

in weight of young male guinea pigs. Eight pairs of pigs under two months of age were started in each experiment. One member of each pair served as a control while the other member of the pair received one pellet containing 1,000 units of bacitracin, implanted subcutaneously. The control and treated member of each pair were caged together and were fed the standard ration used in the laboratory. Average daily gains during the eight weeks feeding periods are shown in Table 13. In the first experiment, the bacitracin pigs gained an average of 0.06 gram more per day than did the control pigs. In the second experiment, the control pigs gained an average of 0.29 gram more per day than did the bacitracin pigs. It was concluded that the bacitracin pellet did not alter the weight gain of the guinea pigs.

Table 13.—Average Daily Gains in Weight (grams) Made by Pairs of Guinea Pigs, One Member of Each Pair Having Had a Subcutaneous Implantation of One Pellet Containing 1,000 Units of Bacitracin.

First experiment			Second experiment		
Pair	Control	Bacitracin	Pair	Control	Bacitracin
1	5.52	5.64	1	6.61	5.23
2	2.60	4.97	2	died	.....
3	4.10	4.75	3	4.40	4.99
4	6.01	4.70	4	5.30	4.77
5	5.25	4.77	5	5.72	4.65
6	5.59	4.97	6	4.76	4.68
7	5.66	5.22	7 .....	.....	died
8	3.11	3.29	8	4.37	5.12
Average	4.73	4.79	Average	5.19	4.91

Project 253-1: Wintering and Grazing Steer Calves

Methods of Wintering Steer Calves That Are To Be Grazed a Full Season and Sold Off Grass, 1952-53.

E. F. Smith, D. L. Good, and R. F. Cox

This is a report on the wintering phase of this test. Following the wintering period the steers will all be grazed together on bluestem pasture until the fall of 1953 at which time they will be sold off grass as feeder or stocker yearlings. The different methods of winter treatment will be measured by their effect on the combined winter and summer performance of the steers.

This test makes the following comparisons:

1. Wintering in drylot compared to wintering on dry bluestem pasture.
2. Level of protein feeding on dry bluestem pasture.
3. The value of a grain and protein combination fed on dry bluestem pasture.

Experimental Procedure

Four lots of 10 Hereford steer calves per lot are being used in this study. They were part of 220 calves purchased from the Brite Ranch at Marfa, Texas. The cost was 29 cents per pound delivered to Manhattan, Kansas, on November 3, 1952. From the date received until they were placed on test December 18, 1952, they were fed prairie hay and 1 pound of soybean pellets per head daily.

All lots were wintered on dry bluestem pasture except lot 13 wintered in a drylot. The calves on pasture were rotated on pasture every 15 days to equalize any differences due to pasture. The pastures in which the steers grazed were stocked at a normal rate during the 1952

summer season; sufficient grass remained for winter grazing. The winter stocking rate ranged from 4 to 13 acres per steer, varying with the different sizes of pasture available for use.

Observations

1. The steers under all methods of feeding made very good gains. The winter was mild with the exception of three snowstorms; one the latter part of November covered the grass for about three weeks.
2. In this year's test, Lot 14 well demonstrates that calves wintered on dry bluestem pasture can compete successfully with calves wintered under feedlot conditions.
3. As a supplement to dry grass, 1 pound of soybean pellets and 1 pound of corn were not equal to 2 pounds of soybean pellets. Summer grazing may minimize the differences obtained here.
4. Lot 16, wintered on 1 pound of soybean pellets, came through the winter in a strong, healthy condition.
5. The results of the winter treatments studied here can best be evaluated after the summer grazing season.

Table 14.—Wintering and Grazing Steer Calves.

Phase I—Wintering—December 18, 1952, to April 1, 1953—
104 days (for Lot 1 to April 9, 1953—112 days)

1. Lot number	13	14	15	16
2. Number steers per lot	10	10	10	10
3. Place of wintering	Drylot	Dry bluestem pasture	Dry bluestem pasture	Dry bluestem pasture
4. Initial weight per steer	417	417	416	416
5. Final weight per steer	548	511	488	476
6. Gain per steer	131	94	72	60
7. Daily gain per steer	1.17	.90	.69	.58
8. Daily ration per steer:				
Soybean oil meal pellets	1.00	2.00	1.00	1.00
Ground shelled corn .....	.....	.....	1.00	.....
Prairie hay	12.19	2.00	2.00	2.22
Salt .....	.09	.....	.....	.09
Mineral (bonemeal and salt) .....	.07	.20	.14	.20
Dry bluestem pasture .....	.....	ad lib	ad lib	ad lib
9. Total feed cost per steer ¹	\$22.82	\$15.63	\$13.41	\$11.03
10. Feed cost per 100 lbs. gain	17.42	16.62	18.62	18.38

1. Feed prices may be found on the last page of this publication.

Project 253-1: Wintering and Grazing Steer Calves

Methods of Wintering Steer Calves That Are To Be Grazed
a Full Season and Sold Off Grass, 1951-52.

E. F. Smith, D. L. Good, and R. F. Cox

The primary objective of this test was to find the most satisfactory method or methods of wintering steer calves that are going to be grazed on bluestem pasture during the summer and sold off grass as feeder yearlings. This is the final test of a series of three tests; a summary of the three years work is included in this publication in another report.

Experimental Procedure

Five lots of good quality Hereford steer calves, 10 head to a lot, were used in this study. They were a part of the light end of a group of 150 steer calves originating at Marfa, Texas, and purchased for experimental purposes.

They were received November 8, 1951, and started on test December 22, 1951. Until they were started on test, they were fed sorghum silage, prairie hay, and 1 pound of cottonseed cake per head daily with free access to salt. During the experiment all were fed in drylot, except Lot 1, which was fed out on dry bluestem pasture. All lots had free access to a mineral mixture (bonemeal and salt) and salt during the winter. The different lots received the following rations from December 22, 1951, to May 2, 1952:

- Lot 1—Bluestem pasture and 2 pounds cottonseed cake per head daily;
- Lot 2—Sorghum silage and 1 pound cottonseed cake per head daily;
- Lot 3—Prairie hay and 1 pound cottonseed cake per head daily;
- Lot 4—Prairie hay, 2 pounds milo grain, and 1 pound cottonseed cake per head daily;
- Lot 5—Prairie hay, 4 pounds milo grain, and 1 pound cottonseed cake per head daily.

All lots were grazed on bluestem pasture a full season in 1952 and sold as feeder or stocker yearlings in the fall.

A feedstuff analysis of the feeds used in the test may be found in the back of this publication.

The final weights are full weights and should be shrunk at least 3 percent for a more complete picture of steer gain.

Observations

1. The results of this test indicate that the most satisfactory method of wintering may be on prairie hay supplemented with 1 pound of cottonseed cake.

2. It was not profitable to add 2-4 pounds of grain to the ration in Lots 4 and 5.

3. Lot 2, fed sorghum silage and 1 pound of cottonseed cake, turned in the poorest performance of all lots. The primary cause for this in all probability was the poor quality of silage fed during the winter. Note the low consumption on line 8 in the table.

4. Wintering on dry bluestem pasture does not appear to have an advantage in this test as it has in previous tests. This is due to the lower yearly gain as compared to Lot 3 and the lower appraisal value.

5. The appraisal value of Lot 1 wintered on dry bluestem pasture and fed 2 pounds of cottonseed cake daily and Lot 2 wintered on sorghum silage and 1 pound of cottonseed cake was 50c per cwt. lower than the other lots (see line 25). This was due to a lack of bloom and somewhat of a thinner appearance which gave an impression of less quality as compared to the other lots.

Table 15.—Wintering and Grazing Steer Calves

Phase I—Wintering—December 22, 1951, to May 2, 1952—132 days¹

1. Lot number	1	2	3	4	5
2. No. steers/lot ..	10	10	10	10	10
3. Place of wintering	Bluestem pasture	Drylot	Drylot	Drylot	Drylot
4. Initial wt./steer	388	389	389	390	391
5. Final wt./steer..	461	476	516	551	572
6. Gain/steer	73	87	127	161	181
7. Daily gain/steer	.60	.66	.96	1.22	1.37

8. Daily ration/steer:					
Ground milo grain				2.00	4.00
Cottonseed cake	2.01	1.00	1.00	1.00	1.00
Prairie hay	1.17 ²	.	11.27	10.80	10.91
Sorghum silage		20.84			
Minerals ³ .....	.06	.13	.08	.09	.08
Salt .....	.06	.10	.06	.07	.04
Dry bluestem pasture	Free choice				

9. Feed required for 100 lbs. gain:					
Ground milo grain				163.98	291.71
Cottonseed cake	335.62	151.72	103.94	81.99	72.65
Prairie hay	195.89		1171.81	885.40	795.97
Sorghum silage		3161.49			
Minerals	9.52	18.89	8.27	7.36	6.08
Salt	9.45	15.75	5.91	5.47	3.15
Dry bluestem pasture	Free choice				

10. Feed cost/cwt. gain ⁴	\$20.32	\$17.85	\$14.05	\$15.38	\$17.81
11. Feed cost/steer	\$15.38	\$15.52	\$17.83	\$24.77	\$32.21

Phase II—Grazing—May 2 to October 2, 1952—153 days⁵

12. Initial wt./steer	461	476	516	551	572
13. Final wt./steer..	696	686	727	743	746
14. Gain/steer	235	210	211	192	174
15. Daily gain/steer	1.44	1.37	1.38	1.26	1.14
16. Cost/100 lbs. pasture gain ⁴	\$10.64	\$11.91	\$11.85	\$13.02	\$14.37

Summary of Phases I and II

December 22, 1951, to October 2, 1952—285 days

17. Initial wt./steer	388	389	389	390	391
18. Final wt./steer..	696	686	727	743	746
19. Gain/steer	308	297	338	353	355
20. Daily gain/steer	1.08	1.04	1.19	1.24	1.25
21. Feed cost/100 lbs. gain	\$13.19	\$13.64	\$12.67	\$14.10	\$16.25
22. Feed cost/steer	\$40.32	\$40.52	\$42.83	\$49.77	\$57.21
23. Initial cost/steer at \$42 cwt.	\$162.96	\$163.38	\$163.38	\$163.80	\$164.22
24. Total cost feed and steer	\$203.28	\$203.90	\$206.21	\$213.57	\$221.43

25. Appraised value/cwt.	\$25.50	\$25.50	\$26.50	\$26.50	\$26.50
26. Appraised value/steer	\$177.48	\$174.93	\$192.66	\$196.90	\$197.69
27. Loss/steer	\$25.80	\$28.97	\$13.55	\$16.67	\$23.74

1. Lot was on dry bluestem pasture from December 22, 1951, to April 22, 1952—122 days.
2. Prairie hay was fed to Lot 1 only when snow covered the grass.
3. Minerals were two parts steamed bonemeal to one part salt.
4. Feed prices: Milo grain, \$2.80/cwt.; cottonseed cake, \$1/ton; prairie hay, \$15/ton; sorghum silage, \$6.50/ton; minerals, \$5/cwt.; salt, \$12/ton; dry bluestem pasture, 50c/head/month; summer bluestem, \$25 for summer season.

Three-Year Summary—1940-50, 1950-51, 1951-52

Methods of Wintering Steer Calves That Are To Be Grazed a Full Season and Sold Off Grass.

This test was to determine the most satisfactory method or methods for wintering steer calves that will be summer grazed and sold off grass as stocker or feeder yearlings. The use of dry bluestem pasture as one of the methods of wintering has been of particular interest.

Experimental Procedure

Each year five lots of good quality Hereford steer calves, 10 head to a lot, were used in this study. All were fed in drylot except Lot 1, which was fed on dry bluestem pasture. The different lots received the following rations during the wintering period.

- Lot 1—Bluestem pasture and 2 pounds of soybean pellets per head daily.
- Lot 2—Sorghum silage and 1 pound of soybean pellets per head daily.
- Lot 3—Prairie hay and 1 pound of soybean pellets per head daily.
- Lot 4—Prairie hay, 2 pounds of grain, and 1 pound of soybean pellets per head daily.
- Lot 5—Prairie hay, 4 pounds of grain, and 1 pound of soybean pellets per head daily.

At the close of the wintering period the steers were grazed together on bluestem pasture until fall, when sold.

Observations

1. All methods of wintering proved satisfactory. Lot 2 fed sorghum silage and protein failed to perform as well as the other lots due to the poor quality of silage fed in each of the three years. In all probability, otherwise this lot would have at least equaled Lot 3 fed prairie hay and protein.

2. Lot 1, wintered on dry bluestem pasture and 2 pounds of soybean pellets, compared very favorably with the other lots and under some conditions would represent the most desirable method of wintering. The first two winters the calves were wintered in a creek bottom bluestem pasture with considerable bluegrass in it. The third winter they were wintered under more typical bluestem conditions. This method of wintering is receiving further study.

3. The feeding of 2 to 4 pounds of grain during the winter in addition to prairie hay and protein does not appear desirable under the conditions of this test.

Table 16.—Summary—Wintering and Grazing Steer Calves—1940-50, 1950-51, 1951-52.

Phase I—Wintering—148 days (138 days for Lot 1)					
1. Lot number	1	2	3	4	5
2. Number steers per lot	30	30	29	31	30
Dry bluestem pasture					
3. Place wintered..	pasture	Drylot	Drylot	Drylot	
4. Initial weight per steer	413	413	414	413	414
5. Final weight per steer	524	531	561	589	633
6. Gain per steer ..	111	118	147	176	219
7. Daily gain per steer .....	.80	.80	1.00	1.19	1.49
8. Daily ration per steer:					
Grain ¹				2.00	4.00
Soybean oil meal pellets ..	2.00	1.00	1.00	1.00	1.00
Prairie hay ....	.52 ²		12.29	10.98	10.43
Sorghum silage		26.35			
Salt .....	.05	.10	.06	.06	.06
Mineral ³ .....	.03	.04	.03	.03	.03
Dry bluestem pasture	Free choice				
9. Feed required for 100 lbs. gain:					
Grain				168.63	269.30
Soybean oil meal pellets ..	248.35	124.93	100.34	84.36	67.25
Prairie hay	64.80		1232.20	924.73	702.36
Sorghum silage		3288.34			
Salt	6.19	13.06	5.89	5.38	3.82
Mineral	3.08	5.10	2.60	2.44	1.82
10. Feed cost per 100 lbs. gain ⁴ ..	\$13.32	\$16.44	\$12.76	\$14.15	\$14.48
11. Feed cost per steer	\$14.79	\$19.45	\$18.81	\$24.90	\$31.71
Phase II—Grazing—151 days (161 days for Lot 1)					
12. Initial weight per steer	524	531	561	589	633
13. Final weight per steer	789	776	793	806	827
14. Gain per steer..	266	245	232	217	194
15. Daily gain per steer	1.65	1.62	1.53	1.44	1.28
Summary of Phases I and II—299 days					
16. Total gain per steer (all phases)	376	363	379	393	413

17. Daily gain per steer (all phases)	1.26	1.21	1.27	1.31	1.38
18. Feed cost per 100 lbs. gain	\$8.55	\$10.13	\$9.53	\$10.74	\$11.87
19. Total cost of feed	\$32.12	\$36.78	\$36.14	\$42.23	\$49.04
20. Initial cost/steer @ \$32.33 cwt.	\$133.52	\$133.52	\$133.85	\$133.52	\$133.85
21. Selling price per steer @ \$29.67 cwt. for Lots 3, 4, 5; \$29.33 for Lots 1 and 2	\$231.41	\$227.60	\$235.28	\$239.14	\$245.37
22. Return/steer above steer and feed cost	\$65.77	\$57.30	\$65.29	\$63.39	\$62.48
1. In 1949-50, ground shelled corn was fed; in 1950-51 and 1951-52, ground milo grain was fed.					
2. Prairie hay was fed to Lot 1 only when snow covered the grass.					
3. Mineral fed last two years only; 2 parts steamed bonemeal to 1 part salt.					
4. Feed prices: corn, \$1.25 bu.; milo, \$2.45 cwt.; soybean pellets, \$83.33 ton; prairie hay, \$13.67 ton; sorghum silage, \$6.50 ton; salt, \$12.00 ton; mineral, \$5.25 cwt.; dry bluestem pasture, \$.50 per head per month; summer bluestem pasture, \$17.33 per head for season.					

Project 253-2: Wintering, Grazing, and Fattening Heifers

Wintering Heifer Calves That Are To Be Fattened for the Fall Market, 1952-53.

E. F. Smith, D. L. Good, R. F. Cox, and D. L. Mackintosh

This is a report of the wintering phase. Following this phase the heifers will be grazed until July 15 and full-fed grain 100 days in the drylot. The object of this test is to compare different methods of wintering heifer calves that are going to be full-fed after a summer grazing period.

Experimental Procedure

Thirty good quality Hereford heifer calves, 10 head to a lot, are being used in this study. They were delivered to Manhattan, Kansas, on September 15, 1952, at a cost of 29 cents per pound. They originated in the Sterling City, Texas, area. From delivery date until November 15, 1952, they were fed prairie hay and 1 pound of soybean oil meal pellets per head daily. The system of management planned for each lot follows.

Lot 19—Wintered on brome pasture supplemented when necessary with protein; grazed on brome pasture until July 15; full-fed in the drylot 100 days.

Lot 7—Wintered on dry bluestem pasture supplemented with 1½ to 2 pounds of concentrate feed per head daily; grazed on bluestem pasture until July 15; full-fed in drylot 100 days.

Lot 8—Wintered on Atlas sorgo silage, prairie hay, 1 pound of soybean pellets and 2 pounds of corn per head daily; grazed on bluestem pasture May 1 to July 15; full-fed in drylot 100 days.

A bonemeal and salt mixture and salt were offered free choice to all lots.

It was necessary to move Lot 19 to drylot on January 1 due to a shortage of grass which resulted from a lack of moisture during the summer and fall. They will be returned to pasture in April, 1953.

Prairie hay was fed to Lot 7 only when snow covered the grass.

Observations

1. The winter in general was mild and favorable for wintering on grass with the exception of three storms; one in the latter part of November left snow on the ground covering the grass for three weeks.

2. The heifers wintered on dry bluestem pasture, Lot 7, made a very favorable gain at a rather low feed cost. They had sufficient dry grass to winter on in pastures that were normally stocked during the previous summer.

3. The heifers in Lot 8 made an exceptionally good gain of 1.64 pounds per head daily and show considerable "fleshing."

Table 17.—Wintering Heifer Calves That Are To Be Fattened for the Early Fall Market.

Phase I—Wintering—November 15, 1952, to April 9, 1953—
145 days (for Lot 7 to April 1, 1953—137 days)

1. Lot number	19 on brome pasture	7	8
2. Place of wintering	On brome to January 1 then to drylot	Dry bluestem pasture	Drylot
3. Number of heifers per lot	10	10	10
4. Initial weight per heifer	446	443	445
5. Final weight per heifer	625	546	683
6. Gain per heifer	179	103	238
7. Daily gain per heifer	1.24	.75	1.64
8. Daily ration per heifer:			
Soybean oil meal pellets	1.00	1.28	1.00
Ground shelled corn .....	.....	.32	1.92
Atlas sorgo silage	17.76	.....	20.21
Prairie hay	6.66	2.29	5.84
Salt .....	.09	.05	.04
Mineral (bonemeal and salt) .....	.18	.04	.07
Dry bluestem pasture .....	.....	ad lib	.....
Brome pasture	ad lib		
9. Feed cost per heifer ¹	\$38.20	\$16.33	\$40.59
10. Feed cost per 100 lbs. gain	\$21.34	\$15.85	\$17.05

1. Feed prices may be found on the last page of this publication.

Project 253-2: Wintering, Grazing, and Fattening Heifers, 1951-52

E. F. Smith, D. L. Good, and R. F. Cox

The objective of this test is to compare different methods of wintering heifer calves that are to be grazed until mid-summer and then finished for fall marketing. Of particular interest is the influence of