young cattle as well as cows. These tags can be ordered pre-numbered or as blanks with ink, allowing the user the option to number the tags. This type tag should be applied according to manufacturer's instructions and may be expected to last some 3 to 5 years. Losses should be minimal, but some tags will require replacement.
4. Hot Iron (fire) Brands - Fire brands are satisfactory and practical for number or ownership (holding) branding. Fire brands are quickly applied and inexpensive, producing a permanent, hair-free scar in the shape of the iron used. Hair should be clipped in the fall or winter ahead of calving to make brand numbers completely legible. A certain degree of experience is needed in applying fire brands. Overbranding or underbranding produces poor legibility.

### EQUIPMENT NEEDED includes:

- (a) Irons - a complete set of number irons (0 thru 9) with 4 to 6 inch numbers with  $\frac{1}{4}$  or  $\frac{3}{8}$  inch thick faces. Commercially available electric branders work well also.

- (b) Heater for irons (wood or bottled gas for fuel).
- (c) Clippers - cattle clippers or sheep shears.
- (d) Chute - a substantial squeeze chute for firm restraint of the animals.

BRANDING PROCEDURE is as follows:

- (a) Placement - Brands are usually placed on the hip, but may be placed on the rib, shoulder or thigh.
  - (b) Age of Animal - Normally for identification purposes, only yearling replacement heifers and cows are branded. Holding brands may be put on any age animal including young calves.
  - (c) Clip Hair - Clipping the brand site is not mandatory but is recommended.
  - (d) Apply Iron - The iron should not be too hot. It should be ash gray in daylight or cherry red if held in the bottom of a 5 gallon bucket. Hold iron on skin firmly with slight rocking motion until the branded area is a rich buckskin color. Avoid overbranding and never brand wet cattle.
5. Freeze Brands - Freeze brands excel for permanent number or holding branding of animals with black or red hair coats. Freezing produces a white hair number or figure due to killing color producing cells in the hair follicles via freezing with a super-cooled iron.

EQUIPMENT NEEDED:

- (a) Chute - squeeze preferable.
- (b) Irons - a complete set (0 thru 9) of 4 inch number irons (copper) with either 3/8 or 5/8 inch thick faces for yearling and adult cattle. Smaller irons for young calves.
- (c) Clippers which will clip very close to the skin (small animal clippers or cattle clippers with special thin blades). Close clipping is mandatory.
- (d) Coolant - either dry ice and alcohol (95% ethyl, methyl or isopropyl) or liquid nitrogen.
- (e) Insulated Container - for coolant and irons. A styrofoam picnic cooler is excellent for dry ice and alcohol but a special wide-mouth container is preferred for liquid nitrogen.

BRANDING PROCEDURE:

- (a) Cooling Irons - For dry ice and alcohol, break the ice into small pieces in the container and pour in sufficient alcohol to cover heavy portion of irons. Proportions are not critical. Add dry ice as needed. For liquid nitrogen, pour into the container a sufficient quantity to cover the heavy part of the iron. Keep irons in coolant. Irons are as cold as the coolant, and ready to use or reuse, when bubbling over the iron has subsided.
- (b) Prepare area to be branded by first clipping as closely as possible then cleansing the clipped area with a brush if necessary. Finally, wet and clean the area with air temperature alcohol.
- (c) Apply Super-cooled Iron - with firm pressure hold each iron on the prepared area for the correct time. Underbranding, caused by too little time, produces poor results, while overbranding, caused by too much time, kills hair follicles and produces a hair-free brand. Use a stop watch or one with a sweep second hand to time according to the table below:

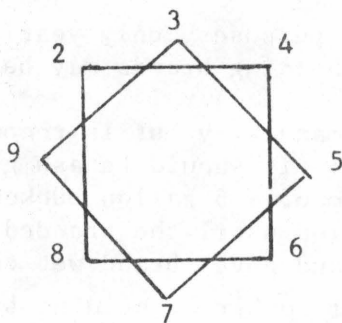
	<u>Contact Time (Seconds)</u>	
	<u>Dry Ice</u>	<u>Liquid</u>
<u>Age of Animal</u>	<u>Alcohol</u>	<u>Nitrogen</u>
Up to weaning (4-8 mo.)	25	15
Yearling (9-18 mo.)	30	20
Adult (over 18 mo.)	35-40	25-30

Mature animals with thicker hides should use the higher times.

- (d) Results to Expect - The super-cooled iron freezes the skin. As it thaws, swelling and reddening will be observed. When hair grows back, it will be white. The white hair number will be complete in about 3 months.

Branding can be done anytime but the best time is in the fall or very early spring, coinciding with normal hair regrowth patterns.

There is a code system which can be used in lieu of numbers. Only two irons are used ( | and L ) though 2 or 3 of each will speed the job.



1=	6= J
2= L	7= V
3= ^	8= L
4= T	9= <
5= >	0= -

Example: 0236 = - L ^ J

#### SYSTEMS:

The two major criteria of a workable identification system are that it be simple and prevent duplication. There are two basic systems for consideration.

1. Identifying Calf with Dam - This system is designed for use in herds where cow herd numbers are randomly assigned and it works best in small to medium size registered herds where identification of calves to correspond to dam herd numbers is desired. The calf number (tattoo and ear tag) is the same as the dam's herd number except that the last digit of the year of birth is added as either the first or last digit of the number.

EXAMPLE - Using year designation 5 for birth year 1975.

<u>Dam Herd Number</u>	<u>Calf Number</u>
50	550 or 505
251	5251 or 2515

The same system is workable using an alphabetical letter for birth year designation such as G for 1975. Under this system a heifer retained for herd replacement will not be assigned a herd number identical with her tattoo and ear tag but will be assigned a unique herd number different from any other cow in the herd.

2. Identifying Calves Consecutively Within a Year - This system is preferred by most commercial cattlemen and operators of all sizes of registered herds. It is generally preferable to use consecutively numbered ear tags for tagging calves at birth. The last digit of the year of birth is the first number on the tag, designating year of birth. In herds of up to 100 cows, tags for say 1975 are numbered 501 to 599. In herds of up to 1000 cows, tags are numbered 5001 to 5999. Calves so tagged at birth can be tattooed with the same number then or when worked at a later time (3 to 7 months) if tattooing is needed or desired.

Any heifer retained as a herd replacement will be assigned a herd number (big ear tag or brand) the same as her calf number. Thus, no animal ever has but one identification number. Under this system there should be no confusion nor duplication certainly in a 10 year period.

One can prevent any possible duplication of numbers which might possibly occur in replacement females when this system is used longer than 10 years. To guarantee no duplication it may be desirable to assign the low numbers in a year to heifer calves and the high numbers in that year to bull calves for the first 10 years and switch to low numbers for bulls and high numbers for heifers at the start of the second 10 year period.



For example if the system is initiated in 1975:

		HEIFER CALVES		BULL CALVES	
		Under 100 Cows	Over 100 Cows	Under 100 Cows	Over 100 Cows
1st	Beginning	501	5001	550	5500
10 Year	1975	up to	up to	up to	up to
Period		549	5499	599	5999
2nd	Beginning	550	5500	501	5001
10 Year	1985	up to	up to	up to	up to
Period		599	5999	549	5499

Another system of designation year is to use an alphabetical letter (such as G for 1975) as the first character in the calf ear tag and tattoo number. This system absolutely prevents duplication. In the year 1975 in a herd up to 100 cows, the number series would begin with G01 and in a herd up to 1000 cows with G001 and in either case run consecutively.

Some breeders like to use an alphabetical letter as the first character of the calf number to designate ownership. This practice is most useful in small herds.

No system should require more than four characters (alpha and/or numeric) in an animal's number.

#### USE OF ANIMAL NUMBER IN REGISTERED NAME

This applies only to registered animals. For the sake of simplicity and usefulness, it is highly desirable to carry the tattoo number in the registered name. Anytime the registered name is seen, the tattoo number is also visible. In naming registered animals, the farm, ranch, breeder name or prefix used to designate the herd should be first in the name. In bulls it is the usual practice to use the sire line designation and in females the family line designation next in the name. An additional unique name for the individual may or may not be used. The final part of the name is the tattoo number.

For Example: Breeder designation - Boulder Farm. A 1975 bull calf tattoo 513 by Clearview Consort 904 could be named Boulder Consort 513. A 1975 heifer calf tattoo 569 out of Boulder Butterfly 873 could be named Boulder Butterfly 569.

Keep names simple, yet meaningful.

## METHODS AND INSECTICIDES FOR FLY CONTROL ON BEEF CATTLE

James E. Roberts, Sr.  
Ext. Specialist, Entomology

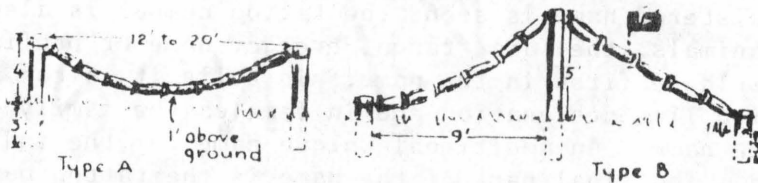
### METHODS OF TREATMENT

There are various methods of treatment for the control of external parasites of beef cattle. Cattlemen should select the method which best suits their needs. For most economical fly control, dust bags or backrubbers should be considered.

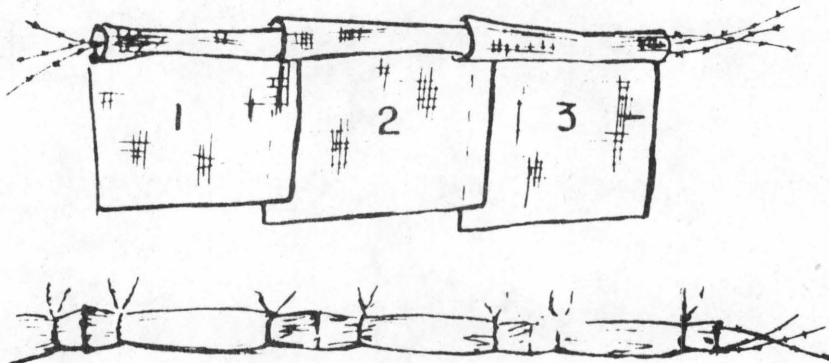
#### Backrubbers

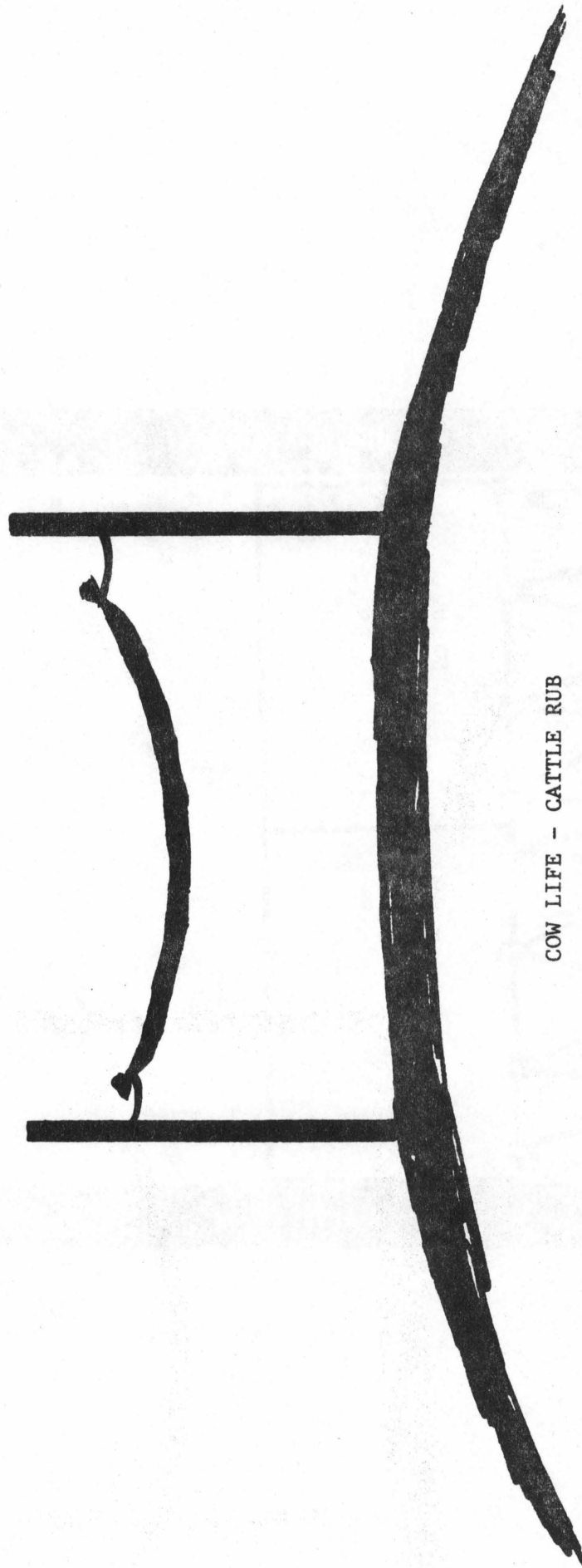
To supplement other methods of control for ticks, horn fly, and lice, well-located backrubbers may be used. Backrubbers must be located near watering places or near salt or mineral to be effective. They may also be suspended across gates, lanes, or passageway; for example, where dairy cattle will pass under them when they leave the barn.

### Construction of Cable-Type Back Rubbers



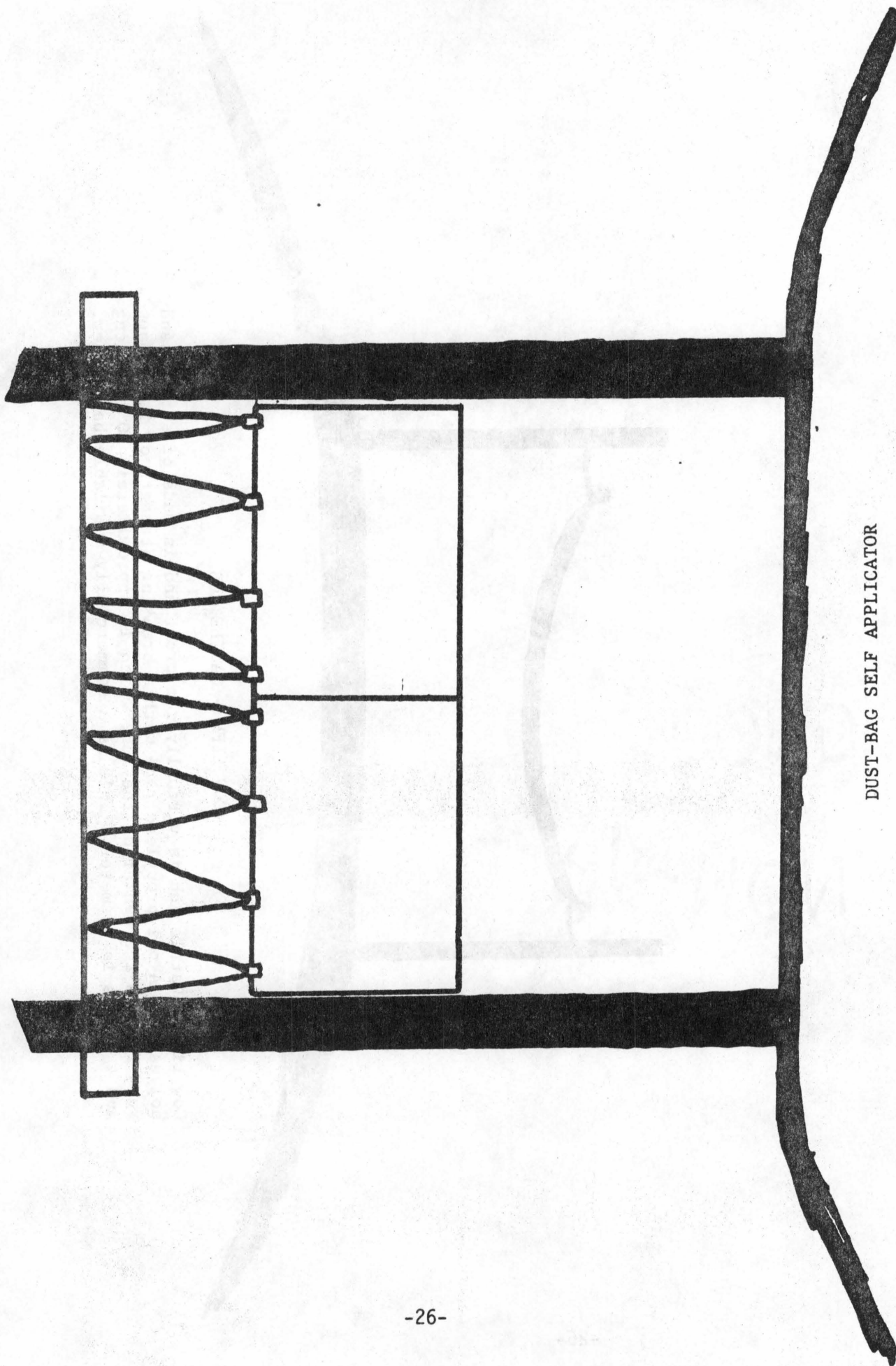
1. Suspend 4 or more strands of barbed wire or No. 9 smooth wire between posts.
2. Twist wire together or "bunch" into a cable with hog rings. Barbed wire holds burlap in place much better than smooth wire.
3. Wrap feed sacks securely around wire. Overlap as follows: wrap sack No. 1 once over wire; follow with No. 2, then No. 3. Go back to No. 1 and repeat process until all sacks are completely rolled.
4. Tie each overlapped joint securely with pieces of heavy twine such as that used on bales of hay; then tie 4" to 6" apart between the joints as shown in bottom drawing.





COW LIFE - CATTLE RUB

Cow Life - Cattle Rub is virtually rot proof and is made of acrylic and polyester. A polypropylene rope with a breaking strength of 2,700 pounds runs through the center of the rub, which is approximately 10 feet long and 4 inches in diameter. This is a commercially available backrubber.



DUST-BAG SELF APPLICATOR

This type of dust-bag is available from several companies.  
It has a waterproof cover and refills are available.



NOTE: Types A and B may be combined by using brace cables as additional backrubbers. Insecticide solution can be applied from can as shown on Type B backrubber (above). A similar type of backrubber can be built on the farm by substituting hank of used baler twine for the burlap. Various types of factory-made backrubbers may be purchased by those who do not choose to build their own.

#### Dust bags

Forced use dust bags have proven to be the best tool available for control of the face fly and a superior method of horn fly control. Lice are adequately controlled when forced use dust bags are used during winter months.

Dust bags are, for practical purposes, a type of backrubber. However they have some advantages over conventional type backrubbers in that they require considerably less attention and servicing.

Directions for Dust Bag Use: Several companies have water proof dust bags on the market. You may also use plain old burlap bags. Pour about 5 to 10 lbs. of dust into a close mesh burlap bag. To prevent the dust from sifting through too rapidly one bag should be placed inside another bag if they are porous.

The homemade or commercially available dust bags should be hung inside barns, under loafing or feeding sheds, in protected walkways, gateways, or wherever cattle pass regularly. In most instances, dust bags may be suspended just inside the door or in the passageway where cows leave the milking barn. They should be hung at a level that will allow the head, sides, and topline of adult cattle to come in contact with them (18 to 24" from the ground). They must be suspended low if face flies are to be controlled. A single dust bag may sometimes be installed over an entrance to a creep. This offers a unique opportunity for young animals to treat themselves.

Dust bags should not be hung on eaves of mineral boxes. This practice has resulted in contamination of mineral to the extent that cattle had to be treated for insecticidal poisoning.

Dust sifts from dust bags onto the cattle as they walk through and rub against them. Use enough bags to obtain adequate coverage and effective results depending on the size of the herd. Additional bags in an extra large barn door will insure adequate usage. Dust should be added to bags (5 to 10 lbs.) when the contents of the bags are depleted.

Important: If dust bags are to be effective against face fly and horn fly, they must be hung 18 to 24" from the ground in places that cattle will frequently rub against them. Frequent usage is more essential for adequate face fly control than for horn fly control. Homemade dust bags must also be protected from direct rainfall. Light rain or "wet" cows will cause slight caking. If dust in bags gets hard, it should be pounded with a stick or similar object to break up the caking and restore sifting properties. THERE ARE A LOT OF WATER PROOF DUST BAGS ON THE MARKET. PAY YOUR MONEY. TAKE YOUR CHOICE. WATER PROOF BAGS USUALLY COME WITH NYLON ROPES AND ILLUSTRATED INSTRUCTIONS ON HOW TO SUSPEND THE BAGS. IT IS VERY IMPORTANT TO MAKE THE BEST USE OF THESE ROPES TO GET A SWINGING ACTION WHEN COWS PASS UNDER THE BAGS.

Pests	Insecticide and Percent Dilution	How to Mix and Apply	Precautions and Days Between Last Application and Slaughter
DUST BAGS			
Horn flies, Lice and an aid in control of face flies	Coumaphos (Co-Ral) 1% D	No mixing is necessary. DUST BAGS MUST BE HUNG 18 TO 24 IN. ABOVE GROUND TO CONTROL FACE FLIES. Install burlap bags or commercial ready- to-use bags of dust in gates, doorways, loafing areas, etc. Keep bags in place during winter for lice control.	Do not contaminate feed or water. 0 days
	----- Malathion (Cythion) 4% or 5% D		
	----- Stirofos (Rabon) 3% D		
	----- Famphur (Warbex) 1% D		
BACKRUBBER <u>1</u> / AND FACERUBBER			
Face flies, Horn flies	Crotoxyphos (Ciodrin) 1% in No. 2 diesel fuel	Use 24 oz. of 14.4 EC in 3 gal. of diesel fuel or any backrubber base oil.	Do not use motor oil or waste oils on backrubbers. 0 days
Horn flies	Coumaphos (Co-Ral) 1% in No. 2 diesel fuel	Use 1 qt. Co-Ral 11.6% EC or 1 pt. Korlan 24% EC or 3/4 pt. Malathion 57% EC in 3 gal. of diesel fuel or any approved back- rubber base oil. To obtain forced use install burlap- wrapped cable or similar device in gates, doorways, loafing areas, etc. at first sign of pest. Slow- ly pour 1 gal. of mixture on 20 ft. of cable. Re- peat every 2 weeks. Keep in place until killing frost.	0 days
	----- Ronnel (Korlan) 1% in No. 2 diesel fuel (Aids in control of lice and face flies)		
Horn flies and Lice	Malathion 2% in No. 2 diesel fuel		DO NOT USE MOTOR OIL OR WASTE OIL ON BACKRUBBERS.
Horn flies	10% Crotoxyphos (Ciodrin) + 2.5% Dichlorvos (Vapona) (Ciovap) EC	Use 2 qts. of Ciovap EC (1.1 lbs/gal.) in 8 gal. of diesel fuel, or any approved backrubber base oil.	0 days
	----- 1% Crotoxyphos (Ciodrin) + 0.25 Dichlorvos (Vapona)	No mixing necessary.	

## BEEF HERD HEALTH PROGRAM

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A herd health program for any of the phases of the cattle business must be centered around the prevention of diseases rather than the treatment of diseases. This does not decrease the importance of the observation and treatment of any animals that become sick, but preventive rather than therapeutic medicine is the key.

All health programs should be developed with the advice of the herd owner's veterinarian. The veterinarian is trained in livestock disease control, and is the person that is most aware of the problems in the area. Therefore, a veterinarian's advice and consultation should be secured when setting up a health program. It is also important to realize that no program will be successful without cooperation between the owner, herdsman, veterinarian, and any others who might be involved.

### ***Basic Principles of a Herd Health Program***

1. Prevent exposure of animals to disease-producing organisms and situations through—
  - a. the practice of good sanitation and cleanliness,
  - b. the isolation of newly acquired animals for 10 days to 3 weeks,
  - c. the maintenance of a good environment,
  - d. the eradication of diseases when possible.
2. Maintain a high level of resistance in the animal population by—
  - a. utilizing proper nutrition—feed, water, minerals, and vitamins,
  - b. utilizing vaccination—immunization procedures that are available,
  - c. the selection of sound animals.
3. If a disease occurs, prevent its spread through—
  - a. isolation of sick animals,
  - b. an early diagnosis—physical examination and/or autopsy by a veterinarian,
  - c. close observation of the herd,
  - d. application of treatment based on the diagnosis.
4. Maintain an adequate record system.

### ***Cow-Calf Program***

1. Breeding herd (cows, bulls, replacement heifers)
  - a. Fertility test bulls prior to the breeding season.
  - b. Vaccinate for leptospirosis (3 strains - *pomona*, *hardjo*, and *grippotyphosa*), IBR, BVD, PI3, and vibriosis, prior to beginning of breeding season and while females are open (not pregnant).
  - c. Treat for internal parasites (worms) at least twice a year—more frequently, if necessary.
  - d. Practice good external parasite control procedures; treat for grubs and lice—follow recommendations on products available.
  - e. Examine all females for pregnancy after the conclusion of the breeding season and cull open cows.
  - f. Isolate all new additions to the herd and test for brucellosis, tuberculosis, and anaplasmosis.
2. Calving Time
  - a. Observe cows closely at calving time.

- b. Remember, the pasture is probably the best calving area.
  - c. Keep animals due to calve soon in an area where handling facilities are available.
  - d. Have your veterinarian instruct you on how you should handle maternity cases, what equipment and medication you need, and when you should seek professional help.
  - e. First-calf heifers usually are going to have more trouble than older animals and will need closer observation and more assistance.
3. Calves
- a. Dip the navel cords on all new-born calves with a disinfectant such as strong (7%) tincture of iodine.
  - b. Make sure calves nurse and get colostrum (cow's first milk) within 2 hours of birth. Keep some colostrum frozen for emergencies and have some form of an esophageal feeder available for use on weak calves.
  - c. Inject new born calves with vitamin A and D during the first few days of life.
  - d. Identify calves soon after birth.
  - e. Castrate and dehorn calves at an early age. It is easier, and fewer problems occur when done early. (Use caustic dehorning material—paste or liquid).
  - f. Vaccinate all calves against *Clostridium chauvoei* and *C. septicum* (blackleg and malignant edema) during the first 2 months. It is important to repeat this at 6-8 months of age.
  - g. Check with your veterinarian about the use of vaccines for other clostridial diseases and for calf scours (Reo-Corona Virus) in your herd.
  - h. Brucellosis (Bangs)—vaccinate all replacement heifers between 2-6 months of age against brucellosis.
  - i. Routine vaccination for IBR-BVD-PI3 should be done 2-3 weeks prior to weaning or 2-3 weeks after weaning, but usually not at weaning because of stress present at that time.
  - j. Treat for grubs and lice in the fall. Read and follow directions on product labels.
  - k. Treat for internal parasites on a routine basis—usually before weaning but more frequently if needed.
  - l. Eye problems—*first obtain a diagnosis* and then follow the veterinarian's advice as to treatment and possible preventive measures. Good fly control and close observation, so that proper treatment may be given early, are two things that will greatly reduce losses.
4. Several Herd Health Practices
- a. Provide good basic nutrition.
  - b. Provide adequate salt and minerals, including magnesium.
  - c. Supply vitamins A and D through the feed or by injection.
  - d. Check with your veterinarian on the need for selenium—vitamin E preparations in the area and on your farm.
  - e. Keep feet trimmed and corns removed from animals, especially bulls. Get this work done before breeding season.
  - f. If artificial insemination is used and teaser bulls are a part of the program, make sure the teaser has had his penis removed, blocked or deviated.

An explanation of the diseases mentioned above may help you understand the reasons for preventing these conditions.

### ***Brucellosis***

This is a bacterial disease, commonly referred to as "Bangs," that affects several species of animal including cattle and man. It affects cattle primarily by causing abortions. There are federal-state programs for the eradication of this disease because of animal losses and the human health hazard. There is no treatment for adult animals but it can be prevented by vaccinating heifer calves between 2-6 months of age.



### ***Leptospirosis***

"Lepto" is a bacterial disease of cattle caused by the organism *Leptospira*. There are 3 strains, *hardjo*, *pomona*, and *grippotyphosa*, that are primarily involved and animals should be routinely immunized against these. Two other strains, *canicola* and *icterohemorrhagiae*, may become important in certain herds. These diseases cause abortions, infertility, weak calves, systemic infections, and death in some animals.

### ***Vibriosis***

Vibriosis is considered to be a venereal disease and is spread, at the time of breeding, from an infected male to the females or from an infected female to the male and then to the rest of the herd. It causes abortions and infertility in the female. Treatment is difficult and prevention is by annual vaccination of breeding animals or by the use of artificial insemination.

### ***IBR***

Infectious bovine rhinotracheitis (IBR) is a viral disease that may cause respiratory infections, encephalitis (brain infection), conjunctivitis, abortion, and reproductive tract infections. It is prevented by the use of vaccines. There are modified live virus (MLV) products for intranasal (IN) or intramuscular (IM) use and killed virus products for intramuscular (IM) use. Do not use any of these products unless you have discussed the precautions regarding their use with a veterinarian.

### ***PI-3***

Parinfluenze type 3 (PI-3) is a viral disease causing primarily respiratory problems in cattle. It is considered to be a secondary factor in many "shipping fever" outbreaks. There are also MLV/IN and IM products and killed virus products for use in immunization programs.

### ***BVD***

Bovine virus diarrhea (BVD) affects cattle by causing abortions, diarrhea, chronic digestive disturbances, weak calves at birth, fetal anomalies, conjunctivitis, dermatitis, and nervous signs. The only vaccines available are MLV products for IM use. Do not use these products without discussing their use with a veterinarian.

### ***Blackleg and Malignant Edema***

These are diseases caused by the organisms *Clostridium chauvoei* and *C. septicum*. These are organisms that live in the ground and may enter a calf through wounds, ingestion, and navel cords. These organisms produce toxins in the animal's body that are rapidly fatal. Prevention is by the use of a vaccine (killed bacteria) in the young animal. Repeated doses are indicated.

### ***Grass Tetany***

Grass tetany or winter tetany is a condition caused by a deficiency of the mineral magnesium (Mg) in the animal's body. It can cause tetany (convulsions), paralysis, blindness, and sudden death. It is treatable if caught early but prevention is more successful. It is prevented by the addition of Mg to the animal's diet on a daily basis. This can be done on a seasonal or year-round basis. Herds in areas where it is a problem should probably supplement year-round. Discuss the methods and materials to use with your Extension Agent or feed dealer.

### ***Herd Health Calendar***

Any type of a health program has certain procedures, vaccinations, and management decisions that must be performed at a given time. The following is a year-round health schedule incorporating some things that are considered to be important in getting the most number of cows bred, pregnant, and calved successfully, and the greatest number and pounds of calf to weaning time. The schedule uses the following premises in arriving at dates:

1. 80-day calving season for cows,  
60-day calving season for heifers,
2. Spring calving season,
3. 285-day gestation period (length of pregnancy),
4. Heifers start calving 30 days prior to cows.

Use the work column at the right to select health management dates for your herd. Then put these dates on your calendar.

	Recommended Date	Your Herd
Move heifers into calving pasture. ....	Dec. 15	_____
Begin calving heifers—60 day season. ....	Jan. 1-Mar. 2	_____
Move cows into calving pasture and sort heavy cows weekly.....	Jan. 15	_____
Begin calving cows—80-day season .....	Feb. 1-Apr. 22	_____
Calves: Identify, disinfect navel cord, give Vitamins A-D, vaccinate for blackleg and malignant edema, castrate & dehorn (may use caustic).....	As born	_____
Fertility-test bulls (prior to breeding season).....	Feb. 15	_____
Vaccinate bulls—leptospirosis (3 strains), IBR, BVD, PI3, vibriosis, and treat for internal parasites (worm). ....	Feb. 15	_____
Replacement heifers (those to be bred for first time): Vaccinate against leptospirosis (3 strains), IBR, BVD, PI3, and vibriosis, and treat for internal parasites (worm)—do these things at least 2-3 weeks prior to breeding. ....	Mar. 1	_____
Start breeding heifers. ....	Mar. 24	_____
Stop breeding heifers—remove bulls. ....	May 23	_____
Cow Herd: Vaccinate open cows and 1st calf heifers for leptospirosis (3 strains), IBR, BVD, PI3, vibriosis, and treat for internal parasites (worm)—do these things at least 2-3 weeks prior to breeding. ....	Apr. 5	_____
Start breeding cows. ....	Apr. 24	_____
Stop breeding cows—remove bulls. ....	Jul. 13	_____
Calves: Revaccinate for blackleg and malignant edema. Castrate and dehorn any missed earlier. Brucellosis vaccinate heifers (2-6 months of age). ....	Jun. 1-Jul. 1	_____
Pregnancy-exam heifers. ....	Jul. 24	_____
Pregnancy-exam cows. ....	Sept. 13 to weaning	_____
Treat cows and replacement heifers for internal parasites, grubs, and lice. This can be done while pregnancy checking. ....	Sept. 13 & before Nov. 1	_____

Calves: Worm, treat for grubs and lice. ....	Oct. 1	
Revaccinate for blackleg and malignant edema (prior to sales).....	Oct. 1	
Vaccinate for IBR-PI3 (Nasal vaccine). ....	Oct. 1	
[If modified live virus (MLV) intramuscular (IM) vaccine is used, do after weaning].....	Nov. 15	
Wean calves. ....	Oct. 15-Nov. 15	
Start magnesium supplementation for cows (may con- sider year-round supplementation).....	Oct. 15-Nov. 1	
Late gestation heifers—vitamins A-D, and treat for lice. ....	Dec. 15	
Late gestation cows—vitamins A-D, and treat for lice. ....	Jan. 15	

### Stocker-Feeder Program

1. Home-raised animals
  - a. Vaccinate prior to weaning for IBR, BVD, PI3, and pasturella. Revaccinate, after weaning, for pasturella.
  - b. Worm calves prior to weaning and again 2-3 months later.
  - c. Treat for grubs and lice—repeat lice treatment at least once and preferably twice during winter.
  - d. Inject calves with vitamins A and D and make sure adequate amounts are available in feed supplies.
  - e. Feed adequate mineral, including magnesium.
  - f. Implant if it is recommended.
2. Purchased animals
  - a. If possible, but preconditioned animals or animals where background is known. When possible, move directly from farm of origin to your farm.  
The following will apply to animals from sales, and those with unknown histories.  
Do these procedures on arrival or wait 3 weeks
    1. Vaccinate for IBR and PI3.
    2. Worm for internal parasites.
    3. Treat for grubs and lice and repeat during winter.
    4. Vaccinate for blackleg and malignant edema, and any other clostridial diseases that your veterinarian recommends.
    5. Implant.
    6. Vaccinate for BVD after animals are well adjusted.
3. Respiratory problems
  - a. Complex problems which may involve many factors are: stress, bacteria, viruses, nutrition.
  - b. Good immunization programs will reduce losses.
  - c. Reduce stress on animals—hauling, feeding, handling, environment.
  - d. Important to get a good diagnosis before starting on any treatment program.
  - e. Treatment must be with effective drugs administered in therapeutic amounts for prescribed period of time. Long acting, sustained-release products have a place in the treatment of the respiratory complex by reducing stress of daily handling.
  - f. Close, keen observation of animals for the early detection of sickness is one of the most important factors contributing to a successful treatment program.

## PRESENTING YOUR CATTLE TO PROSPECTIVE CUSTOMERS

by

A. L. Eller, Jr. & Gary L. Minish, Animal Science Dept.

A great deal of time, energy and money is expended in the improvement and production of purebred cattle. While we give a great deal of attention to the marketing of our commercial cattle, more attention should be given the marketing of purebred seedstock in an organized fashion. Actually a marketing program for the produce of a purebred herd requires a tremendous amount of planning and work on the part of the breeder himself.

There are several decisions about marketing that a breeder must make before he makes production decisions. A large percentage of purebred breeders decide what to produce and then begin to think about the marketing program. Many purebred breeders never really zero in on the market their cattle should go into and thus, they are unsuccessful in moving their product.

There are several factors to consider:

1. The breeder must make a self evaluation. Do I have the capability and knowledge to be a breeder who will really make a contribution to the breed involved? Do I have the knowledge and personality to talk with my logical clientele? Do I have the ability to sell my cattle? Can I close a deal? Do I like people?
2. The production unit must be evaluated. Is my farm one that can provide the pasture, feed, and general environment to produce healthy, well grown cattle? Must I sell calves or can I sell older cattle?
3. The labor supply and the skill of the workers must be evaluated. Can cattle be fed properly? Can cattle be halter broken and fitted for sale if need be? Can others on the farm make private treaty sales?
4. The quality of the herd must be assessed. Are my cattle good enough to improve commercial herds? Will bulls and females from my herd be useful for other purebred herds?
5. The farm location is a key factor. Am I located in a commercial cattle area? Is my farm easily accessible to prospective buyers? Location affects what the sales program should be.
6. The present reputation of the herd must be evaluated. Who knows about my herd? What has been my exposure up to now?

Setting up a marketing program can only be correctly done after the above evaluation has been made. The program will vary from herd to herd. Here are several suggestions:

1. Make your cattle good enough to be useful to the commercial industry. Use selection based on performance records. Upgrade the cow herd management program so that environment is tops. A purebred herd has to be superior to most commercial herds or there will be no market for the young cattle. Only in herds which can find a ready market for commercial bulls can a marketing program be set up to sell females and bulls to other registered herds.
2. Keep records. The complete performance record on each cow in the herd must be kept in a readily available form for your use and for the use of your customer. Use Individual Cow Production Record Cards or sheets.



3. Get to know cattlemen in your marketing area. Get involved in local, area, and state cattle associations and functions. Go to the local feeder calf sales and work at the unloading dock when commercial men bring in their calves. Make visits. Always have some factual material about your cattle to hand to a prospective buyer.
4. Advertise. Put up an eye-catching farm sign. Advertise in local papers. Use appropriate publications in line with your budget based on expected sales. Don't be bashful. Get out and sell your program and operation. Let fieldmen, Extension people and others know what you are doing. Invite groups such as 4-H and FFA field day groups and others to your farm. Aim all advertising at the potential customer.
5. Plan production for a specific market. It is usually smart to plan to move cattle at relatively young ages. Remember profit is essential. Don't forget that sub-par animals should go in the feeder calf sales as steers and heifers.
6. Hold costs down. Most registered herds must be operated basically just like commercial herds. Few farms can support frills and other extra expense today.

There are two types of sales, private treaty and auction. Here are some points on each:

1. Private Treaty. Any purebred operation must rely basically on this type of selling. Remember, though, you are the major ingredient in making private treaty sales successful. Do the following:
  - (a) Sort cattle for sale in groups as to age, quality, breeding status, and value.
  - (b) Price cattle realistically. Use the current commercial cattle market as a base if you are selling to the commercial man. Average and above service age bulls can be priced using this formula:

$$\begin{array}{rcl} \text{NO. OF COWS THE} & & \text{CHOICE SLAUGHTER} \\ \text{PRICE = BULL WILL BREED} & \times & \text{STEER PRICE PER} \\ \text{ANNUALLY} & & \text{CWT.} \end{array}$$

Example: 25 cows X \$60 = \$1500

For below average bulls use:

$$\begin{array}{rcl} \text{WEIGHT OF} & & \text{CHOICE SLAUGHTER STEER} \\ \text{PRICE = THE BULL} & \times & \text{PRICE PER POUND} & + & \$75 \end{array}$$

Example: 1100# X \$.60 + \$75 = \$735

Vary the pricing of individual bulls from this point based on individuality, soundness, pedigree value, age, and time of year relative to expected future costs. Pricing bulls for the purebred market will depend on the current demand. Pricing females can be done in a similar manner based on the commercial market.

$$\begin{array}{rcl} \text{PRICE OF CHOICE} \\ \text{PRICE = WEIGHT} & \times & \text{STEER FEEDER CALVES} & + & \$50 \text{ to } \$100 \end{array}$$

Example - heifer calves: 500# X \$.80 + \$50 = \$450 to \$500

Vary the price from this point depending on the quality of the animals. The point is, price the animals based on the market at the time. Figure costs of production and let this help you in pricing and knowing when to sell. Before you price, decide on what type buyer you plan to sell cattle to.

- ### SUGGESTED FORMAT FOR LISTING CATTLE FOR SALE

(d) Convenience the buyer. Don't waste his time. Have sale cattle accessible. Offer delivery service.

(a) Production Sale - This type of sale is for larger herds who can hold a sale every year or every other year. You may hold a bull sale where yearling bulls are sold, a female sale where breeding age heifers and cows with or without calves are offered, or a calf sale for female and bull calves. Some suggestions:

- (b) Consignment Sale - Consignment sales are often put on by breed associations or other local or state groups. Expect to sell only a portion of the production through these sales. Some suggestions:

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- (4) Ear tag animals with sale lot number.
- (5) Furnish full performance and other data for the catalog. Use only standardized performance measures such as adjusted 205 or adjusted 365 day weights and ratios.
- (6) Have relevant records on consigned animals and on your herd available at the sale.
- (7) Pre-sell your animals. By this I mean work hard before the sale contacting buyers for your cattle.

On any type of sale there are three important areas that should be considered:

- 1. BE SURE HEALTH STATUS OF YOUR HERD AND CATTLE IS PERFECT.
- 2. PROMPTLY TRANSFER REGISTRATION CERTIFICATES OF SOLD ANIMALS TO THE NEW OWNER.
- 3. FOLLOW UP SALES. CHECK ON ANIMALS SOLD. Letters and phone calls are good but a visit is the best. This activity will get you repeat customer business.

COMBINING FEEDS FOR SPECIFIC ACCOMPLISHMENTS  
by H. John Gerken, Jr.  
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BEEF COWS

The goal of every cow-calf operation should be to produce a heavy calf (450 lbs. minimum) every 12 months from every cow. An economical system to produce and harvest roughages for fall and winter feeding and an economical pasture system is essential. Successful cow herd operators must provide adequate nutrition during the critical lactating and breeding periods. A good cowman knows the nutrient value of feeds available and how to use those feeds to meet the needs of the cow at the various stages of her reproductive cycle. Feed costs are more than half the total cost of producing a calf so this is an area where the greatest reduction in costs can probably be obtained.

Cows need many nutrients but those of most practical concern to cattlemen are TDN (energy), total protein, calcium, phosphorus, and vitamin A. These along with water and salt must be considered in developing a beef cow herd feeding program. In addition, magnesium is of concern in areas where grass tetany is a problem. Trace minerals can be supplied in trace-mineralized salt. Vitamin D is supplied by direct exposure to sunlight and by feeding sun cured forages. Mature ruminants receive adequate amounts of B vitamins and vitamin K through bacterial synthesis in the rumen. Vitamin E deficiency occurs only in young calves as white muscle disease. It can be prevented by vitamin E-selenium injections at birth. It is now possible to supplement cattle rations with selenium or to have selenium added to salt-mineral mixtures which should alleviate white muscle disease problems.

Tables are available which give the nutrient requirements of beef cows. Excerpts from these will be used to illustrate rations for dry pregnant cows and for lactating cows in the first 3 to 4 months after parturition. These are key periods in the life of the beef cow. Most of the growth of developing fetus occurs in the last 60 days of pregnancy. Cows in good condition should gain from 0.5 to 1.0 lbs. per day during this period. Cows which fail to gain weight during late pregnancy actually lose body condition as nutrients are drawn from the cow's body to supply the developing fetus. In addition, adequate nutrition in late pregnancy assures a strong cow for the rigors of parturition; a healthy vigorous calf, adequate milk production and a prompt return to estrus cycling by the cow.

The requirements of a 1000 lb. dry, pregnant cow in late pregnancy are as follows:

	Dry Matter	Total Dig. Nutrients	Total Protein	Dig. Protein	Calcium	Phosphorus	Vitamin A, I.U.
%	100	52	5.9	2.8	.18	.18	23,000
Lbs.	16.7	9.4	1.1	0.5	.032	.032	23,000



We can easily meet the needs of the dry cow with average to good quality hay. For example, typical orchard grass hay of medium quality contains 50% TDN, 9.7% protein, .40% calcium, .30% phosphorus and 90% dry matter. It also should contain 4000 I.U. of vitamin A per pound. If we feed 21 lbs. of this hay (as fed basis) we would supply the following nutrients:

9.4 lbs. TDN  
 1.8 lbs. Total Protein  
 .075 lbs. Calcium  
 .057 lbs. Phosphorus  
 70-80,000 I.U. Vitamin A

Thus, we have a balanced ration for a 1000 lb. dry cow with hay alone. However, feed is often short or it may be advantageous for other reasons to use lower quality feeds. One possibility would be to use corn stover instead of hay. Corn stover has the following nutrient values: TDN-45%, crude protein-4.0%, calcium-.37%, phosphorus-.12% and vitamin A-0 I.U. per lb. Note that, except for calcium, corn stover is deficient in every nutrient needed by the brood cow. We cannot balance a ration for a pregnant beef cow using stover alone. However, by combining a full feed of corn stover and 9.0 lbs. of alfalfa hay we can balance the ration for every nutrient including phosphorus which is marginal. The results are as follows:

	Lbs. (As Fed)	D.M. Lbs.	TDN Lbs.	Protein Lbs.	Calcium Lbs.	Phos. Lbs.	Vitamin A I.U.
Corn Stover	13	10.4	4.68	.416	.038	.012	-
Alfalfa Hay	9.0	8.1	4.70	1.385	.101	.019	64,800
	<u>21.0</u>	<u>18.5</u>	<u>9.38</u>	<u>1.801</u>	<u>.109</u>	<u>.031</u>	<u>64,800</u>

Here are some other rations which meet the needs of dry pregnant cows in good condition. These levels of feeding will put her on a rising plane of nutrition so she will be in proper condition at the start of the breeding season.

1. 17-20 lbs. of grass or grass-legume hay.
2. 10-12 lbs. of grass-legume hay plus straw or low quality hay fed free choice.
3. 40 lbs. of corn silage plus 0.5 lbs. of soybean meal or equivalent protein supplement.
4. Medium to high quality pasture.
5. 5 lbs. hay plus 35 lbs. corn silage.
6. 10 lbs. hay plus 25 lbs. corn silage.
7. 15 lbs. hay plus 15 lbs. corn silage.

Dry cows in the middle third of pregnancy have lower requirements than cows approaching parturition. This provides an opportunity for economy as such cows need limited amounts of feed and can utilize feeds of lower quality. Examples of rations suitable for cows at this stage of the yearly cycle are these:

1. Low to medium quality pasture.
2. 15 to 23 lbs. of hay.
3. 10 lbs. of hay plus 15 lbs. straw.
4. 35-40 lbs. of corn silage.
5. 1-2 acres of corn stalks plus hay or supplement as needed.

The lactating cow needs more nutrients than the dry cow. She needs 40-50% more total digestible nutrients and 100% more protein as well as considerably more calcium and phosphorus. Wherever possible, producers should separate dry cows and wet cows so cows nursing calves can be fed according to their needs. Examine the needs of the lactating cow and compare them with those of the dry, pregnant cow to see why this is desirable.

	Dry Matter	Total Dig. Nutrients	Total Protein	Dig. Protein	Calcium	Phosphorus	Vit. A I.U.
%	100	52	9.2	5.4	.28	.28	-
Lbs.	20.5	11.1	1.88	1.11	.058	.058	37,000

Here again we can meet the needs of the lactating cow with high quality hay or other forage. By increasing the amount of high quality mixed hay to 25 lbs. per head per day we will supply the following:

11.25 lbs. TDN  
 2.18 lbs. Total Protein  
 .09 lbs. Calcium  
 .067 lbs. Phosphorus  
 90,000 I.U. Vitamin A

Every nutrient including TDN is adequately supplied by this level of feeding. However, if the hay we had available contained only 6.0% protein as mature orchard grass often does, it would supply only 1.35 lbs. of protein per day or .53 lbs. less than the requirement. We would need to feed 1.15 lbs. of soybean meal or the equivalent to meet the protein requirement of a cow nursing a calf.

Other rations for lactating cows include the following:

1. High quality pasture.
2. 25 to 35 lbs. of grass-legume hay (full feed).
3. 50-60 lbs. of corn silage (30-35% dry matter) plus 1 lb. soybean meal or equivalent.
4. 20 lbs. of grass-legume hay and 20 lbs. of corn silage.

Heavy milking cows such as dairy x beef crossbred females and some dual purpose exotics have higher milking ability and higher nutrient requirements than average milking cows. It is difficult for such cows to get enough energy in order to get back into shape to rebreed on schedule. It may be necessary to feed some grain to such cows in early lactation. Suggested rations for cows with superior milking ability are as follows:

1. High quality pasture plus grain if necessary.
2. 30 to 40 lbs. grass legume hay (full feed) plus grain if necessary.
3. 65 to 75 lbs. corn silage (30-35 % D.M.) plus 2-2 1/4 lbs. soybean meal or equivalent.

## BULLS

Mature herd sires running with the cow herd will normally consume 1 1/2 times as much feed as a cow. When fed separately the goal should be to maintain the weight of mature bulls in good condition and put weight on bulls in thin condition. Suggested rations are:

1. High quality pasture plus grain to condition.
2. 30 lbs. grass-legume hay plus grain to condition.
3. 70 lbs. corn silage plus 1 1/2 lbs. of soybean meal or equivalent.

Young bulls need to be fed for growth as well as maintenance. The goal should be to have yearling bulls gain 1.5 lbs. per day while 2 year old bulls should gain 0.7 lbs. per day. Suggested rations are:

1. High quality pasture plus 12 lbs. of grain.
2. 20 lbs. of grass-legume hay plus 12 lbs. of grain.
3. 70-80 lbs. of corn silage (30-35% D.M.) plus 2.0 lbs. soybean meal or equivalent.

## REPLACEMENT HEIFERS

The success of the beef herd is often related to the development of superior breeding stock and their successful introduction into the breeding herd. Proper development of replacement heifers requires rapid growth, puberty at an early age, adequate development while pregnant and special attention to the needs of the 2 year old heifer nursing her first calf.

The goal in feeding open heifers is to achieve enough weight gain so they can be bred one heat period ahead of the main cow herd at about 14 months of age. They should gain 1.0 to 1.5 lbs. per day from weaning to breeding. For example 600 lb. heifers gaining 1.0 lb. per day will require the following

	Dry Matter	Total Dig. Nutrients	Total Protein	Dig. Protein	Calcium	Phosphorus	Vit. A I.U.
%	100	59	9.1	5.4	.20	.20	14,000
Lbs.	13.6	8.9	1.39	.82	.031	.031	14,000

We can meet this requirement with a full feed of hay (11 to 12 lbs.) plus 5 lbs. of corn grain. Such a ration will supply the following:

9.3 lbs. TDN  
1.45 lbs. Total Protein  
.06 lbs. Calcium  
.04 lbs. Phosphorus  
46,000 I.U. Vitamin A

This ration should easily provide for 1.0 lbs. per day gain on heifers. Increasing the grain 2-4 lbs. would further increase gains as desired to reach 1.25 to 1.5 lbs. per day.

Other suggested rations for growing weanling heifer calves rapidly enough to breed at 14 months are these:

1. High quality pasture plus 5 lbs. grain.
2. 35 to 40 lbs. corn silage (30-35% D.M.) plus 1.0 lbs. of soybean meal or equivalent.
3. 5 lbs. grass-legume hay plus 30 lbs. corn silage plus 1/2 lb. soybean meal or equivalent.
4. 10 lbs. grass legume hay plus 20 lbs. corn silage.

The goal in feeding pregnant heifers is to achieve about 1.0 lb. per day gain for 120 days prior to calving. For example, 800 lb. heifers should reach 920 by calving time. Under feeding replacement heifers can be disastrous as many may fail to breed back after calving. Caution should be observed, however, not to get heifers too fat as this may result in increased calving difficulty. Rations to achieve this performance are:

1. High quality pasture.
2. 20 to 25 lbs. of grass-legume hay (full feed).
3. 40-45 lbs. of corn silage (30-35% D.M.) plus 1 1/4 lbs. soybean meal or equivalent.
4. 5 lbs. of grass-legume hay plus 35 lbs. corn silage plus 3/4 lb. of soybean meal or equivalent.
5. 10 lbs. of grass-legume hay plus 25 lbs. of corn silage plus 1/4 lb. of soybean meal.
6. 15 lbs. of grass-legume hay plus 15 lbs. of corn silage.

#### MINERAL MIXES

Here are several mineral mixes for different situations. These are designed to be fed free choice in salt-mineral feeders. It may be desirable to provide a two compartment mineral feeder so cattle get adequate salt. This can be done with mixtures 1, 2, or 3. No additional salt should be provided when mixture 4 is fed to assure adequate magnesium intake; otherwise, daily magnesium intake may be too low.

Mixture 1. For the cow herd during the breeding season to supply extra phosphorus.

	% of Mix	% Ca.	% P
Trace mineralized salt	33		
Bone meal or dicalcium phosphate	67	22 - 27	13 - 19
Total in mix	100	14.7 - 18.0	8.7 - 12.8

Mixture 2. For the cow herd before and after the breeding season and for grazing steers and heifers.

	% of Mix	% Ca.	% P
Trace mineralized salt	50	-	-
Bone meal or dicalcium phosphate	50	22 - 27	13 - 19
Total in mix	100	11.0 - 13.5	6.5 - 9.5



Mixture 3. For cattle in dry lot or grain or other feeds low in calcium.

	% of Mix	% Ca.	% P
Trace mineralized salt	33.3	-	-
Bone meal or dicalcium phosphate	33.3	22 - 27	13 - 19
Ground limestone	33.3	38	-
Total in mix	100.0	20 - 21.7	4.3 - 6.3

Mixture 4. For feeding to cow herds in fall, winter or early spring when grass tetany (magnesium deficiency) is a problem.

	% of mix	% Ca.	% P	% Mg.
Magnesium oxide	25	-	-	60
Trace mineralized salt	25	-	-	-
Bone meal or dicalcium phosphate	25	22 - 27	13 - 19	-
Ground corn	25	-	.35	-
Total in mix	100	5.5 - 6.8	3.3 - 4.8	15.0

#### VITAMIN A

Vitamin A will not usually be required when cattle are fed green forages or pasture. When cattle are fed low quality forages for extended periods of time, vitamin A supplementation is advisable. Supplemental levels should be 20,000 to 40,000 I.U. per day. Vitamin can be added to the daily ration, mixed in mineral mixes at the rate of 100,000 to 500,000 I.U. per lb. of mineral mix or administered by injection of 1,000,000 to 3,000,000 I.U.

#### SHOW AND SALE RATIONS

Replacement and sale cattle can be developed satisfactorily on ordinary farm rations based on hay, silage and pasture. Farm grains and protein supplements can be added as needed to achieve desired performance. A suitable mix for show and sale cattle is the following:

Feed	Lbs/Ton	% of Mixture	Handmix
Oats, rolled or ground	1110	55	3 buckets
Corn, cracked	565	28	1 1/2 buckets
Soybean meal	200	10	2 #10 cans
Molasses	100	5	3/4 #10 can
Mineral mix*	30	1 1/2	as needed
Vitamin A**	-	-	as needed
	2000	100	

\*1 part tm salt, 1 part ground limestone, 1 part dicalcium phosphate

\*\*Vitamin A or vitamin ADE supplement to supply 2000 to 4000 I.U. of Vitamin A per lb.

This mixture can be fed to show and sale cattle of all ages with good quality hay. Vary the amount fed according to expected gains and condition. It is also a satisfactory mixture for creep feeding. However, increasing the corn to 50% of mixture and reducing the oats proportionately will also give good results.

## DEVELOPING A BREEDING HERD - SELECTING FEMALES - SELECTING HERD SIRES

By: A. L. Eller, Jr., Extension Spec., Animal Science

When developing a breeding herd of registered cattle, extreme care should be taken to begin with the kind of animals that are in keeping with goals and directions that should have already been set for the herd. The old adage that the bull is half the herd is numerically correct, but because of the influence of sires used, the bull is, in fact, considerably more than half the herd. Suffice it to say that sire selection is of paramount importance because of the daughters that each sire will leave in the herd.

When establishing a herd from scratch though, the most important decisions relate to selection of foundation females. Females for the new herd or purchased females to be added to any herd should be selected on production ability. If selecting virgin heifers or bred heifers, these items are of extreme importance:

1. Source - The breeder of such females should be carefully selected. Integrity of that breeder is of paramount importance. You must be assured that pedigree, birthdate and performance records are correct. Check the herd records. The breeder of heifers under consideration should be a one who has practiced performance selection in his herd for a period of years and one who has developed a herd which performs well above average in reproductive and growth traits.
2. Production Records - Select young females who themselves are average or better on individual performance. Look at weaning weight ratios and yearling weight ratios if available. Remember that a ratio of 100 is average for the trait in that herd. Select young females from dams which have regular calving records and show, by inspection of dam summary, average or above growth records. Heifers should be sired by superior sires as judged by production records of their get.
3. Close Relationship - In establishing a herd it's always a good idea to select a group of half sisters from the breeder in question. Doing so insures that you will have like genetics in your herd's foundation.
4. Pedigree - Pedigree is important only as it relates to known production and absence of genetic "traits" such as dwarfism, off color, and other genetic recessives that may adversely affect value of offspring. Popularity of pedigree is of secondary importance because popularity changes over time. In a nutshell, select females which are sound of pedigree and which have ancestors of known (above average) production.
5. Health - Make sure the herd which you consider purchases from is in top health from the standpoint of diseases such as TB, Bangs, Anaplasmosis and Leptospirosis. Selected heifers should have been calfhood vaccinated against Bangs.

Although heifers are usually more available, one should certainly consider the purchase of top producing cows for a herd foundation. It is usually difficult to

buy top producing cows though, because breeders who have them simply want to keep them. Most of the points made before also apply to the selection of cows though these points may prove helpful:

1. Source - Again, a reputable breeder is a must. Performance and progeny records are highly desirable. Top producing cows in general can only be found when a herd is dispersed or in case of a breeder who practices selling top producing cows when they hit a certain age because he is interested in turning generations quickly.
2. Records - Select mature cows who reproduced regularly and those which have plus ratios on their progeny for weaning weight and yearling weight (if available).
3. Age - This is not hard and fast but 8 years old is about the allowable maximum. The younger the better.
4. Soundness - Check udders, feet and legs, eyes and general stamina and health.
5. Service Sires - Bred cows should be bred to superior bulls of known breeding ability.

Now, let's address the matter of selecting raised females for replacements in your herd. First of all, realize that selection from the female side cannot be very intense because of the high percent of each crop which must be retained. Some 15 to 20 percent of a herd of cows will need to be replaced each year. This means that some 50 percent of the annual heifer calf crop must be retained. These are my suggestions as to the replacement heifer selection procedure:

1. Decide how many heifers to keep at weaning -- this number should be on the high side.
2. Selection at weaning:
  - (a) Cull the unregistrable, off marked, unsound kind right off the bat.
  - (b) Remove any which are too young to fit the group to breed for calving at 2 years old.
  - (c) Remove the bottom heifers then on weaning ratio.
  - (d) You may want to kick any very small framed, overfat kind of heifers.
3. Feed heifers to make minimum target weight at breeding time, at 13-15 months of age. For Angus 650#, Hereford 700#, Charolais and Simmental 750#.
4. Expose to bulls or semen from bulls which will produce relatively light birth weights for 45 to 60 days -- preferably 45.
5. Pregnancy check 45 to 60 days after breeding season and discard the open ones.
6. Give these heifers a good culling based on the performance of the first calf produced.

Selection of herd sires is a really tough job but probably easier today than ever before because we have more valid performance information than ever before. In selecting young bulls for use in your herd, these points are quite important:

1. Source - The breeder is doubly important in bull selection. He must be a man of integrity and have a set of complete herd records including performance. The bull you need must be from a herd which has been performance selected. Bulls may be gain tested on the farm or in a test station.
2. Performance Records - Identify bulls with acceptable individual performance records and acceptable production records on ancestors, particularly sire and dam and then go out and look at those bulls so identified on paper. On individual record look at (1) birth weight; (2) weaning weight and ratio; (3) postweaning daily gain and ratio and yearling weight and ratio; (4) wither or hip height if available; (5) some measure of condition if available. On ancestors records, be particular about dams of potential sires. Look for regularity of calving and average weaning and yearling ratios. MPPA (most probably producing ability) or BVR (breeding value ratio) are very useful measures. Look for growth in the sire's progeny and maternal breeding value ratio if available.
3. Pedigree - Like in females, known pedigrees from the standpoint of guarding against deleterious genes. If you can equate animals in a pedigree with production - great. Use performance pedigrees if available.
4. Type and Soundness - Type is an individual matter but moderately large to large framed cattle are more popular today than smaller framed ones. Remember, good producing ones come in a lot of different shapes. A bull must be sound physically and reproductively. Check testicles, penis, prepuce along with feet and legs. Fat thickness measures (probe or sonar) helps get at composition of weight.

Once selected, breed the sound bull to 10-20 proven cows. Compare him against proven bulls. After one calf crop you can fairly evaluate him -- keep or cull.



## SELECTING HERD SIRES

By

W. Norman Vincel, Beef Coordinator  
Virginia-North Carolina Select Sires, Inc.

Selecting the next herd sire or group of herd sires for your particular herd is one of the most important management decisions that you will make in developing a beef herd today. Whether or not this is done through A. I. or by the purchase of a bull, it is vitally important to make the correct decision. In just three generations, the sires used in a herd will make up 87½% of the genetics in that herd! With this sort of impact on your herd you cannot afford to make a mistake.

Today, more so than ever, there is a world of data, both performance and progeny, available to you to help you reach a more logical decision in selecting your herd sire. This data is still in many forms and can at times be confusing. Do not let this discourage you from using it, however, because most of the data can be explained and understood fairly easily.

The first point that needs to be understood is the difference between a bull's Performance Data and his Progeny Data. Performance Data of a bull is what he himself did as an individual, i.e., yearling weight 1150 lbs. 112 ratio. Progeny data is data collected on the calves he sired and had tested for traits such as weaning weight and yearling weight. You should know that Progeny Data, when collected in an accurate method is much more important and reliable than the performance data on an individual bull. In other words, if you have both Performance and Progeny Data on a bull, put greater emphasis on the Progeny Data. By doing this you should make less mistakes!

Let's take a look at the data below and discuss some of the key figures to look for when evaluating data.

PERFORMANCE RECORD - BULL A

	Weight	Ratio
Wn. Mgt.	Creep	
Adj. 205	649	131
Test ADG	3.11	106
Adj. 365	1151	113
Wt/DA	3.14	

The above data is one bull's own record, Bull A. This tells you that his adjusted 205 day weight was 649 lbs. and his ratio within the herd was 131. The 131 ratio means he was 31% above the average of the calves he was tested with. And so on down the chart with test Average Daily Gain (ADG) and Adjusted 365 Day Weight. The Adjusted 365 Day Weight and ratio is probably the one most important piece of data in predicting the improvement he will make in your herd in regard to performance. This data is good and should be utilized when evaluating yearling bulls for possible herd sire use. However, this data is only about 60% reliable when trying to predict how the bull's offspring will perform. In other words 60% of the time your selection will be accurate but the other 40% of the time you will be wrong.

To increase your chance of success, you must then look to the bulls with progeny data that is above average. Take for example the following actual data:

PROGENY DATA - BULL B

Trait	No. Prog.	Trait Ratio
205 Day Wt.	222	104
365 Day Wt.	104	104
Dau. Calf Wn. Wt.	28	109

This data tells you that this particular bull has had 222 calves tested for weaning weight and the 222 calves were 4% (104 ratio) above the average of the calves they were tested against and at yearling time 109 of his calves were 4% above the average. This chart also lists daughters calf weaning weight. The 109 ratio means that this bull has sired 28 daughters who in turn have weaned calves who were 9% heavier than the average of the herd. This is excellent! Progeny ratios above 100 are desirable and those from 104 on up are truly outstanding.

When choosing bulls to use in A. I. you should mainly use those bulls with superior progeny data. If you are selecting a yearling bull you should use those bulls that (1) Have above average individual performance data, (2) Are sired by a bull who has above average progeny data. The more plus proven sires you can include in a pedigree the greater the chances for selecting that outstanding bull.

This is by no means everything to consider when selecting your next herd sire. To cover everything would take up the whole conference. You might also need to consider type, frame size, structure, muscling, etc., to meet your individual needs, but these are traits I will not try to cover here. I feel that the performance traits are a rock on which to build a strong foundation and if you will pay attention to these traits when selecting your next herd sire, whether A. I. or natural, it will increase your chances of selecting a bull who will improve your cattle.

In Summary:

1. The bulls that were used in the last three generations of your herd make up 87½% of the genetics in your herd.
2. Demand and use Performance Data.
3. Seek Progeny data when available.
4. Reliable Progeny Data is more accurate than Performance Data.
5. Use only those bulls and sons of bulls whose trait ratios are above average for the trait or traits you are selecting for.
6. If you don't understand some piece of data - ask for help, you're not the only one confused!

## STANDARDS FOR HERD SIRE SELECTION

Below are listed several traits and criteria that should be considered when selecting a herd sire. All are to one degree or another heritable and can have an influence on your herd. When evaluating a bull, for potential use, you should try and find a bull that meets as many of these criteria as you possibly can.

Even though your goal should be to find a bull that meets all these standards, it might be very difficult to fulfill all of them. In such a case, try and find a bull that meets those criteria that you feel are most important.

### A. INDIVIDUAL CRITERIA

- (1) BIRTH WEIGHT - Extremely large birth weights can cause calving difficulty.
- (2) WEANING WEIGHT - Select a bull with an above average weight within the herd you are selecting from i.e., above 100 ratio.
- (3) TEST AVERAGE DAILY GAIN - Select a bull with an above average Daily gain on 140 Day Feed Test.
- (4) YEARLING WEIGHT - Should be an acceptable weight and above 100 ratio.
- (5) YEARLING FRAME SIZE - You should select a bull that has adequate frame size and skeletal development for your individual needs. Remember, it takes a large framed bull to change a set of small framed cattle.
- (6) STRUCTURAL CORRECTNESS
- (7) COMPOSITION - How much back fat does the bull have at yearling time? A bull that is overly fat will often times mature quicker and smaller than will a leaner type bull.
- (8) REPRODUCTIVE SOUNDNESS - Does he have a good sized and well formed set of testicles and does he produce viable semen.

### B. SIRE AND DAM CRITERIA

- (9) PRODUCTION OF SIRE - The sire's progeny should be above average in the traits of economical importance i.e., weaning weight, yearling weight, maternal value, etc.
- (10) REPRODUCTIVE SOUNDNESS OF SIRE - The sire should have a history of reproductive soundness and good semen producing capabilities.
- (11) PRODUCTION OF DAM - Is she an above average producer in the herd? She should be.
- (12) REPRODUCTIVE PERFORMANCE OF DAM - Has the dam had a calf every 365 days on the average? If not was it because of sub fertility or because of something else?

## SELECTING A PERFORMANCE PROGRAM FOR YOUR HERD

By: A. L. Eller, Jr., Extension Specialist, An. Science

In selecting a performance program for your herd, there are really three options. They are:

1. State beef cattle improvement associations - In Virginia this association is the Virginia Beef Cattle Improvement Association headquartered at Agnew Hall, VPI&SU, Blacksburg, Va. 24061. All breeds of cattle, purebred and commercial, are eligible to be enrolled in the Virginia BCIA performance testing program. Services that this association renders are:
  - (1) Maintains an up-to-date cow herd listing on every cow and sire in every herd enrolled.
  - (2) Will furnish an official grader to come to a member's farm upon request to grade calves and/or yearlings.
  - (3) Weaning records.
  - (4) Yearling records.
  - (5) Annual dam summary - MPPA ratio.
  - (6) Operates three central bull test stations for members - one at Culpeper, one at Red House and one at Berryville. Bulls are tested and sold at these test stations.
2. National breed associations - Most purebred herds today should enroll in their national breed association performance program, regardless of whether they are enrolled in the Virginia BCIA program or another state's BCIA program. The major advantage of having a purebred herd on its national breed association program is that performance records are recorded right along with pedigree records and a permanent record is kept of the performance information which can be recalled for performance pedigrees, summaries, and for other uses in the future. BCIA's do not have this capability.

A complete listing of all the beef breed associations is attached to the end of this write-up. Most breed associations have a performance program. Some of the major ones are as follows:

- (a) American Angus Association - Angus Herd Improvement Registry (AHIR).  
The AHIR program offers:
  1. Weaning performance.
  2. Postweaning and yearling performance.
  3. Dam summary.
  4. Sire summary.
  5. Expected Breeding Value for weaning and yearling.
  6. Performance pedigrees.
  7. National Sire Evaluation Program for progeny testing young bulls.
- (b) American Polled Hereford Association - Guidelines. The APHA Guidelines program offers:
  1. Weaning performance.
  2. Yearling performance.
  3. Sire summary.
  4. Dam summary.
  5. Expected Breeding Value.
  6. Performance pedigrees.
  7. Superior Sire Program - National Sire Evaluation Progeny Test Program.



- (c) American Hereford Association - Total Performance Records (TPR). The AHA TPR Program offers the following:
  - 1. Weaning performance.
  - 2. Yearling performance.
  - 3. Dam summary.
  - 4. Sire summary.
  - 5. Expected Breeding Value.
  - 6. Sire progeny test programs. Their national sire evaluation program is known as the National Reference Sire Evaluation Program.
- (d) American International Charolais Association - Charolais Herd Improvement (CHIP). The Charolais Association furnishes:
  - 1. Weaning performance.
  - 2. Postweaning and yearling performance.
  - 3. Dam summary.
  - 4. Sire summary.
  - 5. Sire progeny - carcass evaluation program.
- (e) American Simmental Association - SMILE Program. The ASA SMILE program offers:
  - 1. Weaning performance.
  - 2. Postweaning and yearling performance.
  - 3. Dam Summary.
  - 4. Sire Summary.
  - 5. Sire evaluation program and annual national sire summary.
- (f) American Shorthorn Association - Record Of Performance (ROP). The ASA ROP program provides:
  - 1. Weaning performance.
  - 2. Postweaning and yearling performance.
  - 3. Sire and Dam Summary.
  - 4. Sire evaluation program.
- (g) North American Limousin Foundation. The Limousin Association furnishes about the same information as do the above associations relative to weaning and yearling performance and do put out a national sire summary.

The following steps are suggested in operating your performance program on your farm. First of all, you need a set of working chutes and a good substantial set of scales. The following points are necessary:

- 1. Enroll your herd in a BCIA or breed association program. In the case of BCIA, get application for membership and cow and sire listing sheets from your county Extension office. Send the completed application and herd list with annual membership dues to the Virginia BCIA office. Enrolling in breed association performance programs entails contacting your association and requesting that your herd be enrolled in the performance program. Follow instructions. Methods of operation in breed programs vary somewhat among associations.
- 2. Identify cows in a visual way either with hot or freeze brands or large ear tags.
- 3. Birth data - When calves are born, each birth should be scored for calving ease. Calves should be tagged at birth. The calves should be weighed at birth and birth weight, calving ease, ear tag number, dam number, and birth date should be recorded in a pocket calving book to be transferred later onto performance sheets.

4. Weaning data - Weigh every calf prior to or at actual weaning time but not after calves are actually weaned. Weights should be taken between 160 and 250 days of age (5 to 8 months). Calves may at this time be graded, measured for hip height, condition scored or given a score for any other trait that the breeder cares to score them for. Be absolutely certain that calves to be ratioed together are designated as contemporaries on the weaning data sheet. Make sure that all information including dam information, sire information and calf information is recorded in full and is legible on the BCIA or breed association weaning data sheet and mail a copy to the office as designated. Once the information has been computerized, you will receive the weaning performance record on a group of calves with the major information given being that of adjusted 205 day weight and ratio.
5. Postweaning and yearling data - When bull calves are weaned, they should be put directly on a 140 day or longer postweaning gain test to gain at a level that will allow them to express their genetic differences. Heifers may be weighed at 12, 15 or 18 months and adjusted to those standardized weights. However, bulls should be weighed at 12 to 14 months of age and adjusted to a 365 day weight. When bulls or heifers are weighed for their yearling weight, they may be graded, measured for hip height, scored for condition and so forth. Again the management code that designates cattle of the same contemporary group must be accurate. Once the yearling data is recorded on the yearling data sheet, it is mailed back to the Virginia BCIA or the respective breed association or both.
6. Dam and sire summaries - Most performance organizations provide a very useful dam summary once a year or more often. Most of the breed associations provide a sire summary on the same basis. Dam summaries may give Most Probable Producing Ability ratios or Breeding Value ratios.
7. Performance pedigrees - If the national breed association is making available performance pedigrees, they may be requested on individual animals.
8. Use performance records and summary records to cull cows, select replacement heifers and to select and cull young bulls. The key to the value of any performance program is that breeders use the information.
9. The sire evaluation programs - Up to this point a small percentage of all breeders have enrolled sires in national sire evaluation programs through their breed associations. For breed associations such as the American Simmental Association which puts out a annual sire summary, it is not necessary to enroll. However, if data is to be used in the sire summary from your herd, reference sires must be used in your herd. If young sires are to be enrolled in a national sire evaluation program through a breed association, they should be outstanding individuals from a performance standpoint based on individual performance records and records on close relatives.

# U.S. BEEF REGISTRY GROUPS

American Angus Association  
3201 Frederick Blvd.  
St. Joseph, Mo. 64501

American Beefalo Association  
200 Semonin Bldg., 4812 U.S. Hwy. 42  
Louisville, Ky. 40222

American Beef Friesian Association  
210 Livestock Exchange Bldg.  
Denver, Colo. 80216

American Blonde d' Aquitaine Assn.  
217 Livestock Exchange Bldg.  
Denver, Colo. 80216

American Brahman Breeders Assn.  
1313 La Concha Lane  
Houston, Texas 77054

American Chianina Association  
P.O. Box 11537  
Kansas City, Mo. 64138

American Galloway Breeders Assn.  
302 Livestock Exchange Bldg.  
Denver, Colo. 80216

American Gelbvieh Association  
311 Livestock Exchange Bldg.  
Denver, Colo. 80216

American Hereford Association  
715 Hereford Drive  
Kansas City, Mo. 64101

American Horned Charolais Association  
P.O. Box 6520  
Tyler, Texas 75711

American-International Charolais Assn.  
1610 Old Spanish Trail  
Houston, Texas 77054

American-International Marchigiana  
Society, Route 2, Box 65  
Lindale, Texas 75771

American Scotch Highland Breeders  
Association, P.O. Box 249  
Walsenburg, Colo. 81089

American Shorthorn Association  
8288 Hascall Street  
Omaha, Neb. 68124

American Simmental Association  
1 Simmental Way  
Bozeman, Mont. 59715

American Tarentaise Association  
Box 1844  
Ft. Collins, Colo. 80522

Barzona Breeders Assn. of America  
P.O. Box 1421  
Carefree, Ariz. 85331

Beefmaster Breeders Universal  
Suite 350—GPM South Tower  
800 Northwest Loop 410  
San Antonio, Texas 78216

Brown Swiss Cattle Breeders Assn.  
800 Pleasant Street  
Beloit, Wisc. 53511

American Maine-Anjou Association  
564 Livestock Exchange Bldg.  
Kansas City, Mo. 64102

American Milking Shorthorn Society  
313 South Glenstone Ave.  
Springfield, Mo. 65802

American Murray Grey Association  
P.O. Box 30085  
Billings, Mont. 59107

American Normande Association  
Box 456  
Kearney, Mo. 64060

American Pinzgauer Association  
2029 Industrial Blvd.  
Norman, Okla. 73069

American Polled Hereford Association  
4700 East 63rd Street  
Kansas City, Mo. 64130

American Red Brangus Association  
P.O. Box 1326  
Austin, Texas 78767

American Red Poll Association  
3275 Holdredge Street  
Lincoln, Neb. 68503

American Salers Association  
P.O. Box 30  
Weiser, Idaho 83672

Devon Cattle Association  
P.O. Drawer 628  
Uvalde, Texas 78801

Foundation Beefmaster Association  
Suite 200—Livestock Exchange Bldg.  
4701 Marion Street  
Denver, Colo. 80216

International Ankina Cattle Breeders  
Route 1, Box 323  
Liberty, Ky. 42539

International Braford Association  
Route 3, Box 4907  
Ft. Pierce, Fla. 33450

International Brangus Breeders Assn.  
9500 Tioga Drive  
San Antonio, Texas 78230

International Illawarra Association  
313 S. Glenstone Ave.  
Springfield, Mo. 65802

National Beefmaster Association  
817 Sinclair Bldg.  
Fort Worth, Texas 76102

North American French Charolais Council  
Route 1, Box 490K  
Denton, Texas 76201

North American Limousin Foundation  
100 Livestock Exchange Bldg.  
Denver, Colo. 80216

North American Norwegian Association  
Box 5606  
Kansas City, Mo. 64102

Red Angus Association of America  
P.O. Box 776  
Denton, Texas 76201

Santa Gertrudis Breeders International  
P.O. Box 1257  
Kingsville, Texas 78363







