of lambs was creep-fed, twice a day, a concentrate mixture consisting of 6 parts by weight of milo; 1 part whole oats; 1 part wheat bran; 1 part cracked corn; 1 part dehydrated alfalfa meal, molasses, and corn pellets. Approximately 2 percent salt was added to this mixture. Lambs were also fed good, leafy alfalfa hay in the creep. The ewes in the different lots were fed similar rations consisting of 1 pound grain, 2 pounds alfalfa hay, and 6 pounds sorghum silage per ewe per day. Records were kept on the feed consumption of the different groups of lambs and ewes.

Table 20 gives the gains and feed consumption of the different groups of lambs.

Discussion and Observations

As in the past four years, the Texas finewool ewes bred and lambed earlier this year than the other two types of ewes. The finewool ewes lambed 23 days (average) earlier than the Northwest Blackface ewes and 28 days before the Northwest Whiteface ewes. Because of the earlier lambing date, lambs from the Texas finewool ewes usually reach market weights earlier than lambs from the other groups. The lambs from the other groups, however, usually gain slightly faster than the finewool lambs and are heavier at 100 days of age. So far in this year's test the lambs from the finewool ewes have gained about .05 pound less per day than lambs from the other ewe groups.

The Whiteface crossbred ewes generally have produced the heaviest fleeces, followed by the finewools. There have been no consistent differences among the three types of ewes in lambing and weaning percentages. There has been no consistent difference in carcass grade of lambs from different ewe groups; however, lambs from the Blackface Crossbreds have in some years graded slightly higher.

Lambing and weaning data from the lambs sired by Hampshire, Suffolk, Southdown, and Shropshire rams have not been consistent. The average birth weights of lambs sired by Hampshire, Suffolk, and Shropshire rams have varied from year to year but have been about equal. The lambs sired by Southdown rams usually averaged lighter at birth than lambs sired by the other breeds.

The Hampshire- and Suffolk-sired lambs so far have gained faster in this year's test than Southdown- or Shropshire-sired lambs; however, they were no more efficient in converting feed into gain. In past years Hampshire- and Suffolk-sired lambs have usually gained slightly faster and have been heavier at weaning than the Southdown- and Shropshire-sired lambs. However, this trend has not been consistent. In 1954-55 the Southdown- and Shropshire-sired lambs gained equally as fast as the lambs sired by the other two breeds. The Southdown-sired lambs have shown a slight advantage in carcass grade in some years but this superior quality has not been demonstrated consistently.

Table 20

Feed Consumption and Lamb Production from Four Different Breeds of Rams and Three Types of Ewes.

	No. of lambs	Daily concentrate consumption in creep per lamb	Av. daily gain in lbs. per lamb	Gain per lb. of creep feed consumed
Sire groups:				
Hampshire	35	1.46	.600	.41
Suffolk	46	1.45	.644	.44
Southdown	32	1.16	.559	.48
Shropshire	46	1.32	.541	.41
Ewe groups:				
Finewools	58		.552	
Northwest Whiteface	44		.615	
Northwest Blackface	57		.604	

Beef Cattle

Three-Year Summary-Level of Winter Supplementation for Steer Calves Both Winter and Summer Grazed on Bluestem Pastures, 1952-53, 1954-55, 1955-56 (Project 253-1).

E. F. Smith, R. F. Cox, B. A. Koch, and F. H. Baker

The primary object of this test was to find the most desirable level of protein supplementation for wintering steer calves on dry bluestem pasture that are to be sold off summer grass as stocker or feeder yearlings.

Experimental Procedure

Three 10-head lots of good-quality Hereford steer calves were used in this study each year. The animals remained on bluestem pasture both winter and summer.

Respective lots were fed the below indicated supplements during the winter:

Lot 1—1 pound of soybean pellets per head daily.
Lot 2—2 pounds of soybean pellets per head daily.
Lot 3—1 pound of soybean pellets and 1 pound of ground corn per head daily.

Salt was available to the steers at all times. A bonemeal and salt mixture was offered free choice during the winter for the first two trials. In the third test, six of the steers in each lot were implanted with 36 mgs. of stilbestrol. The stilbestrol phase of the study is reported elsewhere.

Observations

Some additional gain was obtained by increasing the supplemental feed level from 1 to 2 pounds per head daily. For the combined winter and summer periods an additional 128 pounds of soybean pellets fed per animal to lot 2 produced 28 pounds of gain per steer compared with lot 1. In lot 3, 128 pounds of corn produced 20 pounds more gain per animal compared with lot 1 where only 1 pound of soybean pellets was fed per head daily.

Although the differences were not large, there appears to be some advantage to increasing the supplemental level from 1 to 2 pounds per head daily. One pound of soybean pellets and 1 pound of corn produced about the same gain as 2 pounds of soybean pellets per head daily in this summary. This is the case in two of the three years tested. Apparently 1 pound of soybean pellets per head daily comes close to meeting the calves' protein needs when combined with an energy feed such as corn.

Table 21

Three-Year Summary—Level of Winter Supplementation for Steer Calves Both Winter and Summer Grazed on Bluestem Pastures, 1952-53, 1954-55, 1955-56.

Phase 1—Wintering—125.7 days.

Lot number	1	2	3
Number of steers	10	10	10
Initial wt. per steer, lbs.	505	508	507
Final wt. per steer, lbs.	551	584	572
Gain per steer, lbs.	46	76	65
Daily gain per steer	.37	.52	.60
Daily ration per steer, lbs.:			
Soybean pellets	1.00	2.00	1.00
Ground corn			1.00
Prairie and alfalfa hay[1]	1.47	1.44	1.44
Dry bluestem pasture	Free choice		Free choice
Salt	Free choice		Free choice
Feed cost per steer[2]	$10.25	$14.63	$13.91

Table 21 (Continued).

Phase 2—Grazing, April to August—109.3 days.			
Initial wt. per steer, lbs.	551	584	572
Final wt. per steer, lbs.	757	788	779
Gain per steer, lbs.	206	204	207
Daily gain per steer, lbs.	1.88	1.87	1.89
Feed cost per steer[2]	$16.00	$16.00	$16.00
Summary of Phases 1 and 2—235 days.			
Initial wt. per steer, lbs.	505	508	507
Final wt. per steer, lbs.	757	788	779
Gain per steer, lbs.	252	280	272
Daily gain per steer, lbs.	1.07	1.19	1.16
Feed cost per steer	$25.25	$30.63	$29.19
Feed cost per 100 lbs. gain[2]	$10.02	$10.94	$11.00

1. Hay was fed only when snow covered the grass.

2. The feed prices used are those inside the back cover; $1 per steer was charged for salt and mineral.

Self-Feeding Urea Molasses and the Feeding of Aureomycin to Steer Calves Wintered on Bluestem Pasture, 1956-57 (Project 253-1).

E. F. Smith, B. A. Koch, D. Richardson, R. F. Cox

In this study a self-fed, urea-molasses mixture is being compared to molasses self-fed plus 1.3 pounds of soybean meal in an effort to determine if a urea-molasses mixture self-fed on dry grass will serve as an adequate source of protein and energy.

Another phase of the experiment is to determine if aureomycin will improve the performance of calves wintered outside exposed to the hazards of winter weather.

Experimental Procedure

The steer calves used in the study originated in the vicinity of Santa Rosa and Melrose, N.M. They were allotted to their treatments on the basis of weight. The calves in lots 12 and 12A were wintered together in a 190-acre bluestem pasture and separated each morning to be fed. The calves in lot 7 were in a 60-acre pasture, as were those in lot 15.

Lot 12 should be compared with lot 12A, which received aureomycin in the form of Aurofac 2A. The Aurofac 2A was mixed with the soybean meal so as to furnish 45 mgs. of aureomycin per calf daily.

Lot 7 should be compared with lot 15. The molasses in lots 7 and 15 was self-fed with no attempt to regulate consumption. The urea-molasses mixture fed to lot 15 contained 77 percent molasses, 3 percent phosphoric acid, and a 20 percent urea solution which was one half urea and one half water. The molasses fed to lot 7 contained 3 percent phosphoric acid.

Observations

Aureomycin added to the ration of lot 12A increased the gain slightly as compared with lot 12.

Molasses fed to lot 7 was more palatable than the urea molasses fed to lot 15. The soybean meal and extra molasses consumed by lot 7 increased the gain of that lot by 87 pounds per head over lot 15 self-fed a urea-molasses mixture.

The protein or protein equivalent consumed in the supplemental feed by the two lots was about the same for each lot.

Apparently some additional source of protein other than that found in dry bluestem pasture and urea is necessary for calves.

Table 22

Self-Feeding Urea Molasses and the Feeding of Aureomycin to Steer Calves Wintered on Bluestem Pasture. Compare Lot 12 with 12A and Lot 7 with 15.

December 11, 1956, to March 30, 1957—109 days.

Lot number	12	12A	7	15
Treatment	No aureomycin	Aureomycin	Molasses and soybean meal	Urea molasses
Number steers per lot	10	10	10	10
Initial wt. per steer, lbs.	433	432	435	435
Final wt. per steer, lbs.	514	526	534	447
Gain per steer, lbs.	81	94	99	12
Daily gain per steer, lbs.	.74	.86	.91	.11
Daily ration per steer, lbs.:				
Soybean meal	1.0	1.0	1.3	
Ground milo grain	4.6	4.6		
Aureomycin, mgs.		45 mgs.		
Molasses, self-fed			4.0	
10% urea molasses, self-fed				2.6
Dry bluestem pasture	Free choice		Free choice	
Salt	Free choice		Free choice	
Feed cost per steer*	$19.35	$20.03	$22.05	$14.93

* Feed prices for 1956-57 are inside back cover of this circular. $1 per steer was charged for salt; $0.50 per pound for Aurofac 2A; and $85 per ton for the urea-molasses mixture.

Level of Winter Protein Supplementation for Steer Calves Both Wintered and Summer Grazed on Bluestem Pasture, 1955-56 (Project 253).

E. F. Smith, B. A. Koch, R. F. Cox, and G. L. Walker

This is the third trial of this experiment. In addition to this year's test, a three-year summary is included in this circular. The test is designed to study the level of protein supplementation most desirable for wintering steer calves on dry bluestem pasture that are to be sold off summer grass as stocker or feeder yearlings. Results of this test are measured primarily by the combined winter and summer performance of the steers.

Experimental Procedure

Thirty good-quality Hereford steer calves purchased from the Williams Ranches near Lovington, N.M., were used in the test. They were the heaviest steer calves of 256 purchased. They were divided on the basis of weight into three lots of 10 calves each and grazed together on a 190-acre bluestem pasture during the winter. Each morning they were gathered and divided into three feeding pens to receive their supplements. The treatment assigned to each lot was as follows:

Lot 12A—1 pound of soybean pellets per head daily.
Lot 12B—2 pounds of soybean pellets per head daily.
Lot 12C—1 pound of soybean pellets and 1 pound of corn per head daily.

All of the steers were grazed together during the summer on bluestem pasture.

Six of the steers in each lot were implanted at the start of the test with 36 mgs. of stilbestrol. The results of this treatment are included in another report found in this publication.

Observations

On the basis of gain, apparently 1 pound of soybean pellets does not furnish sufficient protein for steer calves wintered on dry bluestem pasture. The steers in lot 12B gained slightly more in the winter and 29 pounds more year-long when fed 2 pounds of soybean pellets as compared