



### Summary of action at Board of Directors' Meetings

1. Acceptance of subcommittee and committee reports.
2. Election of officers as listed on page 1.
3. Agreed to release proceeding of meeting including subcommittee reports to the press by May 1.
4. Establishment of 1970 annual meeting on April 9 and 10 at Kansas City, Missouri and the mid-year Board of Directors Meeting on September 18, 1969 at Kansas City.

### • Summary of Committee Meetings

Technical Committee - Chairman, Henry Matthiesson.

The Committee reviewed, improved and accepted the reports of its five subcommittees:

1. Central Testing Stations
2. Farm and Ranch Testing
3. Carcass Evaluation
4. Performance Pedigrees
5. National Sire Evaluation Programs

Education and Promotion Committee - Chairman, Max Hammond.

The Committee reviewed, improved and accepted the reports of its five subcommittees:

1. Advertising
2. Publications
3. Educational Activities for Youth and Adults
4. Shows and Exhibitions
5. Markets and Marketing

REPORT OF BIF  
TECHNICAL SUBCOMMITTEE NO. 1  
CENTRAL TEST STATIONS

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Evaluation of beef cattle from many herds at a single location under uniform procedures is known as central station testing. Central stations have proven to be stimuli to the acceptance of overall performance testing concepts.

1. Role of the Central Test Station. This material is recommended for use in test sale catalogs and reports.

Central Test Stations fill an important need in beef cattle improvement. They offer comparisons of bull calves from different herds. They may provide for comparison of herd sires from different herds, if an adequate progeny sample is tested. They may provide a means of comparing one herd to another, if the samples of calves tested are representative of the herds. Such comparisons are impossible without central testing, because environmental differences can easily cover up genetic differences. On-farm tests are probably more accurate for comparing calves within a herd, but the bull buyer must first decide in which herd he will make his selections. Central test stations can help him make that decision.

The Beef Improvement Federation has established recommendations for operation of central test stations to assure that their results are reliable and their reports are clearly understood. Even if all test stations follow the BIF standards, comparison of gains made at different locations is not valid, because many important differences cannot be eliminated. The most a central test can offer is reliable data for comparisons within test and within year.

For most traits, the actual measurement and a ratio based on the group average are reported (Ex. A.D.G. = 2.95 lbs./day; Gain Ratio = 98). The ratio is obtained by dividing the individual measurement by the test group average for that particular trait.

A ratio of 100 means the bull is exactly average in his group, 115 means he is 15% above the average, 90 means he is 10% below the average, etc. This ratio is more important than the actual measurement and much easier to compare.

The 140 day average daily gain and gain ratio are the most important figures in test station results. They measure growth during the period when the bulls are together under test conditions. Selection for 140 day gains should improve weaning weights and feedlot performance because some of the genes which affect feedlot growth rate also affect preweaning growth rate.

Weaning weights and within-herd weaning weight ratios provide good comparisons of bulls which come from the same herd but are less useful for comparing bulls from different herds. This is the best available measure of the dam's milk production, so it is desirable to have a weaning weight above the average of the herd in which the calf was produced. (i.e. within-herd weaning weight ratio above 100). Actual weaning weights and the date weighed are reported to provide information on gain during the interim period between weaning and initial test weights. Loss of weight or very low gains during this period usually result in higher than normal gains during the subsequent test period. The size of this "compensatory" error in test gains would depend on the length of the interim period and the rate of gain.

The 365 day adj. weight and 365 day weight ratio combine adjusted weaning weight and post-weaning gainability into one composite measurement. The 365 day weight ratio is the best overall picture of growth for comparing calves from the same herd. It is very highly heritable (around 60%). However, among bulls in a central test, care must be exercised in using this measurement, because the weaning weight portion was not necessarily under comparable conditions.

If the gain ratio and the 365 day weight ratio are very nearly alike, you probably have a very reliable estimate of gainability to one year of age. Weight-per-day-of-age is an alternate measurement of growth during this same period, but it does not include an adjustment for age of dam.

Efficiency of feed conversion is expressed as pounds of feed per 100 pounds of gain. It is difficult to measure. Most tests do not attempt to get individual feed conversion because it would require individual feeding. Where sire progeny groups are fed in separate pens, a good measure of the sire's ability may be obtained. This also provides some information on the individual half-brothers in the pen. Since size differences affect feed requirements, feed conversion is adjusted to a common body weight. Fortunately, growth rate and feed conversion efficiency are highly correlated, and it is estimated that selection for gain alone will result in 80% as much improvement in feed conversions as selection directly for feed conversion.

Conformation score or grade is optional among test stations. This measurement should be based strictly on skeletal soundness and indications of carcass desirability (including carcass weight and cutability). Since it is an "opinion value" it is less useful to the bull buyer than the other measurements. Each buyer should make his own visual evaluation after evaluating the records of production.

Rations vary considerably among test stations particularly in level of energy. This variation causes some differences in the average daily gains of different tests. These differences caused by feed are not heritable. Bulls can usually be compared as accurately if the test average is near 2.5 pounds per day as they can if the test average is higher than 3.0 pounds per day. Breed differences and local preferences must be considered in deciding exactly what the average gain should be. High roughage rations which produce moderate gains are likely to result in less excessive fattening and fewer health problems than higher energy rations. Bull calves grown on higher roughage rations should adapt fairly easily to a variety of feed and pasture conditions after the test and they should be ready for service within less time than fatter bulls.

### General Considerations

Even under the best possible conditions at a central test station, not all environmental effects can be eliminated. Therefore, small differences in measurements do not mean much. Some bulls may be sick or off feed at just the wrong time, but do not be misled by excuses. Even if a bull was sick, there is no way to adjust the data. The only safe thing to do is to assume that all had equal opportunity.

The buyer must decide which traits will receive most emphasis in his selection program. Only a few traits and a limited number of bulls can be measured at test stations. Testing does not improve the bulls, it only helps to identify the superior ones. Complete herd performance programs in the seedstock herds of the nation will be necessary to achieve satisfactory genetic progress in the beef cattle industry.

## 2. Eligibility.

- (a) Age of calves at time of delivery to test stations should be at least 180 days and not more than 305 days.
- (b) Calves should have completed the weaning phase of a performance records program and the following information should be submitted to the test station:

Sire, dam, birth date, actual weaning weight and date, adjusted 205 day weight, within herd weaning weight ratio (based on average of all bull calves in same weaning season and management group) and the number of calves making up this average.

3. Procedures.

- (a) There should be an adjustment or warm-up period of 21 days or more immediately prior to the test period.
- (b) The length of test should be 140 days or more.
- (c) Initial and final test weights should be an average of two full weights taken on different days.
- (d) All bulls sold in a test sale should be examined by a competent veterinarian for reproductive and structural soundness.
- (e) Test rations will vary according to locally available feeds and test objectives. Feeding should be ad lib. Rations between 60 and 70 percent TDN should be adequate for the expression of genetic differences in growth. The lower end of this range should result in fewer health problems and less excessive fattening.
- (f) See attachment.

4. Test station reports.

The attached report form and definition of measurements is recommended for general use by test stations. Several optional measurements are listed along with those which should be included in all reports.

MEASUREMENTS RECOMMENDED FOR ALL TEST STATIONS

OPTIONAL MEASUREMENTS

Lot No.	Birth Date	WEANING				GAIN TEST					YEARLING		OPTIONAL MEASUREMENTS						
		Actual Wt.	Weaning Date	Adj. 205 day Wt.	W.W. Ratio W/in and No.	(Date) Initial Test Wt.	(Date) Final Test Wt.	Age In Days	Test Gain Ratio	Adj. 365 Day Wt.	365 Day Wt. Ratio	Wt.Per Day of Age	Conf. Score	Index	Fat Thick.	Est. Yield Grade	Adj. Feed Conv.	Initial Cond. Score	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)

Owner, address, breed and sire. (Inserted between sire groups, or in a column at the left.)

Each test group (i.e. breed and age group) should be listed together on the report and averaged. (Age range in each group should not exceed 90 days and breed should be averaged separately within age group.)

Sire group averages are shown for 3 or more progeny of same sire.

If sire groups include calves from different age groups, data may be listed together by sires, but only the average of ratios shown.

- (1) Ear tag test number. Tattoo should be recorded elsewhere and may be put on this report if space permits.
- (2) Month - day - year of birth. Ex. 2/15/69 for Feb. 15, 1969. If all in the same year, may omit year.
- (3) Actual weight used to compute 205 day adj. weight.
- (4) Month - day - year when weights were taken to compute 205 day adj. weight.
- (5) Weaning weight adjusted to 205 days and for age of dam according to BIF. If creep fed add C after weight.
- (6) Adj. 205-day wt. divided by average of all bull calves in same herd in same weaning season group and same management code. Minimum entrance requirement is optional with test management. The number of calves making the average is listed in parentheses. Ex. 105 (17).
- (7) & (8) Average of at least two full weights taken on different days. May be more than one day apart if desired.
- (9) Age at end of test.
- (10) Final weight - initial weight ÷ length of test in days. Minimum length 140 days, no maximum.
- (11) Average Daily Gain ÷ test group average of average daily gain. (Breed within age group average.)
- (12)  $\frac{\text{Final test weight} - \text{Actual weaning wt.}}{\text{Days between weights}} \times 160$  plus adj. 205 day wt. (adj. for dam's age)
- (13) Adj. 365 day wt. ÷ test group average of adj. 365 day weights. (Breed within age group average.)
- (14) Test wt. ÷ days of age when weighed.
- (15) Based on structural soundness and estimated potential for carcass desirability (including carcass weight and cutability).
- (16) Indices will vary with individual test objectives. They should all be based on ratios to the group average of a trait multiplied by some percentage figure, thus resulting in values ranging below and above a mean of 100.
- (17) Fat thickness may be measured by sonoscope and expressed in hundredths of inches.
- (18) Cutability estimates based on sonoscope readings of ribeye area and fat thickness may be classified into the market yield grades of 1, 2, 3, 4, or 5.
- (19) Feed conversion of any group fed together in one pen should be expressed as pounds of feed per 100 pounds of gain. The actual amount of feed should be adjusted to a common body weight to eliminate differences in maintenance requirements.
- (20) Initial degree of fatness may be visually estimated and scored on a scale of 1 to 5, with 1 being very thin; 5, excessively fat; and 3, average in condition.

REPORT OF BIF  
TECHNICAL SUBCOMMITTEE NO. 2  
FARM & RANCH PRE-WEANING AND POST-WEANING  
TESTING PROGRAMS

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Evaluation and use of beef cattle performance data by breeders on a national and international basis requires standard procedures and nomenclature.

The purpose of this report is to recommend standard procedures for reporting and processing performance records obtained on beef cattle in the farm tests.

**PRE-WEANING PHASE:**

The Committee recommendations were to standardize the adjusted weaning weight to 205 days with a range of 160 to 250 days. Calves weaned outside the age range would be reported as irregular  $\pm$ . The Committee is aware that there is research going on relative to earlier weaning of heifer calves. We feel that this Committee should make a recommendation on this matter as soon as enough research is made. The weaning weight will also be reported as a weaning weight ratio within management, code and sex (Male and Female). It is recommended that in registered herds all steers be adjusted to Bull basis (+5%) and in commercial herds all bulls be adjusted to Steer basis (-5%) before computing weight ratios.

The 205 day weight is computed on the basis of average daily gains from birth to weaning. This is accomplished by subtracting a constant of 70 lbs. (or actual birth weight, if available) for birth weight from actual weight dividing by the age in days at weaning, to obtain average daily gain, and multiplying the average daily gain by 205 and adding the 70 lbs. that was subtracted initially for birth weight (or actual birth weight). This provides 205 day weight, unadjusted for age of dam and sex of calf. This procedure is summarized by the following formula:

$$\text{Unadj. 205 day weight} = \frac{\text{actual weight} - 70}{\text{age in days}} \times 205 + 70.$$

To adjust for age of dam, the following adjustment factors are recommended:

Age of dam - 2 year olds - multiply computed 205 day weight by 1.15  
3 year olds - multiply computed 205 day weight by 1.10  
4 year olds - multiply computed 205 day weight by 1.05  
5 through 10 year olds - no adjustment  
11 year olds and up - multiply computed 205 day weight  
by 1.05.

The Committee recommends a conformation score based on 17 High Feeder Grade. Report the conformation score with ratio.

The Committee does not recommend the use of a composite index combining two or more traits into one numerical measure since this concept suggests that a single selection criteria would apply across all herds as far as conformation and growth are concerned.

The Committee recommends that weaning weight ratio and conformation score ratios be used in sire progeny and produce of dam summaries. It is also recommended that Most Probable Producing Ability (MPPA) be included on Produce of Dam summaries and that ranking of dams be based on MPPA for weaning weight ratio.

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

Where  $\bar{H}$  = 100, the herd average weaning weight ratio, N is the number of calves included in cow's average.

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

$\bar{C}$  is the cow's produce average for weaning weight ratio.

Most Probable Producing Ability can also be computed for conformation score ratios using the same formula with R = 3.

#### POST-WEANING PHASE:

$$\text{Adj. 365 day wt.} = \frac{\text{actual final wt.} - \text{actual wean. wt.}}{\text{number days between weights}}$$

x 160 + wean weight (205 days) adjusted for age of dam.

The period between weaning weight and final weight should be at least 160 days and final weight should not be taken at less than 330 days of age.

$$\text{Adj. 550 day weight} = \frac{\text{actual final weight} - \text{actual wean. wt.}}{\text{number days between weights}}$$

x 345 + weaning weight (205 days) adj. for age of dam

Final weight should not be taken at less than 500 days of age.

Yearling weight ratios (not restricted to 365 day weight ratios only) and final conformation score ratios should be included in sire progeny and produce of dam summaries.

The Committee recognizes the need for research to determine proper adjustment procedures to compensate for selection at weaning and computing yearling weight ratios. For example, if only the top 50% of the bull calf crop selected on the basis of weaning weight ratios are involved in a post-weaning test it is recognized that their yearling weight ratios are lower than expected had the entire bull calf crop been tested together.

REPORT OF BIF  
TECHNICAL SUBCOMMITTEE NO. 3  
BEEF CARCASS EVALUATION

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The product beef is the end-point of all beef cattle improvement programs and activities. This subcommittee seeks to improve the precision with which this product is evaluated in overall improvement programs.

Quality of product and quantity of edible portion are the basic measures of carcass merit. However, the relative value of quality and the relative value of quantity are subject to changes in market demands. Carcass evaluation is the technique by which the components of quality and the components of quantity are measured. Carcass evaluation factors should be changed if consumer demands change.

The American Meat Science Association is the organization of meat research workers. Research in beef carcass evaluation has been responsible for the carcass evaluation techniques now available. Continuing research is needed to develop new techniques and improve present techniques.

The Committee recommends that there be common membership and sound communication between BIF and the American Meat Science Association.

The Committee recommends that the basic beef carcass evaluation procedures of the American Meat Science Association be adopted.

The Committee encourages the American Meat Science Association to update their beef carcass evaluation procedures as needed.

There is a need for national uniformity in beef carcass evaluation.

SPECIFIC CARCASS EVALUATION RECOMMENDATIONS:

- I. The Committee recommends that the USDA Quality Grade (conformation excluded) and the USDA Yield Grade be used as the basis for all carcass evaluation.

The Committee recognizes that the degree of use will vary according to the needs of the user, for example:

- (a) The feeder, evaluating his management program, may only need the raw Quality Grade and the raw Yield Grade.
- (b) A commercial cattleman may need the Quality Grade by one-thirds and the Yield Grade by tenths.
- (c) Sire evaluation programs should utilize all components of both the quality and yield grade.

The Committee recognizes that other carcass evaluation techniques are available such as:

The Warner-Bratzler Shear, Taste Panel, Retail Cutout, and Complete Muscle bone separation.

However, these techniques are costly and time-consuming. The need should justify the time and cost.

- II. The Committee recommends that as a goal cattle evaluated in a sire evaluation program have an average quality grade of Low Choice or better.
- III. The Committee recommends pounds of trimmed retail cuts per day of age instead of carcass gain per day of age. The Committee makes this recommendation for two reasons. First, carcass gain per day of age is an echo of live gain per day of age. Second, the Committee feels strongly that carcass gain per day of age does not measure the composition of the gain.
- IV. Although carcass evaluation is divided into quality and quantity components, the Committee does not recommend an index. The Committee feels that carcass improvement will proceed more orderly and faster through selection for those individual carcass traits that are desired or needed.
- V. The Committee recognizes that carcass evaluation is often most difficult to obtain. The Committee recommends that a nation-wide coordinated program be studied and implemented if found feasible to get carcass information back to the producer. The Committee also recommends that central test stations be encouraged to include progeny and herd sampling programs.

RESEARCH RECOMMENDATIONS:

The Committee recommends continued research in all areas of carcass evaluation. It particularly recommends research in:

- (a) Carcass composition with daily gain and feed efficiency.
- (b) Objective measures of quality.
- (c) Improved measures of carcass conformation in relation to carcass merit.

CARCASS CONTESTS:

The Committee recognizes that carcass contests are the show window for carcass evaluation. A wide range of carcass contest methods are now employed. The American Meat Science Association has set forth several different procedures. The Committee recommends these as a base. However, the Committee feels that certain phases of carcass contests need re-evaluating. The Committee is particularly recommending that:

- (a) Stringent minimum qualifying carcass weights be used or a compensating index be developed.
- (b) Uniform, specific procedures be developed that can be used on a national basis.

CONCLUSION:

Both quality of product and quantity of edible portion are important. The beef industry can best prepare itself for the future by improving both factors. This Committee observes that breeders of cattle often tend to rest on their laurels of either quality or quantity and to downgrade in importance the other factor. This Committee challenges the breeders of cattle to improve the entire product.

REPORT OF BIF  
TECHNICAL SUBCOMMITTEE NO. 4  
PERFORMANCE PEDIGREES

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The performance pedigree is a useful tool in furthering the efforts of performance programs. It contains a complete listing of an animal's performance record and its ancestors' performance and progeny records.

Its concise form makes it useful in reporting performance information in sales and promotion efforts. A performance pedigree discourages the use of reporting incomplete or selected performance data.

The full usefulness of the performance pedigree will come into being as a larger segment of the industry utilizes performance programs. It is envisioned that a major role of recording organizations may be to provide the performance pedigree to seedstock producers. In the future the recording organizations should combine the geneology and performance pedigrees.

The recommendations of the subcommittee include a listing of the basic performance information on the pedigree. Additional information may be added to this pedigree as deemed desirable by individual organizations. No attempt is made to set up any type of format as this will be left to the recording organizations.

A performance pedigree should include at least individual performance on the animal, sire and dam along with the progeny information on the sire and dam and could include information through three generations.

Animal's individual record.

205 day adjusted weaning weight  
weaning weight ratio  
weaning conformation ratio  
365 or 550 day adjusted yearling weight  
yearling weight ratio  
yearling conformation ratio

Progeny of each individual in pedigree.

Sons - number of calves or yearlings  
average - 205 day adjusted weaning weight  
weaning weight ratio  
weaning conformation ratio  
365 or 550 day adjusted yearling weight  
yearling weight ratio  
yearling conformation ratio

PERFORMANCE PEDIGREES

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Daughters - number of calves or yearlings  
average - 205 day adjusted weaning weight  
weaning weight ratio  
weaning conformation ratio  
365 or 550 day adjusted yearling weight  
yearling weight ratio  
yearling conformation ratio

Progeny carcass information

number of steers, heifers or bulls  
average - USDA quality grade to 1/3  
% cutability  
Fat thickness/100 lbs. carcass  
Loineye/100 lbs. carcass  
Lbs. of trimmed retail cuts/day of age

Productivity of a sire's daughters.

This information will give a producer some idea how the daughters of different bulls are producing or milking in his herd.

Average M.P.P.A. (Most Probable Producing Ability) for each sire's daughters as compared to her contemporaries or use average weaning weight ratios for this comparison.

REPORT OF BIF  
TECHNICAL SUBCOMMITTEE NO. 5  
NATIONAL SIRE EVALUATION PROGRAMS

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Bob Beck, American Hereford Association  
Stanley Anderson, American Angus Association

SUMMARY AND RECOMMENDATIONS:

National Sire Evaluation Programs are of great potential value as an aid in selecting sires capable of greatest breed improvements. Each breed has a unique role to play in the beef industry. Therefore, programs should be developed specifically for each breed.

Sire evaluation, whether on a national basis or for within-herd use, rests upon the same basic principles. Traits included should be of importance in the economic production of quality beef and with hereditary variation. Information of use includes performance records of relatives, the individual bull himself and of progeny.

Having decided which traits are important in a breed, the following program is suggested:

1. All seedstock breeders should practice within herd performance testing to identify outstanding bulls on the basis of own performance and to make information on relatives available. Successful National Sire Evaluation Programs are dependent on widespread participation in within-herd performance testing.
2. Because of fairly high heritability of many traits, selection on the basis of own performance supplemented with records of relatives should be intense.
3. Lacking knowledge of heritability of between-herd differences, within-herd differences should be the primary criterion for selection on individual performance. Putting bulls in central tests for the post-weaning period to yearling age as a means of minimizing effects of differences in herd environment is desirable. Central testing facilities, preferably provided or sponsored by breed associations, on a scale permitting testing of the top five percent of the bulls would be desirable. The five percent would be selected based on within-herd performance to weaning.
4. Bulls to be used in artificial insemination should be progeny tested with emphasis on characters not measurable in the bull himself.

5. Progeny testing procedures should be designed to evaluate breeding value of bulls relative to use in the national breeding herd.
6. Bulls nominated for progeny testing should be from those with highest individual within-herd or within-central test performance.
7. Progeny testing should preferably be on a multi-herd basis in which artificial insemination is used so that each of several bulls may have contemporary progeny in several herds. The second choice is to progeny test bulls in a single herd but with a reference sire used across several herds for comparative purposes. The third choice is within-herd progeny testing.
8. The number of progeny tested per sire influences the accuracy of the progeny test. The following table indicates how accuracy of prediction varies with numbers of progeny and the heritability of the trait. The accuracy of individual selection, the accuracy of progeny test selection and the combination of individual and progeny test selection are given for 20, 40 and 60 percent heritability.

Heritability	ACCURACY OF SELECTION								
	Individual Selection	Progeny Test Selection Only				Individual plus progeny test selection			
		10	20	40	80	10	20	40	80
.20	.45	.58	.72	.82	.90	.66	.75	.84	.90
.40	.63	.73	.83	.91	.95	.80	.86	.92	.95
.60	.78	.80	.88	.94	.97	.88	.91	.95	.97

To attain a given accuracy of say .88, only 20 progeny or 10 progeny plus individual performance are necessary for a trait that is 60% heritable while about 60 are necessary for the progeny test only and about 50 progeny plus individual performance are necessary for a trait of 20% heritability. Note that for a constant number of individuals available for progeny testing, a compromise must be made between accuracy and intensity of selection since the higher the accuracy, the fewer bulls can be tested thus reducing the intensity.

The material which follows gives details and background information on which the foregoing is based.

#### INTRODUCTION:

The initial charge to this subcommittee included the following:

- "1. There is need to evaluate the current National Beef Sire Evaluation Programs of BIF member organizations with careful attention to cataloging the strengths and weaknesses of each program.
2. There is need to study the long-range needs of the beef industry in National Sire Evaluation Programs.

3. There is need to examine and evaluate the results and experiences of other organizations in conducting National Sire Evaluation Programs on animals of economic significance."

In Committee studies these items have all been considered and various aspects of Nos. 1 and 2 will be brought out in the material which follows. National Sire Evaluation Programs with other classes of animals have been considered. Of these, the history and current program of the Dairy Herd Improvement Associations have been most useful and have the greatest apparent direct application to beef programs.

DEFINITION:

A National Sire Evaluation Program is one which records of males, either sires or potential sires, are systematically collected, summarized, adjusted if necessary for environmental factors, perhaps evaluated to some degree for accuracy and precision, and for maximum usefulness published for use by the industry as an aid in sire selection by commercial cattlemen, seedstock producers, or artificial insemination groups.

The records upon which to base a National Sire Evaluation Program may be those of ancestors or collateral relatives, of the individual himself, of his progeny, or of a combination of the two or more of these types of records. Each of the three types of records is useful with the relative usefulness depending upon specific characters which are of importance and the specific purpose of the evaluation.

For the most part the principles outlined for an effective National Sire Evaluation Program are the same as for within-herd evaluation. Wider participation in on-farm testing programs is essential to both effective within-herd selection and to provide a base for National Sire Evaluation Programs. Thus, this report can be considered as providing background information on sire evaluation - whether on a within-herd or a national basis.

Traits to be considered in sire evaluation should be those which are genetically influenced and most essential to economical production of quality beef.

The relative emphasis to give each trait will vary with breed and type of production.

A National Sire Evaluation Program may be for one breed or it may include all breeds. However, the subcommittee members believe that each breed in all probability has a unique function to play in the total beef production picture. Therefore, National Sire Evaluation Programs should be developed for each breed. Further, ability of a breed to change to meet future changing needs is an important attribute which should be seriously considered in developing sire evaluation and breeding programs.

PURPOSE AND USEFULNESS OF SIRE EVALUATION:

The purpose of any beef sire evaluation program is to arrive at an estimate of the breeding value or transmitting ability of a sire or of several sires. The magnitude of the superiority or inferiority in breeding value is of prime importance.

Except for specialized situations, interest is normally in the overall or total breeding value for the important characters. However, such an overall estimate of breeding value can be arrived at only from a knowledge of breeding values for the individual traits important in the overall appraisal.

Once an estimate of breeding value is arrived at, its usefulness will depend upon several things, including:

1. Its accuracy.

An estimated breeding value is an estimate of probable average productivity of future offspring of the sire. This is true regardless of whether the bull is a progeny tested older animal or a younger, untried bull with only his own performance or that of ancestors or relatives to estimate breeding value. The relationship of the estimate to actual breeding value can range from very low to very high. The relationship could even be negative if there had been some serious error or bias in the method used in arriving at the estimate.

2. Range of environments where applicable.

An estimate of breeding value for a given set of conditions, either climatic or managerial, may or may not be applicable in another situation.

3. Number of sires, each with estimated breeding values, among which valid comparisons can be made.

Usefulness of the estimate of breeding value for any sire or potential sire will be greater the greater the number of sires with similar information with which it may be validly compared. To use an unattainable example, it would be of maximum value if similar estimates were available for all other sires or potential sires of all breeds and types in the world. In decreasing order of value would be estimates of all sires in the nation, of a given breed, in a region, tested under a given management and feeding procedure, and lastly in a given herd.

Within-herd comparisons of estimated breeding value, as well as comparisons of any performance records, will likely always be the most fool proof. However, the beef industry for obvious reasons needs broader comparisons. A national, within-breed basis is probably as broadly as it is practical to think about comparisons now.

Essentially, there are two procedures by which the influence of between-herd differences can be minimized. The first is to place the animals to be compared under comparable environments such as in central post-weaning tests where a part of the records are made under comparable conditions. The second is the development of procedures for statistically accounting for environmental differences between herds.

SIRE EVALUATION METHODS OF POTENTIAL USE IN NATIONAL PROGRAMS:

Types of information which could be obtained and used in sire evaluation programs, together with some discussion of advantages, problems and limitations of each follow:

1. Own performance.

For traits which can be measured in the individual himself an estimate of his breeding value would be:

$$E = h_1^2 (I - \overline{HM}) + h_2^2 (\overline{HM} - \text{Breed average}) \text{ where:}$$

E = Estimated breeding value.

I = Individual or own record.

$\overline{HM}$  = Average of herd mates

$h_1^2$  = Heritability of within-herd differences

$h_2^2$  = Heritability of between-herd differences.

For animals within the same herd, ranking would be on the first term only. On the average it would rank potential sires correctly. However, due to heritability being less than one, a random error is involved. Some potential sires would be rather far below and some rather far above their estimated breeding value.

If only natural service is being used and a fairly high fraction of the available sires are needed for breeding, individual selection is all that would be necessary or could be justified.

Even for use in top seedstock herds or for extensive use in artificial insemination, own performance is indispensable as a means of making initial selection of bulls for further and more precise estimation of breeding values for traits evaluated by own performance and for estimation of breeding value for traits measurable only in progeny.

The most important factor limiting usefulness of own performance as a tool in a National Sire Evaluation Program is our lack of knowledge of the heritability of between-herd differences. Further, this is probably not the same for different pairs of herds. We can partially circumvent this by publishing the actual record of an animal in absolute terms and also publishing the herd average and the percent he is above or below herd average or the average of those with which he was tested. In looking at records this way we are saying we think herd differences are not highly heritable since rank within a herd is important. At the same time, we are hedging somewhat by also insisting that an animal demonstrate his ability to make a respectable absolute record regardless of his rank within the herd. By publishing both types of information, users have an opportunity to vary the relative emphasis on absolute records and rank in the herd according to the judgment of the person making the evaluation.

Although heritability of between-herd differences in beef cattle is unknown, it is only about ten percent in dairy cattle. It is probably lower in beef cattle due to greater variation in management practices. Thus, it is probable that when adequate numbers are included, rank in herd should receive from six to ten or more times the emphasis of absolute records.

Within the range of "normal" environments, evaluation partially on absolute records and partially on rank in herd or test groups will probably do a reasonably good job of insuring that those ranked best will be genetically superior animals. It will result in some equally superior animals being overlooked from herds with low average records due to poor environments. It carries the risk of ranking animals from pampered herds too high unless the superior environment is recognized.

Even with these limitations it would be a worthwhile part of a National Sire Evaluation Program to publish records of the top 2, 5, 10 or even 25 percent of the bulls on those traits which can be measured in the animals themselves such as weaning weight, post-weaning gain, efficiency of gain, yearling weight, conformation score, sonoscope or probe estimates of external fat thickness and perhaps other traits. Selection of these top bulls would be on a combination of absolute record and rank in herd. Such listings would be somewhat analogous to the lists of the top 2 percent of cows in Dairy Herd Improvement Associations now published.

Such tabulations would be a helpful initial step in sire selection for potential buyers whether they use the bull without further evaluation or subsequently progeny test for more critical evaluation.

2. Performance of Ancestors and Collateral Relatives.

Generally speaking, for traits which can be measured in the animal itself, this type of information will be of minor importance. For example, with 40% heritability, inclusion of records on the sire, 40 paternal half sibs, the dam and 4 maternal half sibs in addition to his own record will increase accuracy of predicted breeding value from .63 to .74 or about 17% as compared to own record alone. It would be rare that this much information on relatives would be available. If performance of relatives is poor, information on them will detract some from the individual's own record. If good, it will add something to the evaluation made on own performance. An exception to this is weaning weight. A bull from a dam with consistently good records is desired. For this trait a combination of own record and an estimate of "most probable producing ability" of the dam is recommended.

For carcass traits and maternal traits which cannot be measured in the prospective sire himself, records on half sibs are of value but often difficult to obtain. They should be used to the extent possible.

3. Performance of Progeny.

Progeny tests, properly carried out and with adequate numbers of progeny, are the most accurate way of estimating breeding value. For example, with 40% heritability, the accuracy of predicting breeding value using individual performance plus 10 progeny is .80 compared with .63 for individual performance alone. The accuracy can be increased with larger numbers of progeny, reaching .95 with 80 progeny. The best estimate of what a sire will transmit to future progeny is a measure of what he has transmitted to past progeny. Progeny testing is the only really accurate method of estimating breeding value for meat traits and for female reproductive and maternal characters.

Historically, National Sire Evaluation Programs have most often been thought of in connection with progeny testing.

With universal recordkeeping, with two or more sires per herd and if heritability of differences between herd averages could be determined, estimates of breeding value would be as follows from progeny records:

$$E = h_4^2 (\bar{p} - \overline{HM}) + h_2^2 (\overline{HM} - \text{Breed average}) \text{ where:}$$

$E$  = Estimated breeding value

$\bar{p}$  = Average performance of progeny

$\overline{HM}$  = Average performance of herd mates

$h_4^2$  = Heritability of differences in progeny averages

$h_2^2$  = Heritability of herd differences

The value of  $h_4^2$  and the accuracy of the progeny test will vary with number of progeny--becoming larger as numbers of progeny per sire increase.

Unfortunately, several things necessary for maximum effectiveness of a National Sire Evaluation Program based on progeny testing do not now exist in the beef industry. Recordkeeping is practiced in only a small percentage of commercial herds, many herds (both seed-stock and commercial) use only one sire, and as pointed out previously, heritability of herd differences is not known and may not be a useful figure in specific cases even if we had an average.

#### EFFECTIVE USE OF INFORMATION COMPILED IN A NATIONAL SIRE EVALUATION PROGRAM:

Information will be useful to individual herds and to the progress of the industry as a whole to the extent it is used in a manner calculated to maximize improvement for important characters.

Much research remains to be done on problems involved in achieving the above objective. Further, a compilation and detailed presentation of procedures which appear most logical based on present knowledge is beyond the scope of what can be accomplished by this subcommittee in the time available or within the scope of a report of reasonable length.

A brief summary of factors to be considered in determinations of evaluation giving optimum selection progress is offered:

1. Heritability of Important Characters.

In its simplest terms, heritability is a term which estimates the fraction of what a breeder in the next generation will realize from what he selects for (or reaches for) in selecting breeding stock from the present generation. For example, if cattle of one generation have an average daily gain of 2.00 lbs. and a breeder is able to select replacements from among them averaging 2.25 lbs., the next generation

would be expected to average 2.10 if the heritability were .40.

Generally speaking, for traits of high heritability, relatively more emphasis in selection should be put on own performance as compared to performance of relatives.

2. Genetic Relationships Among Desired Characters.

If positive, progress is speeded; if negative, it is retarded.

Genetic relationships among characters in beef cattle are imperfectly understood. Generally speaking, however, size and growth rates at different life stages are positively related, rate and efficiency of gain (expressed as gain per unit of feed consumed) are positively related, and there is a negative relationship between growth rate and ability to fatten at an early age. Genetic relationships between cow maternal abilities (as judged by weaning weights of calves) and growing ability of calves are uncertain, but may be negative. Overall, negative relationships do not appear to be serious enough to interfere with ability to change performance characters of beef cattle in desired directions to a considerable degree. There are likely limits on extent of possible change.

3. Number of Characters Considered Important in Selection.

Selection for only one character may be the method of choice in some beef herds. However, a more normal situation is that a breeder is interested in progress for two or more characters. Number of characters selected for should be kept at a minimum since selection intensity for any one character can be only  $\frac{1}{\sqrt{n}}$  times as effective as single character selection where n is the number of characters being selected for.

Of equal importance, however, is that total progress is greatest if optimum attention is given each important character.

4. Putting Optimum Emphasis on Each Important Character.

Relative emphasis on each character should depend on (1) its economic importance, (2) its heritability, and (3) its genetic relationship to other desired characters. Relative emphasis on each trait should not be looked on as a constant. Rather, it should vary according to many things including level of the herd for different characters, type of market aimed at, environment, climatic situation, etc.

5. Multi-Trait Indexes.

A selection index is a statistical device which can maximize selection progress for any desired combination of two or more traits.

For the reasons given in item 4 (above) no one index can or should have general applicability. However, in any given situation, once the objectives have been decided upon, an index will do a better job of selection than the unaided brain of the breeder is likely to do in arriving at a proper balance of emphasis.

Indexes can be developed giving optimum emphasis to individual, pedigree and collateral relative and progeny information as well as between characters.

6. Intensity of Selection at Different Life Stages.

Information compiled in a National Sire Evaluation Program could be used to make selections of sires or potential sires for further testing or for breeding use at (1) weaning, (2) at approximate yearling age after a post-weaning test, or (3) after completion of a progeny test. Looked at differently, bulls failing to meet desired levels of performance at each stage would be culled. Basic questions are how much of the potentially available selection pressure should be expended at weaning, how much at yearling age and how much should be reserved for selection among progeny-tested bulls? What is optimum use for breed improvement to be made of bulls selected at yearling age without further test?

Answers to these questions must be based on a combination of economics (i.e., costs of testing vs. genetic losses from mistakes in selection due to incomplete testing) and predicted genetic improvement per year from different selection procedures. Basically, this latter point applies to optimum use of progeny testing taking into account the increased accuracy of selection possible from it vs. the increased generation interval which is inherent with a progeny testing system. This is due to the older ages at which sires will be available for extensive use.

Optimums will depend on many factors including whether characters of greatest economic importance can be evaluated in the bull himself without progeny testing and the extent of use planned for selected bulls. The more use planned, the more important accuracy of selection becomes. Thus, for bulls to be used extensively in artificial insemination, particularly in purebred herds, progeny testing to increase accuracy of selection is usually indicated.

Specific procedures should be developed for each situation. Generally speaking, however, it appears that progeny testing will contribute most for characters measurable only in the carcass and although not used much systematically for this purpose to date, as an aid in selecting for maternal qualities through evaluation of fertility and calf-raising ability of daughters.

For characters measurable in the bull himself, most selection pressure should be at yearling age.

EXISTING BEEF SIRE EVALUATION PROGRAMS:

Programs with some features of National Sire Evaluation Programs are being carried on now by Performance Registry International and by several breed associations. These are all useful. All are desirable steps toward more comprehensive programs. Some rather general shortcomings of these programs are as follows: (bear in mind that these are generalities and not all will apply to all existing programs).

a. Absolute records are used.

These are subject to environmental influence. It is true, however, that evaluating on the basis of gain, carcass quality grade and yield of preferred cuts constitutes somewhat of a built-in control. Feeding for maximum gain may result in too much waste fat and visa versa.

Where two or more sires are tested, percentage above or below average of all progenies tested could be a useful additional figure.

- b. Many progeny tests are based on records of only one sire in a given herd at any one time.

This provides little basis for comparison nor for systematic selection. Within the limits pointed out above, it may give a gross appraisal of whether a bull is good or bad.

- c. Cows are not required to be randomly allotted to sires where two or more are under test.
- d. Kinds of cows to which bulls must be mated are not specified in some programs.
- e. Selection of progeny to be evaluated is permitted.
- f. Records are not published in some programs.  
This is not a shortcoming if the tests are conducted solely for the use of the owner. Of all evaluations which can be made, within-herd testing is basically the most important. It is fundamental to all progress. However, keeping the records confidential limits their usefulness as a source of information to guide the industry to the most productive sires and their sons.

RECOMMENDED NATIONAL BEEF SIRE EVALUATION PROGRAMS:

A National Beef Sire Evaluation Program should include own performance information and pedigree and collateral relative information as outlined in earlier sections plus progeny test information for selected sires with outstanding potential based on own performance and that of relatives.

Ideally, the progeny testing phase of a National Sire Evaluation Program should be based on the following principles and procedures:

- a. A minimum of two sires (preferably more) should be included in each test.
- b. Cows bred to each sire should be a random sample or equalized groups.
- c. All progeny should be managed the same or, alternatively, portions of each progeny should be on each management regime used.
- d. All animals of either one sex or of both sexes in the progeny, or a random sample within sex, should be used for evaluation.
- e. Comparisons of sire progenies produced in different herds should be based on deviations from herd averages with some consideration to absolute records.
- f. For each breed of sire being progeny tested, the type of cow to be used for test should be specified. Cows of the same breed or of a specific different breed or crossbred each have theoretical advantages.

Generally speaking, the most desirable type of test cow will be the type on which bulls of the breed under test will be most widely used commercially.

- g. Progeny testing may be done in either specially designated test herds or in herds in which artificial insemination is being routinely used. With special test herds, natural service may be used but comparisons could be made only among bulls tested in a specific herd. With artificial insemination, tests can be designed to use bulls simultaneously in several herds, thus permitting comparisons of bulls tested in the entire cow population.

Progeny testing, and indirectly National Sire Evaluation Programs based on progeny performance, would be facilitated by (1) recordkeeping in more herds, and (2) wider use of artificial insemination. The latter makes possible the simultaneous use of each of a number of bulls in several herds. Progeny averages expressed as deviations from herd average will then be meaningful. It was only when this technique became possible in dairy cattle that the Dairy Herd Improvement sire-proving programs began to approach maximum usefulness. Since recordkeeping is not universal nor likely to become so in the beef industry in the immediate future, consideration may need to be given to development of a system of tester herds.

#### RESEARCH NEEDS:

To maximize usefulness of sire summaries on a national basis as a tool in planning breeding programs, we need to know more about heritability of between-herd differences and more about adaptability and specific usefulness of cattle under given climates and management systems. This is true whether the summaries are based on own performance, performance of relatives, progeny performance or a combination of all three. Research is needed on optimum testing procedures and optimum weighting for different types of information in making selections.

#### GENERAL:

Summarization and, for maximum utility, publication of records on a national basis with adequate classification for climatic and management systems under which made, and emphasizing deviations from herd averages in addition to absolute records, would be useful to the industry now. Procedures can be improved and refined with time on the basis of experience and additional research information.

It is believed that sire evaluation programs are intimately related to breeding structure of the industry both within and between breeds and to relations of the seedstock and commercial segments of the industry. These aspects require intensive study.

REPORT OF BIF  
EDUCATION AND PROMOTION SUBCOMMITTEE NO. 1  
ADVERTISING

List of Members:

R. C. DeBaca, Iowa State University, Chairman  
Dept. of Animal Science  
Iowa State University  
Ames, Iowa 50010

Bernard Jones, University of Kentucky, Secretary

Harry Herman, N.A.A.B.

John Rohlf, Farm Journal

George Chiga, Red Angus Association

Melvin Kirkiede, North Dakota State University

Paul Pattengale, Colorado State University

R. P. Marshall, Santa Gertrudis Breeders International

George Ellis, Sr., American National Cattlemen's Association

Bob Purdy, American International Charolais Association

Lloyd Miller, American Angus Association

Mrs. Arch Allen, Montana Beef Performance Association

Frank Messersmith, Nebraska Beef Improvement Association

Advertising is a means of representing or selling a product to a potential user or buyer. It represents an operating expense to the breeder for which he wishes a substantial return. Within a democratic society the breeder has the right to use his own system of merchandising his product.

In general, advertising presentations and formats are and have been well done in relation to the purpose for which they have been intended. Basically, those persons who have most used and supported the advertising media generally have been less oriented toward performance evaluation than are the representatives to Beef Improvement Federation or many people that are performance testing.

Performance data are not widely used in advertising. Their use should be expanded. Where used, performance data are often accurately and concisely presented. In some cases, however, the data presented are (even though undoubtedly done in good faith) misleading, superfluous or duplicating. It is to this problem and a general data presentation guidance that Beef Improvement Federation should direct itself in its advertising subcommittee.

The subcommittee recommends that data presented in advertising be:

1. Brief -- too many records cause confusion rather than clarification.
2. Authenticated -- the source of data authentication lends credibility to record use.
3. Pertinent -- data which are useful in decision-making should be encouraged, whereas superfluous data use should be discouraged.
4. Current -- data used should be up to date rather than relating to data that were compiled "once upon a time."
5. Complete -- data used should be a complete reflection of what it is meant to describe. Partial data or distortion of data to look good should be discouraged.

The subcommittee suggests that Beef Improvement Federation consider doing the following:

1. Draft a suggested data presentation format for using records for young breeding animals, produce-of-dam records, sire-progeny summaries and carcass data in advertising.
2. Write to publishers in the advertising media concerning the format proposals and their importance in presenting meaningful and understandable data.
3. Through its members, place a brochure in the hands of every breeder suggesting formats for using performance data in advertising.
4. Suggest that publishers and their advertising representatives provide performance format forms to prospective advertisers for use in makeup.
5. Encourage standardized records such as the use of 205-day and 365-day adjusted weights, cutability data, and weight ratios instead of use of superfluous data.
6. Discourage the use of mature bull weights in advertising.
7. Furnish a list of examples of data uses, phrases, etc., which are misleading or superfluous and should be discouraged such as:
  - (a) "During a 60-day test this bull gained 5#/day."
  - (b) "Sonaray ribeye at 2165 lbs. was \_\_\_\_\_."
  - (c) "Weight of this bull at 23 months and 5 days was \_\_\_\_\_."
  - (d) "Calf weighed 363 lbs. at 4 months and 19 days."
  - (e) "The last 3 calves by this sire weighed 628 lbs."
  - (f) "This bull weighed 1,300 lbs. at 14 months."
  - (g) "One calf sired by this bull weighed 1,220 at 14 months."
8. Recommend to its members that each develop a ranch sign format addition which each individual could attach to his own ranch sign with the purpose of emphasizing performance evaluation.

**MAGAZINE AND CATALOG ADVERTISING:**

The following are possible layouts for incorporating performance records with pedigree, footnotes, etc., into advertising in trade journals or sale catalogs.

**ANIMAL BEING ADVERTISED:**

**Young Breeding Animal**

Picture, Pedigree, Footnotes, etc.
Format 1 (Attached)

**Sire (Sale or reference)**

Picture, Pedigree, Footnotes, etc.
Format 2 (Attached)

**Cow (Sale)**

Picture, Pedigree, Footnotes, etc.
Format 3 (Attached)

RANCH SIGN ADVERTISING:

The following is a possible layout for a ranch sign addition to emphasize performance evaluation:

<p>Format 4</p> <p>Ranch Sign</p>
<p>Performance Testing With Iowa Beef Impr. Assn.</p>

<p>Format 1: Suggested data presentation in advertising young breed animals.</p>							
<p>205 Day Adj. Data</p>					<p>Weight per day of age or 365 Day Adj. Data on Bull Progeny</p>		
	No.*	Weight	Ratio	Grade	No.*	Weight	Ratio
Individual's Record (Creep: Yes or No)							
Sire's Progeny Record							
Dam's Produce Record							
<p>* No. of contemporary test mates on individual records and total number tested in progeny records.</p>							



REPORT OF BIF  
EDUCATION AND PROMOTION SUBCOMMITTEE NO. 2  
PUBLICATIONS

List of Members:

Dixon Hubbard, F.E.S., U.S.D.A., Chairman  
Federal Extension Service, U.S.D.A.  
Washington, D.C. 20250  
L. A. Maddox, Texas A & M University, Secretary  
Vern Felts, University of Wisconsin  
Dave Malena, Successful Farming  
Reuben Albaugh, University of California  
L. A. Nelson, Purdue University  
Douglas Bennett, Oregon BCIA  
Ray Meyers, Red Angus Association of America  
F. R. Carpenter, P.R.I.  
W. N. Swoope, Mississippi Beef Improvement Association  
James C. Nolan, Jr., Hawaii BCIA

Communicating with the users of performance information is an important function of the Beef Improvement Federation and its member organizations. The Publications Committee is concerned with achieving needed publications for the benefit of cattlemen. Thus the committee recommends:

I. That the United States Beef Cattle Records Committee Report (Feb., 1965) be revised by incorporating the recommendations of the sub-committees as approved by the Board of Directors and that this publication be entitled Guidelines for Uniform Beef Improvement Programs and become the official publication of the Beef Improvement Federation.

II. That the officers of the Beef Improvement Federation request that the Federal Extension Service print the Guidelines for Uniform Beef Improvement Programs and that the first printing be in sufficient numbers to furnish copies to:

- (a) 50 copies to each member organization.
- (b) 1000 copies for the Secretary of BIF.
- (c) 1 copy to each County Agricultural Agent's office or appropriate area specialists in the nation.
- (d) 25 copies to each Animal Science State Extension Headquarters.
- (e) 5 copies for each state Vocational Agricultural office to be sent through the Animal Science State Extension Headquarters.
- (f) BIF official mail copies to appropriate organization units of the U.S.

III. That the present Beef Improvement Federation emblem be changed to make the initial easier to identify.

IV. That the Publications Committee serve as an editorial board in developing the final manuscripts for the Guidelines for Uniform Beef Improvement Programs from the February, 1965 report and the reports of the sub-committees working at this meeting.

Publications  
Page Two

V. That the chairman of each sub-committee be responsible for developing an annual news release or feature article on some phase of the committee's responsibility. These releases should be made through the secretary of BIF.

VI. That a news story and address and telephone number of the chairman of each sub-committee with a suggestion that each chairman be contacted for additional information. Accompany the proceedings of the Beef Improvement Federation Annual Meeting when it is mailed the Agriculture Press.

That a Proceedings of the 1969 Beef Improvement Federation Meeting be published as soon as possible.

REPORT OF BIF  
EDUCATION AND PROMOTION SUBCOMMITTEE NO. 3  
EDUCATIONAL ACTIVITIES FOR ADULTS AND YOUTH

List of Members:

Charles Christians, University of Minnesota, Chairman  
Extension Animal Science  
University of Minnesota  
St. Paul, Minnesota 55101  
Del Dearborn, University of Nebraska, Secretary  
James Patterson, North Carolina State University  
Otha Grimes, Amercian Polled Hereford Association  
Dale Davis, Montana BCIA  
Gary Rickets, University of Illinois  
John Auld, Pennsylvania BCIA  
Sherman Berg, Amercian Shorthorn Association  
Dean Hurlbutt, American Angus Association  
Lovell Kuykendal, American Hereford Association  
Neil Stinson, Better Beef Business  
Charlie Scruggs, Progressive Farmer

GENERAL:

The objective of the educational activities for adults and youth committee is to further the cooperation and educational efforts among industry organizations in the interest of beef cattle improvement. Special attention should be directed at the collection, compilation and use of performance data. Our goal is to teach both adults and youth the importance of performance testing. Various teaching programs such as beef cattle short courses, seminars, field days, type conferences and shows have been successfully used; however, performance testing methods records should be used more extensively in these activities.

THEME OF EDUCATIONAL ACTIVITIES:

Net profit is the goal of today's beef producer.

EDUCATIONAL RECOMMENDATIONS FOR YOUTH:

1. Develop a set of guidelines incorporating performance and carcass merit in market beef projects.

Objectives:

- (a) to incorporate individual beef animal performance in the project record and in the final evaluation of the project.
- (b) to emphasize the economic important traits of an efficient market appealing end-product.
- (c) to develop an understanding of efficient cattle feeding practices.

Single Market Beef Project.

This project is geared toward the beginner who has little or no experience in beef selection, feeding or management. The market steer or heifer project would be initiated at the time the beginner would weigh and identify the calf.

This initiation time could vary by area or state depending upon the predetermined termination of the project. The project record would include complete feed records, growth rate, carcass merit and project profit.

Since some youth may raise their own calves while others may buy feeders, the actual birth date may not be available. This would require various alternatives for final project evaluation. In any event, it is recommended that each calf is fed for a particular market or terminal show.

All major (state, regional or national) shows should slaughter all calves which are shown and have their carcass evaluated.

Alternative 1. (verified age) - Verified age calves would be those identified calves which have known birth dates. The final project evaluation could be through the conventional show which would incorporate growth rate as part of the live animal evaluation. The carcass would need to meet a minimum level of excellence and final project evaluation would be determined on "carcass value per day of age."

Alternative 2. (unknown age) - Unknown age calves should be weighed and identified at a specified time. The project record should be kept a minimum of 120 days prior to the terminal show. This performance should be incorporated as part of the live animal evaluation. The carcass should meet a minimum level of excellence and final evaluation would be determined on a carcass "value per day on test adjusted for initial weight."

#### Multiple Market Beef Project.

This project is designed for more experienced beef project members. Multiple market beef calf selection, feeding and marketing would require greater management skill. Generally, the same procedure could be followed as outlined in the single market beef project. The project would be initiated under supervision at a predetermined time. Any individual or group of individual calves could be shown at a terminal show. The objective is to feed the animals for a terminal show and select the animal ready for the show rather than holding the animal by walking, starving, etc. for another show.

The most advanced project would entail feeding larger numbers of animals. This project would include the use of computerized record-keeping programs available to adult beef producers.

2. Develop a set of guidelines incorporating performance information in beef breeding projects.

#### Objectives:

- (a) to increase youth interest in keeping performance records of all breeding cattle.
- (b) to develop a knowledge of suggested procedures for securing performance information and general sound beef cow management systems.
- (c) to develop a skill in selection procedures and making sound management decisions through the use of performance records.

### Beef Breeding Heifer Project.

This project is designed for the beginner who has limited experience in selection, feeding or management of a beef herd. A weanling heifer calf less than 10 months of age should be selected. The project would be initiated when the heifer is weighed and identified. The actual birth date and age of dam is needed to calculate an adjusted 205-day weight. This heifer should be placed on a growing ration and bred to calve as a two year old. At a year of age, a 365-day weight should be recorded.

3. Develop a suggested list of demonstrations and illustrated talks and suggest that member organizations of BIF consider the feasibility of offering awards to stimulate participation.

#### List of Demonstrations and Illustrated Talks.

- Performance Records, their Collection and Use
- The Value of a Sire's Record
- Repeatability of Beef Cow Performance
- Genetic Improvement through Selection of Superior Performance Records
- Genetic Factors Influencing Beef Cow Productivity
- The Genetic Basis of Beef Herd Improvement
- Heritability- Its Meaning, Importance, and Use in Herd Improvement
- Selection Differential - Its Meaning, Importance and Factors Which Influence Herd Progress
- How Many and Which Traits Are Important in Beef Cattle Production
- Sire Selection
- Mating Systems available to the Beef Producers
- The Understanding and Most Probable Use of Most Probable Producing Ability
- Various Methods of Beef Calf Identification
- Various Methods of Beef Cow Identification
- Guidelines of Conducting a Sound Progeny Test
- Inheritance of Various Carcass Traits
- How Conformation is Related to Growth Rate and Carcass Merit

4. Develop recommendations for incorporating performance information in all national, regional and state judging contests.

5. Collect and publish a listing of beef cattle performance testing materials and visual aids. There is need for adaptation of these materials to youth programs. It is recommended that the Federal Extension Service provide leadership for development of a Youth Program Manual on Beef Cattle Performance Testing Programs. This manual should include worksheets.

#### EDUCATIONAL RECOMMENDATIONS FOR ADULTS:

1. Recommend that member organizations incorporate record of performance examples in various educational activities such as field days, workshops, etc. Special emphasis should be placed on clarification of terminology, procedures and use of records.

Educational Activities for Adults and Youth  
Page Four

2. Support National breed and other associations which have incorporated information into their various recognition programs of breeding stock.
3. Recommend the consideration of sponsoring special seminars or briefing sessions for the farm press to encourage further clarification of the why and how of performance testing.

REPORT OF BIF  
EDUCATION AND PROMOTION SUBCOMMITTEE NO. 4  
SHOWS AND EXHIBITIONS

List of Members:

Max Hammond, Florida CIA, Chairman  
Bartow, Florida 33830  
Keith Zoellner, Kansas State University, Secretary  
Myron Lacey, Cornell University  
Sarah Forbes, Red Angus Association of America  
Ted Aegerter, American Shorthorn Association  
Jim Hemmingsen, American Polled Hereford Association  
W. W. Wharton, Ohio State University  
Jess Kilgore, Montana BCIA  
Harold Thompson, Washington BCIA  
Charles Koch, Farm Quarterly  
John Jenkins, Livestock Breeder Journal  
Herman Purdy, Pennsylvania State University

Cattle shows and exhibitions can be important promotional and educational activities if their procedures and goals are based on sound ideas and ethical practices. This report is intended to strengthen the relationship and orientation of the Shows and Exhibitions to the goals and objectives of beef cattle improvement programs based on performance records.

Objective I. Prepare recommended guidelines for use by show management and breed associations. These guidelines would seek to incorporate performance data of economic and genetic importance into shows for breeding cattle, market cattle and carcasses.

SUGGESTIONS FOR BREEDING SHOWS:

1. List cattle in catalog in order of descending age and line-up accordingly in show ring.
2. Weigh cattle at specified time at each show and provide judge and public with printout showing birth dates, weight, weight per day of age, and weight per day of age ratios of each animal to the average of the group shown.
3. Discriminate against excess finish, by including the use of electronic fat measuring devices or other techniques for fat determination. Such fat measurements should be published in printout of performance information.
4. Eliminate nurse cows at shows.
5. Discourage showing older animals (especially females that should be in production). In local youth shows, classes for young cows with calves at sides may be shown.
6. Require judges to give oral reasons for their placings. The reasons should include reference to performance information as well as conformation.
7. Include classes for steers bred by exhibitor. These steers to have known birth dates, known parentage, and official performance information. Steers should be judged on-foot and in the carcass, with premiums being paid on the basis of both classes.

8. Encourage classes for pen lots of performance tested sire progeny groups of breeding cattle. These classes would be designed to include purebred bulls; and purebred, grade and crossbred females. The animals are to be shown in normal growth or breeding condition.

9. Recommend spot-checking to determine ages of breeding cattle. The checking to be done by mouthing or any other acceptable means. Any animal found deviating from the norm for the age in which entered at the show be eliminated from competition at the show.

10. Urge the cooperation of all breed groups in adopting and using a uniform set of show classification and terminology.

11. Provide additional premiums or breed specials in shows for animals that have official performance records.

12. Urge the use of uniform stall cards showing official performance data.

SUGGESTIONS FOR STEER SHOWS:

1. Show by age classifications with minimum weights for each age class. No steer to be shown that doesn't weigh at least 950 pounds. Age shall be determined by mouthing or other accepted means. If a steer mouths differently than entered, he should be moved to the proper class. In adult shows, if he mouths older than entered, he shall be eliminated from the show.

2. Make performance data available to judge and public. Performance information should include weight per day of age or gain over a given time interval (120 to 150 days).

3. Include classifications for crossbreds and/or other breeds in steer or market shows.

4. Slaughter all steers to obtain carcass evaluation. These carcasses should be placed in order of superiority with premium awarded accordingly.

5. Carcass show placings should be based on:

- (a) Efficiency of production as represented by rate of gain, weight per day of age or pounds of saleable meat per day of age,
- (b) Minimum carcass grade, and
- (c) Cutability scores.

Recommendation: That BIF prepare a handbook on "Model Shows" incorporating the above suggestions as well as a uniform show classification and terminology. The handbook for use by fair managers and breed associations.

Objective II. Encourage breed associations, BCI associations, and other groups to have exhibits or displays at livestock shows depicting the value of performance information.

Suggestion: Displays should include live animals as well as performance data.

Objective III. Urge the conduct of schools to better inform judges and breeders in regard to the importance of traits of economic significance.

REPORT OF BIF  
EDUCATION AND PROMOTION SUBCOMMITTEE NO. 5  
MARKETS AND MARKETING

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Without doubt, the first prerequisite to successful merchandising is the thorough knowledge of the product united with the closest possible estimate of what it will do for the buyer.

It follows, then, that the ability to describe the product in language or terms universally understandable is the second in essential importance.

Cutability can be reasonably expected to vastly influence all phases of beef cattle marketing during the immediate future. And to be most meaningful, this marketing feature or influence must be coupled with gainability and feed efficiency, thus reflecting greatly in selections for replacements - in type most nearly suitable for propagation. This does not preclude, however, the importance of the quality requirements of the end-product.

Nomenclature as presently applied to certain grading systems have conflicting aspects. Such condition may easily be solved by more nearly understood terms without changing the system. Let it be known, the committee does not disparage the system.

With these things in mind, the Markets and Marketing Committee makes these recommendations:

1. Encourage the wide-spread use of performance testing terms in all types of literature and publications. Use of terms easily understood no doubt will make performance even more profound and meaningful.
2. In order for cutability to properly influence the marketing phase of beef cattle, standards for feeder calves, yearlings and slaughter cattle as well should be developed and application strongly encouraged in all areas of marketing.
3. A completely different nomenclature be devised for identifying grades of calves.

As a bit of explanation, here, the committee feels that since we presently have conflicting terms describing grades of feeder calves, for example. Fancy, Choice, Good, etc., as against Prime, Choice, Good, etc., and perhaps some difference in standards for these grades as described, a complete set of different, simple terms may be applied and should be established.

Suggested terms are No. 1's - No. 2's - No. 3's - No. 4's. The requirements for No. 1's be that calves falling into this grade have the potential of Choice or better slaughter grade, cutability 2 or better, and a possible 3 lbs. per day gain. Other grades be proportionally less desirable. This system of 1-2-3-4 grading would be much simpler and more completely understandable.

In instances where grades are applied to performance testing, No. 1's could be easily considered as 17-16-15; No. 2's, 14-13-12, etc.

In future deliberations, the Markets and Marketing Subcommittee will evaluate feeder cattle certification programs that are developing or are in use in a few areas of the country. Special attention will be given to the application of these programs to merchandising feeder cattle of known genetic potential and to use of data from herds such as them for industry improvement.