

MANAGEMENT NOTES

Progress through Performance Records¹

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Highlight

A rancher's version of range beef-cattle performance testing in Nebraska — history, accomplishments, and problems.

Much of the early history of performance testing in Nebraska parallels efforts on my own ranch. As most ranchers will remember, cattle prices dropped 25% between 1951 and 1952. Those of us with a large debt were faced with the problem of meeting fixed payments with a severely reduced income. This was the incentive that started a search for more efficient ways of operating a ranch.

Early Attempts

There were three major areas of concern: The management of money, range, and breeding. These were determined by visiting with neighboring ranchers, bankers, extension



personnel, and others. Today I am wondering if merchandizing of product should have been included.

Since my ranch and cattle had been purchased some years prior, there was no chance of reducing the investment. In the area of range, I signed an agreement with our newly formed Soil Conservation District. Here I obtained the help of people trained in the field of range management. In the field of breeding, my visits with these people introduced no new thinking.

A review of "Animal Breeding Plans" by J. L. Lush and discussions with a neighboring rancher over a considerable period led to the start of my performance testing program. Our only plan at that time was to locate and cull the consistently low-producing cows. Since I had only a commercial operation, the first need was to identify each cow in order to keep a record of her production. This raised problems which have not been solved to our satisfaction to date. We finally used a metal tag in one ear and a tattoo in the other.

In 1953 the calves were tagged and tattooed soon after birth. We recorded calf number, date of birth, and mother's number. During the dehorning process that fall these calves were type-graded as good, average, or poor. Since we had no scale available, weights were estimated visually into heavy, average, and light groups. No attempt was made to use these first-year weights, as it seemed we should have at least two years of information.

In the spring of 1954, we type-graded the mother as we identified the new calf. We then compared the mother's type to that of her last year's calf. There did not seem to be a close enough correlation between the two. This indicated sire differences even though we had been trying to select only the best sires. To check sire influence we used all the one-sire breeding pastures possible in 1954. The same procedures were used in the fall of 1954 as in 1953. When I tried to use the data from the two years combined I found it was not detailed enough to be of much use. It was like trying to write a letter using a paint brush for a pen. Some cows were culled on the basis of raising poor and small calves for both years.

Better Measures Developed

I then asked the University of Nebraska Animal Husbandry Department for help. By the spring of 1955 they had prepared forms, figured weight adjustments for age of dam, made graphs to adjust each calf to a standard day of age, developed a numerical grading system, and agreed to furnish a portable scale. Three numbers were allotted to each grade indicating low, average, or high

¹Talk presented at a livestock meeting in Schuyler, Nebraska, in March, 1965. This was an informational meeting to which were invited members of State Legislature, Board of Regents of the University, Governor, various members of news media and others who needed to be informed as to the needs of the beef industry. Forrest Lee, president of Nebraska Stockgrowers and Wesley Hansen, president of Sandhill Cattle Association were also on the program.

within each grade. Thus good grade included 7, 8, and 9; choice 10, 11, and 12; and fancy 13, 14, and 15. It was thought this would indicate type more closely and would let us come up with an average grade for different groups.

Eight herds became involved in 1955. I have found no record as to the number of head that year, but my guess is that some 1,500 cows were owned by these eight ranchers. For the following four years I have records:

Year	No. of Herds	No. of Head
1956	56	3631
1957	86	5174
1958	117	6497
1959	138	7412

This indicated there were many cattlemen interested in a surer way of improving their herds.

Checking the progeny from the different sires that first year showed differences of 33 lb in weaning weight and 0.8 grade difference. This was large enough to cause the sale of one sire and indicated the need for more information on sires.

NBCIA Formed

In September 1962, the Nebraska Beef Cattle Improvement Association was formed at the Halsey 4-H Club Camp with 139 people in attendance. Some of our accomplishments to date include:

1962—65 calves entered in feedlot and carcass test at Ogallala.

1963—152 bulls entered in gain and backfat test.

85 calves in second carcass test at Ogallala.

1964—sale of top test bulls at Ogallala.

120 bulls and 90 carcass animals on test at Ogallala.

149 bulls and 43 carcass animals on test at Schuyler.

In addition the association has been providing several services to its members and promoting programs aimed at aiding the industry as a whole. We had 105 members as of March, 1964. In addition there were probably that many more who are performance testing who have not joined NBCIA. This is too few to have much effect on the beef cattle industry of Nebraska. A sound promotional program needs to be planned and personnel acquired to carry it out. This program should in-

clude both performance testing and range management. They are both equally necessary for the efficient production of beef cattle.

Since all this effort was brought on by an effort to produce cattle more efficiently, I will list my results up to 1963, last time I worked them up. Since 1960 all sires have been gain tested with a performance 105% of average or better.

Year	Weaning weights	Grade
1955	397	8.5
1956	358	8.6
1957	396	8.8
1958	369	9.2
1959	371	9.2
1960	399	9.2
1961	433	9.5
1962	439	10.1
1963	454	10.5

The second range survey made in 1958 showed every pasture but one had improved in condition. This pasture has since been cross fenced in order to use it properly. My records show:

Year	Total Beef sold (lb)	Per acre	Comments
1952	124,176	20.1	
1953	139,216	22.6	Plus 39 additional cows
1961	147,439	23.9	Plus 45 additional cows
1962	163,710	26.5	Little change in inventory

This amounted to an increase of 6.4 lb/acre in a ten-year period. I do not claim this record to be exceptional but it does indicate a trend. Some ranches might be doing real good at 15 lb/acre while another might be poor at 30 lb. A visual survey today would indicate range condition still improving and that higher production can be anticipated. The major added costs have been 4.6 miles of new fence and 3.5 miles of fence moved. Further improvement no doubt will cost more money.

Dr. Frank Baker tells us, "No industry can survive on a static basis." As we gain further knowledge it will be incorporated so we will be using all the proven information possible.

Principles of Performance Testing

It would be appropriate to explain some of the principles involved as we understand them. Variation within an animal population is caused

by two things: environment and heredity. If there were no genetic variation in inheritance, we would have no permanent change in performance traits. Environment can be modified by management. Environment requires constant attention because it varies from year to year and from place to place. To accurately measure genetic variation requires environment to be controlled as closely as possible.

Adjustment should be made for known differences in environment. Age of dam is one example. We consider five through eight-year-old cows to be in their prime. For four-year-old cows we add 20 lb, for three's 40 lb, and for two's 60 lb. These figures were arrived at after summarizing weights from a large number of calves from different age cows. These would be more accurate if they were worked out for each ranch, provided they were based on information covering a period of five years or more and if ample numbers were involved.

All traits of economic value should be considered in a performance testing program. Today we consider fertility, nursing ability, rate of gain, economy of gain, longevity, and carcass merit to be the major traits of economic importance. The more traits we select for, the slower will be the improvement for any one trait. However, progress will be faster than when each trait is selected for separately. Over a period of years performance in a herd systematically selected will be much superior to one where such effort is not made.

Record keeping does not change the genetic makeup of an animal. Measured qualities are recorded so that different animals can be compared within a herd. The more interest a breeder develops in performance measures the more detailed his records will become. This makes for more accurate selection.

The inherent performance of any herd depends largely on the genetic merit of sires used over a period of years. Each sire furnishes one-half the genetic inheritance of several calves each year while a cow furnishes only one-half for one calf in the same length of time. Since about 40% of the heifer calves must be saved for replacements each year, it further limits the selection pressure from the cow side.

At present, performance measures should *not* be designed to market more pounds on every animal. The market demands that we produce an animal of moderate weight that will yield a carcass grading *choice*. We need to select for an animal that will reach this weight quickly and on the fewest pounds of feed.

The Future Ahead

Published figures indicate over one-half of the land area of Nebraska is in grass. Cattle harvest the major amount of this. Cattle also consume a large portion of our grain crops. This could be increased since Nebraska exports both cattle and grain. The beef industry now pro-

duces 42% of Nebraska's agricultural income. General acceptance of performance testing and range management programs offer the prospect of increasing the net income of cattle producers by 25 to 33% in a ten-year period. One goal of NBCIA is to insure that Nebraska remains the Beef State.