



## **South Florida Range Management for Cattle Production**

Joao 'Joe' Vendramini, Professor, Forage Management  
and Rob Kalmbacher, Professor (Retired), Range Management & Forage Crops,  
Range Cattle REC, Ona

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Florida is classified as the longleaf/slash-pine/wiregrass range type. This land has been used for cattle production since 1521, when the first cattle were introduced into the state. In 2017, about 3 million acres of range exist statewide, and much of it remains forested, particularly in the northern half of the state, where production of forest products is the primary source of income from range. About two-thirds of the state's cattle are found in South Florida, and range is an important forage resource for many large, extensively managed ranches. Nineteen of 26 counties in the region each contain at least 100,000 acres of range.

Range is land where indigenous or native vegetation predominates. Range may be grazed or ungrazed but is managed to maintain the native vegetation. The natural plant community at a range site is usually adapted to rather broad but distinctive soil and climatic conditions. Thus, different range sites have different distinctive features in terms of kinds and amounts of forage. Range Conservationists of the USDA, Natural Resource Conservation Service (NRCS) recognize 28 range sites in Florida, but for practical purposes, about four sites are important for cattle production in South Florida (Table 1). Approximately 332 native grasses grow in Florida, but only 10–15 produce most of the forage for cattle. These grasses are of economic importance on the site where they grow.

Range scientists divide grasses into two groups. Preferred or desirable grasses are referred to as "decreasers," which are generally those grasses that are more palatable, nutritious, and higher yielding. These may be grasses that are selected first and grazed most often; consequently, they may decrease on range that is overgrazed. Examples of decreaser grasses are creeping and chalky bluestems, lopsided indiagrass, and maidencane. On the other hand, less desirable grasses—in terms of cattle production—are referred to as "increasers." These grasses are less palatable and are grazed less; therefore, they increase on range that is overgrazed. Examples are wiregrass, bottlebrush threeawn, and broomsedge.

Condition class is the "state of health" of range and indicates the current productivity for cattle production relative to the kind and amount of vegetation that the site may produce. There are four condition classes, which are based on the relative contribution of decreasers. Condition class is usually determined by measuring the frequency-of-occurrence of species, and less commonly by biomass determination. Condition-class determination and its interpretation require knowledge and experience. It is a service provided to ranchers by

NRCS Range Conservationists.

The concept of condition class and increasers/decreasers is a helpful tool but remember that it is an artificial system to aid in communication about range trends. Not all range has the capability to be excellent-condition range. At best, some range is now, and always will be, "wiregrass range." The first step in a range management program is to determine range condition class and realistically assess its potential for improvement, which is best accomplished with NRCS technical help. To try to manage wiregrass range for creeping bluestem and other such grasses, when there is no potential for them to grow, is to do a real disservice to the rancher. On the other hand, if there is potential for improvement, the rancher can profit by having greater cattle carrying capacity with those grasses referred to as decreasers.

## CATTLE DIETS

Cattle grazing range often have over 100 species of plants from which to choose throughout the year. Over 4 years, 98 plant species were encountered in a range at the UF/IFAS Range Cattle Research and Education Center, Ona. The major preferred grasses were creeping bluestem, chalky bluestem, and maidencane. Saw palmetto was the major shrub, while the major less desirable grasses were broomsedge, wiregrass, and *Dichanthelium* spp.; and goldenrods were the major forbs. In a grazed range, the frequency of occurrence of these plants may remain stable over a few years. However, there may be changes in herbage mass and nutritive value of the plants, and consequently, cattle diets change during the year. In such cases, while more shrubs are eaten in winter and more forbs are eaten in summer, grasses such as creeping and chalky bluestems are eaten year-round. Maidencane has superior nutritive value from the time it starts to grow in the spring until late October. Old, weathered maidencane is not eaten during winter. Wiregrass nutritive value decrease rapidly but still is consumed by cattle for approximately 6 weeks after a burn.

Two criteria for evaluating range are forage mass and nutritive value (crude protein and total digestible nutrients [TDN]). Similar to pastures, measurement of available forage should always be on a dry matter (DM) or moisture-free basis. Unlike pasture, ungrazed range forage accumulates over one or more growing seasons and inflates estimates of forage mass. To overcome this problem, estimates of forage mass should be adjusted to reflect only grazable forage. This estimate can be made by a combination of hand separation and estimation, or by measuring forage in the fall—after a burn in the previous winter or spring. Second, estimates of digestibility by in-vitro organic-matter digestion (IVOMD), as performed by the UF/IFAS forage testing laboratory, tend to underestimate range forage by 5–10 percentage units because range forage is almost always at the low end of the scale for all forages tested. For this reason, it may be more useful to predict and use TDN ( $TDN = [0.49 \times IVOMD + 32.2] \times 0.93$ ) rather than IVOMD.

Decreasers make up about 5% of the herbaceous vegetation in range of poor condition, while wiregrass makes up about 40%. All increasers (wiregrass + other increasers) make up about 76% of the herbaceous vegetation. In the example of fair-condition range, decreasers make up about 43% of herbaceous vegetation and increasers make up about 38%. Occurrence and biomass of shrubs are considered in determination of range condition, as shrubs usually constitute a large portion of the total biomass from range.

The poor-condition-class range has historically supported one cow on 35 acres in an all-range, year-round grazing program. In the fair-condition-range example, one cow has been supported on 13 acres, which are grazed from September through February. Range condition, season, and duration of grazing all affect carrying capacity.

Forage mass from fresh marsh sites in good to excellent condition is considerably greater than forage from flatwoods sites, primarily due to maidencane, which dominates the marsh site. Maidencane produces more forage than creeping bluestem or any other grass on a flatwoods site, but maidencane production is limited to the summer, and herbage mass declines in the fall and winter due to senescence.

Nutritive value of diets of cattle-grazing range is relatively low, but it does improve in spring and early summer (April–June) and then declines through fall and winter. Nutritive value is the major limiting factor for cattle production on range. Forage mass can be increased through management, but there is little that can be done to range forage that will result in lasting improvement to crude protein and TDN. At best, flatwoods range is adequate to meet the nutritional needs for growth of a non-lactating cow in spring and early summer. A lactating cow cannot regain weight lost during winter, provide milk for a nursing calf, and rebreed in spring while grazing range. Forage from fresh marsh, however, could supply the protein and TDN required by a lactating cow in spring and summer. Access to marsh greatly benefits the nutritional input to cows, especially in spring and early summer, when it is important to regain weight lost during winter. However, the nutritional value of forage from marsh declines greatly during winter.

Mineral concentrations in the diets of cattle grazing unburned range depend on season and site grazed. Concentrations of P and K are similar in diets obtained on flatwoods or fresh marsh, but concentrations of Ca, Mg, and Mn tend to be lower in diets obtained from marsh than from flatwoods. Concentrations of P, K, Mg, and Mn decline from summer to winter, while Ca and Fe remain about the same. All minerals (except Fe and Mn) at all seasons are below levels needed by a dry-pregnant cow, and they should be supplied in a complete mineral supplement.

## **RANGE IMPROVEMENT**

Sometimes range can be improved in its condition class by the proper combination of grazing, burning, and mechanical brush control. Ranchers and their consultants must consider very carefully the cost of any management practice because the returns from calf production on range are quite low.

Rotation of cattle on range is important mostly for the maintenance of the range resource. On pasture, rotation of cattle among three, four, or more pastures can increase stocking rate and animal production per acre. However, with Florida range utilized as a winter forage source, nutrition is so limited on range that it is doubtful that any slight increases in calf production as a result of rotation would pay for the additional fencing.

If range is grazed year-round, more complex systems of range rotation may be beneficial, but there is no published Florida research indicating what type of grazing program is beneficial to the range or if it will be economical for the rancher. It is known that both time and intensity of grazing affect vigor and productivity of Florida range. "Take half, leave half" has been the general rule for determining when to rotate cattle from one unburned range unit to the next.

Fencing, and consequently rotation, is essential to exclude cattle after burning range. Desirable grasses should be protected from grazing for at least 30 days after burning in March–May and at least 60 days for burns between October and February—when regrowth is slower. Range regrowth after burning is about 200–600 lb/A of dry matter at 30–60 days, depending on the month. Cattle can consume such limited quantities of forage quickly, and range needs to be protected from overgrazing. Protection against overgrazing requires on-site judgment, but as a rule, there should be about 30–60 days of grazing on regrowth, with range stocked at one cow per 10–15 acres.

Management of wiregrass range differs from management for desirable grasses. Wiregrass range is "burn-and-graze range." Cattle will not graze wiregrass beyond 6 weeks after a burn, so in this sense, wiregrass is self-protected.

Rotation is essential to exclude cattle after roller chopping for palmetto control, which will be discussed later. When desirable grasses, such as creeping bluestem, are present on range, they are usually found under the protection of the palmetto canopy. Chopping removes this canopy temporarily, and it is during this time that grasses have an opportunity to spread.

Protection from grazing for one growing season is most advantageous for range renovation. However, intensive grazing management does not guarantee consistent responses in terms of increase in the biomass of desirable species, and therefore such management may not justify required inputs.

## **PRESCRIBED FIRE**

The reasons for burning include improvement of forage quality, brush control, improvement of wildlife habitat, and reduction of hazardous fuel to help prevent wildfire.

Improvement of forage quality as a result of fire is short-lived. Early forage workers demonstrated that crude protein in wiregrass could be increased from about 5% before burning to 9% in regrowth following fire. The problem was that there were only a few hundred pounds per acre of this forage, and it declined in quality so fast that there was no improvement after about 6 weeks. Creeping bluestem and other desirable grasses are a little better than wiregrass in this respect (Table 9). Improvement in crude protein lasts about 3 months, while improvement in digestibility lasts about 5 months. If a rancher wishes to take advantage of improvement in forage quality as a result of burning non-wiregrass range, range must be grazed within about 4 months of burn. Care must be taken that the range is not grazed too soon after the burn (30–60 days as indicated earlier) and that the range is not overgrazed.

Shrub control can be obtained by using prescribed fire. Winter burns, particularly head fires that carry the flames up into the canopy of wax myrtle and gallberry, are effective at keeping the shrub canopy in a reduced state. Wax myrtle and gallberry are fire-tolerant plants, and they will regenerate their canopy over 2–3 years. Late-spring and summer burns may be more harmful to these shrubs, but burning at these months may be impractical on most ranches.

Wildlife habitat improvement because of burning results in more herbaceous plants, especially annuals, which are good seed producers. Plant diversity is increased for 1–3 years after fire. Insects, an important food source, are also more abundant following fire.

Reduction in hazardous fuel is an increasingly important factor, especially because of the proximity of urban development to some ranches, but this often presents problems with the control of smoke from a controlled burn. On the other hand, the rancher is also liable to those same people if a wild or prescribed fire on his land spreads or escapes and destroys other property.

## **SAW-PALMETTO CONTROL**

The purpose of saw-palmetto control is to increase forage yield and therefore to increase cattle-carrying capacity. The increase in forage yield is mainly due to a change in botanical composition, namely, more bluestems, indiangrass, etc.

Since saw-palmetto control is a costly range management practice, thought must be given to the need and benefit. Three factors should be considered. First, a grazing plan must be in effect. Ranchers need to exclude cattle from grazing for one growing season after treatment. Without a grazing plan, saw-palmetto control could result in a further reduction in condition class because uncontrolled grazing could reduce the desirable grasses that were protected by the palmettos. Second, there must be a source of desirable grasses present. Treatment of wiregrass range will reduce saw-palmetto cover, but the result will be more production of wiregrass and other less desirable increaser grasses. Third, palmetto size must warrant control. Saw palmettos greater than 30-inches tall provide sufficient shade to reduce growth of grasses beneath them. A few scattered patches of tall saw palmettos do not warrant control, whereas a uniform stand of 30-inch-tall palmettos does.

There are two types of machinery commonly used on range for saw-palmetto control: roller chopper or brush cutters (Figure 1) and web plow (Figure 2). Chopper size must be matched to palmetto size. For best results, the drums should be filled with water, pulled in tandem (one drum behind the other), and the chopper must have the correct offset (angle between drums). Ideally, it should be pulled at 4–6 mph. Best results are obtained when chopping is done with good-to-excessive soil water as opposed to dry soil conditions. A single pass, if done with these conditions, provides adequate reduction in saw-palmetto cover. Chopping when the soil is too dry results in mortality of grasses, especially bunch grasses. Burning to reduce palmetto cover before chopping is helpful from the standpoint of the operator being able to see holes and stumps, but burning prior to chopping does not result in greater palmetto mortality. Cattle should be excluded from the range for one growing season after chopping.

The web plow consists of a 6-foot steel blade that is usually mounted under a road grader (Figure 4). The blades are like the wings of an airplane and run about 4–6 inches below the soil surface, slicing off roots but leaving the aboveground portion of plants largely intact. Some models are built for pulling behind a tractor. Web plows are "homemade" and not commercially available. Considerable skill is required to build them because it is difficult to get the blade to run uniformly under the soil without surfacing. In addition, the blades require frequent maintenance because of rapid wear in sandy soil.

This article was extracted from the EDIS publication "Managing South Florida Range for Cattle" <https://edis.ifas.ufl.edu/publication/AG173>. If you have any questions about range management in South Florida, please contact Joe Vendramini [jv@ufl.edu](mailto:jv@ufl.edu).



Figure 1. Roller chopper



Figure 2. Web plow.

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### **Upcoming Events**

May 9 - Ona Agronomy Program Highlight with Dr. Joao Vendramini – 11:00 – 11:45 AM.  
“The Importance of Forage Testing to Design a Supplementation Program.”

June 29 - UF/IFAS Range Cattle REC Youth Field Day, 8:00 a.m. – 1:45 p.m. Space is limited, all students and adults must register to attend. Learn more:  
<https://rcrec-2023-yfd.eventbrite.com>

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UF/IFAS Range Cattle REC - 3401 Experiment Station Rd., Ona - <http://rcrec-ona.ifas.ufl.edu/>