University of Florida, IFAS
Range Cattle Research and Education Center

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Range Cattle REC Newsletter

Heifers on limpograss at Deseret Cattle & Citrus. Combining limpograss and bahiagrass is a good combination for central and south Florida. See page 5.

Calendar of Events:

Month	Date	Event	Location
June	16 - 18	FCA Annual Convention	Marco Island
	17	FCA Bull Sale	Marco Island
October	14	Range Cattle REC, Field Day - 863-735-1314	Ona
	25	FL Santa Gertrudis Asso. Auction - 863-519-8677	Bartow
	29	Lemmon Cattle Co. Auction - 706-663-4970	Okeechobee

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Contrasting effects of N-fertilizer and Sludge on Soil pH and Bahiagrass

In theory, acidity refers to the concentration of active hydrogen ions (H^+) in a system. It is measured by an index called pH. The lower the pH, the more active hydrogen ions are present and the more acid the system. A pH of 7 (as is the case for distilled water) is neutral ($H^+ = OH^-$), and for soil a pH of 7 is too high for most forages in Florida. A pH of 5 to 6 is slightly acidic and satisfactory for most Florida forages to grow. A pH of 4 is too low or very acid and will result in poor root growth or function of most Florida forages.

Soil acidity tends to increase with repeated use of nitrogen fertilizer, and liming with calcium or calcium/magnesium compounds capable of reducing soil acidity becomes necessary. For example, it requires 60 lb of lime to neutralize the acidity resulting from the application of 100 lb ammonium nitrate and 110 lb of lime to neutralize the acidity from 100 lb of ammonium sulfate. Increased soil acidity (pH < 5) could reduce pasture production by more than a third, regardless of N fertilization, and predispose the grass to damage by soil-borne insects and grass yellowing.

In one of the long-term (5-yr) trials to evaluate the combined effects of liming an N-fertilization on bahiagrass pasture at the Range Cattle REC, Ona, annual forage DM yield declined from 4.0 T/A to 3.1T/A when 60 lb N/A from ammonium sulfate was applied yearly with and without appropriate liming to maintain a pH $\geq$ 5.0. Corresponding annual DM yields on plots limed to maintain a pH of 5.0 without N-fertilization and on control plots (no lime or pH ~ 4.3 plus no N-fertilizer) were 2.8 and 2.5 T/A, respectively.

In addition to DM yield, we estimated the percentage of each plot that was green, yellow or dead and invaded by weeds every spring from 1998 to 2002 in those trials. The greatest damage to bahiagrass pasture (up to 69% dead with weeds and only 31% green) occurred when grass was not limed but N-fertilized annually. When bahiagrass was neither limed (pH 4.3) nor N-fertilized, it was unproductive all right (2.5 T/A) but the stand did not deteriorate in 5-yr! (95% green). Damage to bahiagrass stand was also minimal (95-98% green) for limed plots whether or not they received annual N-fertilizer. We therefore concluded that the combination of acid soil and N-fertilizer tends to weaken bahiagrass root stolon system and facilitate stand loss. In acid soil situations, money is better invested first in lime to raise the pH to 5 or higher (may require a ton of lime every 3-4 years) than on N-fertilization. On the other hand, indiscriminate use of lime on coarse-textured soils could lead to excessive alkaline conditions and deficiencies of iron, manganese and other micro nutrients. Adequate liming recommendations are based on a knowledge of the soil pH and buffer capacity which only the soil laboratory can provide.

In recent years, many livestock producers applied lime-stabilized sludge to pastures to reduce the cost of fertilizer and lime. Although lime is added in the processing of sludge to control pathogens, insect vectors, and odor, limed sludge is an excellent source of slow-release plant nutrients (especially N and P), organic matter, and lime. During application, the pH of limed sludge could range anywhere between 7 and 11 with the range of N and P content of the dry material in the range of 3 to 5%, and 2 to 4%, respectively. Four years of repeated application of limed-sludge at the Range Cattle REC, Ona has shown that when used at recommended agronomic rates, bahiagrass forage production responds wonderfully to sludge organic fertilizer.

Like all good things, too much can cause serious problems to the condition of pastures. Bahiagrass roots cannot function properly to absorb sufficient iron, manganese and other micro nutrients when the soil pH approaches 7. Several bahiagrass pastures in Polk, Pasco and Hardee counties where excessive amounts of sludge were applied repeatedly attained a soil pH of about 7 and have lost substantial portions of the grass stand to weeds. It is easy to identify the strips on those pastures where sludge was applied excessively.

As a precaution for using limed sludge, monitor soil pH every 2-3 years and alternate sludge use with inorganic N-fertilizer such as ammonium sulfate or ammonium nitrate. In

extreme situations, it may be necessary to apply elemental sulfur to recover sludge-damaged pastures. In a pasture used for hay production in Polk county, we observed a pH decrease from 6.8 to 6.6 over one year when sludge application ceased and ammonium sulfate (100 lb N/A) was used. We are beginning work with sulfur application to reduce soil pH and will have specific recommendations in the near future. **(MBA)**

Effect of Silicon Fertilizer on Bahiagrass Forage and Seed Production

Although silicon (Si) is not an essential plant nutrient, it is known that fertilizer containing Si can improve plant growth. On organic soils in the Everglades Agricultural Area, Si has improved production of rice and sugarcane and inclusion of Si is a regular production practice. In the soil, presence of Si positively influences soil physical properties, especially retention of phosphorus. Laboratory and greenhouse studies at Ft. Pierce have shown that Si fertilizer resulted in greater root and shoot growth of bahiagrass seedlings grown on sandy soil. However, field studies on Si fertilization of bahiagrass have not been conducted.

We conducted a 2-year, replicated study on Argentine bahiagrass forage and seed production at Rhode Ranch near Yeehaw Junction. A different plot area within the same pasture was used in each year. Treatments were single applications of 0, 0.9, 1.8, and 3.6 tons/acre of Pro-Sil, which is a bi-product of processing steel slag. Pro-Sil contains ~14% Si, 30% calcium (Ca), 55% magnesium (Mg). Bahiagrass was fertilized once annually in May with a complete fertilizer which supplied 60-30-50 lb/acre of N-P_2O_5-K_2O, respectively. Micronutrients were also included in the fertilizer. Pastures were grazed except the period from June through August to allow for seed production and harvest. We measured bahiagrass forage production in May and June and seed yield in August.

Fertilization with Si had no effect on Argentine bahiagrass forage production, which averaged (2 year) 1100 and 3300 lb dry matter/acre for May and June, respectively. Seed yield was not affected by treatment and averaged 130 lb/acre. Concentrations of Ca, and Mg in the soil increased as rate of Pro-Sil increased, but concentrations of all other elements in the soil were not affected. Concentrations of all elements in bahiagrass forage were not affected by treatment.

Results from this research indicate that Si fertilization did not improve bahiagrass forage or seed production under field conditions at this one location. Because conditions differ throughout Florida, it is possible that Si fertilization results could differ elsewhere. **(RSK, VM, MBA)**

Feed Mineral Mixtures Year-Round

Even when we have low cattle prices, one input a rancher should not cut back on is mineral supplementation. A good mineral supplementation program should cost about $7 to $9 per cow annually. This is a very low-cost insurance policy.

Research shows that perennial grasses grown in south Florida requires less phosphate fertilizer than previously recommended. In fact, phosphate fertilization is not recommended for bahiagrass in south Florida. Fertilization research shows that phosphorus is 20 to 25% lower in bahiagrass forage not fertilized with phosphate. With modern fertilization practices it is very important that a good mineral supplementation program be followed.

Other mineral nutrients deficient in forages grown in south Florida include copper, cobalt, zinc, iodine, manganese, magnesium, and selenium. Even if minerals are not needed in every situation, the amounts added to a mineral mixture is low and the added cost is minor. Also, borderline deficiencies of trace elements may be present in the forage which could affect cow reproduction and/or calf growth, and the problem not visually recognized.

A mineral mixture has been developed over many years and fed at the Range Cattle REC. It is periodically reformulated and the current mixture contains 14% calcium, 9% phosphorus, 23% salt, 0.20 % potassium, 0.30% magnesium,1500 ppm copper, 50 ppm cobalt, 3000 ppm zinc, 210 ppm

iodine, 500 ppm manganese, 40 ppm selenium, and 180,000 USP units of vitamin A per pound. This mineral mixture is fed at a rate of 2 ounces or 0.125 pound per head per day to cattle grazing sandland pastures. Costing $300/ton, annual cost is $6.85/cow.

There is nothing magical about the Range Cattle REC mineral formula. Other mixtures that provide similar quantities of the mineral nutrients known to be limiting in south Florida forages are equally as good. The important thing is to provide cattle with mineral year-round and watch out for cost.

One cost saving measure is to prevent over consumption. Some formulas are very palatable and cattle will eat two or three times more than needed if fed free-choice. Intake can be controlled by placing a measured quantity of mineral in the feeder for a specific number of cattle for a specific time period (for example three weeks). If cattle eat all the mineral before the next feeding it will not cause problems. Excess minerals are stored in bones, liver and other tissues, and will provide for the animal's needs over several days or even weeks when mineral is not available. However, you don't want cattle to consume all the mineral mixture during the first few days after it is offered.

At the other extreme, cows may eat little or no mineral mixture for long periods, often months. The formulation of the mineral mixture may need to be changed to encourage intake. This is often accomplished by increasing the percentage of the palatable component, such as cottonseed meal, citrus pulp, cane molasses, or similar ingredients. Low mineral intake can result from high salt content in the drinking water, and the salt level in the mineral mixture may need to be reduced.

Work with your mineral mixture supplier and a good formula which supplies adequate quantities of mineral nutrients at a reasonable cost can be accomplished. **(FMP)**

Seed Testing Labs

Seed that you buy in Florida has a tag that provides percentage germination. To be valid, the date of purchase must be within 7 months of the date of test. If you are planting a large acreage of pasture, it is a good idea to do your own seed testing as a check. Test your seed *before* you put it in the ground. If you have many bags of seed, 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. #4. Seed Lab.
Tallahassee, FL 32399-1650

phone: 850-488-9095
fax: 850-410-5342
email: chasonw@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; aeschynomene and ryegrass are $15.75 / sample. If you visit their web site above you can get information about the lab including forms for sample submission. If you don't have access to the Internet, you can call or fax to get forms before you submit your sample. Forms are not essential, but be sure to include all the information listed above with the sample. Do not prepay as an invoice will be included with the results.

Hulsey Seed Laboratory
P.O. Box 132
Dacatur, 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, Argentine bahiagrass is $20; Pensacola bahiagrass is $15; aeschynomene is $14; and ryegrass is $13 /

sample. With Hulsey, just send your sample to them with your name, address, etc., and they will bill you. **(RSK)**

Gator Day Exhibits – Mole Cricket on the Run

Each year, UF/IFAS takes exhibits to the Florida Capitol for "Gator Day", showcasing UF /IFAS programs for the Florida Legislature in Tallahassee. This year, the UF/IFAS Marketing Council invited the statewide "Biocontrol Mole Cricket Project", among six selections, to participate in the Gator Day Exhibits program.

Two 6' x 3' banner posters were developed and presented at the Capitol. The first highlighted the problem of mole cricket infestation on bahiagrass pastures and the patented biocontrol solution developed by UF/IFAS. The second depicted successes achieved with state funds in transferring that technology throughout Florida. And there was the video projection of live mole cricket nematodes from a microscope on a rear projection screen situated between the two posters to draw the crowd.

Briefly, non-native mole crickets damage pastures, golf courses, turf fields and urban landscapes and cause ~$100,000 loss (reduced crop yields, chemical controls, grass renovation) annually. The mole cricket nematode (*Steinernema scapterisci)* was developed specifically to control pest mole crickets and do no harm to non-target organisms. Between 2001 and 2002 the Florida Legislature provided $300,000 in state funds to support a statewide educational effort on mole cricket biocontrol. These funds were used to 1) establish a commercial production source for the mole cricket nematode – Nematac® S – produced by Becker Underwood, 2) demonstrate the efficacy of reduced nematodes strip-application rates statewide by distributing 65 billion nematodes in 34 Florida counties, 3) establish a commercial source of custom strip-application by Ingram Grove services, Inc. and 4) assemble and educate a network of vendors for handling and marketing of the product to producers.

For $25/acre product cost and ~ $10/acre for custom application fee, the nematodes have proven to provide long-term suppression of pest mole crickets on bahiagrass pastures to sustain beef production. It is not surprising that the consignment of Nematac® S for spring 2004 was sold out early in March. The next batch will be ready for market in September 2004 and interested producers need to contact their county livestock agents for ordering information.

The Gator Day exhibit on "Mole Cricket on the Run" at the Capitol on April 14, 2004 generated appropriate enthusiasm from the Legislature, producers, IFAS administration and even school children. I extend a thank you to Dr. Pate who funded the cost of the exhibit and Lockie Gary, Hardee Co. Extension Director, who assisted to mount and supervise that booth. **(MBA)**

The Use of Combined Limpograss / Bahiagrass Grazing in South Florida

First extensively evaluated in 1974, 'Floralta' limpograss is the most widely utilized of the available limpograss varieties in south Floirda. This tropical grass originates from the Limpopo River in the Republic of South Africa. Floralta is a stoloniferous perennial tropical grass that was specifically selected for persistence under grazing conditions. Common to the limpograsses, Floralta produces very little seed and is therefore established vegetatively.

The need to identify forages that will provide adequate dry matter yield in the winter months is of major importance to south Florida cattlemen. A 1998 survey of south Florida cattlemen revealed that 79% of beef operations fed stored forage in the winter months. Floralta has superior winter yield compared to other warm season perennial grasses. In south Florida, limpograss can be expected to produce as much as 30 to 40% of its annual growth in the winter months. One distinct characteristic of Floralta is the ability to maintain appreciable levels of TDN at later stages of maturity. Limpograss maintains nearly 59% TDN, even after 10 weeks of regrowth. Compared to bahiagrass, Floralta limpograss provides appreciable dry-matter yield and is highly palatable. Floralta holds considerable potential as a fall/winter stockpiled pasture forage for south

Florida cattlemen.

We have recently completed a three-year study investigating the effect of replacing supplemental winter hay with stockpiled limpograss on cow and calf performance. Sixty acres of limpograss were established in the summer of 1999 for use in a combined bahiagrass / limpograss rotational grazing study. Cows assigned to the limpograss / bahiagrass rotation were provided 0.75 acres/cow of limpograss and 1.50 acres/cow of bahiagrass in a modified rotational grazing system. Cows assigned to bahiagrass alone (Control) were provided 1.80 acres/cow of bahiagrass. Supplemental winter hay was provided to the Control cows in an attempt to maintain adequate cow body condition during the winter. All pastures received a spring application of 60 lb N/acre. Limpograss pastures also received an additional fall application of fertilizer (60 lb N/A). During September, October, and November, cows assigned to the bahiagrass / limpograss combination treatment were grazed primarily on bahiagrass alone allowing the limpograss to stockpile for winter utilization.

All cows were provided 5 lb supplemental molasses (16% CP) daily from November 1 to mid-April. A 90 day breeding season was initiated on January 1. Pregnancy was determined by rectal palpation in July of each year. Calves were weaned during the first week in August each year.

Cows grazing winter limpograss pastures were provided with no winter hay compared to an average of 1400 lb/cow provided annually to Control cows during the winter feeding period (January to late March). Cows assigned to the limpograss treatment lost an average of 26 lb, but gained an average of 33 lb more body weight during the winter and summer months compared to Control cows receiving supplemental winter hay. Grazing treatment had no effect on calf weaning weight (average weaning weight = 547 lb). Pregnancy rates were also not affected by grazing treatment (average over all three years = 92.2 and 91.6 % for Control and limpograss cows, respectively).

Initially, it appears that grazing strategies that incorporate stockpiled limpograss could be economically effective for fall calving beef cattle in south Florida. Even though limpograss has appreciable winter yield, the majority of growth occurs during the summer rainy season. Cows assigned to the limpograss / bahiagrass treatment spent much of June and August exclusively grazing limpograss. An important consideration to this management strategy suggests that limpograss may limit calf growth compared to bahiagrass, as pre-weaned calves grazing summer limpograss gained an average of 11 lb less than those grazing bahiagrass during the interval from April to August. An economic analysis of both pasture systems is appropriate for each individual ranch. Calving seasons that differ from those used in this study may have a significant impact on the value achieved from the limpograss. As well, persistence of stand will greatly impact economic return, as the high-cost of limpograss establishment is spread over greater or fewer production seasons. **(JDA & FMP)**

Nursery Techniques for Production of Uniform Leucaena Seedlings for Transplanting

Leucaena is a leguminous tree legume that can provide nutritious forage for cattle, meat goats, and in wildlife plantings in Florida. It is a tropical plant that is adapted to fertile, well-drained (not less than pH 6.0) soils. Leucaena can be established by seed or transplanted seedling but the latter gives better and more uniform field survival. Rapid early growth of leucaena is highly desirable because it cuts down on the need for weed control, and enables the plant to successfully compete with weeds, and exploit improved planting site conditions. The procedures we use to produce seedling for our field plantings are outlined.

Seed treatment

Scarification

Hot water: Leucaena seed has a hard seed coat that prevents it from absorbing water and germinating. Scarification involves breaking the seed coat to permit water imbibition. We have used hot water and manual scarification with about the same level of success (>90% germination). Pour hot water over seeds in a suitable container,

stir and leave standing for 2 minutes. The amount of water used should be about five times the amount of seed. After 2 minutes, decant water, and dry seed, if you are not treating with rhizobium immediately. Hot water treatment may be combined with soaking overnight. By soaking overnight, seed that were successfully scarified, imbibe water and swell. This way one can plant out seeds that had been scarified. For large seed lots, small batches (~0.5 lb) of seed may be treated at a time. Leucaena seed can be obtained from ECHO (Educational Concern for Hunger Organization: 239-543-3246); and COSAF (Center of Sustainable Agroforestry: 352-376-6265).

Manual scarification: For more than 1 lb of seed, manual seed scarification may be too tedious. The broad end of the seed is nicked with a file, knife or nail clipper. Be careful not to cut the cotyledon (or your finger tip!). Overnight soaking is not necessary with this method.

Rhizobium inoculation

Like most legumes, leucaena can use atmospheric nitrogen for its growth through a symbiotic relationship with some bacteria called Rhizobium. Successful infection of a plant is evident from the formation of nodules on the plant roots. Leucaena requires the specific rhizobium that it associates with to be present in the soil otherwise its growth may be stunted and leaves appear pale in color. When leucaena is to be established where leucaena had grown before, new inoculation may not be necessary since the bacteria will be present in the soil. Peat cultures of leucaena rhizobium can be obtained from Nitragin Inoculants (414-462-7600). Pour some of the peat culture into a bowl, add water as required to make a slurry or paste. Pour in the seed and stir. The objective is to uniformly coat the seeds with the slurry, air dry (if not planting out immediate) and the seed is ready for sowing. Soil from under established stand of leucaena can also be used as source of inoculum.

<u>Preparation of potting substrate</u>

Materials needed:

1. Potting mixture: We use Fafard 4-Mix Professional Formula®. We buy from Southern Agricultural in Palmetto, FL (941-722-3285).

2. Complete fertilizer: We use Osmocote® (18-6-12), a controlled release fertilizer and Essential Minor Elements®. Both are obtained from Southern Agricultural.

3. Elemental sulfur. We add this to keep pH from becoming too high because our irrigation has large amount of calcium and magnesium carbonates.

4. Container: We use Multi-Pots® #3-96 flats, with 96, 6-cu. in. cells from Stuewe & Sons, Inc., 2290 SE Kiger Island Drive, Corvallis, Oregon 97333-9425. (1-800-553-5331).

For each bag (2.8 cu. ft.=79.3 L), we add 9 g sulfur, 80 g micronutrient mixture, and 204 g of Osmocote. This is thoroughly mixed in a cement mixer. One bag of Farfard mix will fill 7 flats. A little pressure is required on the mixture when filling into the cells to firm the substrate. It is also helpful to add some water to get a good consistency that will make filling the cells easier. After filling the cells, the scarified and inoculated seeds are sown, one per cell, and the flats set on level surface in a nursery shed. <u>Daily</u> watering will be required. It is helpful to have your irrigation on a timer and keep the flats moist.

It may take 3 to 4 months for the seedlings to reach 8-12 in. when they can be handled without much damage. At this stage they can be transplanted in the field. Leucaena established better on well-prepared, fertilized and limed (if necessary) soils. The seedlings can be transplanted into the field in June-October. When transplanting into established pastures, leucaena seedlings should be transplanted into 2 to 3 ft. wide strips that had been rotovated and well-fertilized. **(IVE & RSK)**

Phosphorus Phytoremediation

Amounts of manure generated by concentrated animal operations often exceed the carrying capacity of nearby land, and stricter environmental regulations lead to creation of pockets of highly impacted sites within a watershed basin. Manure utilization for forage production can be an effective approach for addressing both the problems of manure disposal

and impact reductions on water quality. In general, cropping patterns, climate, topography, and fertilization practices affect concentrations of nutrients, including N and P, in runoff waters. Forage production systems may not only be environmentally sound for recycling of nutrients and minimizing nutrient loss to water bodies, but they may also help farmers/producers to maintain a profitable business enterprise.

In concentrated animal operations, feeds are transported to the farm while a lack of manure transportation from the farm results in a net accumulation of nutrients. This can create pockets of highly impacted sites within some ranches/farms. A case in point is the Lake Okeechobee Basin. Phosphorus has been identified as a major cause of eutrophication of Lake Okeechobee. Hence, the efforts for water quality improvement in the lake have primarily been aimed at fertilizer and animal waste management in the basin.

Animal manures can be effective sources of nutrients for forages, and their applications to pastures could provide substantial amounts of nutrients, such as N and P, recycled through herbage production. High quantity and quality of herbage can be produced on impacted sites although optimal management of forage production and manure is crucial.

Unlike commercial inorganic fertilizers, manures have the disadvantage of not having the right nutrient forms and/or ratios for specific crop/forage requirements. Thus, their use may lead to accumulations of excess nutrients including N and P in soils, and cause potential hazards to water quality. As eco-consciousness increases, developments of environmentally and economically sound agricultural production systems are receiving high priority around the world. To reduce potential threats from nutrient runoffs and leaching effects on water quality, recycling nutrients through forage production systems may provide attractive alternatives to farmers/ranchers to comply with environmental rules and regulations, especially in the region where ecologically sensitive water bodies exist, including the Lake Okeechobee Basin.

Various animal manures including cow and poultry manures have been used to fertilize pastures in the US and around the world. Although animal manures are usually targeted at crop/forage production, the nutrients from manures often move in substantial quantities from the targeted agricultural parcels to aquatic systems through runoff and leaching. Such scenarios may cause undesirable changes, directly or indirectly both to agricultural parcels and the nearby water bodies.

In general, non-point sources such as agricultural runoffs are considered major sources of P to surface waters of the US. Intensive forage production can deplete P levels in highly manure-impacted soils, and such forage production may represent a crucial component of nutrient management in pastures. Differential P uptake by various forage species are expected depending on the forms of P present in soils and the capacities of the plants to mine the relatively stable P. Surface applications of slurry and mineral fertilizers in soils with low levels of P may significantly increase P level in the soil surface. Hence P loading to the surface runoff could increase sharply.

Proper estimation of P requirements is possible only if existing P availability in soils is determined. And, it is critical to reduce P losses in runoff due to over fertilization. Once the P demands of grasses in pastures/grasslands are met, the efficiency of grasses in removing/utilizing P usually decreases drastically. Different grasses have variable capacity to remove nutrients. Nitrogen and lime applications are very important for optimal herbage production as well as P uptake by plants. Thus, it is important to know how much lime to apply for various N rates and sources in order to maintain optimal soil pH.

Although animal manures may not have the right forms of nutrients in the right ratios for specific forage requirements, they can be used as nutrient sources, and recycled through herbage production. It is important, however, to optimize nutrient uptake, especially of P by specific forages from a given impacted site. Such herbage production may not only be environmentally sound due to recycling of nutrients and reductions in their losses to ecologically sensitive water bodies, but it may also help farmers/producers to maintain

long-term economic profitability. As there is a critical need for the understanding of P dynamics in pasture systems established in P-enriched areas, we, at the University of Florida, Range Cattle Research and Education Center in cooperation with the Agronomy Department, have set up an experiment at Butler Oak Dairy in Okeechobee with a grant from FDACS to determine whether the widely used forages in southern Florida (i.e., bahiagrass, limpograss and stargrass) can actually be used for P phytoremediation of manure-laden soils in the region. **(HKP & MBA)**

Smutgrass and Tropical Soda Apple Control

Florida pastures contain about 0.5 to 0.75 million acres of smutgrass and tropical soda apple (TSA). These two plants are probably the most serious weeds in Florida pastures.

Smutgrass

Basically there are two species of smutgrass found in Florida 1) small smutgrass (*Sporobolus indicus*) and 2) giant smutgrass or West Indian drop seed (*Sporobolus pyramidalis*). Many times these two types of smutgrass are found growing together in pastures. It is important to be able to identify the two types of smutgrass because treatment is different for each type. The main characteristic for identification is the length of branches on the head. The smaller smutgrass has short branches about 0.5 to 1.0" long and generally are found stuck together forming a single spike. The giant smutgrass has an open type head with ascending branches 1.5 to 2.5" long. The height of the plant has nothing to do with the type of smutgrass found in the pasture. Studies have shown that 'Velpar'® applied at 0.5 to 0.75 lb/A active during the rainy season of July and August will provide 90% + control of the small smutgrass. Velpar® applied at 1.0 lb/A during the rainy season will provide 88-90% control of the giant smutgrass. Both rates of Velpar® require a silicone sticker at 10oz/100 gal. water. No pre-herbicide mowing of smutgrass is required. Velpar® is most desirable for controlling smutgrass in bahiagrass. Special precautions must be used when controlling smutgrass in hemarthria. Do not spray stargrass with Velpar®. Velpar® may cause bahiagrass to turn yellow 20 days after treatment but plants will turn dark green again after 40 days. The application of Velpar® rates higher than 1.0 lb/A is harmful to bahiagrass. Remember, Velpar® will kill oak trees.

Tropical Soda Apple

Tropical soda apple is a broadleaf, perennial, noxious weed that has spread rapidly throughout Florida and other southeastern states. Mature plants range from 4 to 6 ft and produce nearly all their fruits from August through March. Germination and development of seedlings are greatest between August and March. Tropical soda apple is identified by its immature green fruit with white mottling like the fruit of many cultivars of watermelon. Mature fruit turns yellow and may contain 400 to 500 seeds each. Studies have shown that TSA plants can be controlled by several methods. 1) Application of Remedy® at 0.5 lb/A twice at 60-day intervals provided 98% control to non-mowed TSA plants. 2) Remedy® applied at 1.0 lb/A (one time) to non-mowed TSA plants provided 88-90% control. 3) TSA plants mowed and allowed 60 d regrowth, then sprayed, always provided better control than non-mowed treatments. Therefore, mowing TSA plants one time, allowing 60 days regrowth followed by 0.5 lb/A Remedy® provided 98% control. 4) Mowing TSA plants 2 or 3 times at 60 d intervals followed by 0.5 lb/A Remedy® provided 100% control. 5) Mowing TSA plants to a 3-inch stubble 1, 2, or 3 times at 60-day intervals provided 10, 67, and 92 % control, respectively with no herbicide. 6) Spraying TSA 60 days after the last freeze with 1.0 lb/A Remedy® provided 97% control and saved $10 to 15 /A mowing costs. 7) Spraying TSA 60 days after the last freeze with 1.0 lb/A Velpar® (plus rain) provided 98% control of TSA plus control of smutgrass and dog fennel while saving $10 to 15 /A mowing costs. All Remedy® treatments should be applied with a silicone surfactant at 10 oz/100 gal. water. If additional information is desired please call 863-735-1314. **(PM)**

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