

Sudan Pasturage for Beef Production



*"The nearer the bone, the sweeter the meat—
The nearer the ground, the sweeter the grass."
(An Old Scotch Adage)*

Issued by
The Extension Service
Agricultural and Mechanical College of Texas and
The United States Department of Agriculture
H. H. Williamson, Director, College Station, Texas

[Blank Page in Original Bulletin]

Sudan Pasturage for Beef Production

By
George W. Barnes and A. L. Smith, Extension Animal Husbandmen
in collaboration with
John H. Jones, Experiment Station Animal Husbandman

The plan of production presented here suggests the purchase of high grade feeder steer calves of weaning age in the fall, winter feeding them to make good gain, and continuing with a period of sudan grazing in spring and summer and finishing with a period of dry-lot feeding. (Heifer calves may be used instead of steer calves but heifers fed for slaughter should be marketed before they become "cowy.") About one year is required to complete this operation and the method of handling permits the use of a miscellany of farm feeds, namely: the clean-up of field aftermath in the fall, the use of small grain grazing and of silage in the winter, sudan pasturage in spring and summer and use of silage, hays and fodders in the fall dry lot finishing period. Large use is made of grain feeds in the finishing period and protein supplements are fed both during the wintering and the finishing periods. Supplementary feeds may or may not be fed in addition to sudan pasturage. Sudan pasturage is only one of the various feeds to be used but in this bulletin it is given prominence.

Sudan Pasturage

Sudan for pasturage is ordinarily planted in 36 inch rows at the rate of 10 to 12 pounds of seed an acre. It can be grazed as soon as the plants have taken a foot-hold firm enough not to be pulled up when grazed. Figure 1 shows a field of sudan which is certainly far enough advanced for use.



Figure 1. Sudan ready for grazing.

When young, fresh and green, sudan grass is very palatable and high in protein. When old, dry and mature, it is much less palatable and contains about one-half as much protein as when fresh and green. Sudan is considered to be a safe grazing crop in Texas regardless of its state of growth, but it should not be grazed immediately after it has been wilted by frost.

With a given number of yearling cattle and a given acreage of sudan, there are two main problems of management. The sudan should be kept as palatable (short, fresh, and green) as possible and the steers not be allowed to run out of grazing. The acreage allowed per steer must be large enough to allow an accumulation of feed during periods favorable for growth.

When a reserve of feed has been accumulated, part of the acreage may be mowed so that new, fresh growth may form after rains. The acreage per animal required to permit this management will vary from year to year and between different localities. As an example, the practice at the Beeville Station is to allow about $1\frac{1}{3}$ acres per steer. In instances this acreage has furnished grazing for 175 days. In other instances drouth has shortened the grazing period to 70 days.

Kind of Feeders To Use

Any kind of feeder cattle may be grazed on sudan, but thin feeders make more rapid gain on sudan than fleshy



Figure 2. Thin yearling steers ready for sudan pasturage.

feeders. Records show that thin feeder yearlings of good breeding as shown in Figure 2 may make $2\frac{1}{2}$ pounds of gain per head daily for a 60 to 70 day grazing period, whereas fleshy feeders may make less than 1 pound gain per head daily in a 120 to 140 day grazing period. The flesh of the cattle at the beginning, the excellence of the grazing, and the length of the grazing period all affect the gains which may be obtained from sudan pasturage. These factors make it difficult to predict the gains which may be had from pasturage. However, $1\frac{1}{2}$ pounds gain per head daily is suggested as an average rate under most conditions.

Self-Feeding on Sudan Pasturage

Steer yearlings may be self-fed ground ear corn, cottonseed cake, or other concentrate feeds while on sudan pasturage without ill effect from scouring or "going off feed." In using the self-feeder, it is a good plan to keep feed in the feeder at all times. This will prevent over-eating which might occur if the steers should be allowed to clean out the feeder and go hungry before the feeder is refilled.

When steers are first turned on fresh, green pasturage, they will take little feed from the feeder, but as they remain on pasturage and the sudan becomes less palatable they will take increasingly large amounts. For example, a group of 755 pound yearling steers consumed an average of 6.7 pounds of cottonseed cake per head daily when self-fed during a 140 day sudan grazing period. The average daily consumption for each of the 5 28-day periods was, in order: 4.8, 4.4, 5.9, 8.5 and 9.85 pounds. Similar steers self-fed ground ear corn averaged 7.2, 8.7, 12.2, 15.6 and 17.5 pounds per head daily for the 5 respective 28-day periods and 12.3 pounds for the entire 140 days.

Feeds To Use with Sudan Pasturage

Ground ear corn and cottonseed cake have been mentioned as feeds which may be self-fed with sudan pasturage. Neither feed, if fed without the other, is to be considered as the ideal supplement to pasturage. An intelligent plan of feeding is to use both feeds in combination and to vary the percentage of each according to the state of growth and quality of the pasturage. As previously noted, sudan, when young, fresh and green, is high in protein, but when mature and dry, is low in protein. Accordingly, a mixture of about 10% cottonseed meal and 90% ground ear corn, or ground grain sorghum



Figure 3. Steers self-fed ground ear corn on sudan pasturage for 140 days.

heads, is indicated when the sudan is fresh and green. When the sudan is mature and dry a mixture of about 20% cottonseed meal and 80% ground ear corn, or ground grain sorghum heads, is indicated.

Yearlings May Be Fed to Creditable Finish While on Sudan Pasturage

Fleshy feeder yearlings, if fed on sudan pasturage for 140-160 days, may be expected to reach reasonably good market finish. Figure 3 shows a group of steers which were self-fed ground ear corn during a 140-day sudan grazing period. These steers sold for \$10.50 per cwt. delivered to the San Antonio market on September 18, 1940. Although they were not as desirable as grain finished dry-lot steers, they were quite acceptable. Similar steers self-fed cottonseed cake for the same period made the same amount of gain and brought the same price but did not grade quite as well. Other lots, one self-fed cane molasses and the other with sudan pasturage only, were not well enough finished for slaughter after 140 days and required an additional period of 56 days on a dry-lot fattening ration to reach good finish.

The steers, which had sudan grazing only, are shown in Figure 4. These steers also sold for \$10.50 per cwt. at San Antonio, but were sold on November 13, 1940. These steers, after 56 days of feeding in dry-lot, were of approximately the same grade as the steers shown in Figure 3.



Figure 4. Steers fed sudan pasturage only for 140 days. Compare with Figure 3.

Should Yearling Steers Be Fed While on Sudan Pasturage?

Concentrate feeds, supplied in addition to sudan pasturage, increase both gain and finish, but increase the cost of gain to such extent that it usually is more profitable to defer feeding until the steers are placed in dry lot. Sudan pasturage alone may produce very low cost gain. Fattening feeds are less abundant and more expensive in the spring and summer than in the fall or after crops have been harvested. These factors serve to discourage feeding on pasturage. On the other hand, concentrate feeds in addition to pasturage speed up the finishing process and permit the steers to be marketed earlier than if they were not fed. Self-feeding on pasturage saves some labor and the manure is applied directly to the fields. No hard and fast rule is suggested in regard to feeding upon pasturage. With the facts being known, the operator's judgment of conditions, after all, is the main factor in the conduct of a profitable livestock enterprise.

Year-Long Feeding Plan Making Use of Sudan Pasturage

The farm feeding and grazing plan is designed to produce 500 to 600 pounds of gain per animal and at the same time make extensive use of roughage feeds. The produc-

tion of this gain requires, in addition to judicious use of feeds, approximately one year. With these requirements, it is obvious that not just any kind of cattle are suitable.

Use Feeder Steer Calves of High Quality

Heifer calves, even though they may be obtained at lower cost than steer calves, are unsuited for long periods of feeding. They mature so rapidly they become "cowy" before a large gain can be had. Weaned steer calves of high quality should be selected because of the large gain required. There is little reason for putting this gain upon an animal of low quality when the same, or a greater gain, can be placed upon an animal of high quality at the same cost or at a lower outlay. The initial cost of the feeders, even though high on a per pound basis, does not form a prohibitive amount of the cost involved in the production of a large amount of gain, especially when the feeders are of light weight.

The Winter Feeding of Steer Calves

In carrying steer calves through the winter for use of sudan pasturage during the spring and summer, and with the expectation of marketing them as finished yearlings, it is believed that they should be fed well enough during the winter to make $1\frac{1}{2}$ to 2 pounds of gain per head daily. In the winter feeding period, which may last from November



Figure 5. Good choice quality feeder steer calves.

through April, a finish is not desired but good fleshing should be obtained. Heifer calves may be handled in a similar manner and may be expected to make satisfactory gain.

Good to choice quality feeder steer calves, as shown in Figure 5, will make about $1\frac{3}{4}$ pounds of gain per head daily if they are full fed silage and receive in addition 2 pounds of cottonseed meal, 2 pounds of ground ear corn or ground grain sorghum heads, and 0.10 pound of pulverized limestone or oyster shell per head daily.

Small grain pasturage should be used as fully as possible when it is available. With the same feed supplements and 2 to 3 pounds of dry roughage per head daily, small grain pasturage has produced larger gains than silage.

Concentrate supplements other than corn and cottonseed meal can be used and in different amounts than the allowances previously suggested. For instance, oats can be fed because it is good for growth and is often available. Three to 4 pounds of oats, 1 pound of cottonseed meal and 1 pound of ground ear corn fed per head daily from a good supplementary ration to silage or small grain pasturage. One pound of cottonseed meal and 4 pounds of cracked corn may be used if desired. One to 2 pounds of cottonseed, $\frac{1}{2}$ pound of cottonseed meal and 2 pounds of ground ear corn or ground grain sorghum heads also form a good supplementary ration.

In this type of feeding (the use of limited concentrate rations) it is important to provide adequate protein in the ration and it is good practice to feed a calcium (lime) supplement. In full feeding sweet sorghum or grain sorghum silage, about 2 pounds of cottonseed meal is required to balance the ration for weaned calves. In the case of abundant small grain pasturage, or when as much as 4 pounds of alfalfa or other legume hay is fed per head daily, 1 pound of cottonseed meal is sufficient.

There are several good reasons for feeding to make good gains during the winter. Calves make efficient use of their feeds. If the calves do not make 250 to 300 pounds gain during the winter or in the period between the last of the fall grazing and the start of spring grazing, a 950 to 1,000 pound yearling cannot be marketed the next fall. The farm is not a place to merely hold cattle.

After the calves have been purchased in the fall and have been winter fed, drouth may cut sudan pasturage short or the pasturage may not materialize. If this occurs and if

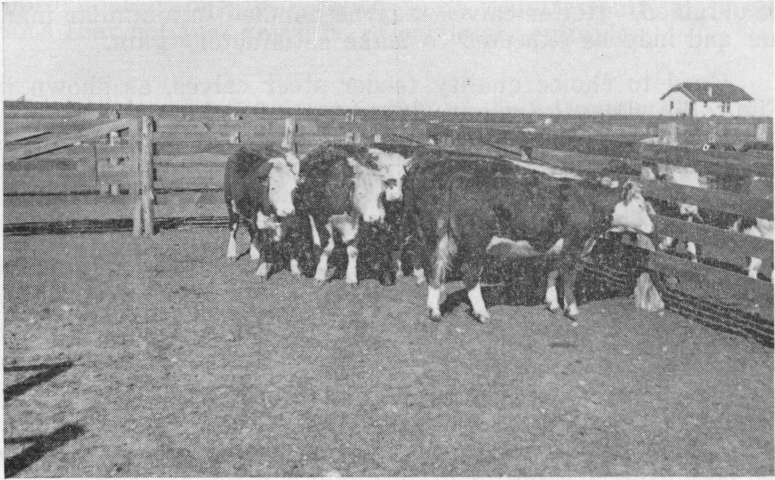


Figure 6. Steer yearlings which received 2 pounds of cottonseed meal, 2 pounds of ground ear corn and a lime supplement in addition to a full feed of sorghum silage during a 209 day wintering period.

the calves have been well fed during the winter and are fleshy, as shown in Figure 6, the owner has more than one course of procedure. First, they can be placed on a concentrate fattening ration in dry lot and can be finished in about 140 days; second, they can be sold as fleshy feeders, and third, they can be sold as lightly fleshed slaughter steers. Steer yearlings of high quality seldom fail to find a buyer in the spring, for if there is a little grazing in one place there is usually plenty in another. The difficulty which the average livestock farmer has in purchasing cattle in the spring suitable for use of sudan pasturage, is one of the reasons for buying calves in the fall and wintering them. However, winter feeding with silage and small grain pasturage is a perfectly good operation within itself, especially when good grains are obtained because such gains usually compensate for the feed and labor expended.

A Feeder Steer Calf Changed to a Fattened Yearling Steer

An example of the method of farm beef production discussed here is the case of a group of choice steers from Substation No. 1 of the Texas Agricultural Experiment Station, Beeville.

An average calf, starting at 390 pounds on October 6, 1939, had 53 days of field grazing in the fall, 140 days of sudan pasturage the next spring and summer, and spent 212 days in dry lot, 156 days of which was between the time field grazing was exhausted in the fall and sudan pasturage became available in the spring. In addition to pasturage the steer received 569 pounds of cottonseed meal, 1,302 pounds of ground ear corn, 5,075 pounds of sorghum silage, 14 pounds of salt and 18 pounds of pulverized limestone. Total gain from weight at purchase to weight at sale was 562 pounds. The purchase price was \$10.00 per cwt. and the sale price was \$10.50 per cwt.

Summary

To make good use of feeds in farm beef production: (1) get high grade feeder steer calves in the fall; (2) feed them well during the winter using silage and small grain pasturage with supplements of grains and cottonseed meal; (3) use pasturage with or without supplementary feeds during the spring and summer, and (4) finish in dry-lot the next fall.

Money, feed, time and careful husbandry are required to change the feeder steer calf into a fattened yearling steer. Many different feeds can be used and different methods of feeding may be employed. Both pasturage and harvested feeds are required for successful production.

FOOTNOTE: This discussion is based on work conducted at Substation No. 1, Beeville, Texas and is reported in Texas Agricultural Experiment Station Bulletin No. 599.

An average calf starting at 300 pounds on October 6, 1937, had 53 days of feed grazing in the fall, 100 days of suban pasture the next spring and summer, and spent 212 days in dry lot, the days on which was between the time feed grazing was extended in the fall and suban pasture in the spring. In the fall, the average daily gain was 1.25 pounds, in the spring 1.50 pounds, and in the dry lot 1.00 pound. The average gain was 1.25 pounds per day, and the average gain was 1.25 pounds per day.

Summary

To make good use of feeds in fattening calves, the following points should be considered: (1) feed them well during the winter months when they are in the barn with supplement of vitamins and minerals; (2) use pasture with or without supplementary feeds during the summer and autumn; and (3) keep them dry in the winter.

Many feed trials and levels of husbandry are required to change the feeding plan and a balanced feeding plan. Many different feeds can be used and different methods of feeding may be employed. The amount and frequency of feeds and to which the successful husbandry plan should be applied.

A Forder Steer Calf Changed to a Fattened Feeding Steer

Cooperative Extension Work in Agriculture and Home Economics, Agricultural and Mechanical College of Texas and United States Department of Agriculture Cooperating. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. 5M-9-41