they would grade top-good to low-choice. Although gains were disappointing, the results show no significant difference between the mixtures fed in time required to reach slaughter grade, daily gains or carcass grade and yield. Daily feed consumption declined as the concentrate in the ration increased, so that T.D.N. intake was approximately the same for all lots. The data indicate that concentrate-to-roughage ratios in fattening rations for calves can vary widely, with essentially equal results.

The Value of Dehydrated Alfalfa Meal and Molasses in Supplements for Wintering Weanling Calves

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Recent studies with beef cattle supplements have emphasized the feeding of rations which contain the proper balance of the various nutrients. There are suggestions that dehydrated alfalfa meal may have value other than as a source of known nutrients. Molasses may have value above that resulting from added energy or possible increased palatability of the ration. The addition of these components to fattening rations is being extensively studied but little information is available concerning their use in wintering rations. Their use in wintering rations in this area would ordinarily be restricted to their addition to pelleted supplements.

The data reported here are the results of the fourth trial of a study of the value of adding dehydrated alfalfa meal and cane molasses to a wintering ration containing mature, weathered native grass hay as the roughage.

Procedure

Thirty grade, Hereford calves were divided into 3 lots on November 15, 1956. There were six steers and four heifers per lot. All calves were fed the poor-quality hay, free-choice. This hay had been cut from native grass pastures in early November, was relatively coarse textured and was lower in content of protein and phosphorus than prairie hay cut from a similar area in July. Much of the roughage was growth from previous summers. The hay had no apparent green coloring.

In addition to the low-quality hay, the calves had access to a mineral mixture of two parts salt and one part steamed bone meal and were fed an average of two lbs. of protein supplement per head daily. The pelleted supplements contained approximately equal amounts of protein (Table 1) and the ingredients were fed to the various lots as follows:

Lot 1. 1.5 lbs. cottonseed meal, 0.5 lb. corn.

Lot 2. 1.35 lbs. cottonseed meal, 0.15 lb. corn, 0.5 lb. dehydrated alfalfa meal.

Lot 3. 1.6 lbs. cottonseed meal, 0.3 lb. corn, 0.1 lb. cane molasses.

Table 1.—Chemical composition of feeds.

	Percent Dry Matter	Percentage composition of dry matter					
		Ash	Protein	Fat	Fiber	N.F.E.	Ca	P
CSM-Corn	91.65	5.80	37.37	3.81	10.78	42.24	0.23	0.51
CSM-Corn-Dhy. Alfalfa Meal	92.07	7.22	35.84	3.58	14.74	38.62	0.55	0.44
CSM-Corn-Molasses	92.99	5.57	36.63	2.74	12.88	42.18	0.18	0.87
Weathered hay	91.90	7.18	3.72	1.53	37.92	49.65	0.35	0.04

All feeds were fed every other day. A considerable quantity of the hay was wasted but no estimates of this waste were made.

Results

A summary of the results is given in Table 2. In the 133-day wintering period the average gain of the calves was approximately the same, 2, 4, and -4 lbs. for the calves in Lots 1, 2, and 3, respectively This would indicate that there was no practical value of adding dehydrated alfalfa meal or cane molasses to the supplemental feed of calves fed poor-quality hay, hay that was of much lower feeding value than good-quality prairie hay.

Table 2.—Dehydrated alfalfa meal and molasses in supplements for wintering calves (133 days).

	Lot 1 Corn, CSM	Lot 2 Dehydrated alfalfa meal Corn, CSM	Lot 3 Corn, CSM Molasses
Average weight per calf (lbs.)			
Initial 11-15-56	381	380	382
Final 3-28-57	383	384	378
Gain	2	4	—4
Average daily ration (lbs.)			
Weathered hay[1]	10.0	10.0	10.0
Protein supplement	2.0	2.0	2.0
Mineral mixture	.04	.04	.04
Winter feed cost[2] ($)	22.83	22.98	22.78

[1] An equal amount of roughage was fed to each lot. There was considerable wastage of this poor quality hay. This weathered hay was valued at $20 per ton.
[2] Pellets cost $70.76, $71.88 and $70.40 per ton in Lots 1, 2, and 3, respectively.

The average gains of calves fed the three different pellets in each of four years are given in Table 3. During the first three years there was a consistent difference, although not great in some instances, in favor of adding dehydrated alfalfa meal or cane molasses to the ration. The 4-year average gains were 4, 15, and 19 lbs. for the simple pellet, the pellet containing dehydrated alfalfa meal, and the pellet containing cane molasses, respectively.

These results indicate that the inclusion of dehydrated alfalfa meal or molasses in a pellet to be fed as a supplement to weathered hay could be recommended. The nutrients furnished by dehydrated alfalfa meal

Table 3.—Dehydrated alfalfa meal and molasses in supplements for wintering calves (4-year ave.).

	Lot 1 Corn, CSM	Lot 2 Corn, CSM Dehydrated alfalfa meal	Lot 3 Corn, CSM Molasses
Total number of Calves	40	40	40
Average weight per calf (lbs.)			
Initial	422	420	420
Final	426	435	439
Gain (ave. 118 days)	4	15	19

and molasses are more likely to be present in prairie hay or the dry forage available in a native grass pasture during the winter months than in the weathered hay fed in our tests.

Although conclusive data are not available, it might be assumed that the addition of dehydrated alfalfa meal or molasses to pellets fed as supplements to higher quality roughages such as prairie hay is not as valuable as when the addition is made to pellets fed as supplements to poor-quality, weathered hay.

The Response of Dwarf Carrier and Normal Beef Cattle to Insulin Induced Stress

E. J. TURMAN

Although dwarf individuals have been observed in practically all species since ancient times, their occurrence was sporatic and usually regarded as a curiosity. In contrast, dwarfism in beef cattle has shown a sharp increase within the last decade, and has become a serious economic problem. Not only does the dwarf calf represent the loss of a cow's production for the year, but considerable stigma has been attached to animals and lines of breeding known to produce dwarf calves.

While some have suggested that non-genetic factors may be responsible, careful analysis of many records has clearly demonstrated that dwarfism in beef cattle is hereditary. The dwarf calf is homozygous for a single autosomal recessive gene. Non-dwarf calves are either homozygous for the dominant normal gene, or heterozygous and thus carriers of the recessive dwarf gene. Heterozygous animals, while apparently normal themselves, can produce dwarf offspring. Homozygous normal animals, on the other hand, cannot transmit a recessive dwarf gene, and would produce no dwarf calves regardless of the genotype of the animal to which they were mated.

The problem facing the breeder has been the identification of the carrier animals among his normal individuals. To date his only method has been the mating of animals of unknown genotype to animals known to carry the dwarf gene. Such progeny tests will either prove an animal a carrier if a dwarf calf is born, or make the odds against his being a