

Table 2. Effects of farm of origin on transit weight losses and effects of post-shipment diet on gains and feed intake during the first 21-day period post-shipment

Farm of origin	Weight losses (%)	Body weight gain (lb)			Feed intake (lb/head/day)		
		C	HK	PP	C	HK	PP
1	7.58	42.89	79.84	63.65	10.7	11.1	10.3
2	7.94	68.53	73.65	33.49	11.2	11.6	9.9
3	7.10	51.56	69.76	58.16	10.9	11.1	10.3
4	7.10	75.21	87.92	71.23	11.2	11.6	10.8
5	8.58	69.32	80.93	73.71	11.1	11.5	10.7
6	7.17	48.48	65.97	48.07	10.4	11.6	10.2
7	9.95	57.74	53.19	47.98	10.6	11.1	10.2
8	6.07	54.85	88.51	71.32	10.5	11.4	10.6
9	5.66	50.07	58.78	66.34	10.8	10.5	10.1
X	7.46	57.7	73.1	59.4	10.8	11.3	10.3

the FO's, no response in one and a negative response in calves from three FO's. The response to the PP diet was more dependent upon FO than were the responses to other diets. The percentage of animals treated for respiratory disease ranged from 20 to 65 percent, depending upon FO.

During assembly and transportation, calves use body stores of energy and protein. The rumen, which contains the microorganisms for protein synthesis and the release of energy from feedstuffs, may not be able to meet the needs of the recently stressed calf. The usually low feed intakes during the first 2 or 3 weeks in the new environment compound the nutritional problem. Feed dry-matter intakes for the first 21 days post-shipment for the study are presented in Table 2. FO did not significantly affect intake, but diet did. Intakes were higher for calves fed the HK diet than for those fed either the C or PP diet. Average daily consumption of the HK diet was higher than the other two diets, and feed efficiency was improved by 22 percent over the control group. Thus, the HK diet not only improved gains but also increased intake and improved feed efficiency. Calves fed the PP diet consumed .5 lb less feed/head/day than the C calves and feed efficiency was improved by 7 percent as compared to the C calves.

Weight Changes During Transportation of Stocker Calves

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Story in Brief

Sixty-four stocker calves weighing an average of 621 lb were used to determine the effect of transportation (250 miles) and pre-shipment diet on body weight changes and blood constituents. Feed and water deprivation alone accounted for 63 percent of the

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weight losses noted during transit. Transit resulted in an additional 1.42 percent loss (2.44 vs. 3.86 percent) in pre-shipment body weight. Although consumption of the pre-shipment diet was low (1.8 lb/head), the diet significantly decreased weight loss during transit. The fact that transit elevated rectal temperature by 1° F showed that transported calves have a higher normal temperature upon arrival than calves not transported. Post-shipment feedlot performance was not particularly affected by any treatment. Thus, feeding a high density (over 60 percent Total Digestible Nutrients) diet before shipment can reduce the amount of body shrink in short haul (250 miles) stocker calves.

Introduction

Each spring a large number of heavy stocker calves that have been grazing winter pasture are shipped to finishing lots. Morbidity and mortality of these stockers is usually low because of their large size, age, previous exposure to viral and bacterial agents and immunization. The greatest loss as a result of shipping is body weight. The objective of this experiment was to determine the amount of shrinkage due to feed and water deprivation and that due to transit. A pre-shipment diet was also evaluated in terms of its ability to reduce shrinkage.

Experimental Procedure

Sixty-four yearling steers that had previously grazed winter wheat pasture for 100 days were assigned to one of three treatment groups. Assignment was based on body weight and breed. Average weight of the steers was 621 lb. Treatments were as follows: 1) "assembled but not transported" (22 of the 64 steers were removed from wheat pasture to the assembly point and housed in an outside pen without feed and water while other cattle were being transported; 2) "assembled and transported" (21 of the 64 steers were assembled with group 1 steers but transported 250 miles); 3) "assembled, fed and transported" (21 steers were assembled and fed on an experimental diet of 32 percent alfalfa pellets, 32 percent cottonseed hulls, 32 percent shelled corn and 4 percent formaldehyde-treated soybean meal, and then transported).

Calves in Treatment Groups 2 and 3 were transported 250 miles on a single deck livestock trailer. Departure and arrival points were both at the location of Treatment Group 1. Blood samples were collected, and rectal temperature and body weights were determined before and after shipment. After arrival, all groups were placed in a feedlot and fed a finishing ration.

The 64 calves had originated from four cow-calf farms, and these farms served as blocks. Data were analyzed as a randomized block with multiple observations.

Results and Discussion

Calves in Group 3 were allowed 3 hours before shipment to consume the experimental diet, but consumption was low (1.8 lb/head). It is important to note that these calves were not accustomed to eating from a trough. The soybean meal in the experimental ration was treated with 0.5 percent formaldehyde to create a rumen bypass protein. There was no odor of formaldehyde on the ration, and formaldehyde probably did not affect intake.

Weight losses as a result of water and food deprivation amounted to only 2.44 percent of the pre-shipment weight (Table 1). With the additional stress of transportation added to that of fasting, an additional 1.42 percent body weight loss was noted when Groups 1 and 2 were compared. Although consumption was low, the pre-shipment diet reduced the amount of weight lost during transportation (2.94 percent vs. 3.86 percent). Weight gains after shipping are presented in Table 1. These were

Table 1. Effects of transit and feeding prior to transit

Parameter	Treatment groups ^a		
	1	2	3
Weight Lost (%)	2.44 ^b	3.86 ^c	2.94 ^b
Weight gain (lb)			
28 days	119.5	122.4	119.2
56 days	210.0	223.1	221.8
Rectal temperature (F)			
Pre-shipment	102.5	102.7	102.5
Post-shipment	102.1 ^b	102.9 ^c	103.2 ^c
Packed cell volume (%) ^d			
Pre-shipment	40.7	41.1	41.9
Post-shipment	43.5	43.3	44.2

^aGroup 1 - assembled, not transported. Group 2 - assembled and transported. Group 3 - assembled, fed and transported.

^{b,c}Means in the same row with different superscripts are significantly different ($P < .01$).

^d Amount of red blood cells as percentage of total blood.

calculated using arrival weight and a weight at 28 and 56 days, at which times calves were removed from water for 16 hours. Total weight gains at 28 and 56 days were not affected by any treatment, but calves in Group 3 were slightly heavier than those in Group 2 because they had less weight loss during transit and yet gained an equal amount in the feedlot. As expected, rectal temperatures were not different among the three groups before shipment, but were significantly elevated as the result of shipping 250 miles. Health status was not altered during the 5-hour transportation phase, but the stress of shipping elicited an increase in body temperature. Thus, the normal temperature was 1° F higher in calves that were shipped than in calves subjected to the same period of fasting without being shipped.

Packed cell volume (PCV) shows the amount of red blood cells as a percentage of the total blood. As the body loses water, the percentage of red blood cells or PCV will increase. Average PCV before the transportation phase was 41.2 percent and was not different among the treatment groups. Post-shipment PCV was not significantly affected by treatment but was higher than pre-shipment PCV. These results show that body water losses were the same among treatment groups and were the result of water and feed deprivations. An additional weight loss noted in Group 2 steers must have been either from the body mass or the gut fill. The pre-shipment diet could have reduced total weight losses by preventing the mobilization of body stores. The effect of feeding a pre-shipment diet or of transit on morbidity could not be determined in the study because no animals got sick or died.

Steer Weight Gains on Midland and Hardie Bermudagrass Pastures

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Story in Brief

A grazing trial with steers on four bermudagrass varieties (Midland, Hardie, Oklan and SS-16) began in 1977. Winter death loss of Oklan and SS-16 was so severe in 1979 that these two varieties were deemed unsuitable, and tests on them were discon-