

Using Performance Data in Judging Classes

John Massey

Department of Animal Sciences, University of Missouri-Columbia

Judging contests are an important educational tool. Someday young cattle producers will be faced with selection decisions that affect the profitability of their operations. They should be prepared to use all information available to them, including performance data. Therefore, to better educate future cattle producers, performance data should be included in livestock judging classes and in all judging competitions. The combination of evaluation through performance records and visual appraisal better prepares students for realistic selection decisions.

Judging contests have long been used to exercise the decision-making abilities of young producers. Contestants must make logical decisions as to the relative worth of each animal in a class. Often, the only knowledge about the class comes from visual appraisal. Contestants can visually appraise and estimate general size, weight and composition (lean to fat ratio), but they could increase their accuracy if they could consider performance information. Factors such as weight, rate of gain, frame score, backfat and scrotal circumference are easily measured, and contestants can make more accurate decisions by evaluating them. Estimated Breeding Values (EBV), ratios, accuracies and Expected Progeny Differences (EPD), which are easily obtained from most beef breed associations and progressive breeders, can help determine differences between individuals more accurately than visual appraisals alone.

This guide can be used to train youth interested in modern beef selection practices. A cattle producer using performance information while making selections is like any successful businessperson who uses the most accurate inputs possible to make economically sound decisions. This guide provides some examples of judging situations that include performance records. The possible types of classes are as numerous as the selection decisions producers must face every year. Before any judging exercise, contest or otherwise, you must define the class of cattle, obtain the appropriate performance data, and make and justify decisions to meet the defined needs.

Defining the class

Any selection exercise involves determining which animal comes closest to fulfilling a defined need. Before a sensible choice can be made, the judge should provide the answers to three questions:

- How are the selected animals to be used (the selection purpose)?
- Under what conditions are the selected animals expected to perform (the selection situation)?
- From the selection situation, what are the most important functions the animals must serve (selection priorities or goals)?

The class purpose, situation, and priorities can be very simply stated, such as for this class of Shorthorn heifers:

Purpose — Shorthorn replacement heifers.

Situation — Small herd of registered purebreds producing commercial bulls.

Priorities — Growth.

These selection criteria can be stated more elaborately depending upon the advanced level of the student or contestant or upon what concepts the instructor wishes to teach. Consider the following description for a class of Angus bulls:

Purpose — Natural service sire in a two-breed rotational crossbreeding system.

Situation — Midwest commercial operation (150 head, Hereford cow base) integrated with corn production. Cows are medium mature weight and moderate in milk production. Cows forage on improved pasture and/or stalks. A percentage of the heifer crop is retained as herd replacement; the remaining heifers and all steers are finished for slaughter on the farm. Labor is a limited resource.

Priorities — Maintain current mature weight. Increase longevity. Improve cutability. Decrease calving difficulty.

A realistic situation is the key to giving the class a real life, applied meaning. It is not necessary to use actual data; hypothetical situations and data can be applied to a class in a realistic manner. The educational value of the exercise is the critical issue.

Other examples of selection situations are:

Angus heifers

Purpose — Replacements for a seedstock herd that supplies bulls to commercial herds.

Situation — Commercial herds operate with low feed and management resources (western range conditions). Feeders are sold at weaning; all replacement females are produced from calf crop.

Priorities — Pre-weaning growth. Soundness. Fleshing ability.

Simmental bulls

Purpose — Herd bull in commercial crossbreeding system.

Situation — Small Angus-Hereford cross cows (900 pound average mature weight) make up the herd, and high feed resources are available. Daughters will be retained in the herd. Calving difficulty has been a major problem.

Priorities — Calving ease. Milking ability in replacements. Yearling growth in feeder cattle that are sold.

Polled Hereford bulls

Purpose — To sire seedstock herd sire prospects and replacement females.

Situation — Progeny from these bulls is sold to or used primarily by other seedstock operations and by some commercial operations. Average feed resources and high management and/or labor resources are available in both.

Priorities — Maintain a balanced performance program with progress in all areas, but avoid major setbacks in any one area. Marketing appeal. Longevity.

A statement of selection priorities should not imply that they are the only criteria to consider. Certainly, if a bull has a severe structural problem or clearly lacks testicular development, he should not be chosen even though soundness or fertility was not listed as a selection priority. The instructor may even choose to omit selection priorities from the class description. This would encourage the student or contestant to individually develop priorities based upon the selection situation and then make corresponding selection decisions.

Considering performance data

Besides what students can see, what other factors should they consider? Any student wishing to excel in beef cattle judging should be prepared to use the following performance information:

- Birth date.
- Birth weight.
- Birth weight EBV and accuracy.
- Weaning weight, (actual and adjusted) ratio and number of contemporaries.
- Weaning weight EBV and accuracy.
- Yearling weight, (actual and adjusted) ratio and number of contemporaries.
- Yearling weight EBV and accuracy.

- Weaning or yearling hip height and frame score.
- Maternal EBV for weaning weight or Dam's MPPA (Most Probable Producing Ability).
- Post-weaning average daily gain, ratio and number of contemporaries.
- Fat thickness.
- Yearling scrotal circumference.
- Weight per day of age.
- Birth, weaning and yearling weight EPDs, (Expected Progeny Differences).
- Calving ease scores, EPDs and maternal EBVs definitions of terms may be found in MU publication [G2030](#), *Beef Production Glossary*.

All of these records will not be available for every class. Some classes may have nothing more than birth dates and weaning weights.

Students should be trained to understand each factor and to optimize use of whatever information is available. It is impossible to describe every combination of class description and performance data set. However, many will be related to commercial production. Table 1 provides some guidelines to consider when making bull selections.

Table 1. Commercial bull selection criteria.

Trait	Standards	
	Maternal sire	Terminal sire
Function		
Scrotal circumference (cm) (minimum at 1 year)	34+	32+
Calving ease score	Unassisted	Minor assist accepted
Birth weight (pounds)	65 to 85	80 to 110
Birth weight EBV ¹	102+	95+
Structural soundness	Excellent	Adequate
Milk Production		
Maternal EBV	102+	Not important
Growth		
Weaning weight EBV	98 to 104	104+

Yearling weight EBV	98 to 104	104+
Market Acceptance		
Frame score (1 year)	4 to 6	5 to 7
Hip height (inches) (1 year)	47.0 to 51.0	49.0 to 53.0
Fat thickness (1,100 pounds)	0.2 to 0.4	<<0.2
¹ In most cases, higher EBVs are associated with lower birth weights. However, for some associations the opposite is true. The instructor should clarify.		

When both EBVs and actual data are presented, give emphasis to the EBVs even if the accuracies provided are somewhat low. However, if EBVs are not provided, a minimum of actual weights and within contemporary group ratios should be provided, and students should seriously consider them.

Simmental bulls — example

Decisions are not always simple, regardless of whether data are provided or not. To illustrate, let's look at a pair of Simmental bulls. The performance data are provided in Table 2. Two different possible class descriptions follow.

Table 2. Example — Simmental bull data.

	Bull 1	Bull 2
Birth weight	104	87
Birth weight EBV	99	101
Weaning weight EBV	109	100
Yearling weight EBV	105	100
Maternal weaning weight EBV	100	110
Scrotal circumference (cm)	36	32
Class description	Situation A	Situation B
Purpose	Terminal cross sire	Sire in three-breed rotational system

Situation	Midwest cash corn and crop cow/calf operation (15 percent of herd — first-calf heifers)	Low feed resource, in western range conditions
	850 to 1,000 lb. avg. mature weight	Minimum labor available
	Feeder calves sold at weaning	1,000 to 1,100+ lb. avg. mature weight average
Priorities	Growth	Limit mature cow size
	Fertility	Maternal ability
	Calving ease	

For situation A, the judge may decide that Bull 1 is a more logical choice than Bull 2. This decision can be justified (perhaps through oral reasons) by stating that: "1 has greater weaning and yearling weight EBVs than 2. Thus, if 1 and 2 were bred to comparable cow groups, 1 should sire faster-growing calves that are heavier at weaning. Furthermore, 1 has a greater scrotal circumference than 2. Although 2 has a smaller actual birth weight than 1, their birth weight EBVs are nearly equal, so similar occurrences of dystocia are expected from either bull on the average.

"Situation B presents a different need to be met by the bulls. A judge may prefer Bull 2 over Bull 1 in this case and would justify this because 2 is expected to contribute greater maternal ability to the rotational system as he was estimated with a much greater maternal breeding value than 1.

"Also, 2 has a lower (near average) growth EBV than 1. Thus, with low feed resources available, replacement heifers sired by 2 should be of more moderate weight than those sired by 1. Finally, 2 has a slightly superior EBV for birth weight than 1. However, 2 is to be faulted for having only a minimum required yearling scrotal circumference."

Remember that there are no clear guidelines on placing classes even though performance records are included. In fact, including weights and breeding values can create more ways to justify alternate decisions. The records may even be contradictory to the results of visual appraisal alone. However, these contradictions can provide a marvelous opportunity to discuss various producer goals and how alternative selection practices can be used to reach them.

Combining performance data with visual appraisal

At one time, cattle were selected by visual appraisal alone because no better method was available. Fortunately, evaluation techniques have improved and visual appraisal can now be used as an aid to the more accurate performance selection. Difference in composition, frame size, muscle expression, structure and abnormalities can be determined visually after the main decisions have been made on performance data.

It is important, especially in reason classes, that performance information be made available to logically combine visual traits with performance data. The following are a few examples of combined visual and performance traits:

- Smooth, well laid-in shoulders and a long, narrow head, coupled with low or moderate birth weight should indicate fewer calving problems.
- A long-bodied, high-volume heifer with high maternal EBV should indicate more future productivity as a cow.
- Natural thickness over top and heavy weaning weight ratio and/or yearling weight EBV indicates the bull should sire thick-made, heavy calves for the commercial market.
- Structural correctness on feet and legs coupled with moderate to large scrotal circumference in bulls indicates the bull should be a more successful natural breeder.

As in any judging situation, it is impossible to make a clear-cut choice that cannot be argued. Students should not be discouraged if someone else has a different opinion on how two individuals may best fulfill a given need. These decisions are always controversial. The ultimate goal is to make a sound, defensible decision based on fact and to learn from the judging exercise how to improve cattle production through better selection practices.

Adapted from a Beef Improvement Federation Fact Sheet prepared by Carla Nichols, University of Kentucky; Brad Skaar, Iowa State University; John Crouch, American Angus Association; and Steve Radakovich, Iowa Angus and Hereford Breeder. Reviewed by Brad Huffines, Iowa State University; Harlan Ritchie, Michigan State University; Jim Gibb, American Polled Hereford Association; and Ken Ellis, University of California. Edited by Daryl Strohbehn, extension beef specialist, and Gene Hettel, extension communications specialist, Iowa State University.