1-1-1971

Out-wintering steers

G. C. Anderson

L. P. Stevens

Bulletin 603
June 1971

Out-Wintering Steers

West Virginia University
Agricultural Experiment Station

THE AUTHORS

G. C. Anderson is Animal Husbandman; L. P. Stevens is in charge of Reedsville Experiment Farm.

West Virginia University
Agricultural Experiment Station
College of Agriculture and Forestry
A. H. VanLandingham, Director
Morgantown

OUT-WINTERING STEERS

G. C. ANDERSON and L. P. STEVENS

The purpose of this bulletin is to describe a management system developed for wintering steers with a minimum of shelter. Many aspects of the system are not unusual and are commonly followed, whereas others represent innovations which may be of value. The system was planned to develop yearlings for grazing, while keeping feed, shelter, and labor at a minimum.

Wintering Area[1]

A wooded area of about 15 acres was used. The primary exposure is northeastern and the area is protected from the prevailing westerly winds by a ridge and a tree-covered knoll. Approximately one-quarter of the area is in a conifer plantation, composed of 80 per cent red pine and 20 per cent white pine. These trees were planted on a five-foot spacing and are 15 to 20 feet tall. The remaining three-quarters of the area is in second growth hardwood, and has some slash left from timber harvesting.

Soil of the area is shallow, stony, and well-drained. Mud was not a serious problem and the road through the area provided easy access (Figure 1).

A wide variation in winter temperature is characteristic of the area with fluctuations of -12° to 65° F being common from December through February. Representative precipitation and temperature records are presented in Table 1.

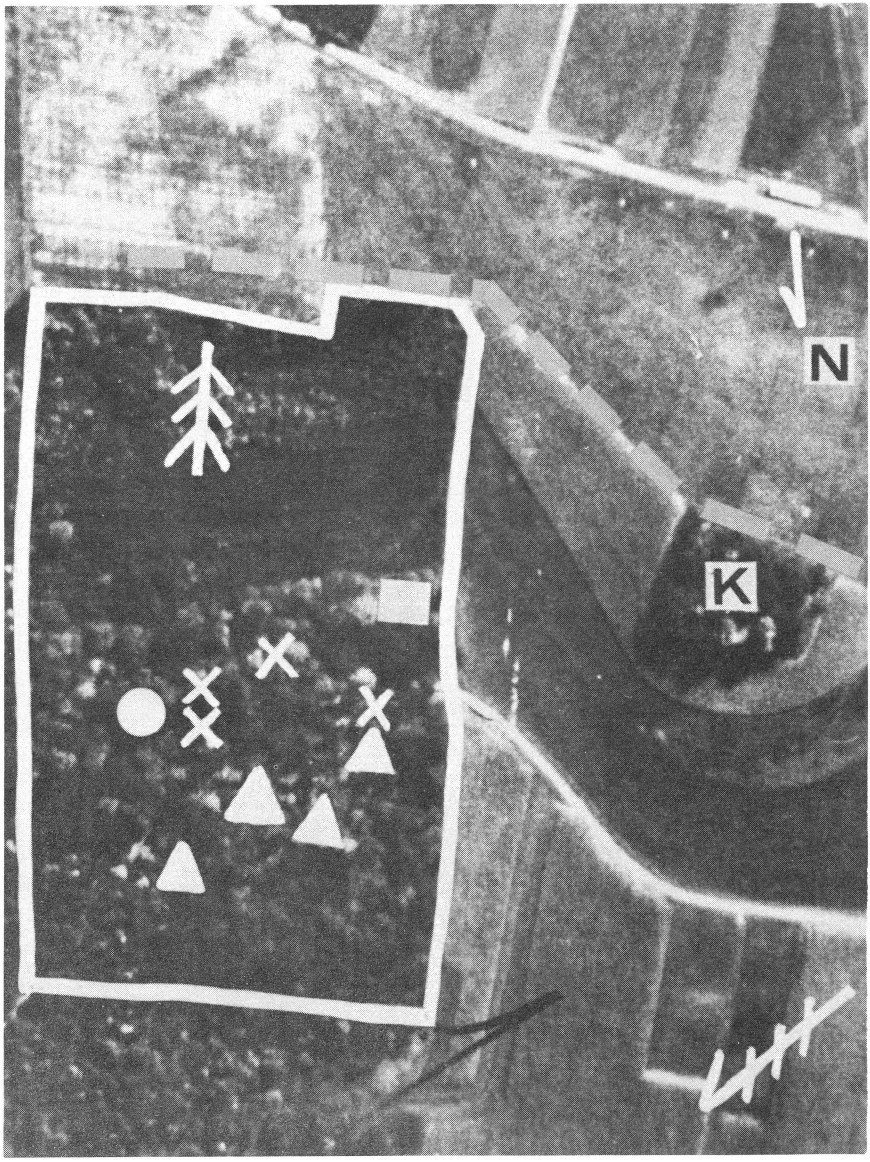
Feeding and Management

Conditioning for the wintering period is an important item in this system. Poor performance due to ill health and poor feed utilization can substantially reduce or eliminate potential profits. The likelihood of such losses occurring can be eliminated or greatly reduced. To this end, the following conditioning program was followed: Upon arrival the steers were given an intramuscular injection of antibiotic and vitamins A, D and E[2] as preventive measures against pulmonary disease and hemorrhagic septicemia. Control of internal and external parasites was obtained by giving each steer an 18 gm. bolus of Thibenzole and a pour on treatment of Co-Ral (1968) or Neguvon (1969).[3]

[1]Reedsville, Preston County, West Virginia.

[2]Antibiotic 10 c.c. per animal. Each c.c. contained 200,000 I.U. procaine penicillin G. and the equivalent of 0.25 gm. dihydrostreptomycin. Vitamin preparation provided 200,000 I.U. of vitamin A, 20,000 I.U. of vitamin D2, and 48 I.U. of vitamin E per c.c. 2.5 c.c. were given per animal.

[3]Co-Ral, four per cent solution, administered one-half fluid ounce per hundredweight. Neguvon, eight per cent active ingredient, one-half fluid ounce per hundredweight with maximum of four ounces per animal. The average application was three ounces.



Prevailing Winds
Conifer Plantation
□ Corral
K Knoll
---- 1900 feet elevation ridge

0 Water Trough
△ Location of hay feeders 1968-69
X Location of hay feeders 1969-70

FIGURE 1. Aerial photograph of wintering area.

TABLE 1
Characteristics of Reedsville Winter Climate[1]

Month/Year		Temperature Maximum °F	Temperature Minimum °F	Total Precipitation Acre (Inches)	Total Snow (Inches)	Maximum Snow Cover (Inches)	No. Days Snow Cover
November	69	64	9	3.31	9.5	6	7
December	69	46	-4	6.28	23.5	15	19
January	70	59	-12	2.54	20.2	13	27
February	70	62	-7	2.98	12.0	3	10
March	70	65	7	5.15	13.0	5	7

[1]Elevation 1,800 feet.

TABLE 2
Composition of Supplement[1]

Ingredient	Percentage	Pounds per Ton
Finely ground corn	85	1,700
Soybean Meal 44%	5	100
Urea, Feeding Grade[2]	5	100
Dicalcium Phosphate	3	60
Trace Mineralized Salt	2	40

[1]20 per cent crude protein. Cost per ton $74.55 (based on following costs: Ground corn, $68.00; soybean meal, $112.50; feeding urea, $115.00 per ton. Dicalcium phosphate, $5.75 and trace mineralized salt, $3.25 per hundredweight.)

[2]Urea is not palatable and this level is high enough to affect intake.

Grass hay harvested in early June was provided in racks[4] once daily (Figure 2). The base feeding rate was 2.0 pounds per hundred pounds of body weight. The amount fed above this base was adjusted in keeping with changes in temperature. When the temperature was in the range of 20° to 0° F the level of feeding was increased to 2.25 pounds, and when temperatures fell below 0° F the level was increased to 2.5 pounds per hundred pounds of liveweight. These levels were equivalent to a full feeding.

In keeping with the intended use of the steers a weight gain of 0.75 to 1.00 pound per day was desired. Such a level of performance usually cannot be supported by grass hay unless a supplementary source of energy with some protein is provided. A low cost supplement based on ground corn and urea was designed to provide these nutrients (Table 2). The palatability of this

[4]Three racks were provided, each with places for 20 head.

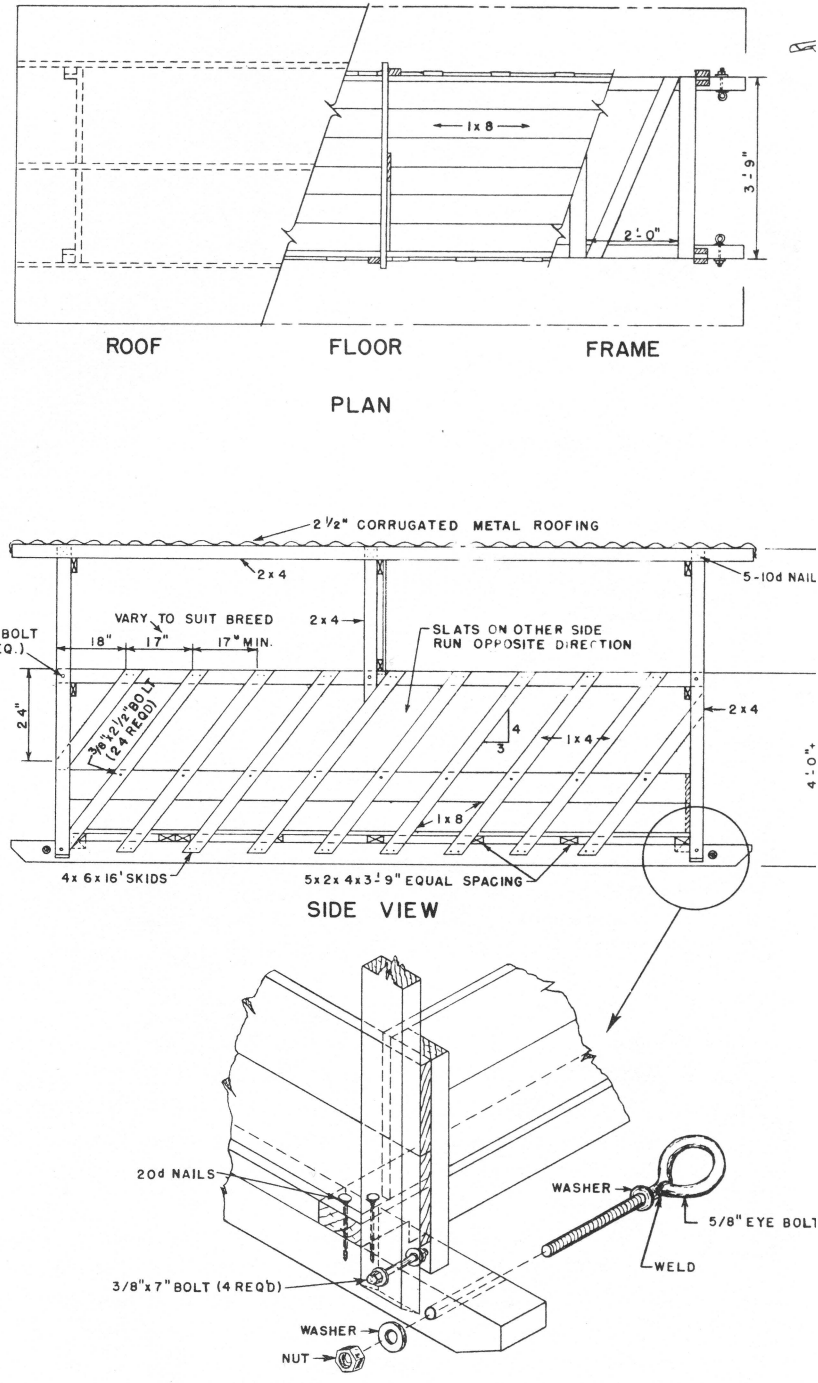
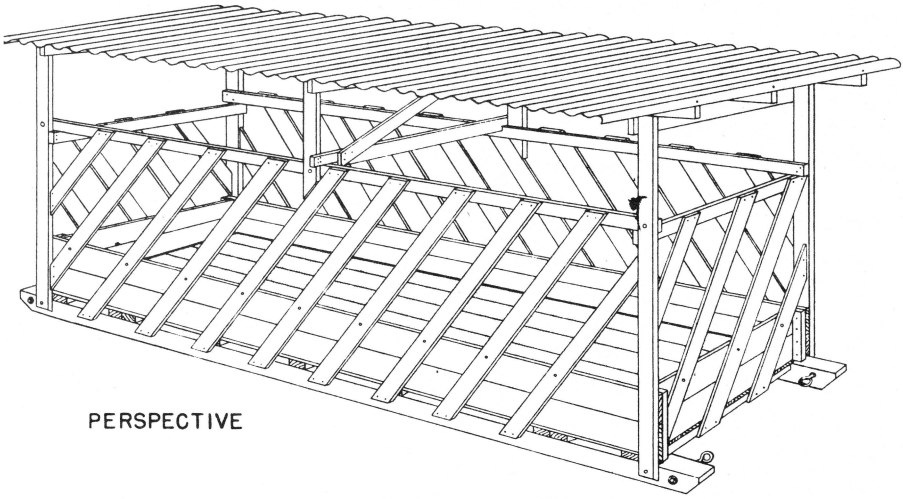
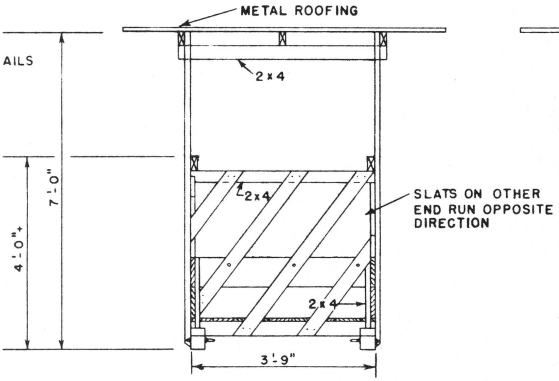


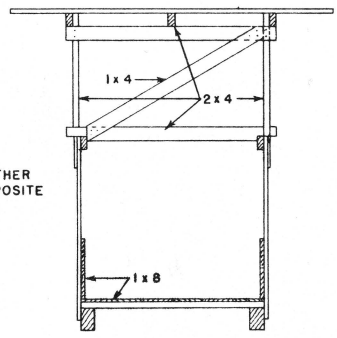
FIGURE 2. Cattle



PERSPECTIVE



END VIEW



CROSS SECTION

NOTES:

ALL WOOD TO BE PRESSURE TREATED WITH PENTACHLOROPHENOL

NAILS AND BOLTS SHOULD BE GALVANIZED

8d NAILS USED FOR SLATS SIDES AND FLOOR

MATERIAL LIST:

OLTS

13- 1"x 4"x 10'- SLATS AND BRACES
1- 4"x 4"x 8'- SPREADERS
2- 4"x 6"x 16'- SKIDS
11- 1"x 8"x 14'- BUNK
4- 2"x 4"x 16'
5- 2"x 4"x 14'
3- 2"x 4"x 8'

SCALE: 1/2" = 1'-0" UNLESS OTHERWISE INDICATED.

HARDWARE:

8-SHEETS 2 1/2" CORRUGATED METAL - 7' LONG ROOFING NAILS
8d - 5 LB.
10d - 1 LB.
20d - 1 LB.
24- 3/8" x 2 1/2" BOLTS.
4- 3/8" x 7" BOLTS.
6- 3/8" x 5" BOLTS.
4- EYE BOLTS 5/8"

COOPERATIVE EXTENSION WORK IN
AGRICULTURE AND HOME ECONOMICS
WEST VIRGINIA UNIVERSITY
AND
UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

CATTLE FEEDING RACK
FOR HAY & SILAGE

USDA '61	EX. 5925	SHEET 1 OF 1

tle feeding rack.

supplement was planned to be low so that cattle would eat it slowly over the entire day. Consumption of small amounts on several occasions during the day makes the nutrients of the supplement available to the rumen microorganisms in keeping with their ability to use them, thus providing a more thorough digestion of the hay. Another reason for restricting the palatability of the supplement was to insure that the timid animals would be able to obtain their share. When first offered the supplement, the steers required about five days before they would fully accept it. A similar length of time was required for adjustment with each scheduled increase in the amount of supplement offered (Figure 3).

In practice the supplement was placed in a feeder at about 9:00 a.m. About one-third to one-half of the total would be eaten in the next 45 minutes. The remainder would be sampled during the rest of the day so that by evening or the next morning all would have been eaten.

The level of supplement feeding was scheduled as follows:

Days on Feed	*Pounds per Head per Day*
0-30	1.5
31-60	2.0
61-120	2.5
120 to end	3.0

FIGURE 3. By lowering palatibility, consumption of the forage supplement was spread out over the day and provided each animal ample opportunity to consume its share.

A mineral mixture composed of equal parts of salt and steamed bone meal or dicalcium phosphate was self-fed. Watering problems commonly experienced with sub-zero temperatures were avoided by equipping a standard concrete trough with a circulating device (Figure 4).

The amount of feed used in wintering steers under this system is given in Table 3. Three different grass hays were fed each winter in the following sequence: bluegrass, fescue, orchardgrass. Observations during the 1968-69 winter verified the reputation of fescue for being relatively unpalatable. Although wastage did not exceed an estimated one per cent, the amount of fescue pulled out of the feeders during the 1968-69 winter was considered to be excessive and the intake less than desired.

Standard practice in harvesting these grasses has been to cut as early as possible, usually in early June, and to harvest bluegrass first and the orchardgrass last. In view of the results of the 1968-69 wintering a change in this schedule was made so that fescue was cut first in the 1969 harvest. Results were as expected. The intake of fescue during the 1969-70 wintering was 2.1 pounds per hundred pounds of bodyweight. The corresponding intake rate for 1968-69 was 1.7 pounds per hundred pounds of bodyweight.

Areas selected for bedding were influenced to a marked extent by the location of the hay racks. The racks were moved at least once during each winter and with each change in location an associated change in bedding area would follow, although the previously used area was not completely abandoned.

FIGURE 4. The anti-freeze device used in this trough prevented freezing during the lowest temperatures. This photograph was taken during a period of -10° F. (Details concerning this circulating device can be obtained from the authors.)

TABLE 3
Feed Consumption

Year	No. of Days	Feed per Steer			
		Hay		Supplement	
		Daily	Total	Daily	Total
		lbs.			
1968-69	147	10.8	1587	2.1	309
1969-70	162	12.9	2090	2.6	414

During the first winter the first location of the hay racks was on a rather exposed ridge. While the racks were in this position the steers bedded down behind nearby snags, clumps of brush, or old logs. When the racks were shifted to another area which provided somewhat more shelter the steers not only changed their bedding area but also dispersed.

A 20-year-old plantation of red and white pine on a northern slope was next to the second location but the steers did not use the plantation for protection or resting. However, during the 1969-70 winter, with the hay bunks in the same area, the plantation was heavily used. A very marked preference for the red pine area was demonstrated. In fact, the white pine area was never used for a bedding. The amount of snow beneath the white pines was greater and the depth of needles was less than under the red pines. Interestingly, the steers bedded down in groups of three to five around the base of a tree and used the same beds repeatedly.

This system of out-wintering in a wooded area has resulted in a very satisfactory performance as shown in Table 4. Its primary advantages are (1) costs associated with buildings are eliminated, (2) concentrations of manure do not occur and costs of removal and distribution are eliminated, (3) likelihood of diseases commonly occurring as a result of concentration is reduced, (4) investment in labor is low.

TABLE 4
Performance of Steers

Year	No. Days[1] Fed	No. Steers[2]	Average Bodyweight		Average Gain/Steer	
			Beginning	Ending	Total	Daily
1968-69	147	40	475	590	115	0.78
1969-70	162	25	540	720	180	1.1

[1]In 1968-69, beginning Nov. 21 and ending April 17.
In 1969-70, beginning Nov. 4 and ending April 15.

[2]1968-69 steers were Herefords, those in 1969-70 were Charolais X Hereford.

On the other hand, only one major disadvantage is apparent: the area to be used must in effect be sacrificed for it is expected that with regular use tree growth will be greatly reduced and the undergrowth will be eliminated. The area used in these trials has a very low site index and has little value for timber production.

Major requirements of an area for out-wintering are: (1) all-weather road access to and within the area, (2) rolling type of topography to provide a variety of protected areas with a general southerly exposure, (3) brush or wooded area to provide windbreak, (4) a suitable holding yard, chute, head gate, and loading ramp.

Blank Page in Original Bulletin