



Cooperative Extension Service

Institute of Food and Agricultural Sciences



RANGE CATTLE REC NEWSLETTER

February 2001 - Vol. 4, No. 1



Calendar Of Events

February

15	Basic Beef Cattle Management Short Course - Breeding Programs for Small Herds and Maintaining a Healthy Herd. Statewide Videoconference. Tim Olson and Your Local Agent
15	Panhandle Beef Conference and Trade Show. Marianna, FL Ph:850-482-9904.
16	Winter Bull Sale. Marianna, FL Ph:850-482-9904
20	Johne's Disease Meetings. Labelle, FL Ph:863-674-4092
20	Johne's Disease Meetings. Okeechobee, FL Ph:863-763-6469
22	Basic Beef Cattle Management Short Course - Basics of Reproduction and Managing for an Efficient Operation. Statewide Videoconference. Joel Yelich and Your Local Agent.

March

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Editorial:

Back to the Basics - Beginning Your 2001 Fertilizer Program with a Good Liming Practice -

The Institute of Food and Agricultural Sciences of the University of Florida recommends lime application to an optimum pH of 5 and about 60 lb/A of nitrogen(N) fertilizer to bahiagrass pasture in south Florida. It is a known fact that repeated application of inorganic sources of N (ammonium nitrate, ammonium sulfate or urea) will eventually lead to acid soil conditions (pH <5). Soil acidity directly affects the growth and well-being of crop's roots due to aluminum and/or manganese toxicity. Acidity also indirectly affects the availabilities of soil nutrients to plants. The objective of this article is to discuss soil acidity, its importance, and steps to take to avoid related problems.

Theoretically, acidity refers to the concentration of active hydrogen ions (H⁺) in a system. Practically, acidity is measured by a term called pH which is defined as the reciprocal of the H⁺ activity i.e. $pH = \log 1/A H^+$. The lower the pH the more the active hydrogen ions present. A pH of 7 is neutral and is normally too high for most forages in Florida. A pH of 5 to 6 is slightly acidic and satisfactory for most Florida forages. A pH of 4 is too low, very acidic and will result in poor growth of most forages. Remember an acidic substance tends to increase active hydrogen ions of a system to which it is applied and conversely a basic substance tends to mop up (neutralize) hydrogen ions in a system. Another definition, that of buffers or buffer systems are compounds which can maintain

the pH of a solution within a narrow range when small amounts of acids or bases are added. Buffers can either mop up or issue a few active H⁺ ions when the need arises.

The soil represents a very complex system with sources of acidity and buffering substances at the same time. Sources of soil acidity are humus or organic matter, clay minerals (aluminosilicates), hydrous oxides of iron and aluminum, exchangeable aluminum, soluble salts carbon dioxide and inorganic N fertilizer. Sources of soil buffering capacity are the amount and nature of the inorganic clay and organic matter.

Soil pH is the best single indicator of the general soil acidity conditions. However, as a measure of active soil acidity in a medium that has some buffering capacity, it gives no indication of the amount of lime to be applied to reach a target pH. The lime requirement of a soil is related not only to soil pH but also to its buffering capacity. Some soils are more highly buffered than others and a lime requirement determined for one soil will in all probability not be the same as that determined for another. Hence, soils classified as clays, peats and mucks have higher buffer capacity and, if acid, will have a higher lime requirements. Coarse textured soils with little or no organic matter will have a low lime requirement.

The implication of the discussion so far are:

1. Soil acidity will increase with repeated use of inorganic sources of N.
2. Increased soil acidity (below pH 5) could reduce your pasture production by more than a third, regardless of N fertilization and predispose the sward to damage by soil borne insects and exhibit grass yellowing.
3. However, indiscriminate use of lime on coarse-textured soils could lead to excessive alkaline conditions and a resulting deficiencies of iron, manganese and other micronutrients
4. Adequate liming recommendations are based on a knowledge of the soil pH and buffer capacity which only the expert can provide.
5. The indiscriminate use of pH test kits by persons unfamiliar with the rudiments of soil chemistry is undesirable.

Liming as the term applies to agriculture is the addition to the soil of any calcium or calcium and magnesium containing compound that is capable of reducing soil acidity. Lime correctly refers to calcium oxide (CaO) but the term almost universally includes materials such as calcium-magnesium carbonate (dolomite) and calcium silicate. Most native soils in south-central Florida often have a pH of less than 4.5 and require lime application before pasture establishment. Bahia will grow satisfactorily at pH of 5 and all other warm season grasses require pH of 5.5.

If you have not applied any lime to your pasture within the past 3 years then as you plan

your 2001 forage program, take representative soil samples from the fields and allow a reputable soils laboratory to analyze and make appropriate liming recommendation. You may consult with your county agents for the proper sampling and soil processing procedures.

Rainfall at the Range Cattle REC - Ona in 2000 -

Annual rainfall at Ona for 2000 was 32.02 inches, which was 21.13 inches (40%) less than the 59-year average (53.15 inches). There were no records broken for low rainfall totals for individual months, but every month in 2000, except September (8.03 inches compared to the 59-year mean of 7.13 inches), was lower in rainfall compared to respective months for the 59-year mean. The driest year had been 1956 when 36.73 inches were measured, and the year with the greatest rainfall was 1959, when 78.82 inches was recorded.

Seed Testing Labs -

I have had quite a few phone calls this past year from cattlemen wishing to have germination tests conducted on seed lots used in pasture. It is a good idea to have your seed tested **before** you put it in the ground. If you have one bag, the sampling problem is easy, but if you have more, then try to sample at least 20% of the bags. For example, if you have 20, 50 lb bags of bahiagrass, then you need to sample four bags selected at random. Take a "handful" of seed and put it in a zip-lock bag along with a slip of paper containing your name, address, phone number, plant ID (Pensacola bahiagrass), and *seed lot number* found on the bag you purchased. Here are two choices for seed laboratories:

Florida Dept. of Agric. and Consumer Services
Bureau of Feed, Seed & Fertilizer Laboratories

3125 Conner Blvd. Bldg. #8
Tallahassee, FL 32399-1650

Phone: 850-488-9095

Fax: 850-921-1249

E-mail: fl-aglab@doacs.state.fl.us

Web site: <http://doacs.state.fl.us/~aes-fsflab>

Mr. Wallace Chason is in charge at the state lab. This lab will test seed of all of the common forages we sow. For example, bahiagrass costs \$21.00; aeschynomene and ryegrass are \$15.75 / sample. If you visit their web site above you can get information about the lab including the necessary forms for sample submission. If you don't have access to the Internet, you need to call or fax to get forms before you submit your sample.

Hulsey Seed Laboratory
P.O. Box 132
Decatur, GA 30031-0132
Phone: 404-294-5450

Fax: 404-294-TEST

Mr. Jerry Hulsey is in charge at this private lab. They will test most of the common forages we use in Florida. For example, bahiagrass costs \$18.00; aeschynomene costs \$13.00; and ryegrass costs \$10.00 / sample. With Hulsey, just send your sample to them with your name, address, etc., and they will bill you. **(RSK)**

Yield and Nutritive Value of Stockpiled Perennial Grasses as Influenced by Growth Period, Fertilizer, and a Freeze -

Fall stockpiling of forage grasses in the field for later grazing is a viable alternative to making hay. Harvesting forages is costly averaging approximately \$23.00/ton of hay and \$17.00/ton of silage. Hay production under tropical Florida conditions may be a difficult task especially during unfavorable weather conditions when dependent on contract services. In addition, harvested forages must be removed from storage and transported to the site of utilization. Stockpiled forage allows grass accumulation from October to the first freeze (frost) followed by timely utilization of the frozen grass. However, major concerns with stockpiled forages are dry matter accumulation during the fall and changes in forage nutritive value over time following a freeze.

A three year study was conducted with 9 perennial grasses (Floralta hemarthria, Florakirk and Tifton 85 bermudagrass, Florico and Florona stargrass and Tifton 9, Pensacola, Argentine and Paraguay 22 bahiagrasses) each allowed to accumulate from October 1 and November 15 with and without fertilizer. The fertilizer consisted of 50-13-50 lb/A N-P₂O₅-K₂O + micronutrients. All grasses were harvested for yield and nutritive value (crude protein and digestibility) on the day of the freeze, 1, 2, and 4 wk after the freeze. The following results are averaged over a 3-yr study. Allowing all 9 grasses to accumulate forage from either October 1 or November 15 until January averaged 1.3 or 0.4 T/A dry matter (DM), respectively at time of freeze. Hemarthria averaged 1.9 and 0.8 T/A, stargrasses and bermudagrasses 1.6 and 0.6, and bahiagrasses 0.7 and 0.3 T/A.

Forage accumulation for all grasses during the fall/winter with and without fertilizer averaged 1.3 and 0.5 T/A DM, respectively. Hemarthria averaged 2.0 and 0.7, stargrasses and bermudagrasses 1.7 and 0.6, and bahiagrasses 0.6 and 0.4 T/A, respectively. These data indicate fertilizing hemarthria, stargrasses, and bermudagrasses in early to mid-October will result in 1.7 to 2.0 T/A DM, compared with 0.6 to 0.7 T/A with no fertilizer. Results also indicate little benefit to fertilizing bahiagrass during October or later.

Crude protein content decreased very little for all grasses from the day of the freeze to 4-wk after the freeze. Hemarthria averaged 9.2% CP both at the time of the freeze and at 1 wk after the freeze, and decreased to 8.5% at 2 and 4 wk after the freeze. Stargrass and bermudagrasses averaged 12.4, 11.6, 10.3 and 10.1% CP at the time of freeze, 1, 2, and 4 wk after the freeze, respectively. Bahiagrasses averaged 11.5, 10.9, 10.5, and 10.4% CP, respectively.

Forage digestibility, unlike CP decreased drastically over time following a freeze. Hemarthria averaged 63% on the day of the freeze, 59% 1 and 2 wk after the freeze and 54% after 4 wk. Stargrasses and bermudagrasses averaged 58, 53, 50, and 40% digestibility, respectively. Bahiagrasses averaged 59, 53, 52, and 44% digestibility, respectively. Forage digestibility tends to decrease immediately following a freeze for all grasses, however, the amount of decrease depends upon the grass. Floralta decreased the least and stargrasses, bermudagrasses and bahiagrasses decreased most drastically following a freeze.

These data indicate tropical forage grasses can be stockpiled in the fall for winter grazing. Unlike bahiagrasses, the stargrasses, bermudagrasses, and hemarthria will all respond to fall fertilization. Following a freeze, crude protein concentration in the standing forage will remain stable for up to 4 wk. However, digestibility of standing forage will drop within 1 wk after a freeze, followed by an additional drop within 4 wk. The amount of this latter decrease will depend on the perennial grass. (PM)

Copper Oxide Boluses for Grazing Cattle -

The significance of supplemental copper for grazing cattle in Florida has been realized for many years. In almost all situations a balanced free-choice, salt-based mineral supplement will provide adequate copper nutrition. More recently, I have had several inquiries at the Range Cattle REC regarding the use of commercial boluses containing copper oxide needles. This form of supplementation involves the oral administration of a gelatin capsule (bolus) containing a measured amount of copper oxide in the form of small needle particles. Once administered, the capsule presumably drops into the reticulum where it dissolves slowly over time. This form of supplementation is not new. In the 1994 / 1995 calving season we investigated the use of these boluses in two Kansas cowherds at two locations. At the start of the trial, cows assigned to the treated group received two boluses (20 g of copper oxide needles), and their respective calves received one (10 g of copper oxide needles). The effect of treatment on copper status of the cows was determined by liver biopsy collections at the start and end of the study (106 and 154 d for Herd 1 and 2, respectively). The effect of treatment on calf performance was determined by comparison of calf ADG in Herd 1 and calf weaning weight in Herd 2. The results of this study are shown in Table 1. Table 1. Effect of copper oxide bolus administration on cow liver copper concentrations and calf performance at two locations.

Location	Treatment	n =	Liver Copper, ppm		Calf ADG, lb/d	Calf WW, lb	
			Start	End		All Calves	Heifers
Herd 1	Bolus	18	17.3	24.1	1.78	-	-
	Control	16	13.4	8.1	2.11	-	-
Herd 2	Bolus	276	162.3	291.2	-	634	748

	Control	830	195.6	187.0	-	689	779
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Copper-oxide bolus administration increased liver copper levels in both herds. This increase was less dramatic for cows in Herd 1, which is probably explained by the high levels of forage molybdenum found at this location. Molybdenum is a well-known antagonist of copper absorption. The average forage molybdenum levels for forage clippings collected over all four seasons were 10.65 and .78 ppm for Herd 1 and 2, respectively. Most importantly, copper bolus administration appeared to adversely affect calf ADG and weaning weight. One explanation for the negative impact of copper oxide bolus administration on calf gain relates to the potential antimicrobial effect of copper in the rumen. Copper may be altering the ruminal microflora in such a manner as to negatively impact forage digestion.

We are continuing to investigate the potential use of copper oxide boluses in grazing Florida cattle. Greg Yost, a graduate student in our program, is currently involved in the evaluation of different levels and forms of supplemental copper in cattle. In a recent study, he evaluated the ability of copper oxide boluses (12.5 g of copper oxide needles) to replete copper deficient Holstein heifers. In his study, copper bolus administration caused a rapid increase in liver copper up to approximately 28 days, where it then leveled off at about 150 ppm liver copper.

In addition, we are also investigating the effect of copper oxide boluses on forage digestibility. In this study, the effect of copper bolus administration on voluntary intake and digestibility of stargrass hay is being evaluated in growing steers. This study will be completed soon and should provide further information on the potential usefulness of this unique form of copper supplementation for grazing Florida cows.(JA)

Shrink of Marketed Calves -

Body weight loss or shrink is a normal occurrence of calves once removed from the cow, feed, or even their accustomed surroundings. Calves will shrink about 3% during the first 4 to 5 hours following removal from the cow or feed. Three percent shrink has become the cattle industry standard as a basis for establishing sale weight of newly weaned calves.

If calves are gathered and immediately weighed for sale, their live weight is shrunk (reduced) by 3% to establish a sale weight. In the trade this is termed pencil shrink. The 3% pencil shrink approximates live weight loss by calves sold through an auction market.

Shrink is a phenomenon the seller must be aware of because it influences the value of a calf. A 500 pound steer calf on today's market sells for \$4 to \$5 less for every 1% increase in shrink. A truck load of calves will bring \$400 to \$500 less for each 1% increase in shrink.

An example of how rapidly shrink occurs, we penned a group of crossbred steers at weaning for 6 hours without feed or water. These calves averaged 501 pounds when removed from the cow and shrunk 4.5% to an average weight of 478 pounds six hours later.

To estimate auction market shrink, Extension workers in North Carolina compared calf arrival weights at the auction market with calf weights when sold. They found a shrink of 2%; and this did not include weight losses prior to the calf's arrival at the auction market.

North Dakota researchers used steer and heifer calves that were on a preconditioning and backgrounding program to study marketing shrink. Calves transported from the farm to the auction market and placed on hay and water the day before the sale lost 6.2% of their on farm weight by the time they were sold, while calves hauled to the auction market the day of the sale and sold within 2 hours after arrival lost only 2.4% of their on farm weight when sold.

The important principle to remember is that shrink is closely related to the time a calf has been removed from the cow or feed. Calves sold at the ranch should be gathered as easily as possible, weighed immediately, and adjusted to an agreed upon pencil shrink.

If ranch marketed calves are loaded on the truck and hauled a distance for weighing the pencil shrink should be adjusted accordingly. If calves are weighed on the truck, insist that trucks arrive on time such that calves do not remain penned for extended periods.

For calves sold at an auction market, the seller should gather calves with limited commotion then haul them immediately to the auction market. Try to deliver calves such that they are sold as quickly as possible after arrival.

It is recognized that many ranchers with small herds must pen calves the day before the sale. Some ranchers even deliver calves to the auction market the day before the sale. It is important that these calves be provided hay and water, but they will still lose considerable weight.

Again, obtain a sale weight on calves in as short a time as possible after removal from the cow or feed. This is true for calves sold at the ranch or the auction market. Remember, buyers are well aware of shrink and also use it to their advantage. **(FMP)**

Featured Ranch: Bright Hour Ranch



From their aerial photography of southwest Florida in 1994, the Nature Conservancy staff saw a 72-square mile mosaic of plant community – gradations of black and white that indicated dry prairies, hammocks, scrub and scores of marshes, unmarred by roads or development. They were looking at Bright Hour Ranch located on State Road 70 just east of Arcadia. Mr. Calvin Houglund, the 83 year-old businessman from Tennessee and owner, had bought the ranch in 1964 as a place on which to raise cattle, relax, hunt and be outdoors with family, friends and nature. He had renamed this sanctuary, "Bright Hour" after a "good luck" steeplechase horse he owned as a teenager in Tennessee.

In January this year, Dr. Rob Kalmbacher and I were privileged to visit with Ranch Manager and life-long resident of Bright Hour, Mr. Rowdy Bateman, and learn more about their operation.

Currently, Bright Hour Ranch is a 46,000 acre commercial cow-calf operation with approximately 18,000 acres in improved pasture and sod service integrated with a 1000-acre citrus and watermelon farm, and the balance of approximately 28,000 acres in a nature conservancy plan that perpetually supports native grazing by cattle and wildlife.

In 1970, Mr Houglund bought some Beefmaster bulls to breed to the existing Brahman cross cow herd. He was so pleased with the Beefmasters that today the 8,500 head cow-calf herd consists mainly of Beefmaster and Angus crosses. Mr. Bateman finds the high fertility, moderate cow-size and good marketability of the Angus breed, and the Brahman "tolerance" blood and closed sheath characteristics in the Beefmaster crosses as a winning combination. The bulls are put on the cows on December 1 at a ratio of 1 bull to 20 cows. The ranch retains ownership of approximately 500 heifer calves yearly.

Improved pastures are mainly of Pensacola and Argentine bahiagrasses in 640-acre sections. There are a few acres of bermudagrass pasture and 50 acres of Rhodesgrass hay field. At variance to most south Florida ranches, Bright Hour ranch adopts a fall pasture fertilization program when about 400 pounds of 20-10-10 fertilizer are applied in September. Probably the uniquely low-lying topography of the ranch allows for adequate residual soil moisture and fertilizer nutrient uptake after the usually wet summer months. A special aspect of the Ranch's forage program is their haylage-tubing operation.

State-of-the-art machinery on site is capable of baling and wrapping haylage at the rate of 250-370 round bales per day with 37 bales in a row of tubes. All the Rhodesgrass forage and some bahiagrass and bermudagrass pasture are cut for haylage. Cut grass is wilted to 50-55% moisture before treating with a liquid mold inhibitor (organic acids), baling and wrapping all in one operation. The liquid inoculant helps preserve the forage and also

improves intake of haylage at feeding. Many travelers on SR 70 stop over to admire the haylage tubing operation when in process.

Bright Hour Ranch is a pioneer in environmental conservancy and a whole book can easily be devoted to this subject. Mr. Bateman says " We look at wildlife conservation not as one of the things you have to do but as one of the things you must morally do. It has always been and remains an integral part of this ranch". By providing leadership that promotes deep conservation ethics in all his staff, Mr. Hougland has maintained an incredibly intact landscape for wildlife, water, cattle and natural habitats. Nearly every species of animal that is native to Florida calls Bright Hour Ranch home. White tail deer, turkey, quail and wild hogs are the main sporting games, but sandhill cranes and ducks are seen in abundance. Cara Cara and burrowing owls, and rare animals such as the Florida grasshopper sparrow, Florida scrub-jay, Eastern indigo snake and even an occasional Florida panther are encountered. The Conservancy ecologist in Florida, Mr. Richard Hilsenbeck, notes that two of the ranch's 12 natural communities are globally imperilled and 17 rare vertebrate species are Federally listed as threatened or endangered.

The ranch employs many methods to enhance the natural habitat. By clearing a one-mile wide border of pasture around three sides for the ranch's traditional revenue products – cattle, oranges, hay and sod – Mr. Hougland and his staff kept the ranch's interior wild. Even fences were kept to a minimum. "When we got to this area, Mr. Hougland reportedly said "I can't stand to see a fence right across that pretty slough" so we stopped it right there and picked it up on the other side". Burning of native grassland is controlled on a 3-year rotation to rejuvenate grass and keep underbrush in check. With a controlled hunting policy, only a few people get to hunt at Bright Hour Ranch, and those who do have strict self-imposed limits of quail, comply with state limits on deer, ducks, turkeys, and participate in state-sanctioned alligator harvesting. In restricted, no-hunting, mowed game trails, feed are put out for deer, turkey and birds like the threatened sandhill crane. They also plant plots of prescribed feed, wild oats and native peas. Recognizing the importance of water systems, the ranch constructed a weir that provides a 20-acre plus fresh water lake, controlling runoff from a canal that serves as the major water source not only for livestock and wildlife but also a major source of drinking water for the city of Punta Gorda.

In 1995, Bright Hour Ranch received the Commissioner's Ag. Environmental Leadership Award for wildlife in Florida. In 1998, Mr. Hougland concluded a conservancy easement agreement with the Southwest Florida Water Management District on the 28,400 acre natural habitat which allows cattle grazing in private ownership but prohibits future development and legally protects the natural character of the land in perpetuity. There is also the human touch to Bright Hour Ranch. Nearly everybody on the ranch is kin to each other. Today, Mr. Zeke Browning, born 77 years ago and former ranch foreman who showed Mr. Hougland around while he considered buying the ranch, manages the ranch's water and wildlife. Chobee Bateman, is the ranch's secretary for 37 years and her son, Rowdy Bateman whom we visited, is the ranch manager, having foregone a successful career in banking to rejoin the working family. Robert Browning, Zeke's nephew, manages the cattle operation. The staff speaks of Hougland with a mixture of respect and

affection. Some of their children are attending college through a scholarship fund that Mr. Houglund set up specifically for them with profits from the hog operations and fees paid by professional alligator trappers. Mr. Bateman and Mr. Houglund, we of RCREC Newsletter salute you for letting us briefly into your and our wonderful world of Bright Hour. (MBA)

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