



Cooperative Extension Service

Institute of Food and Agricultural Sciences



RANGE CATTLE REC NEWSLETTER

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Calendar Of Events

March

2 Florida Bull Test Sale, N. Florida REC Beef Unit, Marianna, FL.
Ph: 850-482-9904.

14 Beef Cattle Herd Health Management Seminar, Wauchula, FL. Ph:
863-773-2164.

May

1-3 UF Beef Cattle Short Course, Gainesville FL. Ph: 352-392-1981.

5-10 Florida International Trade Show, Ocala, FL. Ph: 352-620-3440.

23 Subtropical Agricultural Research Station Field Day, Brooksville,
FL. Ph: 352-796-3385.

June

19-21 FCA 2002 Annual Convention and Trade Show, Marco Island, FL.
Ph: 407-846-8025.

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EDITORIAL

What have 'Cattle Market Outlook' and 'Mole Cricket on the Run' Got in Common? -

The Range Cattle REC Newsletter warmly welcomes our youngest faculty member, Dr. Tom E. Anton, into our fold. Dr. Anton is an economist and joins us immediately after graduation from the University of Illinois at Urbana-Champaign. With this issue of Newsletter, he initiates a quarterly cattle market outlook series.

After six years of waiting, *Steinernema scapterisci* (Ss), the entomopathogenic nematode that provides permanent biocontrol of mole crickets is now commercially available under the trade name Nematac S®. It is produced and marketed by MicroBio, a subsidiary of Becker Underwood, Inc., Ames Iowa. However, soil moisture and proper timing of application will be essential for successful mole cricket biocontrol.

So what have 'Cattle Market Outlook' and 'Mole Cricket on the Run' got in common? – the Range Cattle REC Newsletter.

Cattle Market Outlook -

The current cattle cycle has reached 13 years which ties the longest cycle in the 20th century (1967-1979). Cattle inventories have been declining over the past four to five years reaching the lowest point since 1992. However, there are indications the end of the cycle may be near. One such indicator is the market price. With cattle inventories being low and beef demand improving, prices have been strong since late 1998, though they dropped off slightly since September 11. There has been a slight rebound since the end of 2001.

With strong demand and strong prices, the expectation of analysts was for herd expansion

to begin this year (2002). However, preliminary numbers led many to retract that view as heifer hold-backs were not evident. New information released by the USDA may indicate that initial expectations were accurate.

Seasonal increases in cattle on feed inventories for the October to January period saw steer placements increase. However, the usual increase in heifer placements did not occur, and the numbers of heifers on feed at the end of 2001 was down 6.8 percent from the same period in 2000. This trend could be an indicator that herd building may be beginning. However, USDA cattle inventory estimates released on February 1, 2002 indicate a 0.5 percent decline in the number of heifers held as replacements. There was an increase in the number of heifers expected to calve in 2002. So, there may be a stabilization of herd size beginning in transition to the expected expansion.

The expectations for the 2002 calf crop are for a continued decline based on decreasing cow numbers. As long as demand continues to remain strong or improve, this will translate to higher calf prices over 2002 and into 2003. These higher prices should translate into strong profits for cow-calf producers. If we are indeed at the beginning of a new cattle cycle, cow-calf producers are likely to see strong to good profits over the next three to four years as the industry goes through the up swing of the cycle.

December 2001 and January 2002 Florida cattle prices have continued the slight fall off from October. However, Orlando auction market summaries indicate that trend may be stabilizing or reversing as late January prices have begun to rebound slightly. Feeder cattle futures prices as of late January were also showing an expectation of increasing feeder cattle prices through November 2002.

The recent comments by Alan Greenspan have led to some increased optimism in the economy. A mid-January gallop poll also suggests that consumers believe we are pulling out of the recession. As long as consumer confidence remains high, the beef demand outlook should remain strong which, coupled with dwindling supplies, will continue to support strong prices for the foreseeable future. (TEA)

Salt Needs of Florida Cattle -

An essential need for sodium and chlorine by cattle has been demonstrated for thousands of years by a natural craving for common salt. These two mineral elements function as electrolytes in body fluids and are specifically involved at the cellular level in water metabolism, nutrient uptake, and transmission of nerve impulses. The initial sign of sodium and chlorine deficiency is a craving for salt, demonstrated by the avid licking of wood, soil, and sweat from other animals. A prolonged deficiency causes loss of appetite, decreased growth, unthrifty appearance, reduced milk production, and loss of weight.

The need for supplemental salt by cattle is primarily for sodium, with a need for chlorine above that naturally found in feeds and forages less evident. However, the requirement is expressed as salt (sodium chloride). The salt requirement of all classes of cattle is about 0.25 % of the total diet dry matter. This is about 1 ounce per head daily for 1000 pound

brood cows.

Florida grasses contain about 0.2 % salt equivalent. Thus, forage eaten by a 1000 pound cow supplies 0.8 ounces of salt daily, leaving only 0.2 ounces to be provided in a mineral supplement. This is easily met with mineral mixtures containing 20 to 30 % salt and consumed at 2 ounces per head daily, an intake recommended for loose mineral formulas developed by IFAS for Florida conditions. If salt is fed separate from other minerals, average intake should be about 0.2 ounces per head daily. Higher amounts are not harmful, but would be a waste of salt.

High salt intake can be a problem in Florida due to the proximity of many ranches to coastal brackish waters and high salt levels in well water. Cattle tolerate drinking water containing up to 1.0 % or 10,000 ppm total soluble salts (sea water contains 3.6 %) without affecting health or production. Water containing more than 1% salt should be avoided. The major response of cattle to high saline water is reduced feed intake, which causes reduced growth and milk production.

A major problem with salt in drinking water is that cattle may not consume mineral mixtures provided, and essential supplemental minerals such as phosphorus, copper, cobalt, selenium, iron, iodine, and zinc will not be consumed. Mineral mixture intake is affected when drinking water exceeds 1500 ppm total salts. If low intake of a mineral mixture is caused by the high salt content of drinking water, a mineral mixture with little or no salt should be provided, or a palatable feed ingredient such as cottonseed meal, citrus pulp, or molasses might be added to the mineral mixture to encourage its intake.

Keep an eye on the mineral intake of the cow herd. They should average eating 2 ounces per head per day for loose mineral formulas developed from Florida research, and that recommended on the feed tag for other mineral formulas. Mineral mixture intake is affected by many factors and can vary over short periods, thus estimates should be based on intakes obtained over several weeks. Do not be concerned if cattle do not consume or go without mineral over several days because body stores will prevent mineral deficiencies. (FMP)

Acidity of Fertilizers-

The major cause of acidity (decrease in soil pH) on agricultural soils is due to nitrogen fertilizer, especially those of an ammoniacal (NH_4) nature. Common potassium salts (except the nitrate) and superphosphate have no effect on soil reaction. The major effect of NH_4 is exerted when it is converted to nitrate (NO_3) with the concurrent release of hydrogen (H) in the soil solution. More H means lower soil pH. Both common forms of nitrogen fertilizers (ammonium nitrate and ammonium sulfate) used on Florida pasture are acid forming, and this can be measured by the amount of lime required to neutralize the acidity. It requires 60 lb of lime to neutralize the acidity resulting from 100 lb of ammonium nitrate, and 110 lb lime to neutralize the acidity from 100 lb of ammonium sulfate. Cattlemen usually apply about 50 lb/acre of N, so let's look at the amount of lime required to neutralize that amount of acidity. For ammonium nitrate (34% N) ranchers

need to apply 90 lb/A of lime, while for ammonium sulfate (21% N) they would need to apply 260 lb/A of lime. The cost of this lime should be taken seriously because the true cost of the fertilizer should include the cost of the lime too. At \$30/ton for lime, you need to add \$1.34 and \$3.93 for each application of 50 lb N/acre from ammonium nitrate and ammonium sulfate, respectively. Ammonium sulfate supplies sulfur, an important nutrient for plant growth, but sulfate does not remain in our sandy soils for long. (RSK)

'Jiggs' a Potential Bermudagrass for Central Florida -

Jiggs, a bermudagrass which originated in south Texas was tested at the Range Cattle REC over a 3-yr period. It forms a thick, dense sward, consisting of fine stems that attain a height of 24 to 30". This perennial grass establishes rapidly when recommended establishment procedures are followed. Jiggs appears to be well adapted to many south Florida flatwood soils and will tolerate saturated soil conditions equal to other bermudagrasses and stargrasses. Once established, Jiggs is very persistent and competes well with common bermudagrass when properly managed. Jiggs, like most bermudagrasses and stargrasses, has a high fertility requirement consisting of 200-40-80 lb/acre N-P₂O₅-K₂O + micros with N applied in split applications. Dry matter (DM) yields of Jiggs are equal or better than Florona and Okeechobee stargrasses, ranging from 6.6 ton DM/acre (total warm season yield at 4 wk regrowth) to 8.1 ton DM/acre (total yield at 5 wk regrowth). Jiggs will also produce good forage yields during the frost-free cool season, averaging about 1.4 ton DM/acre from mid-December to mid-April. This cool season yield is slightly better than rhodesgrass and Florona stargrass. Forage nutritive value was similar to the stargrasses ranging from 10 to 16% CP and 51 to 58% digestibility during the summer-fall period. Jiggs can be used for both hay and for grazing. It matures rapidly; therefore, grazing frequency (rest period between grazing or hay harvest should not extend beyond 4 or 5 wk. Jiggs bermudagrass harvested for hay tends to cure rapidly, usually equal to or sooner than Florona stargrass. Diseases have been limited to a low incidence of rust during early spring.

Jiggs has been selected primarily because of its fine stems, dense turf, good yielding ability, during both the warm and cool season, good persistence, with average quality. (PM)

Effect of maturity on quality measures of four common Florida pasture forages -

The three major factors affecting forage quality include; 1) forage specie, 2) forage maturity, and 3) fertilization. Cattle ranchers in Florida have long recognized the value of these three management inputs on the nutritional contribution of forage to their cowherd. Recently, we evaluated the effect of forage maturity on the feeding value of four forages commonly used in south Florida.

The four forages consisted of Pensacola bahiagrass, Floralta limpograss, Tifton-85 bermudagrass, and Florona stargrass. Because both bermudagrass and stargrass belong to

the Cynodon family, comparisons reported herein are often made between the Cynodons and bahiagrass or the Cynodons and limpograss. Forages were harvested and stored as hay at two stages of maturity (approximately 4 and 10 weeks). For measures of voluntary forage intake, forages were ground and fed individually at a rate to ensure ad libitum intake. Each forage x maturity treatment was evaluated in growing steers and mature cows (n = 6/treatment). Total forage offered and refused was determined during a 14-d sample collection period, which immediately followed a 7-d adaptation period. Forage organic matter digestibility was determined in growing steers by the use of metabolism crates where forage consumption and total fecal production was assessed for 7 d.

Forage with greater maturity was associated with a lower CP concentration. At both stages of maturity, bahiagrass had a higher CP concentration compared to limpograss. Bahiagrass tended to be less affected by the maturity-associated declines in crude protein compared to the other forages.

With the exception of limpograss, digestibility was reduced with increasing maturity. Bahiagrass had the highest digestibility compared to all other grasses. Bahiagrass was less affected by maturity than the other forages.

Independent of forage specie, average voluntary intake for mature cows and growing steers was reduced by over 23% when forage matured from 4- to 10-wk. Also independent of forage specie, growing steers tended to voluntarily consume more forage (19%) compared to mature cows. Steers and cows consumed more Cynodon forage compared to the other forages at the 4-wk maturity. However, The Cynodons also suffered the greatest loss in voluntary intake when allowed to mature to 10-wk. Again, bahiagrass was less affected by the maturity-associated declines in voluntary intake compared to the other forages

Table 1. The effect of forage specie and maturity on organic matter (OM) crude protein, OM digestibility and OM intake of four Florida pasture forages.			
	Forage maturity		
Item	4 week	10 week	Change
Crude Protein	----- %	----- %	----- % -----
	OM basis -----		

Bahiagrass	9.8	7.7	-21.4
Limpograss	7.9	4.2	-46.8
Bermudagrass	9.8	6.6	-32.7
Stargrass	9.5	6.9	-27.4
Digestibility	----- %	----- %	----- % -----

	OM basis -----		
Bahiagrass	62.4	59.0	-5.4
Limpograss	56.7	56.2	-0.9
Bermudagrass	59.8	53.1	-11.2
Stargrass	59.6	49.6	-16.8
Voluntary OM Intake	----- % Body weight - -----		----- % -----
Bahiagrass	1.84	1.64	-10.9
Limpograss	1.50	1.21	-19.3
Bermudagrass	1.92	1.47	-23.4
Stargrass	2.45	1.62	-33.9

The semi-tropical weather and growing conditions of Florida are unique when compared to other US states. Sub-tropical weather is conducive to forage yield, but is generally associated with low nutritive value. The most common forage grass in Florida is bahiagrass (*Paspalum notatum*), covering an estimated 2.5 million acres.

Bahiagrass has a relatively low fertility requirement, is highly tolerant to overgrazing, and is easy to establish from seed. These attributes make bahiagrass a popular choice for most Florida cattlemen. One disadvantage of bahiagrass is that it becomes dormant in winter, when very little yield is realized. Therefore, cattlemen must rely on other pasture forages, stored forage, or purchased feeds to supplement the nutritional needs of the brood cowherd. The results of the current study reveal important information regarding the feeding value of four sub-tropical grasses commonly utilized in Florida. Bahiagrass is commonly considered to be of marginal quality, especially compared to the other forages reviewed in this study. Not considering dry matter yield, these results suggest that bahiagrass contains similar nutrient qualities, especially at latter stages of maturity, compared to limpograss, bermudagrass, and stargrass. It is likely that the low yield, often realized with bahiagrass, contributed to the favorable quality seen in this study. The Cynodons, evaluated in this study, are highly digestible and promote excellent voluntary intake. However, digestibility of the Cynodons, especially bermudagrass, declines rapidly with increasing maturity. This depression in digestibility is also accompanied by a large decrease in voluntary intake. Limpograss, in contrast, is typically low in crude protein but digestibility is not greatly affected by maturity. (JA)

Mole Crickets on the Run -

After six years of waiting, *Steinernema scapterisci* (Ss), the entomopathogenic nematode that provides permanent biocontrol of mole crickets is now commercially available under the trade name Nematac S®. It is produced and marketed by MicroBio, a subsidiary of

Becker Underwood, Inc., Ames Iowa. Proper timing of application will be essential for successful biocontrol.

Nematac S contains infective juveniles (IJs) which are the only free-living stage of *Ss* nematodes. The IJs in the Nematac S product do not feed but may live for months on stored reserves if kept cool (40 oF). Once applied on a pasture, the sole function of the IJs is to search for an adult or pre-adult mole cricket, invade it, and initiate infection. The reproductive stage of *Ss* nematodes normally takes place inside a dead mole cricket.

The IJs do not move far in the soil but depend on mole crickets to move to them. The IJs then attach to a mole cricket, enter it through its mouth or spiracles, and initiate an infection. Active dispersal by the IJs in the soil may be measured in inches. By comparison, passive dispersal of the nematodes by mole crickets may be measured in miles. Additionally, the length of time that *Ss* juveniles survive in soil after application and without finding a mole cricket is days or weeks depending on soil temperature, type, and moisture, and natural enemies. Survival is better in sandy or sandy-loam soils, moderate soil moisture, and temperatures between 60 and 75 oF than in clay soils, excessive moisture, and higher or lower temperatures. There are numerous organisms in the soil that prey on the IJs such as mites, fungi and other nematodes. Therefore, large numbers of IJs are normally applied (~ 1 billion/A), and they must find and infect a mole cricket in the shortest possible time after application for biocontrol to occur.

Tawny and southern mole crickets usually overwinter as adults in deep burrow systems. Following their mating flight in early spring (mid-February to April), when temperatures become warm, many adults relocate and lay clutches of eggs in underground chambers. By early June, most adult mole crickets die just as the hatchlings (tiny nymphs) of the new generation begin feeding on pasture. These hatchlings are largely nomadic because they have no permanent 'home' burrows. They tend to seek escape above ground and move in groups especially following heavy rainfall (> 1 inch). Adults may retreat into deep burrows rather than coming to the surface.

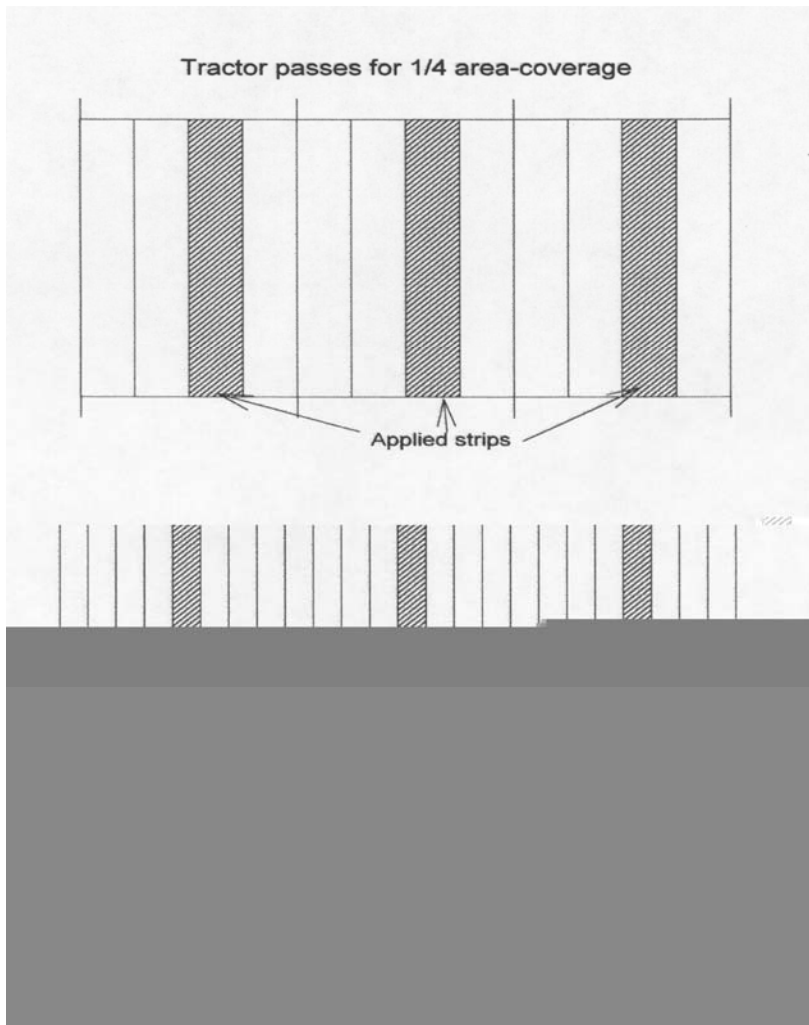
The peak nymph activity is between June and September and may be used to assess the magnitude of mole cricket infestation on a site, but it is not the best time for *Ss* nematode application. By October, the nymphs that hatched in June have developed into large nymphs (juveniles) and young adults with wings. As a result, surface activity decreases and subsurface activity (tunneling) increases. A considerable amount of damage to sod occurs during feeding and tunneling in the fall.

The seasonal pattern of mole cricket activity in pasture is critical for timing the application of *Ss* nematodes. Nematodes are more effective on large juveniles and adults, which have larger body openings, than on nymphs. Two times that are ideal for *Ss* nematode application to pastures in Florida are September to November, and March to May when a high percentage of adult mole crickets are present. Nematode application during these periods should be timed for early mornings or evenings and following rainfall or irrigation to ensure cool, moist conditions necessary for nematode survival. Upon successful entry and infection in mole crickets, the nematodes will reproduce in the mole cricket cadaver and recycle back into the soil to allow for long-term mole cricket

control. (MBA)

Recommendations to Optimize Biocontrol of Mole Crickets on Pastures:

1. Purchase fresh nematodes (Nematac S) within a few weeks before planned application (even better to have them arrive as close to application time as possible).
2. Store nematodes in a refrigerator at about 40 oF (4-6 oC).
3. Transport nematodes to the field in a cooler with ice or in an air-conditioned vehicle. Use a towel or other barrier to prevent direct contact with the ice.
4. Time application for early mornings or evenings in March-May or September-November.
5. Apply nematodes to moist soil.
6. Use a machine with injector tines or a modified slit-seeder that can place the IJs in suspension 1 inch below the soil surface and close the slit with press wheels. If soil is very moist and plant cover is not too dense, a sprayer rig with filters removed can also be used (Check pump and nozzle).
7. Mix nematodes directly into a tank partly filled with fresh, clean water with the agitator running, and then bring volume up to 100 gallons. Calibrate to apply enough suspension to obtain 1 billion nematodes in 100 gallons of water to an acre.
8. Apply the nematode suspension in strips, immediately after mixing, while maintaining constant agitation, to one-quarter or one-eighth (see figure below) of the pasture to be treated.



Newsletter Contributors

[Martin B. Adjei, Editor](#)

Extension Forage Specialist
Agronomy Assistant Professor

[Rob S. Kalmbacher](#)

Range Management and Forage Crops
Agronomy Professor

[Findlay M. Pate](#)

Beef Cattle Management
Animal Science Professor & Center Director

[Paul Mislevy](#)

Pasture - Forage Crops and Reclamation
Agronomy Professor

[John D. Arthington](#)

Beef Cattle Management
Animal Scientist Assistant Professor

[Tom Anton](#)

Livestock Economist
Assistant Professor