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# BETTER MANAGEMENT

## ON SOUTHERN COASTAL FOREST RANGES

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### FOREST SERVICE U. S. DEPARTMENT OF AGRICULTURE

## BETTER FOREST-RANGE CATTLE MANAGEMENT

Cattle raising in the southern Coastal Plain region, extending from Virginia to Texas, is an important, rapidly developing agricultural enterprise. There are about 7½ million cattle in this region, representing an increase of 20 percent in the past 5 years.

Forage and feed resources of the southern Coastal Plain are made up of extensive areas of forest range as well as improved pastures and farm crops. In 1943 nearly 1 billion pounds of beef and veal were produced, equivalent to about one-fourth of the Nation's requirements for military and lend-lease purposes. The continued need for beef and hides, economically produced, during the war and in the post-war period demands careful handling of forest range and livestock to make the most of available forage and feed supplies, without damage to the forest.

A large proportion of the cattle of the southern Coastal Plain graze on forest range at least part of the year. This is an old custom which has developed many grazing practices well fitted to the country. However, some of these traditional practices do not provide for adequate livestock nutrition, proper handling of cattle, or the most efficient production of livestock and timber. The average small farm wood lot is often used by so many cattle for summer shade and winter protection that it furnishes little forage and produces far less timber than is possible. Improved management, therefore, offers real opportunities in range grazing—reduced death losses, larger calf crops, heavier calves at market time, greater profits, and minimum damage to timber.

Cattle grazing and timber production are generally recognized as an ideal combination in the Coastal Plain. Fully stocked stands of vigorous trees close enough together to induce natural pruning produce a maximum of timber. In such stands, the amount of forage is limited. However, there are on the Coastal Plain vast areas of cut-over forests that are not now fully stocked with trees, and a heavy forage cover is available for grazing.

Grazing on forest lands should be only moderate so as to assure continued vigorous production of the more valuable forage plants as well as tree reproduction. Moreover, if managed so as to make sure that no damage results to the timber, grazing has real value in forestry by reducing the fire hazard. It also furnishes the landowner with an annual source of income. Experience and research indicate that the better the range management the greater will be the production and profit from both timber and livestock.

### ADEQUATE YEAR-LONG NUTRITION

Cattle need adequate nutrition throughout the year for efficient production of beef. When not properly nourished, they become poor, produce very few calves, eat more poisonous plants, and the herds suffer excessive death losses from starvation during the winter. Adequate year-long nutrition can be obtained from forest range when combined with supplemental feeding, the use of permanent and temporary improved pastures, or both.

Such adequate nutrition is reflected in greater beef production, as illustrated by two similar herds on forest range in Louisiana. The first was grazed on fenced forest range in spring and summer, and on farm

pastures the rest of the year, but was fed 2 pounds of cottonseed meal and 4 pounds of cottonseed hulls per head per day for about 100 days in winter. In 1943 there were nearly 80 calves per hundred cows; calves averaged 355 pounds at 8 months; and herd death losses were only 2 percent. The calf crop from this herd in 1944 was over 90 percent. In contrast, the second herd ran yearlong on unfenced



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Figure 1.—Yearling heifers grazing on wiregrass range in June in southern Georgia.

Wiregrass range furnishes reasonably good grazing in spring and early summer but only fair grazing after early July.

range, with inadequate winter feed and an average of only about one-half pound of cottonseed meal per head per day during January and February. As a result, the calf crop in 1943 was only 35 percent; calves weighed 300 pounds at 8 months; and herd death losses were 6.4 percent.

## BEST USE OF THE RANGE

Grass is grass to some folks, but forest ranges in the southern Coastal Plain differ in type and in forage composition and grazing values. They are most effectively used and have highest value if grazed at the proper seasons and proper intensity. Among the many types of range in the southern Coastal Plain, the wiregrass, broomsedge, switch cane or reeds, and bottom-land hardwoods are the most important.

### Wiregrass Type

The wiregrass type, found mainly in the longleaf-slash pine flatwoods of south Georgia and Florida, is composed chiefly of pineland three-awn, Curtiss dropseed, carpet grass, and bluestems, and many additional grasses, weeds, and shrubs (fig. 1). This type furnishes reasonably good grazing from mid-March to early July, but only fair grazing from then until mid-October. It may be profitably grazed

during the winter if Curtiss dropseed is plentiful and if the cattle are kept on unburned range and are given enough supplemental feeds.

Where the forage fully covers the ground, as under open forest stands, the grazing capacity is about 5 acres per cow for spring and early summer; 8 to 10 acres per cow for spring, summer, and fall; and 15 to 20 acres for the entire year. In some well stocked forests in the lower Coastal Plain and where the forage cover is thin, the grazing

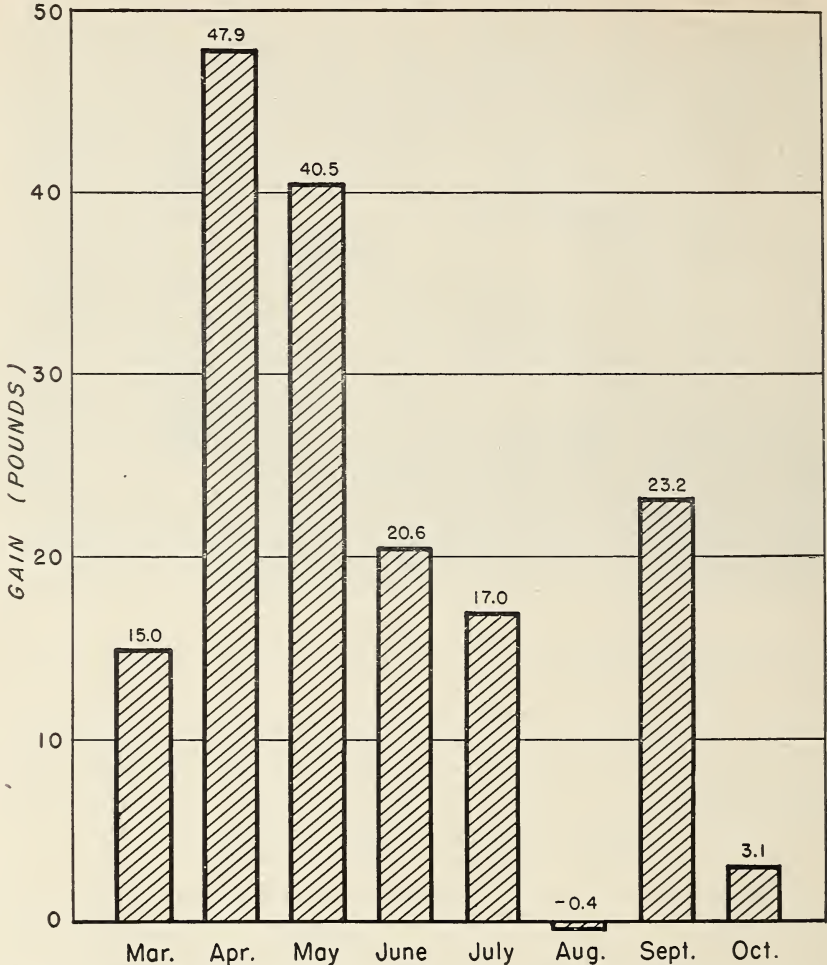


Figure 2.—Average monthly gains of steers on broomsedge-forest range, during a 9-year period at McNeill, Miss. These figures show the value of this type of range for spring and early summer grazing.

capacity is so low as to require 30 acres per cow for a 7-month season. Grazing at the intensities indicated would utilize the available forage without adversely affecting the growing forest.

### **Broomsedge Type**

The broomsedge type is widely scattered throughout the Coastal Plain, but is especially characteristic of the longleaf pine forests in southern Mississippi, Louisiana, and east Texas. It extends northward into the shortleaf and loblolly pine-hardwood forests as far as

southern Arkansas. The grasses, which grow very densely on cut-over timber lands and old fields growing back to trees, are mainly broomsedges or bluestems, with scattered panicgrasses, paspalums, and weeds. The broomsedge type furnishes reasonably good grazing from late March through mid-July and fair grazing in early fall (fig. 2). Its value is very low in late fall and winter. Carpet grass and Bermuda grass, which grow along roads, trails, and on heavily grazed spots within the broomsedge type, furnish good forage and help lengthen the summer and fall grazing seasons.

Average grazing capacity of the broomsedge type under heavily cut-over or open pine stands is about 8 acres per cow for spring, summer, and early fall, whereas 15 acres or more are required for



Figure 3.—Cattle grazing on switch cane or reed range in eastern North Carolina. If not overgrazed or burned, switch cane furnishes valuable forage.

yearlong grazing with supplemental feeding during the winter. Under moderately dense stands of shortleaf and loblolly, mixed with low-value hardwoods, such as blackjack oak and post oak, there is less grass, and grazing capacity is about 10 to 12 acres per cow for the spring and summer. Fully stocked pine stands shade out most of the grass and thus have little value for grazing.

### Switch Cane or Reed Type

The switch cane or reed type furnishes some forage throughout the Coastal Plain, but is especially valuable in eastern North Carolina (fig. 3). The main forage plant is switch cane or reed, which produces best when protected from overgrazing and fire. Switch cane areas are used for grazing during all seasons of the year, but most commonly in late spring and summer. Some farmers, however, protect them during the summer and graze them only in the winter. In parts of Louisiana, switch cane is highly prized for winter grazing.

Grazing capacity varies from 3 to 12 acres per cow for 6 months of grazing, from May 15 to November 15, depending on the density and vigor of the reeds. About as much acreage is required for 3 or 4 months of winter grazing as for 6 months of summer grazing.

## **Bottom-Land Hardwood Type**

An abundance of shrubs and vines, and scattered tufts of grasses and sedges, valuable for grazing, grow in the more moist areas typical of the bottom-land hardwood forests in the Mississippi River delta and swampy areas scattered throughout the Coastal Plain. This hardwood forest type produces an assortment of valuable timber trees such as sweet gum, tulip poplar, and ash, the seedlings and sprouts of which are readily eaten by cattle, especially in the spring. While this type of forest range is highly prized by stockmen, it requires more careful handling than the pine types, in order to assure continued forest production.

The bottom-land hardwood areas furnish fair winter forage and usually may be grazed moderately at that time. Usable areas have a grazing capacity of about 8 to 12 acres per cow for the winter, although some supplemental feeds are needed on most ranges to keep the cattle in good breeding condition. Heavier grazing than this in winter and spring must be avoided in order to minimize damage by cattle to hardwood seedlings. Grazing management of bottom-land hardwood areas should aim to assure vigorous growth of the forage plants and reproduction of valuable tree species.

## **Poisonous Plants**

Poisonous plants, widely scattered throughout the Coastal Plain, cause many cattle losses on heavily grazed ranges. The most dangerous species include Carolina jessamine, black cherry and common chokecherry, lambkill kalmia, spotted waterhemlock, crow poison, and poisonous mushrooms. Although there is much to be learned about these plants in the southern Coastal Plain, it is generally agreed that cattle seldom eat them when good forage is adequate. Therefore, the most practical way to avoid stock poisoning is to see that the cattle always have plenty of palatable forage and other good feed. In some cases, it is feasible to get rid of the poisonous plants by cutting or grubbing them out, or by fencing them from the main part of the range.

## **CATTLE GRAZING REDUCES FIRE HAZARD**

Cattle have real value in forest protection as they reduce the fire hazard through eating and trampling the forage plants which comprise part of the highly inflammable ground cover. Also, grazing often brings about a change in plant cover, such as the invasion of carpet grass, which burns less readily than other types of range vegetation. In the switch cane or reed type especially, cattle trails facilitate the fighting and control of fires. Even light grazing measurably reduces fire hazard. Moderate grazing, as recommended in the above grazing-capacity estimates for the various forest range types, may reduce the grass "rough" and consequently the potential fuel by as much as 50 percent.

## **Prescribed Burning**

Fire is a deadly enemy of young trees, and must be kept under the strictest possible control. In the longleaf pine type, however, it may be practical for a forest owner to divide his forest into several parts and prescribe-burn a different portion each year to remove excessive rough and fire hazards, prepare a seedbed for pine, control brown-spot

disease, and furnish fresh, easily accessible forage for the livestock. Prescribed burning is burning to attain these desirable ends without endangering timber production. Before undertaking prescribed burning, the stockman should consult the nearest State or Federal forest official, to check regulations regarding the use of fire.

Longleaf pine reproduction needs to be protected from any burning until it is in its second year of growth and from the time the buds are 6 inches high until the seedlings are 5- to 8-feet high. If there is slash pine reproduction intermingled with the longleaf, it is best for slash pine to be 12- or 15-feet tall before the area is burned. Under prescribed burning the fire should be set in the late afternoon or early evening, in late December, January, or February, closely following a rain, when much of the vegetation is still damp. Burning should be done against a steady, light wind. Under such conditions the fire will burn so slowly that one can step over it almost any time. An adequate system of fire breaks should be provided and burning done in small units.



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Figure 4.—Cattle grazing in early spring on burned longleaf pine range. Careful winter burning in such timber stands holds fire damage to a minimum. Acreage of burned range should be sufficient and cattle should be excluded from the range until adequate new forage has grown. Burning is not recommended outside the longleaf pine forest type.

Burning is not recommended outside the longleaf pine forest type.

The new succulent forage on burned range in longleaf pine areas attracts cattle, and they spend most of the time there (fig. 4). On an experimental tract near Tifton, Ga., for example, 80 cattle spent as much time in the early spring on 116 acres of burned range as they did on 1,460 acres of unburned range under the same fence. It is important, therefore, to provide sufficient burned range for maximum cattle gains. As a rule, it takes about 5 acres of burned range per head of cattle for spring and early summer grazing. Even though a sufficient acreage is provided, the cattle should be excluded from burns until the forage has made enough growth to maintain them in good condition.

In the switch cane or reed type, intentional burning to freshen the forage is not advisable—for several reasons. First, burning delays the grazing season from 1 to 4 weeks because new growth is easily

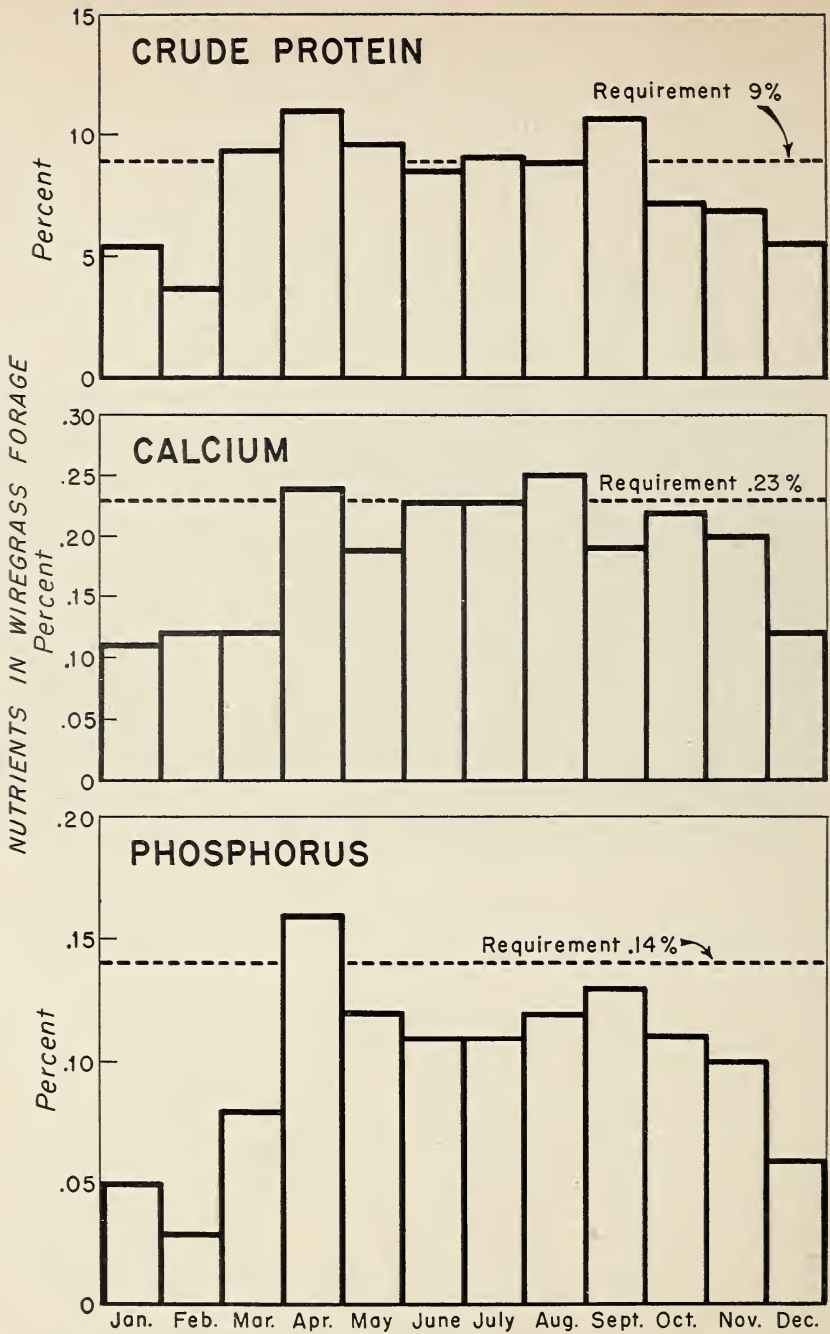


Figure 5.—Crude protein, calcium, and phosphorus in wiregrass forage in relation to the requirements of breeding cows and growing animals. These nutrients are particularly deficient in native forage during the winter.



damaged even by light grazing. Second, the foliage produced after a fire has low frost resistance the following fall and the leaves drop earlier than on unburned plants. Third, the amount of forage available during the first growing season after a fire is less than on unburned areas and a larger acreage is needed for each animal. Fourth, it is not only difficult, but usually impossible to control fires in the switch cane type because of the speed and severity with which they burn.

## SUPPLEMENTAL FEEDING ON THE RANGE

Cattle on forest range in late fall and winter need protein supplements. It is during this time that the forage is most deficient in



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Figure 6.—Cattle eating supplements on forest range. When cattle are on range in winter they should be fed protein concentrate supplements. Mineral supplements should be available throughout the year.

nutrients (fig. 5). Experiments in southern Georgia show that cattle on range, fed cottonseed meal or cake as a protein concentrate supplement, go through the late fall and winter in much better condition than animals without supplements. Cows on typical wiregrass range there (fig. 6), fed 2 pounds of cottonseed meal per day in late fall and early winter, made an average gain of 24 pounds per head during a 55-day period. In contrast, cows on similar range but without protein supplements averaged a loss of 44 pounds—a difference of 68 pounds per head.

Cattle on forest range need mineral supplements yearlong, especially phosphorus. Chemical analyses in nearly every State from Texas to North Carolina show that the native forage is deficient in essential minerals, as indicated in figure 5. A mixture of two parts steamed bonemeal to one part salt, which usually takes care of most mineral deficiencies, should be provided cattle at all seasons.

## USE OF IMPROVED PASTURES

Permanent and temporary improved pastures on farms, for use in conjunction with forest range, make for greater production of beef per animal. They also make for better seasonal use and less danger of damage to trees on forest ranges. Such pastures provide high-quality forage to keep the cattle in good productive condition when the native plants in the forest are of low palatability and nutritive value. This in turn boosts calf crops, insures rapid growth of animals intended for sale or slaughter, and avoids starvation losses. Good improved pastures also assure needed nourishment for replacement heifers or feeder calves after weaning.

Desirable permanent, improved pastures contain one or more of such forage species as Dallis grass, clovers, and Bermuda grass. Temporary pastures may include velvetbeans and field aftermath (fig. 7), cover crops such as oats, rye, barley, ryegrass, and wheat, or a combination of these.



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Figure 7.—Cornstalks and velvetbeans furnish good temporary pasture in fall. They help provide adequate yearlong nutrition for beef cattle grazing on forest range in spring and summer.

### DRY-LOT FEEDING

It may be necessary to provide harvested feeds, such as hay, silage, and concentrates, in a dry lot, especially during winter. However, this practice is generally less economical than grazing cattle on range or pasture, with supplements, and should be used only when such supplemented grazing is not sufficient to maintain animals in a reasonably good condition.

### FENCING ASSURES BETTER MANAGEMENT

Fenced control of cattle is vital in good range management. Cattle can be grazed during suitable seasons and in proper numbers only if the range has the necessary boundary and cross fences. When the range is fenced it is also possible to get full use of good bulls, whereas it is impossible, except on a very large scale, to carry on a good breeding program on unfenced range. Also, high-quality cows can be grazed on fenced range without being bred to scrub bulls such as are found on nearly every open range.

Supplemental feeding is easier on fenced than on open range and death losses are not as high as where the animals are allowed to graze

on highways and railroad rights-of-way. Livestock handling, including branding, vaccinating, castrating, dehorning, and caring for sick animals, is also much easier when the herd is under fence. Furthermore, fencing offers a measure of fire protection to a landowner because the incentive is removed for others to burn his forest range to improve grazing for their cattle, as is the custom on the open range in parts of the South. Finally, fencing is a strong deterrent to timber trespass, thus aiding further in timber management.

Although free range is still common in many sections of the southern Coastal Plain, better-grade livestock and higher prices for animals are encouraging a steady trend toward fencing. Caution is advisable, of course, to avoid overinvestment, but a minimum of boundary and cross fences is indispensable to good management.

## HERD IMPROVEMENT AND MARKETING

Good range cattle management includes use of good bulls. One good bull can improve the quality and value of the calves from a herd



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Figure 8.—Cows and calves grazed on untimbered switch cane or reed range in eastern North Carolina. Calves produced on such ranges are generally in good market condition at weaning time in November.

of 20 to 30 cows. In addition, herd improvement can be accomplished by systematically culling each year the old and barren cows, those that may not produce the type of calf wanted, and other undesirable animals. In this way the forage available for grazing can be used more effectively by the remaining herd.

It is desirable to dispose of the normal increase of calves each year about weaning time, when they are in the best condition (fig. 8). It will seldom pay to graze them through the winter on forest range even with protein supplements. If harvested feeds can be spared, it may be practical, of course, to hold the calves and fatten them during the winter. Anyhow, "Sell a crop of beef each year," is a good range cattle management motto.

# GOOD RANGE MANAGEMENT PAYS DIVIDENDS

Abundant forage, its effective use, larger calf crops, lower death losses, and more marketable cattle all play a part in producing, from southern forest ranges, greater annual income and the meat and hides so vitally needed during the war and post-war period. Experience has shown that the man who follows the best grazing management practices will, in the long run, be the most successful.

If further information is desired on various phases of improved forest range grazing, timber growing, supplemental feeding, or improved and temporary farm pastures, see your county agent or communicate with your State extension service.

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