

Fattening Calves and Yearlings



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SUMMARY

Rolled wheat, cracked corn, grain mixture, and rolled barley as grain rations have all proved satisfactory for fattening calves and yearlings. While some differences have been noticed in the feeding value of these grains, yet for Eastern Oregon conditions the selection of grains would be largely a matter of choice based upon economy.

The substitution of linseed-meal for a part of the barley ration added to the expense without any material change in the results.

The addition of 10 pounds of peas and barley silage to the ration reduced the hay fed 3.8 pounds, but did not increase the gains.

Chopping hay decreased the waste and increased the gains.

Chopping did not increase the amount of hay actually eaten.

Steer calves gained 5 percent faster than heifer calves but were not as fat at the end of the feeding period.

Heifers 12 months of age sold for the same price as steer calves of the same age and fed in the same manner.

Heifers 20 to 23 months of age sold for less than steers of the same age and fed in the same manner.

Calves that are to be fattened the first winter must be large, well grown, and should be weaned without loss of weight or condition. Smaller calves may be carried over the winter and fattened out a year later.

Calves make good gains in weight but the degree of finish which they will acquire is not as dependable as that of a more matured animal.

Profitable fattening calves or yearlings requires rather concentrated rations at reasonable prices and close attention to every detail.

The making of baby beef and yearling beef offers a fair opportunity for profit under the conditions of this test.

The outlet for baby beef in the Northwest appears to be increasing, but is still somewhat uncertain both as to volume and price.

Fattening Calves and Yearlings

By

E. L. POTTER, ROBERT WITHYCOMBE, and F. M. EDWARDS

INTRODUCTION

The objects of this test were (1) to determine the cost of fattening calves and yearlings in Eastern Oregon; (2) to determine the marketability of short fed calves and yearlings on the Portland market; (3) to study the value of the common grains, silage, chopped alfalfa and long alfalfa for fattening calves and yearlings.

Plan of the test. The Experiment Station had under way at this time the experimental work with deferred breeding of beef cows which has just been published as Oregon Agricultural Experiment Station Bulletin 271. The calves from this herd were available for four years; the number ranged from 36 to 71 a year. All of the calves that were in good condition and of good size were placed in lots of 9 and 10 each and fed out in various ways for the April or May market, and were therefore marketed at approximately 12 months of age. The smaller calves, that is, those which were not large enough or old enough for the test just mentioned, were put into separate lots, fed through the winter, pastured the following summer, and then fed out experimentally during their second winter. The tests, therefore, involve two very distinct systems of handling, the baby beef proper being sold at the age of 12 months and the yearlings not until they were approaching 24 months of age. In this bulletin the first group are designated as calves and the second group as yearlings.

The more important comparisons were repeated for a second or third year. In the final summary these tests that were repeated are averaged together.

Feeds used. The feeds used, with the exception of corn, mill-run and linseed-meal, were grown on the Station farm. The alfalfa hay was raked with a side delivery rake, put up in cocks and stacked in the usual way with buck rakes and stacker. It was put up as carefully as possible and was fed just as it came from the stack except that tops and bottoms of stacks, if moldy, were not fed. The oats, wheat and barley were also raised on the Station farm. The corn was purchased in the open market and was graded as No. 2 yellow. All of the grains were ground dry with a roller mill. The silage was made from peas and bald barley, which in previous tests had proved itself about equal to good corn silage. The mill-run and the linseed-oil meal were purchased on the open market. Rock salt (one-half ground) was before the lots at all times.

Shelter. The cattle were wintered in open lots 45 by 115 feet. A small portion in each lot, perhaps 25 or 30 feet in diameter, was kept bedded with straw. The feed yard was protected somewhat on the north by a few trees, but otherwise the location was cold and windy. No sheds were used. While the stock was on winter feed, clean water was supplied by a small

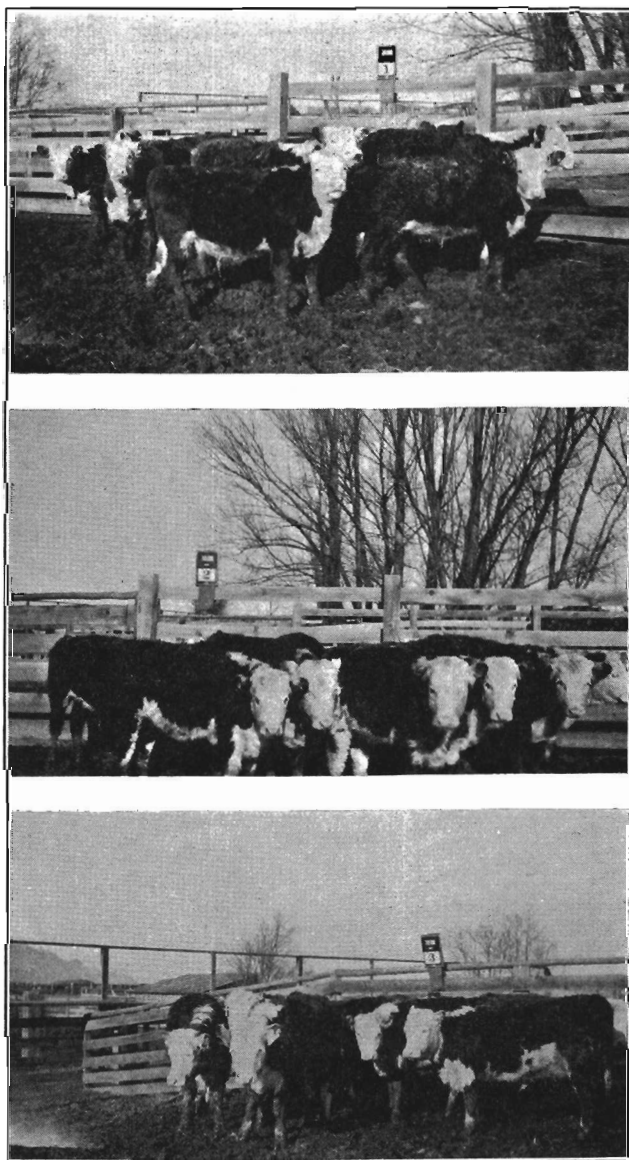


Figure 1. Calves of the experimental lots at the beginning of one test 1926-27. Approximate age 7 months. Average weight 435 pounds. Ration Lot 1, chopped alfalfa hay and grain mixture; Lot 2, chopped alfalfa hay and grain mixture and linseed-oil meal; Lot 3, long alfalfa hay and grain mixture.

stream which was diverted through the edge of the lots in a wooden flume. The water was cold but had sufficient volume and fall to prevent freezing.

Stock used. The calves used, as already indicated, were from the Station herd. They were from high-grade Hereford cows and sired by good pure-bred Hereford bulls. The cows were bred each year to begin calving April first. A few of the calves came the last of March but most of them came in April and May. A few, however, were born as late as June and July. The cows were on the Station farm during the spring months but were on the Whitman National Forest near the headwaters of Catherine Creek and Little Minam river during the summer.

COMPARISON OF GRAINS FOR FATTENING CALVES

The results of two separate tests on the comparison of different grains, and a grain mixture when fed with alfalfa hay for fattening calves are found in Table I.

TABLE I. COMPARISON OF GRAINS FOR FATTENING CALVES

Average of 2 tests, 19 calves in each lot.
All lots fed all the alfalfa they would eat.
Average length of feeding test 101 days.

	Lot 1	Lot 2	Lot 3	Lot 4
	Barley	Corn	Wheat	Grain mixture
	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>
Weight at beginning of test	486	487	484	490
Weight at close of test	676	681	688	691
Daily gain	1.90	1.95	2.02	2.02
Daily ration				
Alfalfa hay offered	11.5	11.8	11.6	12.2
Alfalfa hay refused .....	.6	.8	.6	.9
Alfalfa hay consumed	10.9	11.0	11.0	11.3
Grain	5	5	5	5
Silage	5	5	5	5
Feed per 100 lbs. gain				
Alfalfa hay offered	606	604	574	604
Grain	267	260	251	251
Silage	263	256	248	248

The grain mixture used in these tests was made up of three parts barley, one part mill-run, and one part oats by weight. This and similar mixtures are in quite general use for the finishing of show cattle. All of the grains were ground by running them through a large roller mill. The grains were ground dry and the rollers were run at the same speed.

All of the grains used in this test produced excellent results. On the basis of amount required to produce 100 pounds of gain and making allowance for the differences in the hay consumption, corn proved to be worth 4 percent more, pound for pound, than barley. Wheat was worth 12 percent more than barley, while the grain mixture was worth 7 percent more than barley. The results of this test should not be taken to apply under all conditions. It should be borne in mind, however, that different samples of grain vary a good deal in their feeding value. Particularly is

this true of corn and barley. The amount of grain used was not large enough in any case to cause serious trouble from bloat. While some differences in the feeding value of the different grains were shown by these tests, all of the lots made good gains and acquired a good finish. The choice of grains would be largely a matter of economy. To those who are somewhat inexperienced in the feeding of baby beef it might be best to use the grain mixture. This ration has been very satisfactory at the Experiment Station, and with it calves can be gradually worked up to full feed without much danger of digestive disturbances. The feeder should be ever careful, however, not to increase the grain too rapidly. The successful feeding of baby beef is likened somewhat to the feeding of a threshing machine. If a machine is fed beyond its capacity much of the grain goes out into the straw stack; the same is true in the case of baby beef. If the animals are fed beyond their digestive capacity, much of the feeding value of the excess grain is lost.

TABLE II. LINSEED-OIL MEAL FOR FATTENING CALVES

Average of 1 test, 10 calves in each lot.
Both lots fed all the chopped alfalfa they would eat.
Length of feeding test 116 days.

	Lot 1 With oil-meal	Lot 2 Without oil-meal
	Lbs.	Lbs.
Weight at beginning of test	434	436
Weight at close of test	674	667
Daily gain	2.07	1.99
Daily ration		
Alfalfa hay offered (chopped)	12.9	12.3
Alfalfa hay refused .....	.2	.5
Alfalfa hay consumed	12.7	11.8
Chopped barley	4.2	4.9
Linseed-oil meal .....	.7	none
Feed per 100 pounds gain		
Alfalfa hay offered	621	618
Chopped barley	204	247
Linseed-oil meal	33	none

It will be seen in Table II that where 0.7 pound of oil-meal was substituted for a similar weight of barley, the rate of gain increased slightly. The difference in gain was so small, however, as to be within the limit of experimental error. On the basis of feed required to produce 100 pounds of gain, 33 pounds of oil-meal saved 43 pounds of barley. Since the price of oil-meal is ordinarily at least double the price of barley, its use in this test was unprofitable. While the Eastern Oregon Branch Station conducted but one test with oil-meal, the results of the one test are in accord with numerous tests at other experiment stations, all of which show that the use of a high protein supplement such as oil-meal is not necessary when a large quantity of good alfalfa hay is used.

THE ADDITION OF SILAGE TO A RATION FOR FATTENING CALVES

Peas-and-bald-barley silage was fed with a ration of alfalfa hay and grain mixture in one test. The grain mixture used was the same as given on page 7. The results of this test are shown in Table III.

TABLE III. PEAS-AND-BALD-BARLEY SILAGE FOR FATTENING CALVES

Average of 1 test, 10 calves in each lot.
Both lots fed all the alfalfa they would eat.
Average length of test 112 days.

	Lot 1 With silage	Lot 2 Without silage
	<i>Lbs.</i>	<i>Lbs.</i>
Weight at beginning of test	471	471
Weight at close of test	680	685
Daily gain	1.87	1.91
Daily ration		
Alfalfa hay offered	10.7	14.5
Alfalfa hay refused	1.7	1.2
Alfalfa hay consumed	9.0	13.3
Grain	5.6	5.6
Silage	10.0	none
Feed per 100 lbs. gain		
Alfalfa hay offered	574	758
Grain	300	294
Silage	537	none

Table III shows that the addition of 10 pounds of peas-and-barley silage to a ration of grain and alfalfa did not increase the gains but did reduce the hay fed 3.8 pounds. The gains are in favor of the lot that received no silage but the difference is so small as to be within the limits of experimental error. The shrinkage from Union to Portland on the lot that received silage was 1.2 percent less than for the lots that did not receive silage. This agrees with previous tests on the shrinkage of silage-fed two-year-olds (see Oregon Agricultural Experiment Station Bulletin 193). This test, together with other experiences in the feeding of silage to calves, leads to the conclusion that the use of silage along with grain and alfalfa does not give the results when fed to calves that it does when fed to more matured animals.

COMPARISON OF LONG ALFALFA AND CHOPPED ALFALFA HAY FOR FATTENING CALVES AND YEARLINGS

The results of the tests in feeding long alfalfa hay and chopped alfalfa hay to calves and to yearlings are given in Tables IV and V.

TABLE IV. COMPARISON OF LONG AND CHOPPED ALFALFA HAY FOR FATTENING CALVES

Average of 3 tests, 29 calves in each lot except Lot 3, which is for only 1 test with 10 calves. All lots fed like grain ration.

Average length of feeding test 108 days except Lot 3, which was fed 120 days.

	Lot 1 Chopped alfalfa	Lot 2 Long alfalfa	Lot 3 Alfalfa meal
	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>
Weight at beginning of test	500	501	558
Weight at close of test	718	702	823
Daily gain	2.00	1.86	2.21
Daily ration			
Alfalfa hay offered	12.9	14.4	16.0
Alfalfa hay refused	0.2	1.0	0
Alfalfa hay consumed	12.7	13.4	16.0
Grain	4.6	4.6	4.2
Feed per 100 lbs. gain			
Alfalfa hay offered	645	774	724
Grain	228	245	190

TABLE V. COMPARISON OF LONG AND CHOPPED ALFALFA HAY FOR FATTENING YEARLINGS

Average of 2 tests, 17 yearlings in each lot.

All lots fed like grain ration.

Average length of feeding test 107 days.

	Lot 1 Long alfalfa	Lot 2 Chopped alfalfa
	<i>Lbs.</i>	<i>Lbs.</i>
Weight at beginning of test	798	793
Weight at close of test	974	1013
Daily gain	1.64	2.06
Daily ration		
Alfalfa hay offered	20.0	20.0
Alfalfa hay refused .....	.2	.1
Alfalfa hay consumed	19.8	19.9
Grain	5.3	5.3
Feed per 100 lbs. gain		
Alfalfa hay offered	1235	1001
Grain	327	265

It may be seen from Table IV that chopping hay for calves reduced the waste and made a slight increase in the daily gain. It will also be noted that the calves on chopped hay actually ate less than those fed unchopped hay. This is contrary to popular opinion, yet the results of these tests are confirmed by a number of other unpublished tests.

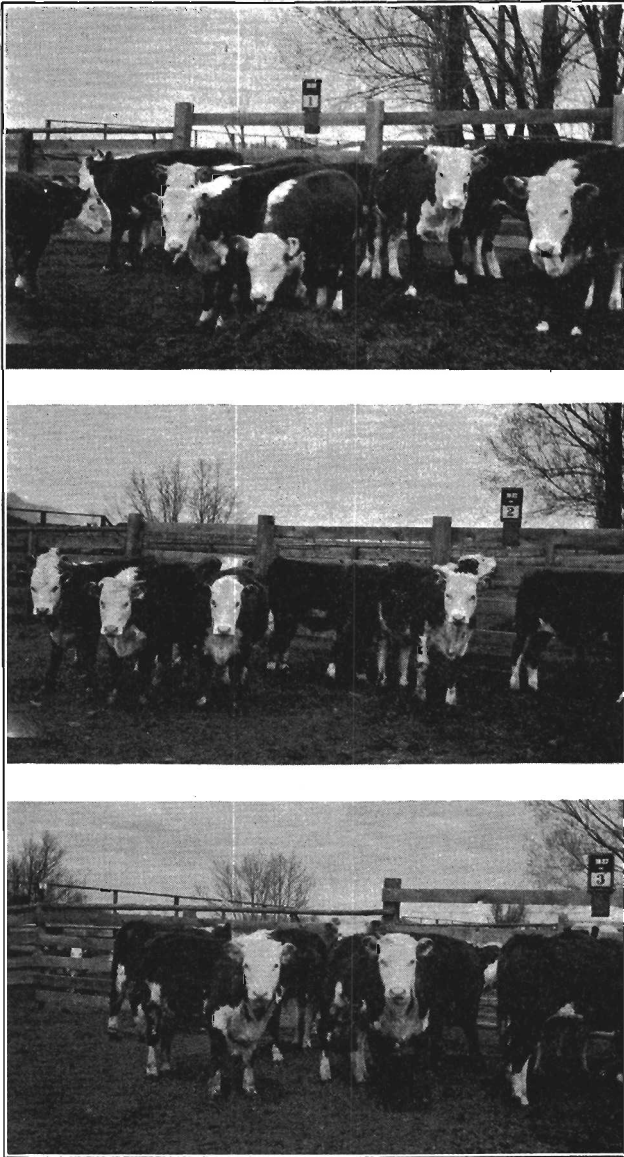


Figure 2. The same lots of calves as shown in Figure 1 after 116 days in the feed lot. Average weights Lot 1, 667 pounds; Lot 2, 674 pounds; and Lot 3, 662 pounds.

The calves on chopped hay not only required less hay to produce 100 pounds of gain but also a little less grain. One hundred pounds of chopped hay produced the same gain as 120 pounds of long hay, and at the same time saved 2.63 pounds of grain. If one pound of grain is considered as equivalent to three pounds of hay (see Oregon Agricultural Experiment Station Bulletin 193), 100 pounds of chopped alfalfa in this test would be equal in value to 128 pounds of long hay, or, in other words, chopping increased the value of the hay 28 percent.

In the tests with the yearlings shown in Table V it will be noted that the yearlings on long hay were forced to clean up their hay so thoroughly as to leave little waste. This method of feeding, while reducing the waste to a minimum, apparently lowered the gain. Using the same method of figuring used for the calves, chopping in this case increased the value of the hay 42 percent. It is possible, of course, that if the yearlings on long hay had been fed more liberally, so as to have produced more gain, the difference in favor of chopping would have been less.

Grinding the hay for calves increased its feeding value 30 percent. Since the alfalfa meal was used in but one test, however, and the hay consumption in this test was unusually large, and since the feeding was done in the open and during stormy weather, much of the ground and chopped alfalfa hay was unavoidably wasted. Hence this figure on alfalfa meal should not be considered as final.

The fact that both the calves and the yearlings on the chopped hay and on the alfalfa meal made larger gains than those on long hay, would seem to justify the assumption that the calves so fed were also better finished. The difference in finish, however, if any, was not noticeable.

The chopped hay used in these tests was chopped in a silage cutter with knives set to cut the hay one-fourth inch in length. Of course many of the pieces of hay were much longer than this. The alfalfa meal was prepared in the same machine but with the use of an alfalfa meal attachment. The holes on the screen of the regrinding attachment were five-sixteenths-inch in diameter.

The difference in shrinkage from Union to Portland was determined in only one shipment. In that case the calves fed long hay shrank 5.7 percent and those fed chopped hay, 7.7 percent.

STEERS VS. HEIFERS

In the course of the four years of work, 16 different lots of calves were fed. Each of the 16 lots contained both steers and open heifers in approximately equal numbers. Individual weights were taken so that the gains made by each animal were known. In 11 of the 16 lots the steers gained more rapidly than the heifers, while in five of these lots the heifers gained more rapidly than the steers. As an average of all the animals used, the steers weighed 15 pounds a head more than the heifers at the start and gained 10 pounds a head more during the test, so that at the end they were 25 pounds heavier. Since the steers and heifers were fed together, the difference in feed consumption was not known. While the heifers did not

gain quite as rapidly as the steers, they fattened readily. The heifers and steers all sold for the same price, although buyers indicated, in their comment, a slight preference for the heifers on account of their higher condition. There was no discrimination in the price on account of sex.

In the case of the yearlings, the steers gained 2.03 pounds daily against 1.90 pounds for the open heifers, but with the yearlings the heifers sold for a lower price than the steers. The yearlings were actually about 20 to 23 months of age while the calves were about 12 months of age. In the case of the yearlings the buyers stated that the trade which would take the steer carcasses would not take the heifers, since these heifers were becoming patchy around the hip bones and tail head and acquiring much the same appearance as more mature cows. The number of yearlings marketed was not large enough to afford an accurate measure of the difference in price between the steers and heifers. Apparently, however, heifers 20 to 23 months of age may be expected to sell for at least \$1.00 per hundred pounds less than steers of the same age and finish.

SHRINKAGE UNION TO PORTLAND

All the cattle were weighed just before shipping to Portland. The experimental scales adjoined the Station feed lots so the cattle were weighed with the minimum amount of disturbance. The cattle in all cases had feed and water before them until a few minutes before going on the scales. After weighing they were driven to the railroad, a distance of 2.5 miles. They were loaded on the cars sometime during the afternoon or evening and arrived in Portland about noon the next day. The exact time of loading and shipping varied with each shipment. The cattle were sold the morning after arrival and were given the usual stockyard fill. The final weight was the selling weight as taken by the stockyards company. The shrinkage figures as determined in these tests represent the difference between the full feed yard weight at Union and the actual selling weight at Portland. The actual shrinkages determined in this way were as follows:

	Percent	Percent
1927 Calves	7.5	
1928 Calves	8.7	
1929 Calves	7.3	Yearlings 5.0
1930 Calves	6.0	Yearlings 5.5

This shows an average shrink on the calves of 7.4 percent and on the yearlings 5.3 percent.

DRESSING PERCENTAGE

The dressing percentage, or yield, was obtained only for the calves in the years 1928 and 1929. In 1928 the average dressing percentage of all lots of calves, based on the selling weights at Portland, was 56.9 percent. In 1929 it was 56.3 percent.

SELECTION OF CALVES

The calves used in these tests were from well bred Hereford cows and sired by good pure-bred Hereford bulls. Even with this good start it was not possible to use all of the calves for baby beef and get them fat as calves. The proportion of calves selected and their weights are shown below.

	1926-27	1927-28	1928-29	1929-30
<i>Calves fattened first winter</i>				
Percent of entire crop.....	58	70	66	83
Date weighed	Dec. 21	Jan. 7	Jan. 7	Jan. 1
Weight on above dates	434 lbs.	468 lbs.	507 lbs.	558 lbs.
<i>Calves held over until yearlings</i>				
Date weighed	Dec. 21	Feb. 6	Jan. 11	Jan. 1
Weight on above dates	334 lbs.	324 lbs.	334 lbs.	360 lbs.

Since very few of these calves were dropped before April first, it will be seen from the weights that those selected to fatten as calves were of good size and well grown. They were all taught to eat before being put on the test proper and before being weaned. The calves which were held over to fatten as yearlings were calves of good quality but were younger and smaller, as is shown by the weights. That those selected were none too good is shown by the fact that although they were fed until April, when California grass cattle had begun to come on the market, they were each year just barely good enough to sell satisfactorily. With a little less weight and finish they would have been merely good stockers. The reader is cautioned, therefore, that the results on fattening calves reported in this Bulletin are doubtless better than what might be expected with average calves or with calves that have been allowed to shrink heavily during weaning.

The calves that were not sold as beef the first winter were fed in much the same manner as those that were sold, but they did not get large enough or, in some cases, fat enough for slaughter that winter. Their average weight at the beginning of the test was 337 pounds and at the end of 102 days they weighed 517 pounds, making an average daily gain of 1.78 pounds. They were fed during their first winter an average of 12 pounds of alfalfa and 4.3 pounds of mixed grain. At the end of the winter these calves, by that time yearlings, were turned out on the Station pastures, which consisted largely of blue-grass, occasionally a little bunch grass, and sometimes sweet clover. As winter approached they were given a little supplemental feed while on pasture. Then they were put into the feed lots and used for the comparisons of chopped hay and long hay, the data for which have already been given.

During the first winter they gained 180 pounds a head. During the grass season, with the addition of a little supplemental feed, they gained 314 pounds and during the final fattening period those on long hay gained 176 pounds, making a final full feed lot weight of 1,007 pounds per head. The cattle were by that time from 20 to 23 months of age and in excellent market condition.

FINANCIAL STATEMENTS

TABLE VI. COST OF FATTENING CALVES

Initial cost—475 pounds @ 93¢	\$43.94
Interest on initial cost at 8% for 150 days	1.46
722 pounds of barley @ \$30.00 a ton	10.83
2163 pounds of hay @ \$8.00 a ton	8.65
Labor—150 days at 5¢	7.50
Interest on one-half of the feed and labor .....	.45
Death loss at 5.5%	1.32
Total cost per head	\$74.15
Total gain—150 days @ 2 pounds 300 pounds	
Final weight full at Union 775 pounds	
Final cost per 100 pounds or the full weight at Union	\$ 9.57
Final cost per 100 pounds or the full weight less 3% shrinkage	9.86
Marketing expenses to Portland per head	4.54
Shrinkage Union to Portland	7.4%
Cost per 100 pounds at Portland on Portland weights	\$10.96
Average selling price at Portland	11.94
Profit per 100 pounds .....	.98

In two years out of four these calves brought the same price as the best two-year-old steers, one year they brought 50¢ less and one year they brought 50¢ more than top cattle on the market.

TABLE VII. COST OF MAKING YEARLING BEEF FROM WEANING TO MARKET

<i>Cost for First Winter</i>	
Initial cost—337 pounds at 93¢	\$31.17
Interest on initial cost at 8%—102 days .....	.71
439 pounds barley at \$30.00 a ton	6.59
1224 pounds hay at \$8.00 a ton	4.90
Labor—102 days at 5¢	5.10
Interest on feed and labor 51 days .....	.19
Death losses at 5.5% .....	.62
Total cost at end of first winter	\$49.28
<i>Cost for Second Year</i>	
Initial cost as above	\$49.28
Interest on initial cost at 8% for 332 days	3.64
Pasture 225 days at \$2.25 per month	16.88
578 pounds barley at \$30.00 a ton	8.67
2566 pounds hay at \$8.00 a ton	10.26
Labor of winter feeding—107 days at 5¢	5.35
Interest on feed and labor for 166 days	1.52
Death loss at 5.5%	3.54
Total cost per head	\$99.14
Final weight full at Union	1007 lbs.
Final cost per hundred pounds full weight at Union	\$ 9.85
Marketing expenses to Portland per head	5.90
Shrinkage Union to Portland	5.3%
Cost per hundred pounds at Portland on Portland weights	\$11.01
Selling price at Portland	11.68
Profit per 100 pounds .....	.67

In 1930 the yearling steers brought 15¢ more than any other steers on the market. The heifers brought \$1.00 less than the steers. In 1929

fourteen yearling heifers and two steers sold together for \$1.35 more than any other heifers but for 65¢ less than the best two-year-old steers on the market that day.

These data show that with extra good calves and with good hay at \$8.00 a ton and grain at \$30.00, the larger calves can be profitably made into baby beef, while the smaller calves can be finished as yearlings. This, however, is assuming a normal market in which prices improve somewhat during the winter months. During the four years of these tests the average December top at Portland was \$10.78, while the average April top was \$11.83, or a margin of \$1.05 per hundred pounds.

The calves in these tests were valued at \$9.25 per hundred pounds on the full weight at Union, or approximately \$1.50 below the Portland top. This initial price also corresponds quite closely with the average costs as given in Oregon Agricultural Experiment Station Bulletin 220.

Attention is called to the gains made by the yearlings on grass. These large gains would not have been possible on anything but good feed, especially as the calves were quite fat when turned out to grass. Attention is also called to the death loss of 5½ percent. Calves that are on heavy feed throughout their lives are apparently subject to a heavier death loss than would otherwise be the case, even though the loss from stray and theft is reduced to the minimum. Five and one-half percent was the average loss for all of the cattle used in these tests. In the financial statements, therefore, all the cattle have been charged with a death loss of 5½ percent per annum. The same percentage is also charged for one-half of the feed and labor, under the assumption that the losses are evenly distributed throughout the year. If an animal is lost at the beginning of the year no feed or labor is lost, but if the animal is lost at the end of the year, feed and labor for the year are also lost.

The yearling steers made as good a financial showing as the steer calves but this was not true of the yearling heifers. The two methods of making beef, however, are not strictly comparable as only the early calves were used in one case and the late calves in the other. The two methods used in combination, however, show how it is possible to produce high class, early maturing beef from all of the calf crop.

The tests show that under conditions similar to those of the Experiment Station at Union, calves and yearlings can be fattened at a small profit. However, the tests would not indicate sufficient profit in this type of beef production to justify its adoption in any large way throughout the state.

Calves may be depended upon to make good gains in weight but the degree of finish which they will acquire is somewhat uncertain.

The profitable fattening of calves or yearlings requires good feed at reasonable prices.

OTHER OREGON TESTS

In addition to the test listed above three other tests have been conducted at Union—one in 1916-17, one in 1917-18, and one in 1919-20. In these tests good calves fattened for an average of 123 days gained 1.86 pounds a day on 14 pounds of alfalfa and 5.6 pounds of grain. This checks

quite closely in the matter of gains and feed consumption with the later tests. At the time of these earlier tests, however, the Portland market did not seem favorable to beef of this age. The calves in 1917 were sold at Portland after feeding 175 days. They brought 80 cents per hundred pounds under the price of good two-year-old steers. The calves from the other tests were not quite as fat and were held over and fattened out as yearlings. From 1915 to 1917 five tests were conducted at Corvallis with good calves weighing 458 pounds at the start. They were fed 158 days and made an average gain of 2.0 pounds a day. They consumed daily 6.6 pounds of hay, 5.7 pounds of silage and 8.1 pounds of mixed grain. The hay in these tests was not alfalfa but was vetch, clover and other mixed hays of only fair quality. The calves, therefore, were fed more grain and less hay and silage. The calves in these tests were all good pure-bred calves but from 10 to 20 percent in each test put their gains into growth rather than finish.

BABY BEEF IN THE CORN BELT

Since thousands of head of baby beef are finished in the corn belt each year, some consideration may profitably be given to the methods practiced there and especially in contrast to our own. At the outset, however, certain fundamental differences in conditions between Oregon and the corn belt should be noted. First, grain is much cheaper in the corn belt than in Oregon. The corn belt always has a surplus of feed grain while Oregon never has enough to meet local needs. According to the estimates of the United States Department of Agriculture, the average farm price of corn in Iowa for the past five years was \$24.36 a ton, while the average price of barley in Oregon was \$32.25. Second, the price of hay is much less in Oregon and the quality is better. Third, the outlet for extra good beef in Oregon is more limited and the price is lower, particularly in the early summer after grass cattle appear in large numbers.

Many baby beef feeding tests have been conducted by the corn belt experiment stations. Some of the more significant tests of the past eight years are summarized in Table VIII. For convenience the tests are averaged in two groups—first those with silage; and second, those without silage.

TABLE VIII. SUMMARY OF CORN BELT BABY BEEF TESTS
 Kansas, Colorado, Minnesota, Ohio, Michigan, and Nebraska

	Lot 1 With silage	Lot 2 Without silage
Number of tests	42	22
Weight at beginning of test	406 lbs.	388 lbs.
Weight at close of test	817	789
Number of days fed	198	182
Daily gain	2.06 lbs.	2.23 lbs.
Daily ration		
Hay	3.6	5.1
Grain, including supplement	10.0	11.5
Silage	10.3	none
Feed per 100 pounds gain		
Hay	178 lbs.	235 lbs.
Grain, including supplement	463	526
Silage	501	none

These tests in comparison with our Oregon tests show a much heavier use of grain and correspondingly less hay. The daily feed of grain is twice as large and the cattle are fed for a longer time. The calves in these corn belt tests consumed a total of practically three times as much grain as those in the Oregon tests. Naturally the corn belt tests produced fatter calves and marketed them later in the season. The daily gains in the corn belt tests were slightly higher, owing perhaps to the larger amount of grain used. It was the object of the Oregon tests to use more hay and less grain, to produce cheaper cattle, and to market them earlier in the spring, before the advent of grass cattle.