

Bluestem Range in the Piney Woods of Louisiana and East Texas

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SINCE virgin stands of longleaf pine in Louisiana and East Texas were cut, the pine has not reproduced successfully on most of the area. Clear cutting, indiscriminate woods burning, hog-rooting, and brown-spot needle disease teamed up or worked separately to prevent a new crop of pine trees. Grasses, predominately bluestems (*Andropogon* spp.), quickly increased to dense stands on the open forest land. Though the area has an 8-month growing season and averages about 45 to 55 inches of annual rainfall, crop farming has not been successful in most of the cut-over piney woods territory, because the topsoils are shallow and the subsoils are poorly drained.

The cut-over land, largely unfenced is grazed as free range by cattle, hogs, sheep, and goats. Beef cattle are more numerous and valuable than all other kinds of stock. Many of the herds belong to farmers or woodland residents who own less than 100 acres of land and less than 50 cows. The average herd grazes yearlong on the range and is not fed adequate protein or mineral supplements during fall and winter.

Calf crops average between 35 and 60 percent and calves weigh about 300 pounds in fall unless fall-winter care is good and herd management is practiced (Campbell and Rhodes, 1944).

There is great opportunity in this area for increased production of both timber and meat. What is needed is reforestation, pasture development, range improvement, and better management of timber, forage, and livestock.

CHARACTERISTICS OF PINEY WOODS RANGES

Range beef cattle in the western Gulf Coastal Plain get from 60 to 90 percent of their yearlong grazing from forest range; thus the cattle industry is highly dependent on the range (Cassady, 1949). However, the low production per cow indicates that the forage either is inadequate for good beef production or is not being used properly.

Forage plants.—The herbaceous vegetation of the western Gulf region is composed mainly of six species of *Andropogon* (bluestems or broomsedges), several panicums (*Panicum* spp.) and paspalums (*Paspalum* spp.), carpetgrass (*Axonopus affinis*), blue dropseed (*Sporobolus junceus*), threeawns (*Aristida* spp.), cut-over muhly (*Muhlenbergia expansa*), and beak-rushes (*Rhynchospora* spp.). These grasses and grasslike plants furnish from 85 to 95 percent of the forage grazed by cattle. Bluestems alone make up about half of the ground cover and over half of the forage.

Pinehill bluestem (*Andropogon divergens*) and slender bluestem (*A. tener*) dominate the type. Pinehill bluestem is most abundant and is grazed yearlong. It closely resembles little bluestem (*A. scoparius*). Slender bluestem is a fine-leaved grass that is nutritious in spring and early summer until the wiry flower-stalks are formed. Close grazing prevents growth of flowerstalks, and slender bluestem sods are often cropped throughout summer and fall.

Palatable weeds furnish from 5 to 15 percent of the herbage grazed by cattle

and are particularly valuable in spring and fall. The most important weeds are swamp sunflower (*Helianthus angustifolius*), littleleaf tickclover (*Desmodium ciliare*), and common lespedeza (*Lespedeza striata*). Palatable browse plants are scarce on most ranges, and they are grazed closely during winter, where available.

Forage production.—Grass production is influenced principally by the forest stand, accumulation of litter, and weather. Average annual forage production in very open savannah-like forest is 1,500 to 2,000 pounds per acre (air-dry herbage). In moderately heavy scrub oak stands, it varies from 500 to 1,100 pounds per acre, and in well-stocked, polesize longleaf pine from 400 to 900 pounds per acre.

Grass production in pine plantations is of particular interest because thousands of acres of private and public land are being planted to pine each year. A 1946 survey of unthinned and unburned slash pine plantations (Campbell and Cassady, 1947) gave the production figures indicated below. Original spacing of the pine was mostly 6 x 8 feet and survival averaged about 65 percent for 20-year-old stands.

Age of Plantation (years)	Pounds of Grass Per Acre
1 to 5	1,440
6 to 10	1,300
11 to 15	240
16 to 20	90
Unplanted land	1,500

When successful slash pine plantations are about 12 or 13 years old, the canopy closes over and there is a heavy accumulation of litter. Herbage production drops quickly and remains low until the timber stand is thinned. Observations indicate that grass growth increases slowly as periodic thinnings are made.

Production varies widely between years, depending on rainfall during the

growing season. For example, an area of open forest range in central Louisiana produced the following amounts of grass: 1947—2,100 pounds air-dry grass per acre.

Rainfall averaged normal but July and August were dry.

1948—1,300 pounds per acre. A drought year. Each month of the growing season had less than average rainfall.

1949—3,150 pounds per acre. A wet growing season; rainfall was above normal every month except May and September.

About 60 percent of the grass was produced by June 15. Adequate forage for conservative grazing was produced even in the drought year of 1948, because the effects of drought were not felt until early summer.

Grazing capacity.—Of the 1,500 pounds of grass produced in average years on bluestem ranges with only scattered trees, about 40 percent or 600 pounds is available as forage under present standards. The calculated grazing capacity is 30 animal-unit days of grazing per acre or one cow-month's feed per acre.

This rate of stocking is based on three assumptions—(1) that the average cow (animal-unit) requires a ration of 20 pounds of currently produced grass herbage (air-dry) per day, (2) that the main forage grasses can be utilized an average of 40 percent without significant damage to timber reproduction or herbaceous vegetation, and (3) that the soil will not be damaged by grazing or trampling where at least 60 percent of the herbaceous vegetation is left.

Cut-over longleaf pine range has an estimated average grazing capacity of about one cow per 20 acres per year, under existing timber stand conditions and essentially yearlong use. The capacity varies from 12 acres per animal unit on the open forest to 40 or 50 acres per cow

in well-stocked timber stands (Campbell and Cassady, 1951).

NUTRITIVE VALUE OF FORAGE AND CATTLE GAINS

Analyses of samples of forage grazed by cattle show that low amounts of crude protein and phosphorus often seriously limit the value of native forage on bluestem ranges. Phosphorus was not adequate for normal growth of beef cattle at any time, although it reached a high of 0.14 percent during the few weeks from late March to early May.

from about 8.5 percent in June to 6.0 percent in October; and ran around 5.0 percent during late fall and winter. Cows with calves started losing weight when the crude protein content fell below approximately 8.0 percent (Cassady, 1947).

The final measure of forage value is the weight gained by cattle that graze the range. From 1946 to 1948, monthly and seasonal weights were obtained on a herd of 40 to 60 beef cows and their calves that grazed yearlong on bluestem ranges (Figure 1).

The weight changes of these cattle are

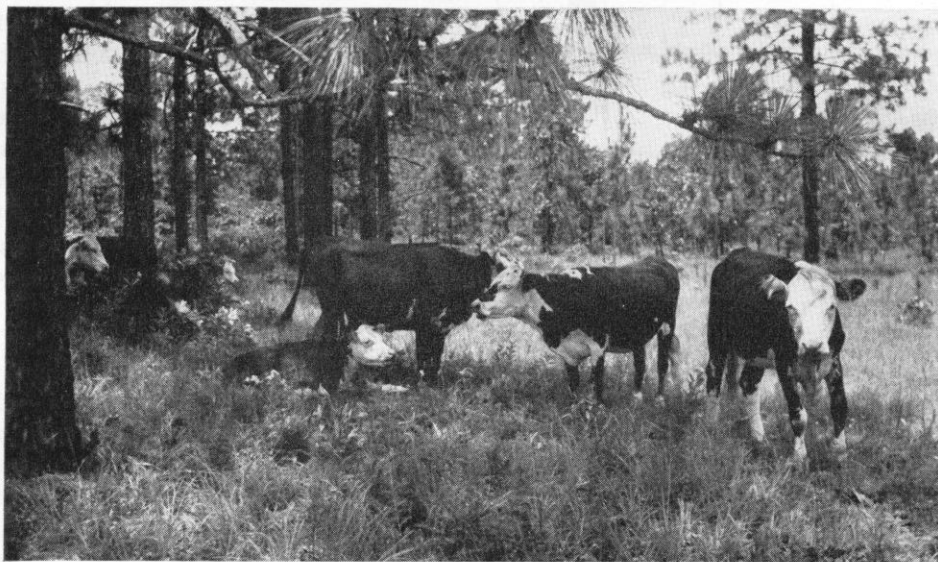


FIG. 1. Grade beef cattle make substantial growth on bluestem forest range of the southern Coastal Plain during spring and early summer (central Louisiana).

The amount of crude protein appears adequate for 3 to 3½ months in spring, but is usually deficient thereafter. Black *et al.* (1939) estimate that an 800-pound breeding cow with calf needs about 1 pound of digestible protein per day. If she is to get this amount, the forage must contain not less than 9.0 percent crude protein. The forage grazed by cattle on these ranges averaged between 9.0 and 14.0 percent crude protein in spring; declined

summarized by seasons in Figure 2. Three main seasons are evident: spring, when all classes of cattle gain weight; summer, when mature cattle lose slightly and growing cattle gain slowly; and late fall-winter when all age groups lose weight (Cassady, 1947).

The spring season of 3½ months extended from about March 15 to June 25. Daily weight gains during spring averaged: calves—1.50 pounds, yearlings and

2-year-old heifers—1.25 pounds, and mature cows—0.82 pound. Peak gains of 2 to 2.5 pounds per day were reached by growing animals during late March and April. As the grass lost its freshness, cattle gains gradually diminished during May and June, or even earlier if the season was unusually dry and hot, as in 1948.

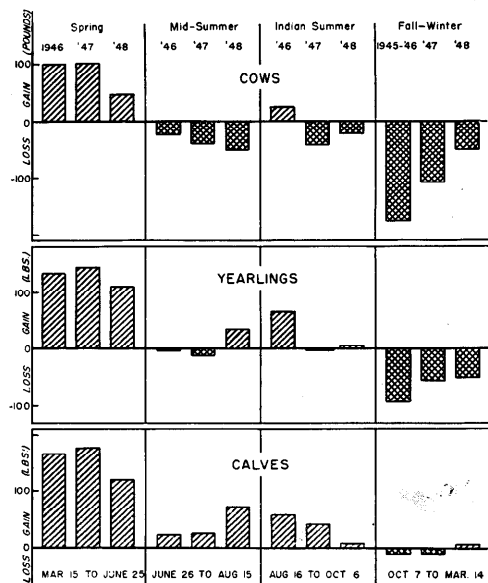


FIG. 2. Seasonal weight gains and losses by grade beef cattle grazing on forest range in central Louisiana, 1945-48.

The summer season lasted about $3\frac{1}{2}$ months, from late June to early October. Calves made slow gains; yearlings gained in some years and lost during others; and mature cows lost weight each summer. The heaviest summer losses occurred in midsummer from heat, insect pests and reduced forage quality. In 1946, there was a distinct Indian Summer gaining season. All animals gained weight from late August to early October, when mild, moist weather produced a variety of palatable weeds, new grass, and flower heads. Favorable Indian summers occur intermittently.

The real losing season for cattle on forest range was late fall and winter—

the period of about 5 months from October 15 to March 15 when poor forage and cold weather caused weight losses in cattle of all ages. In the winter of 1945-46, the cows lost 176 pounds or 25 percent of their weight, in 141 days. From about Christmas to early March, they received a very small supplement of cottonseed meal.

During the next two winters these cattle were fed a good ration of cottonseed meal for about 85 days in January, February, and March—2.1 pounds per day in 1947 and 2.6 pounds in 1948. They lost weight heavily each fall before supplemental feeding started. However, after feeding began they lost only 24 pounds in the 1947 feeding period, and gained 36 pounds per head in the 1948 winter feeding period. In 1948-49, feeding was started in mid-November. As a result, cows came through the winter in good condition, and calves weighed more at weaning age than they did during any other year of the study.

BETTER USE OF FOREST RANGE

Beef production and returns from range cattle in Louisiana and East Texas are comparatively low. The adoption of improved management practices should more than double the present average production of about 140 pounds of beef per cow per year.

The first step needed is to get control of range lands and livestock with grazing leases and fences. Such control will give stability to the operation and permit much-needed regulation of breeding, herd improvement, and supplemental feeding without interference from the neighbor's cattle.

Second, the operator should recognize the seasonal value of forest range and provide adequate supplemental pastures and feed to keep the herd in productive condition throughout the year.

Finally, the operator must consider

that his herd grazes on forest land that may reseed naturally or be planted to trees by the landowner. Reforestation will gradually reduce the amount of forage and usable range in the area. To keep pace, cattle growers must either reduce the number of range stock or restrict forest grazing to a shorter season—spring and early summer when range forage is at its prime—and provide other forage and feed for winter, fall, and late summer, in that order. This will give more intensive and more productive use of these lands which is desirable as the population increases.

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A TRIP TO AUSTRALIAN SHEEP COUNTRY

All Australian sheep are run in fenced pastures, called 'paddocks', and there is no herding. There is a line fence around the boundaries of the property, and the station is sub-divided into a number of paddocks. In the high carrying capacity areas, these paddocks vary in size from one hundred to twelve hundred acres; while in the dry country, the paddocks will vary from about 1,000 acres to 10,000 acres or more. The standard type of fence has about five smooth wires and one barbed wire at the top. The boundary fences may have a wire netting set in the ground about six inches and extending up about thirty inches to prevent invasion by rabbits. In some cases there are dingo-proof fences, in which the wire netting is carried much higher.

Dr. Hadleigh Marsh
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