

Central Test Stations

Central test stations. More than any industry facet, they have put performance concepts in the limelight. They have offered top-gaining bulls to purebred and commercial sectors alike. Their role has been positive. But they are not perfect. Have they become too competitive? Can they be improved? Should they be changed? The following articles consider such points from several vantage points.

Modification of Central Bull Tests

by R.E. Taylor (Colorado State University), and M.L. Mosinski and D.A. Daley (both of Fresno State University)

There is an increased awareness within the cattle industry of the inherent dangers of maximization of growth at the expense of other economically important traits. This is not to imply that rapid early growth is un-

important, only that it must be tempered by an understanding of the impact of total growth on profitability. Commercial and seed stock producers are faced with the prospect of increased mature size which may adversely affect reproduction (when feed resources are limited), increase calving difficulty and require greater total input.

The direction of the industry must be shifted from the direct emphasis on pounds per animal regardless of cost, to a ratio of total pounds to total cost.

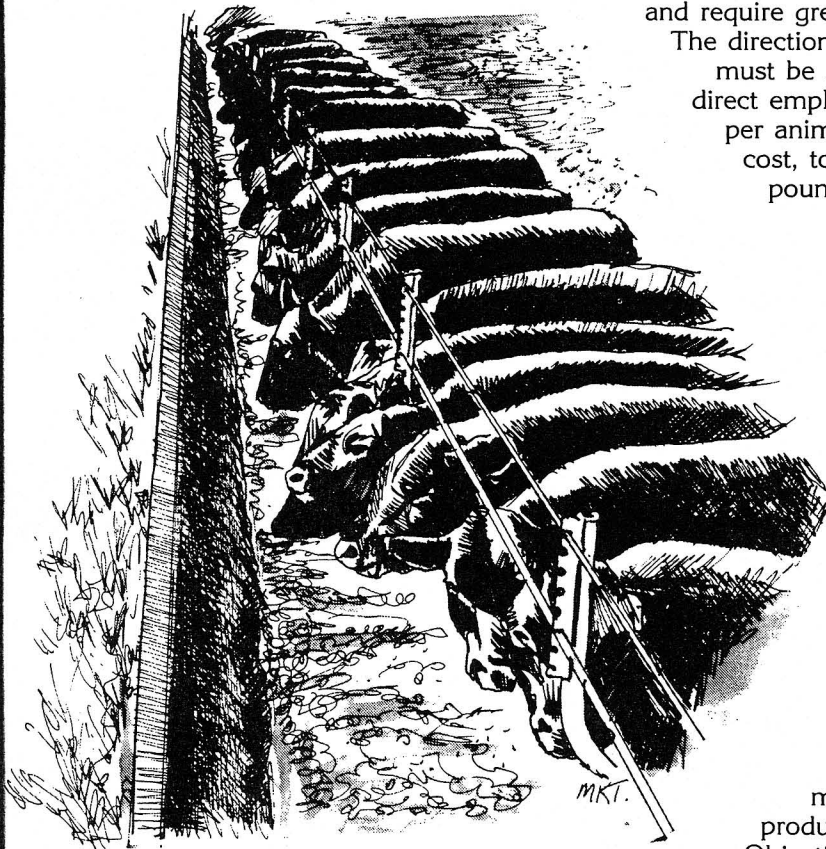
Producers must concentrate on decreasing the time necessary to produce a given amount of product rather than continually increasing product volume.

Performance testing of diverse breeds has played an important role in the improvement of the total productivity of cattle. Objective performance evaluation, in conjunction

with the influx of Continental breeds, has rapidly altered the direction of the purebred and commercial industry. The development of central bull tests has provided an effective method for the improvement of growth rate, feed efficiency and carcass merit. However, the continued emphasis on single trait selection (growth) in central tests is resulting in maximization of mature size without regard to the total efficiency of production. Reproduction (age at puberty, mothering ability, calving ease, fertility) and "maintenance" or "convenience" traits (udder and teat shape, structural soundness, disposition, longevity) receive minimal or no selection pressure in central bull tests.

Current methods of bull evaluation require modification if central testing is to address the concerns of the commercial producer:

- 1) inefficient utilization of feed resources by maximization of cow size when feed is limited;
- 2) the production of a highly heterogeneous end product, particularly with regard to weight, lean to fat ratio, and quality grade;
- 3) the genetic correlation between mature size and birth weight, hence increased calving difficulty;
- 4) selection of all breeds for growth, rather than utilization of particular breed advantages; and
- 5) maximization of growth at the expense of other traits of economic



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importance that may be more difficult to measure.

Many cattlemen are skeptical of purchasing bulls at central tests due to either real or perceived overfeeding. There is a legitimate concern regarding the usefulness of performance-tested yearling bulls under range conditions. Based on current testing procedures, a bull may reach a useful weight and fatness after 84 days on test. However, the

evaluation are necessary. Consideration should be given to concepts developed by the swine industry. Concentrated efforts in swine production have resulted in performance programs that emphasize efficiency of growth and composition (proportions of lean, fat and bone) to a defined endpoint (days to 230 lb.). In the swine industry, there is relatively little incentive to increase output in terms of pounds per individual. However, there is a strong incentive to increase efficiency (decrease days to 230 lb.) and total pounds per unit of input or per female in the breeding herd (reproduction). Additionally, the production of a comparatively consistent, uniform product has facilitated marketing and consumer acceptance.

Within each breed of cattle there are particular lines that excel in rapid early growth (decreasing days to market weight), yet are comparatively moder-

ate in size. It is virtually impossible to recognize rapid-growing, moderate size

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cattle based on the current methods of central bull tests.

Current testing schemes reward physiologically immature cattle (exceptionally large and lean). At a 1984 test, the "high-performing" bull (Continental breed) weighed 1,423 lb. with .05



feeding program will continue for another 56 days. This type of program penalizes the bull for rapid early growth. Decreased gains (performance data) and increased fatness (visual appraisal) during the latter portion of the feeding program make the true value of the bull difficult to determine.

Swine industry ideas

Based on these concerns, modification of current methods of performance

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An Alternative— Early Observations

by Dave Daley

First, it is important that people realize my perspective. My family has been involved in the commercial cattle business in Northern California for five generations. Although I have been involved in research, teaching, graduate work and coaching livestock judging teams, everything I evaluate is tempered by my past (and present) involvement in commercial beef production. Frankly, the harsh economic reality of the cow-calf industry makes it difficult for ranchers to be anything but pessimistic when confronted with alternative management practices—"new ideas." Our emphasis in applied research must be to minimize inputs. There is a great need to evaluate low cost alternatives. Commercial cattlemen are receptive to new ideas—if the return can be realized without major cost!

Fresno's bull test was designed with two primary goals: (1) increase acceptance of performance-tested bulls by

commercial cattlemen; and (2) evaluate the validity of our present method of testing cattle.

There is no question that central testing has been an important mode of genetic improvement for many years. However, in the range livestock industry of the far West, acceptance has been slow at best. One of the primary concerns has been "over-fat" bulls that may not function under range conditions. Regardless of whether the perception is entirely valid, it exists, and will not go away by wishing.

Secondarily, those producers who do attend central tests often become involved in the "horse race" of maximum gain, maximum growth, maximum size (the 1,400-lb. yearling bulls with zero fat). Based on marketability of the product and feed resources, I am sure that we must, as an industry, target an endpoint that satisfies the marketplace and the environment.

inches fat at 13 months of age. Should this bull be rewarded as the "high performer?" Other than the obvious advantage in growth traits, will the total contribution of this bull to the beef industry be positive?

Suggested alternative

As an alternative to current methods, bull tests could be designed to reflect efficiency of growth to a constant weight. Evaluating days of age to a constant weight within frame and / or breed may be a viable modification. Cattle will be assigned to mature size groups based on breed and frame score. Each mature size group will be fed to a weight selected to reflect approximate equal physiological maturity (same percent of mature weight) of all bulls on test. The most critical factor in the design of the test is accurate assessment of mature size in young

animals. At the conclusion of the test, one of the important criterion for selection will be days required to reach an acceptable weight, not simply selection for maximum off-test weight and gain. Each mature size group will be considered contemporaries.

Current methods of bull evaluation require modification if central testing is to address the concerns of the commercial producer:

Composition (fatness) will be measured as a bull reaches an assigned

General observations:

1. The alternative method (used at Fresno) saved approximately \$70 per bull in feed costs. This is a result of removing the cattle from the high energy ration as they reached their respective target weights.
2. Visual evaluations by commercial cattlemen at the target weight indicated that cattle were phenotypically acceptable, i.e. not "too fat." However, by the conclusion of the 140-day test, the same cattle were unacceptable. Backfat probe data supports this observation.
3. Selection of the appropriate target weight is the most difficult aspect of the program. Selection of target weights within frame size groups (an estimate of mature size) seems reasonable. However, this requires the proper identification of frame. Additionally, this lends credibility to the concept that all sizes work in a particular environment—which may be true from a biological perspective and even from an economic perspective for one segment of the chain, but it is not necessarily valid for all segments. We need to be aware of restrictions—from portion size, to boxed beef, to regional demand for different carcass weights. I absolutely concur with the concept of allowing the en-

vironment to dictate the genetic resources. However, commercial cow-calf producers are too often left with the impression that whatever calf they produce (as long as it fits their environment), the feedlot will feed to a logical slaughter endpoint, the packer will slaughter, and the consumer and retailer will buy! We must think of the entire industry, and I believe a specific target weight will give us direction, increase the uniformity of our product, facilitate marketing at all levels and allow us to concentrate on efficiency rather than size.

4. From the perspective of the "buyer" or commercial producer, the cattle that were superior at 84 days (reached their target weight first) were not necessarily "superior" at the end of the traditional 140-day test.

We have already initiated the evaluation of another small group of bulls and intend to follow up with a larger group of cattle during the fall. We would enjoy an opportunity to visit with breeders who would like additional details.

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weight endpoint. It is important to realize that exceptional leanness is not necessarily an advantage. Two points are critical in the assessment of composition of young bulls as potential breeding stock:

- 1) research indicates approximately .20 inches greater fatness in steers than in their counterpart bulls at equivalent weights; and
- 2) several studies demonstrate the positive relationship between palatability attributes and subcutaneous fat thickness with approximately .30 of an inch considered minimum.

It is critical that we do not forget that our ultimate goal in the beef industry must be the efficient production of a desirable end product. Based on these premises, assessment of composition (fatness) should be similar to other traits—at an optimum level rather than maximum or minimum. Perhaps a range of .15 to .30 inches in performance-tested bulls is appropriate. There is the additional concern of many cattlemen that very lean cattle do not have the fleshing ability necessary to consistently reproduce under range conditions.

The beef program at California State University, Fresno, is in the process of beginning an evaluation of 70 bulls representing several breeds (Charolais, Salers, Angus, Brangus and Braford). Based on mature size estimates, two weight endpoints have been identified; 1,050 lb. and 1,200 lb. Weights selected were based on typical market weights, length of the feeding period,

It is virtually impossible to recognize rapid-growing, moderate size cattle based on the current methods of central bull tests.

the frame score system, USDA feeder grade guidelines for market weight of different frame sizes and the cattle delivered for test. Weight endpoints for the initial study are arbitrary. However, the selected weight endpoints are realistic with respect to current carcass weight constraints and are heavy enough to assure the opportunity for development of yearling bulls. These data will begin to establish guidelines necessary for weight endpoints of

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various mature size groups. Cattle will be given maximum opportunity to gain on a typical bull test ration. Composition (fat probe), scrotal circumference, and hip height will be recorded, in addition to weight, at the conclusion of the 28-day period during which the bull reaches the predetermined endpoint. Maximum test length is 140 days. Bulls that do not reach target weights by the end of the feeding period will be adjusted and compared with their respective mature size group. Consideration is also being given to the inclusion of physical trait descriptions (structure, sheath, polled or horned, disposition, etc.). As bulls reach assigned weight endpoints, they could be removed from the high energy diet and provided a limited high roughage ration. This would allow rapid early growth bulls an opportunity to begin to adjust to the environment in which they are expected to perform. One of the primary concerns of commercial producers is excessive conditioning of yearling bulls off-test.

Table 1 clarifies the major impact of the proposed modifications based on classification into four major groups. Cattle deficient or excelling in total growth will have the same evaluation

Table 1. Current vs. Alternative Methods of Classification for Growth Rate.

Group	Characteristics	Current Method (Days)	Alternative Method (Weight)
1	Deficient in rapid early growth; attain compositional maturity at a weight unacceptable based on industry standards (lighter)	Penalize; "smaller" frame, excessive condition	No change
2	Deficient in rapid early growth; eventually attain a relatively large mature size	Advantage; frame size, leanness	Penalize; increased days to a defined weight
3	Rapid early growth; moderate mature size	Penalize; perceived excessive condition, "smaller" frame	Advantage; decreased days to a defined endpoint, more acceptable level of condition
4	Rapid early growth; large mature size	Advantage; frame, leanness, growth	No change

by either method. Cattle deficient in rapid early growth but eventually reaching a large mature size are penalized. Cattle that are superior in rapid early growth and are moderate in mature size will have an advantage. The greatest change is the increased emphasis on time required to produce a product rather than simply increasing the total amount of product. This provides producers the flexibility to select for traits other than mature weights in their breeding program (reproduction and

convenience traits). Additionally, identification of bulls that excel in rapid early growth but are moderate in mature size becomes possible.

It is not realistic to assume that this modified procedure will allay all concerns regarding central testing. These modifications do not address methods of evaluation for other traits, but by removing mature size as the ultimate goal, intense selection is possible for traits other than maximum growth.



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True Confessions of a Simmental Breeder

by Ellie Thomas Larson, Mount Horeb, Wis.

The following comments appeared as Ellie's regular monthly column in the February 1985 Simmental Shield.

We've seen a number of articles lately discussing central bull test stations from a negative perspective.

One of our "in-house" problems seems to be our constant search for a simple answer to genetic selection—a sure-fire means of evaluation that always works. We find a method that of-

fers answers, like the central test programs, and when we discover it's imperfect, we want to discard it.

While I agree that we should be combining genetics for "optimum" production which suggests multi-trait selection, I believe the bull testing programs are a useful and necessary evaluation tool for today's cattle breeder.

Realizing there's no simple answer to genetic evaluation and that the central test concept has limitations, I suggest we consider these positive aspects:

1. Central bull tests offer the small breeder a place to evaluate their bulls. The majority of our country's seed stock producers run relatively small

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numbers of cows. We know evaluating the entire calf crop as a group allows most accurate information, but a small breeder doesn't always have enough bulls or the facilities.

2. Central bull tests measure post-weaning gain, a trait highly heritable and economically important to the industry. Although we are increasingly aware of the dangers of single trait selection, we can never ignore the profit contribution of rapid growth during this period of a beef animal's life.

Even today, there are certainly many herds where selection for post-weaning growth would offer the fastest economic progress. Used intelligently with

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other information (i.e. calving ease, maternal breeding value, carcass evaluation) it offers a useful means of evaluating a trait.

3. Central bull tests expose the commercial producer to performance data. Although this is only a side benefit, it may be the most timely advantage of the system.

Selection criteria based on performance information is easily the most valuable tool we have for improving our cattle. Bull tests allow the commercial

man to inspect data that includes not only rate of gain, but also weaning and yearling weights, scrotal circumference, birth weights, and estimated breeding values. All are being included in more and more station sale catalogs.

4. Central bull tests provide a format for recognition of performance. Our industry is traditionally geared to recognize and laud the show ring winner. Today's progressive breeder knows that comprehensive performance evaluation is a far superior method for recognizing genetic potential than visual appraisal.

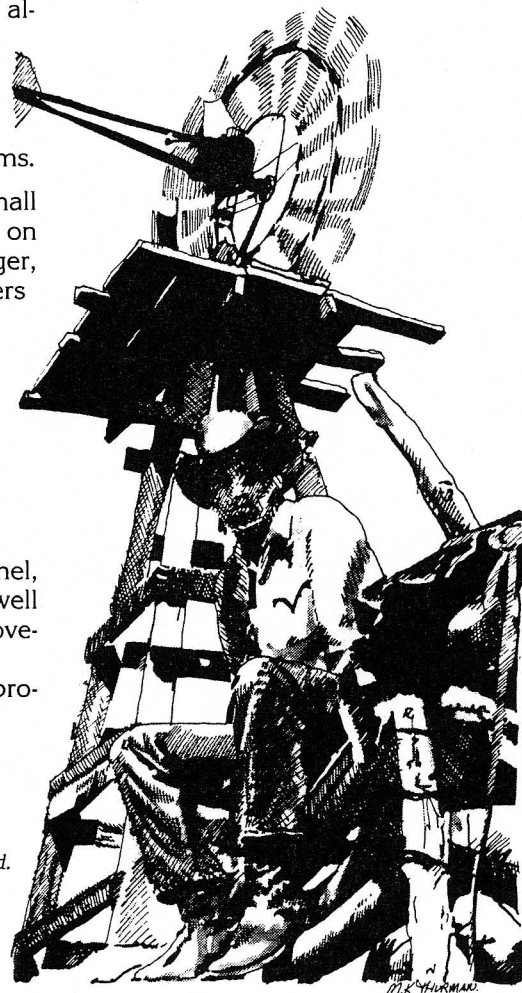
The competition of a bull test, although an incomplete means of evaluation, is at least based on sound performance principles and recognizes breeders who are using these tools in their programs.

5. Central bull tests allow the small or new breeder a format to compete on relatively equal footing with larger, more established programs. It offers an opportunity for comparison and evaluation and also a potential marketing option.

I might also add that a test station in any given area tends to increase total awareness of progressive new ideas in the industry. Generally, the programs are supported by university personnel, the progressive area breeders, as well as the state and national Beef Improvement Federation.

Used wisely, central bull test programs are a useful and necessary tool for today's cattle breeder. Let's not throw out "the baby with the bath water."

Reprinted courtesy of the Simmental Shield.



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Performance Show Rings?

by Gregory May, Maymont Angus, Timberville, Va.

Bull test stations are the show rings of the performance business. Although they continue to serve a good purpose in evaluating bulls, test stations today are principally valuable as tools for promotion. They can and should be more than that.

When central bull testing began, it served an important performance eval-

uation function. Today, the development and spread of other techniques for evaluating growth potential are making central testing less useful for that purpose. In order to play a major role in performance evaluation for the future, test stations must adopt procedures for measuring something other than relative growth rate within a highly

selected set of bulls. Present thinking along that line is promising, but changes must come quickly if test stations mean to regain the forefront of performance testing.

Test stations have served a promotional function ever since central bull testing began. That is a legitimate and important purpose for central testing.

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The relative importance of the promotional function has grown excessively, however, as the importance of the performance evaluation function has declined. Few breeders now send progeny groups to test. Most breeders instead send their largest calves by whatever sire in the hope of winning the test. The industry is using test stations to identify the odd exceptional bulls rather than to evaluate populations of good ones.

The motivations for using test stations as show rings are clear. First, a test winner attracts more attention and more dollars. Unless the performance data collected on the other bulls is especially useful to their breeders or properly reflected in the price paid for

the bulls, breeders will continue to test selected top bulls rather than groups of good bulls. Second, only an outstanding bull really justifies the cost of cen-

The industry is using test stations to identify the odd exceptional bulls rather than to evaluate populations of good ones.

tral testing. The bill from a test station often is 60 to 100 percent more than the cost of testing on the farm. Except for any special value given to data collected at the test station, nothing but

promotional value justifies that extra expense.

If test stations are to continue serving a useful role in performance evaluation, they need to measure something that most breeders cannot measure on the farm. Today, that something is nothing more than the relative growth and scale of selected calves from competing herds. A simple first step toward something more useful could involve testing meaningful progeny groups from various herds, particularly groups by unproven sires. Further steps could include testing for feed efficiency and composition of gain. Some of those further steps involve significant costs. If the data is worth collecting, however, central testing is an ideal method for spreading the costs among breeders who can use the data.

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Improving Georgia's Cattle

by James Vance, Vance Angus Farm, Buckhead, Ga.

Central test stations have made a tremendous impact on the beef cattle industry in the country. It would be mind-boggling if there was some way you could know the results of the financial contributions test stations have generated. In the state of Georgia, the quality of registered cattle has improved a great deal as a result of the competition at the stations. I know of several instances where average weaning weights in commercial herds have increased over the years by 100 lb. or more through use of test station bulls.

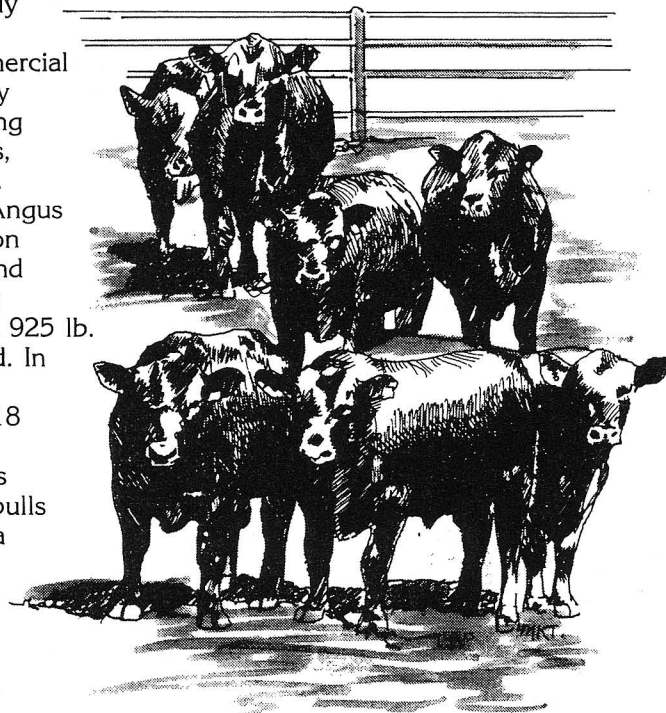
It has been estimated that the bulls tested are from the upper fourth of their contemporary groups. I believe that is a conservative estimate. Usually, we have a few bulls to sell to A.I. studs or purebred herds. Some of the bulls are taken home by the breeders and the rest sell to the better commercial producers. Many times these bulls sell at bargain prices when you consider the cost of testing, the genetics offered, and the level of performance. In Georgia, we only allow the top two-thirds of the bulls to sell (after unsound bulls have been eliminated). We require bulls to pass a thorough reproductive and physical exam before they can sell, and scrotal measurements are taken on all bulls; this information might not be

available if the bulls were not at a central test station. Bulls are ranked for sale based on an equal combination of average daily gain (ADG) and weight per day of age (WDA), and bulls must have at least a 2.5-lb. WDA to be enrolled. All this simply means the bulls that sell are truly the "cream of the crop." If this doesn't give commercial producers the opportunity to select some outstanding bulls at reasonable prices, I don't know what would.

In 1973, the average Angus tested at the Tifton station posted a 2.86-lb. ADG and a 2.54-lb. WDA. Yearling weights averaged around 925 lb. for 39 Angus bulls tested. In 1985, the averages were 3.85 lb. for ADG and 3.18 lb. for WDA. Yearling weights for the 61 Angus averaged 1,178 lb. The bulls have been fed basically a 10 percent concentrate, 30 percent roughage ration since the first test. The heritabilities of gain and yearling weight are high, and the good producers will continue to

take advantage of that fact.

Robert Stewart, who is now responsible for the Tifton test, estimates that state test stations provide only about



1½ percent of the total bulls needed per year for the cow herds in Georgia. Somehow, commercial producers should be made aware that these sales are an excellent place to buy a bull.

Possibly we should consider testing bulls for 112 days, then feed around 10 lb. per day for the last 28 days of a test period. This would let the bulls down so they could be used as yearlings

easier, keep them from getting as fat, and save \$60 to \$80 per bull tested. Everybody should know it takes twice as much energy to put on fat as it does for real growth and muscle.

I also believe we should continue to work on a way to forage-test bulls. It is a sound idea, but the mechanics have yet to be worked out.

Even with the new computer tech-

nology that will give us EPDs instead of in-herd ratios, a need will continue for testing bulls at central locations under similar management.

I'm truly grateful to people like Byron Southwell and Dr. W.C. McCormick for first testing bulls in Tifton, Ga., 27 years ago. The work is still being carried on statewide by extremely capable people.

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Common Sense Necessary

by Bruce Betzold, Betzold Farms, Nokomis, Ill.

The test stations at Southern Illinois University (Carbondale) and Western Illinois University (Macomb) seem to be gaining in popularity, both in the number of consignments and the number of buyers willing to invest more money in bulls. Buyers feel these test stations offer a good selection of bulls that are measured for superior genetics in highly heritable economic traits, hopefully bulls that will improve their cattle operation.

Test stations are designed to be used as a selection tool, and as with any selection tool, a little common sense must be applied with the information. Too often, we view test stations like a horse race: if your animal has one small falter, the rest pass him by. However, just the fact an individual bull "wins" the test (in terms of weight, gain, index, etc.) doesn't mean he is the "best" bull for every situation. A bull's EBVs, birth weight, structural soundness and other traits are all factors to be evaluated. More and more emphasis is being placed on selecting cattle which work in a particular part of the country under specific environmental and management conditions. This is important and needs to be considered along with test station results.

Feed efficiency is a trait which needs more emphasis. Individual feed efficiencies are measured at both the SIU and WIU tests, and the efficiency figures are weighted heavily in the final index scores. Efficiency is a trait of high heritability (40 percent) and high importance, whether it be in a test station, feedlot or pasture. It may be a slow process and an expensive trait to measure, but it's an area where the cattle industry

can make important progress.

Many test stations now list such things as a bull's birth weight, calving ease and EBVs in the sale catalog, and some require bulls to pass a visual appraisal of structural soundness before they sell. Combined with the test station results, this information helps potential buyers better evaluate bulls, and improves overall selection. I would like to see more test stations include the breeding value information in the sale catalog.

Test stations and the resulting performance information have been useful to me both in our marketing program, and as a selection tool for bulls that I may use. We have participated in central test stations for nine years, and have sold bulls successfully as a result. I also get reports from test stations around the country, and I look at the information on different bulls to see if

there is a sire whose progeny consistently do well under various conditions.

We are trying to produce efficient cattle that perform well under our conditions and will do the same for people under similar conditions. We look at test station information, but we also keep track of calving ease, udder soundness, teat size and other basics. If you don't have cows that can wean good calves and breed back under your conditions, you are defeating your purpose.

Putting all these things together is the challenge, and it makes the cattle business interesting. We are always trying to improve, and test stations provide a good selection tool. Test stations may not be perfect, but when the information generated is used with a little common sense, it helps a breeder evaluate an individual bull or a sire group.

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Are We Keeping Them in Perspective?

by John R. Crouch, Director of Performance Programs

A scientific approach to the performance evaluation of beef cattle was initiated in the early 1930s by the USDA at the U.S. Range Livestock Research Station, Miles City, Mont. Research in New Mexico and California

led to the first central bull-testing stations at Balmorhea, Texas, in 1941. Today there are some 75 official central bull gain-testing facilities in the United States.

Central test stations have enjoyed

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tremendous popularity in the beef cattle industry for various reasons:

First, they offer a vehicle for breeders, large and small, to evaluate potential sires on their ability to gain for a specified period under constant feed and management conditions.

Second, test stations provide breeders a means to market outstanding young bulls to other purebred breeders.

Third, central tests provide commercial breeders with a source of gain-tested bulls which hopefully would increase growth in their herds.

In this way, central bull tests have served the beef cattle industry well. However, central test stations have their limitations.

Central test stations only measure gain from one point to another point in the life of an animal. While gain is important, other things are more important with respect to the commercial value of a bull. These factors, listed in the order of priority are:

1. The entire beef industry revolves around the birth process. Hence, if a large majority of a bull's calves are pulled, that bull has little value commercially, regardless of his test sta-

tion records. A bull's birth weight, calving ease and birth weight estimated breeding value (EBV) must fall within acceptable parameters.

2. In order to perform his natural function, a bull must possess a sound reproductive system and must physically be able to cover the country and service cows.

3. Estimated breeding values (EBVs) for weaning weight, maternal traits, and yearling weights must be adequate. These values really are the most accurate predictors of the value of the animal **as a parent** and are much more important than individual records.

In recent years some test station supervisors have done an excellent job of displaying EBVs in sale catalogs. This has assisted buyers tremendously.

During the past five years, considerable interest has been shown in forage and pasture tests using limited grain and maximum roughage. Normally these tests are conducted for older bulls in order to obtain more valid comparisons. In my opinion, interest will continue to increase in this type of evaluation until a more accurate method of determining genetic superiority is devised.

Not perfect

While the results of central test stations have been generally beneficial, there have also been some less positive effects. For the past 15 years, and especially the past 10 years, the beef industry has charted an unrelenting quest for maximum growth and frame. Test stations, like the show ring, have become a contest wherein the tallest, heaviest yearling is crowned "king" of the day. In many cases, the "king" commands an extremely high price while many other members of his court with excellent records and EBVs scarcely receive the minimum bid. This phenomenon has defeated the original purpose of the central test and has certainly decreased the beneficial influence test stations have exerted on our industry.

There will be a better way. Future technology and use of sire evaluation methodology will allow breed organizations to predict the genetic value of yearling cattle with an amazing degree of accuracy.

Expected progeny differences (EPDs) such as those which now appear in sire summaries will eventually replace within-herd ratios and EBVs. When this occurs, perhaps the need for central bull tests as we know them today will be obsolete.

AJ