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FEEDING MILKING SHORTHORN STEERS

Marvel L. Baker, V. H. Arthaud and C. H. Adams

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Feeding Milking Shorthorn Steers

Marvel L. Baker, V. H. Arthaud and C. H. Adams¹

Many farmers keep cows of dual-purpose breeding in preference to cows of either strictly beef or dairy breeding. The male calves may be allowed to run with their dams until weaning age, or the cows may be milked. In the latter case the calves are either hand-fed or some of the cows are used as nurse cows, with two or more calves assigned to each cow. The calves sometimes are fed grain and marketed for slaughter at weights ranging from 650 to 900 pounds. Some producers prefer to grow the calves on cheap feeds until they reach a weight of from 500 to 700 pounds. They are then sold as feeders or fed for slaughter by the producer. Observations indicate that frequently these calves are not well grown.

For several years the Nebraska Agricultural Experiment Station has maintained a herd of registered Milking Shorthorn cows, formerly at the Valentine Substation and more recently at Lincoln. Beginning in 1942 steer calves from this herd have been finished for market by the Animal Husbandry Department of the Experiment Station at Lincoln.

Objectives

The objectives of the feeding work were to provide the producer with feed-lot data and where possible with slaughter data for Milking Shorthorn steers. As a definite breeding research program with the Milking Shorthorn herd was planned, it also was believed that information about the beef-making qualities of the steers should be of equal importance with milk and butterfat production records.

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The Steers

The steers were from the registered Milking Shorthorn herd maintained either at the Valentine Substation or at Lincoln. They varied in age, weight, and condition at the time they were received by the Animal Husbandry Department, depending upon prior treatment. This varied greatly, depending upon season, climatic conditions and the availability of milk and other feeds. Six groups of steers were studied. The groups were handled differently after their receipt at Lincoln, depending upon their initial weight and condition and upon the feeds that were available. Each group is discussed separately.

First Group

The first group consisted of five steers received at Lincoln April 9, 1942. Their average weight on April 15 after they had rested and filled was 442 pounds per head; their average age was 263 days. Such steers should have made good and economical pasture gains for a time, had good pasture been available. As pasture was not available, the steers were placed in the feed lot for 227 days.

For the first 56 days of the feeding period they consumed an average of 16.07 pounds of silage, 2.18 pounds of alfalfa, 9.44 pounds of ground shelled corn, and 1 pound of linseed pellets per head daily. They made an average gain of 165 pounds per head, or 2.95 pounds per head daily. The steers were eating an average of 13 pounds of corn per head daily at the end of this period and the silage had been eliminated from the ration.

For the remainder of the period, 171 days, the steers were fed an average of 4.87 pounds of prairie hay and alfalfa hay (practically all prairie hay) per head daily. They also consumed an average of 15.50 pounds of ground shelled corn, and 1.46 pounds of linseed pellets per head daily. Since alfalfa hay was largely eliminated from the ration, 0.10 pound of ground limestone per head daily also was fed. The

steers made an average gain of 405 pounds per head, or 2.35 pounds per head daily, during this period of 171 days.

The steers made an average gain per head of 570 pounds, or an average daily gain of 2.51 pounds, for the total period of 227 days. They consumed an average of 3181 pounds of corn, 182 pounds of alfalfa hay, 775 pounds of prairie hay, 901 pounds of silage, and 308 pounds of linseed pellets per head. They required 558 pounds of corn, 32 pounds of alfalfa hay, 136 pounds of prairie hay, 158 pounds of silage, and 54 pounds of linseed pellets for 100 pounds of gain.

At the close of the feeding period they were shipped to Omaha and sold. They shrank 3.68 per cent in shipment and sold at \$14.50 on a market with a top of \$16.00. They were quite acceptable steers and graded good to choice in the carcass.

Second Group

The second group consisted of nine steers received at Lincoln February 6, 1944. On February 9, when started on feed, they averaged 504 pounds per head in weight. They were fed for 161 days or until July 19 on a full feed of corn silage and ground shelled corn with 1 pound of soybean oil meal per head daily.

They consumed an average of 5497 pounds of silage, 1571 pounds of corn, and 161 pounds of soybean oil meal per head, or an average of 34.14 pounds of silage, 9.35 pounds of corn, and 1 pound of soybean oil meal per head daily.

The steers averaged 838 pounds per head at the close of the feeding period. They thus made an average gain of 334 pounds per head, or 2.07 pounds per head daily.

They consumed an average of 1646 pounds of silage, 451 pounds of corn, and 48 pounds of soybean oil meal per 100 pounds of gain. They were as well finished as Group 1 and sold on the Omaha market at \$15.00 per hundredweight with the top for the day at \$17.00.

Third Group

Seven steers were fed in Group 3. They were received at Lincoln September 23, 1945. They averaged 320 days in age and 576 pounds per head when started on feed September 24, 1945.

They were fed for 102 days on an average of 40.04 pounds of corn silage, 0.96 pound of soybean oil meal and .08 pound of ground limestone per head daily. They made an average gain per head of 199 pounds and an average daily gain per head of 1.95 pounds. The seven steers were then fed until April 26, 1946, or for an additional 112 days. Ground shelled corn was added to the ration and the soybean oil meal was increased to 1.5 pounds per head daily. For this period the seven steers consumed an average of 19.7 pounds of silage, 1.44 pounds of soybean oil meal, 0.10 pound of ground limestone, and 15.03 pounds of ground shelled corn per head daily. They made an average gain of 231 pounds per head, or 2.06 pounds per head daily.

For the entire 214-day period the seven steers consumed an average of 6291 pounds of silage, 257 pounds of soybean oil meal, 20.5 pounds of ground limestone and 1683 pounds of ground shelled corn per head. They made an average gain of 430 pounds per head, or 2.01 pounds per head daily, and required an average of 1463 pounds of silage, 60 pounds of soybean oil meal, 4.8 pounds ground limestone, and 391 pounds of ground shelled corn for 100 pounds of gain.

At the close of the feeding period the steers weighed an average of 1006 pounds per head. The two lightest steers weighed 800 pounds each and sold at \$15.50, one steer with a final weight of 1020 pounds sold for \$15.75, and four steers with weights of 1010, 1070, 1170 and 1175 pounds respectively sold for \$16.50 per hundred pounds.

Fourth Group

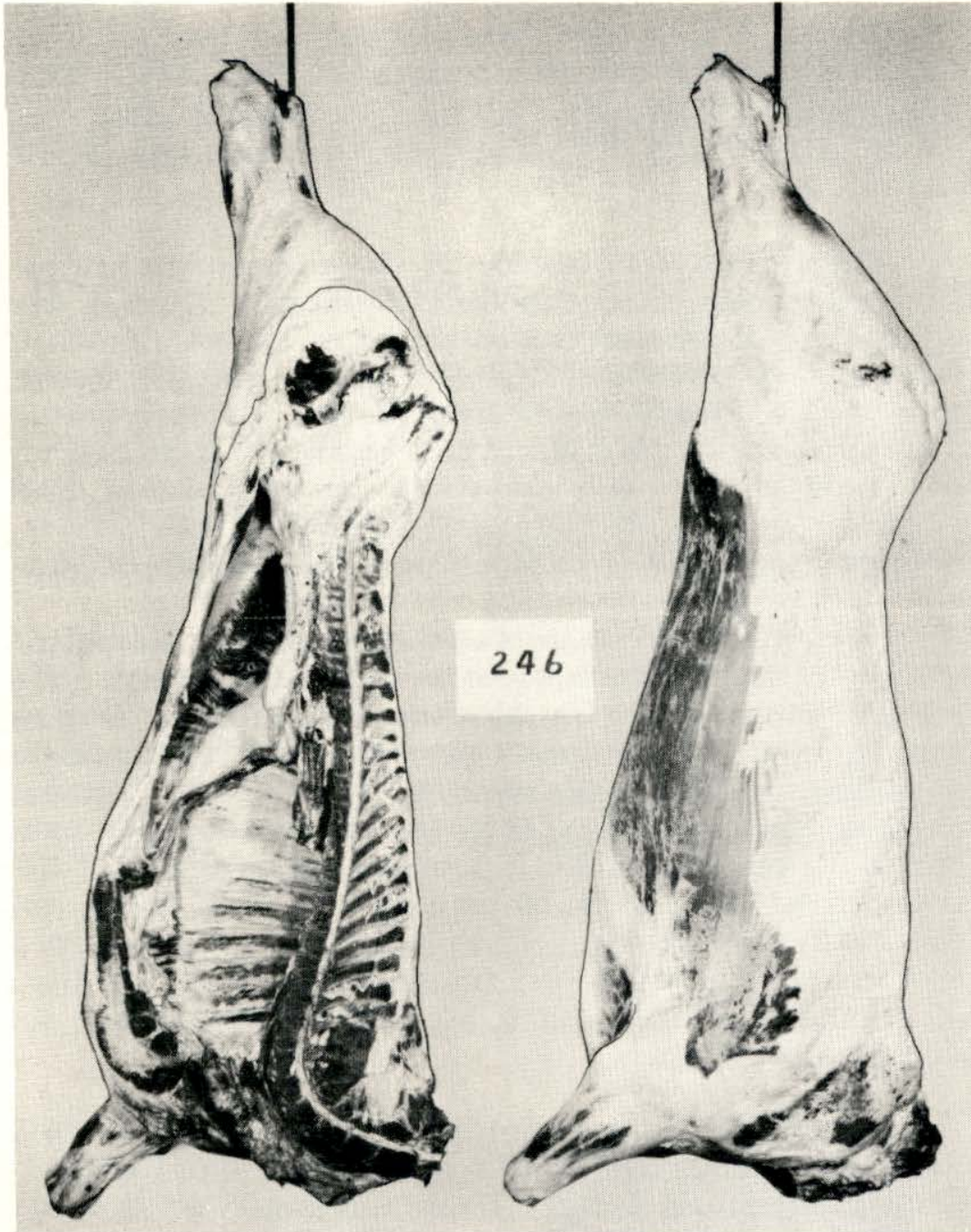
Group 4 also consisted of seven steers. They were received at Lincoln September 24, 1946. They averaged 680 pounds per head in weight after they were rested and filled--at an average age of 457 days.

The steers were fed for 56 days on sorgo silage, linseed pellets, and ground limestone. During this period they consumed an average of 59.44 pounds of silage, 1.47 pounds of linseed pellets and 0.14 pound of ground limestone per head daily. They made an average gain of 126 pounds per head, or 2.26 pounds per head daily, and required an average of 2627 pounds of silage, 65 pounds of linseed pellets, and 6.3 pounds of ground limestone per 100 pounds of gain.

Ground shelled corn was then added to the ration and the linseed pellets were increased slightly. The steers were fed for an additional 112 days. During this period they consumed an average of 19.88 pounds of silage, 16.94 pounds of corn, 1.54 pounds linseed pellets, and 0.14 pound of ground limestone per head daily. They gained 1710 pounds, an average of 244 pounds per head or 2.18 pounds per head daily, for this 112-day period. They required an average of 911 pounds of silage, 777 pounds of corn, 71 pounds of linseed pellets, and 6.5 pounds of limestone for 100 pounds of gain.

In the total 168-day period the steers gained 2595 pounds, an average of 371 pounds per head or 2.21 pounds per head daily. They consumed an average of 5555 pounds of silage, 1897 pounds of ground shelled corn, 256 pounds of linseed pellets and 24 pounds of ground limestone per head, or an average of 1497 pounds of sorgo silage, 511 pounds of ground shelled corn, 69 pounds of linseed pellets and 6.5 pounds of ground limestone for 100 pounds of gain.

At the conclusion of the feeding period, the steers weighed an average of 1051 pounds per head and sold at Omaha for \$24.00 per hundredweight.



Carcass of a 1045-pound Milking Shorthorn steer which gave a 60 per cent yield and graded high-good. The carcass is well balanced, but it is slightly dished in the loin and the round is not plump enough to grade higher. The carcass was graded before the U. S. D. A. standard was changed on January 1, 1951.



Photograph of the forequarter of the same carcass, showing the cross section between the fore and hindquarters. There is sufficient external finish and marbling and a thick, meaty navel end. The "eye" muscle is not as thick as it should be for a carcass of this size and weight.

Fifth Group

Fifteen steers were included in this group. Eleven of these with an average initial weight of 385 pounds were received June 3, 1947. They were grazed on bromegrass pasture for 104 days and made an average gain of 142 pounds per head. They were then fed corn silage and soybean pellets for 91 days, or until December 15, 1947. Four additional steers with an average initial weight of 400 pounds were received October 6, 1947. These were used until December 15, 1947 to cleanup pastures. They also were fed some silage and supplement. Prior to December 15, the fifteen steers were grazed or fed for an average of 162 days. During this period they consumed a total of 3440 pounds of corn silage, 76 pounds of soybean pellets and 139 steer-days of grazing. They made an average gain per head of 250 pounds, or 1.55 pounds per head daily. An average of 1376 pounds of corn silage, 30 pounds of soybean pellets, and 55 steer-days of grazing were required for 100 pounds of gain.

Beginning December 15, 1947, the steers were continued on a full feed of corn silage, approximately 1.5 pounds of soybean or cottonseed meal pellets, and 0.06 pound steamed bone meal, and were brought to a full feed of ground ear corn, ground shelled corn, and dried beet pulp.

There was some variation in the initial weight of the steers. Therefore they were marketed as they reached desirable weight and finish. During this period the steers were fed for an average of 156 days. They made an average gain of 365 pounds per head, or 2.35 pounds per head daily. They consumed an average of 3339 pounds of corn silage, 226 pounds of ground ear corn, 964 pounds of ground shelled corn, 915 pounds of dried beet pulp, 229 pounds of soybean and cottonseed meal pellets, and 10 pounds of bone meal per head. This amounted to an average of 21.47 pounds of corn silage, 1.46 pounds of ground ear corn, 6.20 pounds of ground shelled corn, 5.88 pounds of dried beet pulp, 1.48 pounds of supplement and 0.06 pound of steamed bone meal per head daily.

An average of 915 pounds of corn silage, 62 pounds of ground ear corn, 264 pounds of ground shelled corn, 251 pounds of dried beet pulp, 63 pounds of supplement and 2.7 pounds of bone meal were consumed per 100 pounds of gain.

These steers were on feed or grass for an average of 317 days. They consumed an average of 6780 pounds of corn silage, 2,105 pounds of ground ear corn, ground shelled corn and dried beet pulp, 306 pounds of supplement and 139 steer-days of grazing per head. They made an average gain of 615 pounds per head, or 1.94 pounds per head daily, and required an average of 1102 pounds of corn silage, 342 pounds of carbonaceous concentrate, 50 pounds of supplement, and 23 steer-days of grazing for 100 pounds of liveweight gain.

The steers sold relatively well at Omaha on the open market. For example, the last six of the steers to sell brought \$34.50 per hundredweight. On the

same day and to the same buyer, the Experiment Station sold 43 head of Hereford steers of the same weight which had been fed for 30 days longer. They sold for \$35.50. It should be noted that price comparisons under market conditions prevailing at the time of sale were not of very much value.

Carcass grades were not obtained for all steers. The four poorest steers graded low-good in the carcass, two graded average-good, and the others graded from high-good to low-choice. The average age at time of sale was 557 days.

Sixth Group

Thirteen steers comprised this group. They were produced from the Milking Shorthorn herd which had been moved previously from Valentine to Lincoln.

These steers were started on feed in October, 1948. Prior to this and after weaning, they had been grazed on brome grass pasture. The average initial weight of the steers was 593 pounds into the feed lot. They were fed for an average of 202 days.

For the first 78 days of this period they consumed an average of 33.97 pounds of corn silage, 1.6 pounds of soybean and linseed pellets, and 6.38 pounds of ground shelled corn per head daily.

In this period of 78 days the steers made an average gain per head of 178 pounds, or 2.26 pounds per head daily. They consumed an average of 282 pounds of corn, 71 pounds of pellets and 1501 pounds of corn silage per 100 pounds of liveweight gain.

The corn was then increased and dehydrated alfalfa pellets were added to the ration. The ration of linseed pellets was decreased and the consumption of silage also decreased. The steers were fed for an average of 124 days in the final period. During this final period the thirteen steers consumed an average of 15.06 pounds of corn, 5.64 pounds of dehydrated pellets, 0.88 pound of linseed pellets and

5. 18 pounds of silage per head daily. They made an average gain of 278 pounds per head, or 2.25 pounds per head daily. An average of 670 pounds of ground shelled corn, 251 pounds of dehydrated pellets, 39 pounds of linseed pellets, and 230 pounds of corn silage were required for 100 pounds of gain.

For the total feeding period of 202 days the steers consumed an average of 2363 pounds of ground shelled corn, 236 pounds of linseed and soybean pellets, 698 pounds of alfalfa pellets, and 3305 pounds of silage. They made an average gain of 456 pounds per head, or 2.25 pounds per head daily.

For the entire period of 202 days an average of 519 pounds of ground shelled corn, 52 pounds of soybean and linseed pellets, 153 pounds of alfalfa pellets and 725 pounds of corn silage were required for 100 pounds of gain.

Four of the thirteen steers were slaughtered in the college abattoir. These steers yielded 60.2 per cent cold and graded average-good and high-good in the carcass.

The remainder of the steers were sold on the Omaha market as they reached slaughter weight (approximately 1050 pounds) in April and June, 1949. They were considered fully as good as the steers slaughtered at home. Five head sold in April for \$22.75 and four head sold in June for \$25.50 per hundredweight.

Summary

Feed-lot data for six groups of Milking Short-horn steers fed during the period from April, 1942 to June, 1949 are presented.

The treatment of these groups prior to feeding varied greatly, depending upon season, climatic conditions and the availability of milk and other feeds. Some of the calves were hand-fed and some were allowed to nurse their dams or other cows.

Feeding and management during the feeding periods also varied according to the initial weight and condition of the steers and according to the availability of feeds. The feeding period usually was divided into a preliminary period during which rations relatively high in roughages were used, and a finishing period in which heavier feeding of concentrates was practiced.

Gains per head or average daily gains and the feed required per unit of gain were satisfactory. The limited slaughter data obtained indicated that the steers would have graded from low-good to low-choice in the carcass based upon original Federal grades. According to revised grades now in effect, these carcasses would grade one grade higher.

Observations of these steers indicate that such steers should be kept gaining from birth until they are ready for slaughter. During a large part of this time the feed may consist largely of roughages with due attention given to the proper level of specific nutrients, especially protein. The proper length of the finishing period, during which heavy feeding of corn or similar concentrates is practiced, will be determined by the kinds and value of available feeds and by the condition of the cattle market. As is true of other cattle, Milking Shorthorn steers generally should be finished in keeping with their grade.