2016 NFREC Beef/Forage Day PROCEEDINGS

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UNIVERSITY of FLORIDA

April 15th, 2016

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Appreciation is expressed to the following NFREC staff members that are involved or assist with the NFREC Beef Cattle and Forage programs.

NFREC Marianna Beef Unit
Pete Folsom
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2016 NFREC Beef/Forage Day

Schedule of events (CDT):

8:30 AM **Registration (Registration fee - $10) and interact with exhibitors**

9:00 AM **Start morning program**

- **Reducing Nitrogen Inputs in Livestock Systems –** Jose Dubeux, UF Forage Specialist
- **Planning for Summer Forages –** Ann Blount, UF Forage Breeder
- **Bahiagrass Effects on Soil Health –** Cheryl Mackowiak. UF Soils Specialist
- **Focus on Preweaning Calf Management –** Philipe Moriel, UF Beef Specialist
- **Impact of Record Keeping and Culling on Herd Profitability** – Nicolas DiLorenzo and Cliff Lamb, UF Beef Specialists

12:30 PM **Lunch and speaker**

- **Florida Heifer Development Program –** Kalyn Waters, UF Holmes County Extension Director and Cliff Lamb, UF Beef Specialist

1:30 PM **Start afternoon program (Choose one)**

- **Winter forage demonstration –** Ann Blount, UF Forage Breeder and Jose Dubeux, UF Forage Specialist, Cheryl Mackowiak, UF Soils Specialist and Mark Mauldin, Livestock Agent, Washington County
- **Feed Efficiency Tour and Experiment Overview–** Nicolas DiLorenzo and Cliff Lamb, UF Beef Specialists

2:30 PM **Adjourn**

Reducing Nitrogen Inputs in Livestock Systems

Jose Dubeux, Nicolas DiLorenzo, Ann Blount, Cheryl Mackowiak, Liza Garcia, Erick Santos, David Jaramillo

North Florida Research and Education Center, Marianna, Florida
University of Florida

Introduction

Nitrogen is a key element for forage growth. It is required to form proteins which are the building blocks for new plant tissues. Soils in Florida are often low in soil organic matter (SOM), which is the main N source in the soil. As SOM decays, it releases mineral N which can be taken up by plants and soil microorganisms. The atmosphere is rich in N. Approximately 79% of the air we breathe is N, but unfortunately in a form (N_2) that is not assimilated by plants. In order to be assimilated by plants, the atmospheric-N_2 needs to be reduced to ammonium, which can be later transformed into nitrate. There are two important ways to reduce atmospheric-N_2: 1) Industrial fertilizer; 2) Biological N_2-fixation (BNF). Manufacturing N fertilizers is expensive and increases CO_2 emissions because it uses natural gas, a fossil fuel. Biological N_2-fixation is mediated by different organisms, but we will focus in the association between legumes and soil microorganisms (*Rhizobium* and *Bradyrhizobium*). Forage legumes such as clovers, perennial peanut, peas, vetches, and many others associate symbiotically (mutual benefits) with these soil microorganisms and reduce atmospheric N_2. The biologically fixed N_2 is used for the legume growth and later is made available for other plants in the community. In a grazing condition, cattle will eat the legumes and recycle 80-90% of the N back to the soil via excreta. Therefore, companion grasses will be able to utilize the recycled N. If the legume is not grazed, senescent tissues will be deposited above- and below-ground and decay, also releasing N to the system. Legumes not only add N to the system, but they also are known for their greater nutritive value, particularly if compared to warm-season perennial grasses. Legumes are rich in protein and they are often more digestible than warm-season grasses, leading to greater forage intake and animal performance.

The decision whether to apply N fertilizer or to plant forage legumes is highly dependent on livestock prices and cost of inputs, in this case, N fertilizer and legume seeds. Typical annual amounts of N fertilizer used in Florida livestock systems ranges between 200 to 300 lb N per acre, if we consider warm- and cool-season. The efficiency of N fertilizer, i.e., the amount of applied N that is recovered by the plant, is approximately 50%. Environmental losses via ammonia volatilization and leaching reduces the economic benefits of applied N and might cause pollution of ground water by nitrates. Greater livestock performance and reduced fertilizer inputs obtained in grass/legume systems, may offset the establishment cost of perennial warm-season legumes and annual legumes overseeded during the cool-season.

Management options to reduce N inputs from fertilizers in North Florida

The development of year-round grazing systems that are less dependent from N fertilizer inputs is the major goal of our research and extension programs. In order to reach this goal, we have been testing warm- and cool-season systems, contrasting grass/legume with N-fertilized based systems. We are measuring not only livestock performance, but also measuring N inputs and potential savings with reduction of N fertilizer. In addition, we are also monitoring other potential benefits from these systems such as reduction in leaching, provision of forage for pollinator insects, increase in SOM, and reductions in greenhouse gas emissions from soil and livestock.

In the warm-season, we are comparing three systems: 1) Argentine bahiagrass + 100 lb N/A; 2) unfertilized Argentine bahiagrass; 3) Strip-planted Ecoturf perennial peanut mixed with Argentine bahiagrass (Figure 1). The perennial peanut was established in 2014, in 9-ft wide strips using a rate of 80 bushels per acre. Bahiagrass strips were 9-ft. wide as well. Therefore, only 50% of the total area was planted with perennial peanut. This approach reduces the establishment cost and allows the use of the grass strips for hay during the establishment phase.

We started the warm-season grazing trial in July 2015, and preliminary results indicated greater gains per animal and per acre for steers grazing perennial peanut/bahiagrass mixtures. This is a long-term research and these results are preliminary. Long-term benefits of adding forage legumes requires longer-term trials. Persistence of perennial peanut under grazing also needs to be assessed. Livestock prefer perennial peanut rather than bahiagrass, therefore, the grazing management should target the peanut. We have been using continuous stocking with adjustable stocking rates based on the perennial peanut herbage mass. In the first grazing year, when the perennial peanut was still developing, our average stocking rate was 1.5 steers per acre during the warm-season and 0.7 lb/head/d compared to 0.35 lb/head/d observed for steers grazing unfertilized bahiagrass pastures and 0.5 lb/head/d for steers grazing fertilized pastures. Although livestock gained twice as much gain on perennial peanut/bahiagrass compared to unfertilized bahiagrass pastures, these gains are considered below the potential livestock gains on perennial peanut pastures. In the first year we used calves just weaned from the cows, therefore, the transition from weaning to the new development stage resulted in reduced gains. Towards the end of the season, weight gains reached more than 1.5 lb/head/d on perennial peanut pastures, but that was not enough to offset the initial reduced gains. In 2016 we will use yearly steers and evaluate the full potential of perennial peanut for growing animals. It is important to mention that perennial peanut/bahiagrass pastures did not receive N fertilizer during the grazing trial (Figure 1).

Figure 1. Strip-planted perennial peanut (*Arachis glabrata* Benth.) on Argentine bahiagrass (*Paspalum notatum* Flügge). Photo credit: Jose Dubeux

In the cool-season, we overseeded the warm-season perennial pastures to establish year-round grazing systems. The fertilized bahiagrass pasture was overseeded with a mixture of FL 401 cereal rye and RAM oat (50 lb/A of each) and fertilized with 100 lb N per acre. The perennial peanut/bahiagrass pasture was overseeded with the same cereal rye/oat mixture fertilized with 30 lb of N/A plus a mixture of clovers (15 lb/A of Dixie crimson, 6 lb/A of Southern Belle red, and 3 lb/A of Ball clover). Finally, the unfertilized bahiagrass was overseeded with a similar grass/clover mixture + 30 lb N/A, as described for the perennial peanut/bahiagrass system. In summary, the fertilized grass treatment received a total annual input of 200 lb N/A, whereas the grass/legume and unfertilized bahiagrass received only 30 lb N/A of N fertilizer input. Considering the current price of urea, the cheapest N source, 200 lb N is equivalent to $80. In our trial, we used a combination of urea and ESN, therefore, the price should be considered greater than this ($88). The seed prices used for the cool-season legumes was equivalent to $70 per acre. If we add the 30 lb N applied for the grass/legume systems, the final cost is similar between systems. Seed rates used in this trial could be potentially reduced by 20-30% without causing significant reduction in the clover contribution. Long-term results will determine the overall benefits of these contrasting systems, not only in terms of livestock production, but also soil health and other ecosystem services provided. Overseeded forages grew faster in the perennial peanut strips, as shown on Figure 2, likely due to greater soil N left behind by the peanut and less competition on perennial peanut compared to bahiagrass strips (Figure 2).

Figure 2. Cool-season forages overseeded on perennial peanut/bahiagrass pastures. Cool-season forages grow better on perennial peanut strips. Photo credit: Jose Dubeux

Clovers peak in March-April, when small grains are phasing out. Therefore, clovers extend the grazing season, reducing feeding costs (Figure 3). In late March-early April, bahiagrass and perennial peanut start to regrowth, completing the one-year cycle of the grass/legume based systems (Figure 4).

Figure 3. Cool-season clovers adds N to the system while improves cattle diet.
Photo credit: Jose Dubeux

Figure 4. Perennial peanut and bahiagrass starts to regrowth in the spring while cool-season annuals are phasing out. Photo Credit: Erick Santos

Take Home Message

Sustainable grazing systems for Florida panhandle are possible by combining warm-season perennial legumes and annual cool-season legumes into current grass monocultures. Reduction of N fertilizer and maintenance of cattle productivity is possible because forage legumes add biologically fixed N and have greater nutritive value than warm-season perennial grasses. Long-term results are important to demonstrate other ecosystem services provided by forage legumes in livestock systems.

Our Summer Annuals: Millet, Forage Sorghum, Sudangrass, Sorghum-Sudan and Crabgrass

Ann Blount and Jose Dubeux

North Florida Research and Education Center, Marianna, Florida
University of Florida

While the backbone of the southern cattle industry relies on perennial grasses like bahiagrass and bermudagrass, summer annuals, like millet, sorghum-sudangrass, and crabgrass, offer high quality and high yielding forages in situations where an annual forage system is desirable (Fig 1).

Figure 1. Forage millet and clay pea make a successful mixed grass-legume, warm-season forage planting for cattle.

Pearl millet, forage sorghum, sudangrass and **sorghum-sudan hybrids** are annual, warm-season, seeded grasses that grow quickly in the spring and summer months and offer high-yielding and high-quality forage. These forages require cultivated land or may be stripped or no-tilled into a pasture following small grains, after the winter forage has been grazed down. Row crop and vegetable crop producers may also use millet, forage sorghum, or sorghum-sudangrass in rotation with high valued crops to maintain weed control and/or prevent erosion, while provide their livestock with quality forage. Sometimes these forages are used when renovating pastures, particularly when trying to eliminate existing stands of perennial grasses. They can successfully shade out bahiagrass and bermudagrass.

Pearl millet, forage sorghum, sudangrass and sorghum-sudangrass may also be used for creep grazing, green chop, haylage, silage or hay. The large stems are often hard to dry for making hay, and a hay conditioner would best be used to hasten the drying period. Often these types of summer forages are ensiled rather than harvested for hay.

Pearl millet varieties, include Tifleaf 3, and several other commercially available varieties, are all well adapted to much of the south. Pearl millet should not be confused with Japanese millet, browntop millet, or proso millet. These are short growing millets, popular in wildlife plantings or for quick cover to prevent soil erosion. Forage yields of these millets are considerably lower than that of pearl millet and are not usually recommended for livestock forage plantings.

Some of the forage sorghums and sorghum-sudangrass hybrids now have the brown midrib (BMR) trait, which enhances the digestibility of the forage by as much as 40%. Sudangrass is a finer grass

than sorghum-sudangrass and generally its forage is lower yielding. Remember that equine should not be fed sorghum-sudangrass hay because of health issues related to cystitis.

While these quick growing annuals offer high nutritive quality, they can present a few management concerns. First and foremost, we have a new pest of sorghum, sudangrass and sorghum-sudan, the **sorghum aphid**. So be aware that this pest may require that any planting should be scouted and possibly sprayed with an insecticide. This insect has emerged several years ago with a vengeance.

Also, **nitrate accumulation** can occur in all of these grasses. Weather and crop management may contribute to the rapid accumulation of nitrates in the plant tissue. This generally occurs during periods of low rainfall or low humidity with plants heavily fertilized with N. When hay is cut during or just following a period of drought, nitrate levels may be elevated. **Prussic acid** (HCN) poisoning is not a concern in millet, however, it is with forage sorghum, sudangrass, and sorghum-sudangrass and care should be taken with livestock consuming these forages during periods of drought or frost. Regardless of the class of livestock you are feeding, care needs to be taken to prevent any issues with nitrates and prussic acid concentrations in sensitive animals.

Pearl millet, forage sorghum, and sorghum-sudangrass seed is often readily available and there are some very good varieties on the market. More information on planting, management and expected yields of these crops can be found in extension publication http://edis.ifas.ufl.edu/ag157

Performance and yield of these annual forage varieties are tested in Florida and Georgia. University of Florida trial results are found at:
http://animal.ifas.ufl.edu/corn_silage_forage_field_day_extension/index.shtml.

One of my favorite summer annual forages is **Crabgrass.** It is a fine-stemmed grass that can be grazed or cut for hay. It often volunteers in pastures or fields that have recently been tilled. Crabgrass can be planted, however commercial seed are limited to "Red River Crabgrass", developed at the Roberts Noble Foundation of Ardmore, Oklahoma and "Quick-N- Big" from Elstel Farms and Seeds, Thomas, OK, and "Mojo Yellow Jacket Coated" crabgrass from Barenbrug USA. Some new crabgrass varieties Crabgrass can be managed as an annually planted forage. It mixes very well with legumes and other types of summer grasses. It is very palatability and has excellent forage quality with CP at about 14% and % IVDMD in the upper 70s (78-79%) when grazed or cut for hay in the vegetative stage. As the plant matures, as with most grasses, its forage quality declines.

Planting crabgrass fits well in open land situations where planting annual winter forages, such as ryegrass, oats, rye or wheat, for early grazing is the goal. The periods for winter annuals and crabgrass are complementary and allow for slight overlap in seasonal forage production. Shallow tillage prior to planting winter annuals incorporates crabgrass seed and usually results in good crabgrass stands the following spring, without the need for spring tillage. When the crabgrass stand is established, fertilization is the primary management practice required. Crabgrass growth in Florida declines by late August or early September. More information about crabgrass can be found in EDIS at http://edis.ifas.ufl.edu/ag195. Now that the season for summer plantings of annual grass forages is here, let's hope for timely rains and better growing conditions than this past year's. Perhaps these summer annual forages might find a fit and help to extend the forage calendar on your livestock operation.

Brunswick grass or Brown seeded paspalum (*Paspalum nicorae*): a weed contaminant in southern pastures and bahiagrass seed production fields

Ann Blount, Jay Ferrell, Anthony Drew, Jose Dubeux, Cheryl Mackowiak and Doug Mayo (in cooperation with Johnny Melton, Jack Melton Family, Inc.)

North Florida Research and Education Center, Marianna, Florida
University of Florida

Brunswick grass (*Paspalum nicorae* Parodi), sometimes referred to as "Brown seeded paspalum", is becoming a problematic weed in summer perennial grass pastures in the southeast. Brunswick grass is a perennial summer grass, with a similar growing season and appearance to that of bahiagrass. This plant is native to South America and was introduced as a soil conservation plant for erosion control and as a potential forage crop. This plant has become naturalized and has contaminated some bahiagrass pastures and even some seed production fields in Florida, Georgia and Alabama.

Brunswick grass is competitive with bahiagrass and bermudagrass. Cattle will consume Brunswick grass when it is young and tender, however, it quickly becomes rank and loses its palatability, causing cattle to avoid grazing it. Since it is less palatable, the plant gains a competitive advantage and will eventually dominate in perennial grass pastures. Brunswick grass has reportedly contaminated bahiagrass seed fields and pastures in several Florida counties, including Gilchrist, Levy, Alachua, Citrus and Sumter.

The seed of Brunswick grass is close in size to that of Pensacola bahiagrass. This has made it difficult for bahiagrass seed processors to effectively eliminate Brunswick grass to meet total weed seed specifications (2.0 %) for saleable seed. Brunswick grass is more easily removed from Argentine than Pensacola bahiagrass due to greater seed size differential.

The best method to stop the spread of Brunswick Grass is to avoid harvesting seed from pastures contaminated with this grass weed. Seed producers must scout for Brunswick grass prior to seed harvest, to avoid the further distribution of this weed. To our knowledge, no herbicides currently exist that will selectively remove Brunswick grass without severely injuring or killing the desirable pasture grasses. Therefore, high rates of glyphosate should be utilized to kill the pasture as the first step of total renovation. Mechanical cultivation alone may not eliminate Brunswick grass. Mechanical cultivation, in addition to herbicides and crop rotation, should provide successful control of Brunswick grass, since seed survival in a seed bank is not believed to be long-term.

It is important to remember that large quantities of bahiagrass seed are sold without any field inspections for purity, resulting in the sale of contaminated seed for use in new pasture plantings. When purchasing seed to establish new pastures, purchase only from reliable seed sources.

It is very important that livestock producers and bahia seed harvesters learn to identify Brunswick grass. If producers are considering seed production, fields should be scouted for Brunswick grass first, before making the investment in additional fertilization needed for optimal seed production. Seed harvesters should also become familiar with this grass weed to avoid contamination. The following are comparisons of Brunswick grass and Pensacola bahia. If you need help positively identifying this grass, work with your **County Extension Agent**. If needed, they can have samples sent in to the **University of Florida Herbarium** for positive identification.

Brunswick grass is a perennial summer grass, with a similar growing season and appearance to that of Pensacola bahiagrass (Fig. 1).

Figure 1. Seed head of Brunswick grass and seed (left) (courtesy of Bruce Cook, CIAT) and Pensacola bahiagrass (right) (courtesy of Carlos Acuna, UNNE).

It has a deep and aggressive rhizome system that appears very different from bahiagrass rhizomes (Fig. 2).

Figure 2. Rhizome comparison of Brunswick grass (left) and Pensacola bahiagrass (left center). Whole plant of Brunswick grass with leaves and rhizomes (far right)

Brunswick grass seed are slightly smaller than that of Pensacola bahiagrass, and the seed coat has a dark, chestnut brown center that varies somewhat in size by variety (Figs. 3 and 4).

Figure 3. Seed of Brunswick grass (left) and Pensacola bahiagrass (right).

Figure 4. Close up of seed of Brunswick grass

FOCUS ON PREWEANING CALF MANAGEMENT

Philipe Moriel, PhD, and John D. Arthington, PhD

Range Cattle Research and Education Center – University of Florida, Ona, FL

Vaccination

A herd health management plan is crucial to obtain a profitable beef production. Some producers, however, choose to not vaccinate until they experience a loss. The investment in disease prevention is less than the cost of disease treatment. For instance, the annual cost of a vaccine health program ranges from $3 to $10 per cow-calf unit. *Don't wait until a disease out break occurs before implementing a sound herd health program.* (Powell et al.; Livestock Health Series).

Vaccination programs should always be customized for your operation after taking into account geographic region, type of cattle operation, frequency of introducing new stock, post-vaccination problems and export or interstate shipping requirements. **Table 1** provides the cattle producer with a basic example of calf health vaccination program. However, it is important to **contact your veterinarian** to establish your own health program and to determine if additional vaccinations are required for your area (Powell et al.; Livestock Health Series).

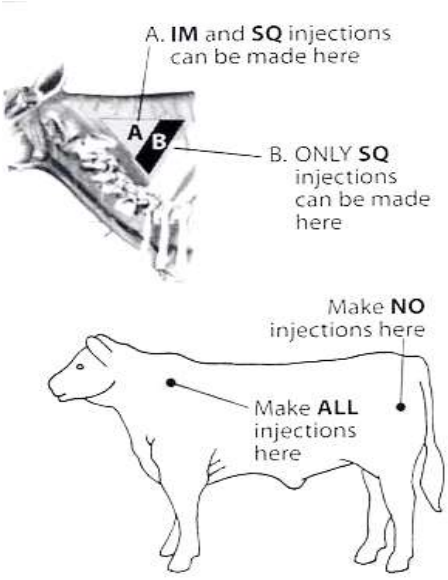
Table 1. Basic vaccination schedule for cow-calf producers

Vaccine	Decision	Time of vaccination
Blackleg 7-way	Recommended	Pre-weaning (3-4 months) and 2-3 weeks before weaning
IBR-BVD-PI3	Recommended	Pre-weaning (3-4 months) and 2-3 weeks before weaning
Leptospirosis	Recommended	Pre-weaning
Brucellosis	Recommended	Heifers (4 to 12 months)
BRSV	Optional	Pre-weaning (3-4 months)
Pasteurella	Optional	Pre-weaning (3-4 months) and 2-3 weeks before weaning
Pinkeye	Optional	As needed
E. coli	Optional	Cows (twice 30 days before calving)

Adapted from Powel et al. Herd Health Series

ALWAYS follow the manufacturer's recommendations for dosage, method of administration (**Figure 1**), number of times given and proper storage. Common issues with vaccination are: (1) improper administration; (2) lack of proper storage before application, and (3) vaccine handling on the day of application. Whenever possible, choose products that require subcutaneous rather than intramuscular injections. Few producers check the temperature of the refrigerator used for vaccine storage (adequate

temperature for vaccine storage is between 35 to 45 F). If vaccine is store improperly, then money was wasted in the purchase of the product, the vaccine will not work, and cattle will not be properly immunized. Also ultraviolet rays can damage the product and make the vaccine ineffective. **So, check the temperature of your refrigerator and make sure it is adequate and within the range necessary to properly store your vaccines. Also, on the days of vaccine application, keep vaccine bottles (and vaccine guns) on ice and protected from sunlight at ALL TIMES.**



Source: Courtesy of The Ohio State University, Used with permission

SQ (subcutaneous) injections:
Needle gauge: 16 to 18
Length: 3/4 to 1 inch; 3/4-inch if tent technique is not used.

No more than 10 cc at a single injection site.

Separate injection sites by at least 4 inches.

IM (intramuscular) injections:
Needle gauge: 16 to 20
Length: 1- to 1½-inch long

No more than 10 cc at an injection site.

Too much drug in one area can cause muscle damage.

Figure 1. Beef Quality Assurance guidelines for proper vaccination.

Creep-feeding

Creep feeding is a management tool used to provide supplemental nutrients to pre-weaned calves. The word "creep" refers to the process by which the calf is allowed to creep into (or access) a space that is designed to exclude the cow. The rationale for creep feeding is centered on the concept that the cow's milk will only provide about half of the nutrition required by a 4 month-old calf. Without supplemental feed, the calf must obtain the remainder of its nutrition from forage. Often the forage base may be of limited quality for the calf to fulfill this deficit. This is further confounded by an inability to consume large amounts of forage due to an underdeveloped rumen. If milk and forage together cannot supply the calf with adequate nutrition, then sub-optimal body weight gain can be expected. There are two types or categories of creep feeding: (1) free-choice or unlimited creep, or (2) limited-intake creep.

Decisions regarding creep feeding beef calves must weigh the cost of implementing this management tool against the value of unrealized body weight due to inadequate nutrition. Calves will experience some level of daily gain, despite the provision of creep feed, so it is important that beef producers understand the calculation used to estimate "added" gain. Added gain is the difference between the daily gain of calves consuming creep feed vs. those not consuming creep feed. Most studies involving unlimited creep feeding have found that the value of this "added" gain, due to creep feeding, is poorly efficient, meaning that the amount of creep feed needed to produce 1 kg of added gain is typically more costly than the value of that added gain. During the early weeks of creep feeding it is not uncommon for this ratio to be as great at 12 to 15:1.

Another option is *limited creep feeding*, which is designed to provide a small amount of supplemental nutrition targeted to fill gaps in protein and/or energy deficiency and compliment the value of the milk and

forage consumed by the calf. An initial experiment was conducted at the University of Florida, Range Cattle Research and Education Center in Ona (Moriel and Arthington, 2013). Grain-based creep supplements were manufactured into a compressed cube (approximately 3 x 6.5 cm) and fortified with trace minerals (Min+) or not (Min-). The experiment utilized multiparous Braford cow/calf pairs grazing established summer bahiagrass pastures. Treatments were applied to eight pastures containing approximately 17 cow/calf pairs per pasture. Treatments consisted of 1) no creep, 2) Min+ creep, and Min- creep, randomly applied to 2, 3, and 3 pastures, respectively. Creep feed was offered to calves on Monday, Wednesday, and Friday within cow exclusion areas. The amount of creep-feed offered was limited to 0.50 lb/day.

Calves consuming creep feed without mineral rapidly increased their intake before reaching 0.50 lb/day on week 9, which was the maximum target intake for the study (**Figure 2**).

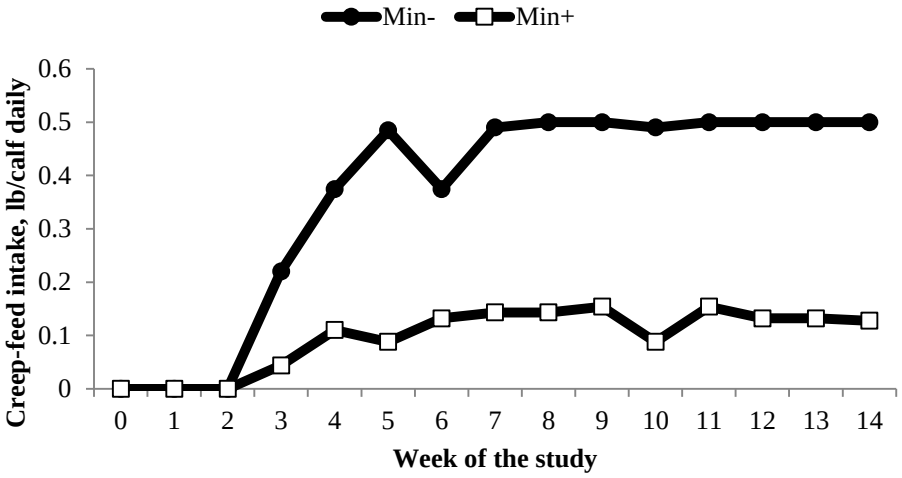


Figure 2. Daily intake of dry creep feed over 14 consecutive weeks. Treatments consisted of a compressed dry creep cube fortified with trace minerals (Min +) or not (Min -).

Calves consuming the trace-mineral fortified creep feed never reached the target intake level, therefore, overall total intake of creep feed was greater for Min- vs. Min+ (**Table 2**). This difference was likely due to an adversion to the Manganese oxide and/or Zinc sulfate included in the mineral fortified cubes (0.50 and 0.64%, respectively). This reduced voluntary intake is not a problem with older cattle, as mature cows would readily consume the same cube formulation. Calves, on the other hand, may be more sensitive to trace element ingredients and this should be considered with trace mineral formulations for calf creep feeds are constructed. There was no impact of creep supplement on change in cow body weight or body condition score. Creep supplementation resulted in an average of 0.15 lb/day of added gain compared to calves receiving no creep supplement. Although intake of our mineral-fortified creep cubes was greatly reduced, added body weight of these calves did not differ from calves consuming cubes without mineral fortification (P = 0.90; **Table 2**). Cost per lb of added gain was $0.40 and $0.06 for Min- and Min+, respectively. These results collectively indicate that pre-weaned beef calves can experience efficient, cost-effective added gains when provided limit-fed creep supplements.

Table 2. Effect of limited creep (with and without mineral fortification) on performance of beef calves during the final 102 days prior to weaning [1]

Item	Treatment			SEM	Contrasts[2]	
	Control	Min-	Min+		+ Min vs. - Min	Cube vs. No Cube
	---------- lb ----------					
Initial BW	282.0	286.0	282.0	4.2	0.74	0.76
Weaning BW	478.0	498.0	496.0	4.7	0.86	0.14
ADG	1.94	2.07	2.09	0.027	0.90	0.05
Total intake[3]	0.0	36.0	5.0			
$/gain[4]	-	0.40	0.06			

[1]Creep supplements formulated into a compressed cube and offered on Monday, Wednesday, and Friday in amounts to target intakes of 0.50 lb/calf daily (n = 34, 56, and 49 calves for Control, Min-, and Min+, respectively.

[2]Single df contrasts. Experimental Unit = Pasture; 3, 3, and 2 pastures for Cube(- Min), Cube(+ Min), and Control, respectively.

[3]Estimated intake; lb/calf over 102 days

[4]Cost/lb of added gain based on $391 / 2,000 lb

Early-weaning

Early-weaning (EW) is a management practice consisting of permanent calf removal at ages often less than 5 mo. Early-weaning improved the reproductive performance of primiparous beef cows, when performed prior to the breeding season (Arthington and Kalmbacher, 2003). However, few beef producers are willing to adopt this management practice due to the lack of information on nutritional management of EW calves. Thus, we evaluated different calf management systems for early-weaned beef calves and their long-term consequences on calf performance (Moriel et al., 2014a,b).

Experiment 1 evaluated the growth performance and carcass characteristics of beef steers, while experiment 2 evaluated growth and reproductive performance of beef heifers. In both experiments, calves were either normally weaned (NW) at 250 days of age (day 180 of the study), or early-weaned (EW) at 70 days of age (d 0) and randomly assigned to 1 of 3 EW calf management systems: 1) EW and grazed on ryegrass and bahiagrass pastures until day 180 (EWPAST); 2) EW and limit-fed a high-concentrate diet in drylot for at least 180 days (EW180); and 3) EW and limit-fed a high-concentrate diet in drylot for 90 days, then grazed on bahiagrass pastures until day 180 (EW90). Calves in drylot were limit-fed the high-concentrate diet at 3.5% of body weight (as-fed), whereas EW calves on pasture were supplemented with the same high-concentrate diet at 1.0% of body weight (as-fed).

Experiment 1 demonstrated that overall growth performance of EW steers was similar or greater than NW steers (**Table 3**) throughout the entire study. Early-weaned calves provided a high-concentrate diet in drylot for at least 90 days (EW90 and EW180 steers) were heavier at the time of NW and at shipping (day 260) compared to NW and EWPAST steers. However, early-exposure to high-concentrate diets did not affect the overall carcass characteristics and marbling scores of steers slaughtered at a common backfat thickness (**Table 3**).

Table 3. Growth performance and carcass characteristics of beef steers developed in different calf management systems from the time of early-weaning (EW; day 0) until shipping (Experiment 1).

	Treatments					
Item	**NW**	**EWPAST**	**EW180**	**EW90**	**SEM**	***P*-value**
Body weight, lb						
day 0 (EW)	189	198	203	203	9.2	0.64
day 180 (NW)	475[a]	432[a]	652[b]	535[c]	19.7	<0.01
day 260 (shipping)	504[a]	507[a]	793[b]	610[c]	25.6	<0.01
Slaughter	1042	1066	1132	1119	35.7	0.22
Days on finishing diet	202[bc]	227[c]	141[a]	187[b]	14.9	0.002
Hot carcass weight, lb	650	663	707	705	22.5	0.22
Yield grade	3.12	3.14	3.15	2.98	0.196	0.91
Marbling	404	418	401	456	41.4	0.75

[a,b]Within a row, means without common superscript differ ($P \leq 0.05$).

Experiment 2 demonstrated that EW heifers limit-fed a high-concentrate diet for at least 90 days in drylot, and EW heifers grazed on pastures and supplemented with concentrate at 1% of body weight for the entire study, had similar or greater growth performance than NW heifers (**Table 4**). From day 180 until the end of the breeding season (day 395), heifers were grouped by treatment and supplemented with concentrate at 1.5% of body weight (as-fed). During this period, no differences were detected for average daily gain among treatments (1.52, 1.60, 1.36 and 1.54 ± 0.058 lb/d for NW, EWPAST, EW180 and EW90 heifers, respectively). Interestingly, limit-feeding a high-concentrate diet in drylot, for at least 90 days, increased the percentage of pubertal heifers at the start of the breeding season (day 335) compared to NW heifers (**Table 4**). Particularly, a greater percentage of EW90 heifers achieved puberty at the start of the breeding season, despite having similar growth performance from the time of NW until the end of the breeding season compared with NW heifers. Thus, our results support the concept that puberty achievement of EW heifers was associated with a critical window (approximately 70 days following EW), in which enhanced nutrient intake and growth performance led to early-activation of the reproductive axis. No differences were detected on percentage of pregnant heifers following a 60-day breeding season, which can be attributed to the small number of heifers in each treatment.

Table 4. Growth and reproductive performance of beef heifers developed on different calf management systems from the time of early weaning (EW; day 0) until the time of normal weaning (day 180; Experiment 2).

	Treatments[1]					
Item	**NW**	**EWPAST**	**EW180**	**EW90**	**SEM**	***P*-value**
Body weight, lb						
day 90	306[a]	297[a]	361[b]	376[b]	8.1	<0.001
day 180	467[a]	392[b]	577[c]	476[a]	14.1	<0.001
day 335	712[a]	643[b]	800[c]	720[a]	17.5	<0.001
Age at puberty, days	429[a]	418[a]	298[b]	358[c]	14.9	<0.001
Body weight at puberty, lb	753[a]	674[b]	629[b]	643[b]	26.2	0.09
Pubertal heifers on day 335, % of total heifers	30[a]	40[a]	100[b]	80[b]	13.2	0.002

Pregnant heifers, % of total heifers	60	50	78	70	15.6	0.64

[a,b]Whithin a row, means without common superscript differ ($P \leq 0.05$).

[2]From d 180 to the end of the 60-day breeding season (days 335 to 395), heifers were grouped by treatment and rotated among bahiagrass pastures every 10 days, and were provided concentrate supplementation at 1.5% of BW.

In summary, metabolic imprinting is the process by which nutrition, during early-life, may permanently affect the metabolism and performance of livestock. Early-exposure to high-concentrate diets to EW beef steers may enhance growth performance of beef steers, as well as, enhance the growth and anticipate puberty achievement of beef heifers. Thus, identifying strategies that are able to enhance calf performance, during early postnatal life, may provide unique opportunities to optimize feed resources and increase the profitability of dairy and beef cattle management systems.

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FLORIDA HEIFER DEVELOPMENT PROGRAM

UF/IFAS EXTENSION

Mission: Serve as a resource for cow/calf producers in the Southeastern USA to provide opportunities in education and facilitation of replacement heifer development for enhancement of sustainable beef cattle operations.

- Nominations Due August 1, 2016
- Development Program starts October 1, 2016
- Heifers housed at NFREC, Marianna
- Heifer eligibility determined by age and weight
- Open to purebred and commercial cattle
- Heifers will be exposed to 2 rounds of A.I.
- Consignor education component

UF | IFAS Extension
UNIVERSITY of FLORIDA

For forms, rules and regulations and information please contact:
Kalyn Waters (850.547.1108) or Cliff Lamb (850.526.1612)

2016 FLORIDA HEIFER DEVELOPMENT PROGRAM
NOMINATION FORM

Ranch Name:

Contact Person:

Street Address:

City, State, Zip:

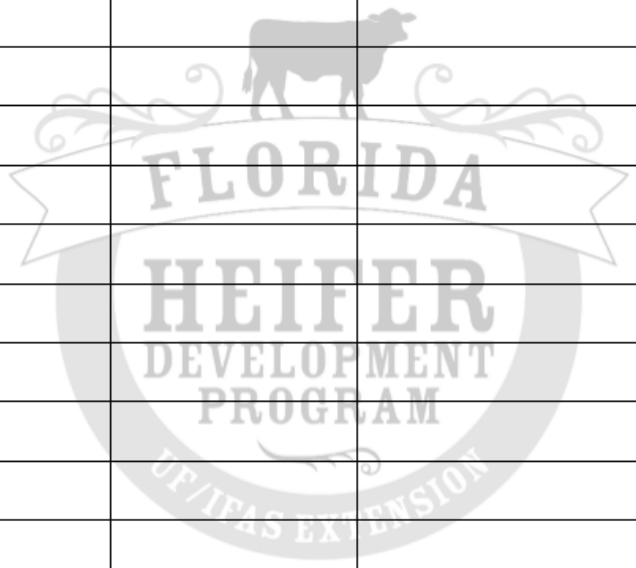
Telephone: **(day)** **(night)**

Email Address:

NOMINATION & DELIVERY DATES
Birth Dates: **Aug. 15-Nov. 31, 2015**
Nomination Deadline: **Aug. 1, 2016**
Delivery Date: **October 1, 2016**

Nomination Fee (nonrefundable deposit): **$50.00/heifer**
Send to: **NFREC-Marianna**
3925 Hwy 71
Marianna, FL 32446

Heifer ID	Birthdate M	D	Y	Sire Breed (if known)	Dam Breed (if known)	Heifer Registration # (if applicable)	*Early Pick Up	**Potential Sale Consignment



* In the case that the consignor does not want heifers bred to Angus cleanup bulls, only exposed to A.I., heifers can be picked up on day of first ultrasound. Costs will be pro-rated by the day for feed and yardage if heifers are picked up early.

**In the event that a sale is planned at the conclusion of the program, heifers will be eligible for consignment for auction. Indicate if you would be interested in cosigning individual heifers if a sale is held (all sale event costs would be evenly distributed among those wishing to sale heifers).

If space is available, I wish to nominate additional heifers (circle one): Yes No If so, how many additional heifers?_____head

I certify that I have read, and agree to, the rules and regulations of the Florida Heifer Development program and have records in my possession that verify the age and management of the cattle represented by this document.

Signature:_____Date:_____

The 2016 NFREC Forage Breeding Program





The University of Florida's Forage Breeding Program includes a wide array of forage grass and legumes species because Florida's environment is diverse, ranging from tropical to temperate conditions. Forage breeding at the NFREC is based at both the North Florida Research and Education Center (NFREC-Marianna and Quincy) and at Gainesville. At NFREC we focus breeding on the sub-tropical forages like bahiagrass, perennial peanut and limpograss, and temperate species that include triticale, cereal rye, oat, ryegrass, alfalfa and clover. Our cultivars are also grown world-wide because of their adaptation to areas of the world with similar climates.

Major Impact: The University of Florida's Forage Breeding Program has been very successful in forage cultivar development and in basic research related to forage and small grain improvement. Since 2005 through 2016, of new southern forage cultivars released by public institutions in the southeastern U.S., 80 % were developed or co-developed by the University of Florida's Forage Breeding Program. Ann Blount has been a developer or co-developer on over 65 cultivars in her career. With the addition of Cheryl Mackowiak, in soil and water sciences, Nick DiLorenzo, in livestock nutrition, Jose Dubeux, in forage management and Cliff Lamb in livestock reproduction and management, we present a unique team of specialists working with sub-tropical forage systems for the southeastern U.S.

Because of our unique location in northern Florida we have developed a strong multi-state forage program across state lines. We are very actively involved with forage researchers at a variety of Universities. The University of Florida's Forage Breeding Program is an active member of the SUNGRAINS consortium, a six-university cooperation of plant breeders who work collaboratively on small grains (oat, wheat, triticale and rye) variety development.

We also partner on several international projects. At present, we are developing a long-term research agreement with the UNNE, at Corrientes Argentina to co-develop forages for North and South America. Similarly we are working with EMBRAPA forage specialists in Brazil on *Paspalum* and *Arachis*. In 2015, we began a collaboration to develop forage small grains for Western Australia. We continue to be a major contributor and active participant with the PepsiCo-Quaker Oat Program.

Released Cultivars (developed or co-developed at the NFREC):

- *Bahiagrass*: UF-Riata
- *Cereal Rye*: FL104, FL-SYNT, and Boss
- Clovers: Ocoee white, Barduro red, Southern Belle red, 2,4D resistant red
- *Limpograss*: KenHy and Gibtuck
- *Oat*: FL0720, Legend 567, FL02011 hulless, RAM LA99016, Horizon 201, Horizon 474, Horizon 270, Horizon 314 and Chapman
- *Perennial Peanut*: UF-Peace, UF-Tito, Ecoturf, Arblick, and Cowboy
- *Ryegrass*: Earlyploid, Jumbo, Attain, Prine, Ocala, Big Boss, Big Daddy, Fria (and approximately 30 other commercially viable cultivars)
- *Forage Soybean*: Hinson Long Juvenile
- *Triticale*: Trical 342, Monarch, FL01143 and Sunland
- *Wildlife Forage Blend*: Supreme Southeastern Mixture

Other Investigators/Units: Agronomy: Ken Quesenberry, Ali Babar, Patricio Munoz, Lynn Sollenberger, Kevin Kenworthy, Gordon Prine, and Joao Vendramini, Soil Science: Maria Silveira; Other Universities: University of Georgia, University of Kentucky, North Carolina, Clemson, Auburn, Texas A&M, and Louisiana State Universities, and with scientists at the USDA-ARS (CPES, Tifton, GA) and USDA-NRCS.

Florida Panhandle Beef Cattle & Forage Management Calendar

University of Florida Extension State Specialists and County Agents - Doug Mayo, Cliff Lamb, Mark Mauldin, Ann Blount, Cheryl Mackowiak, Jose Dubeux, Jay Ferrell, Jennifer Bearden, Nicolas DiLorenzo, Shep Eubanks, Jed Dillard, Mike Goodchild, Roy Carter, Henry Carter, John Atkins, and Kalyn Waters

The purpose of this cattle and forage management calendar is to provide reminders for management techniques with similar timing to those used at the North Florida Research and Education Center's Beef Research Unit, Marianna, Florida.

Overview

90 Day Breeding Season

Cows—Bulls in March-May
Heifers—Bulls in February - April

Calving Season

Cows: December - February
Heifers: November - January

Spring Working—April (vaccinate & parasite control)

- Cows & calves - vaccinate & parasite control
- May booster vaccines for calves

Weaning—August

- Wean and market calves
- Pregnancy test and cull open and aged cows

Fall Working – October

- Pre-breeding vaccinations and parasite control

Stocking rate—2 acres permanent bahiagrass pastures per cow

Hay—feed 4-5 rolls (2 tons per cow)

- Note: More hay required if winter grazing not utilized

Annual winter pasture— ½ to one acre per cow

Annual summer pastures (tilled soil): ½ to one acre per cow

January

Cattle Herd Management

- Update herd & equipment inventory records
  - **Florida Beef Cattle Ranch Record Book** (http://jackson.ifas.ufl.edu/ag/livestock_ranch_record.shtml)
- Monitor body condition of breeding herd
  - **Body Condition Scoring Beef Cows** (http://pubs.ext.vt.edu/400/400-795/400-795_pdf.pdf)
- Check calving cows and heifers 2-3 times daily
  - **Beef Cattle Calving Management** (http://msucares.com/pubs/publications/p2558.pdf)
  - Move cows and newborn calves out of calving pasture
    - Record calf birth date, weight, tag calves, (optional: castrate bull calves)
  - Evaluate body condition of nursing cattle and increase energy supplement as needed
  - Feed best hay available to nursing cows & heifers
  - Check calves for scours
    - **Calf Scours: Causes, Prevention & Treatment** (http://www.ag.ndsu.edu/pubs/ansci/beef/as776.pdf)
- Develop heard health plan and schedule for the year with veterinarian
  - **A Planning Calendar for Beef Cattle Herd Health** (http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-1920/ANSI-3260web2015.pdf)
- Check mineral
  - Use high magnesium mineral if grazing winter annuals to prevent grass tetany
    - **Grass Tetany in Cattle** (http://edis.ifas.ufl.edu/ds137)
- Weigh and work replacement heifers
  - Vaccinate with IBR, BVD, BRSV, PI_3, vibrio-lepto, 7-way clostriadal, and dewormer
    - **Vaccinations for the Beef Cattle Herd** (http://www.aces.edu/pubs/docs/A/ANR-0968/ANR-0968.pdf)
  - Take pelvic measurements and palpate repro tract
    - **Pelvic Measurements For Reducing Calving Difficulty** (http://www.iowabeefcenter.org/Beef%20Cattle%20Handbook/Pelvic_Measurements.pdf)
  - Cull heifers with small pelvis, low tract score or that weigh less than 600 pounds
  - Purchase additional replacement females, vaccinate and isolate from herd for 30 days

Pasture Management

- Begin grazing winter forage at 10-12 inch canopy height and remove cattle when forage canopy is 4 inches.
  - If possible, limit-graze for 2-3 hours per day, plus free choice hay to acclimate cattle and stretch grazing days
  - After initial grazing, top-dress with 40-50 lbs. N per acre

Pest Management

- Burn pastures for thatch removal
  - **Management of Spittlebugs in Pasture** (https://edis.ifas.ufl.edu/ag242)
- Apply dormant season herbicide treatments
  - **Weed Management in Pastures and Rangeland** (https://edis.ifas.ufl.edu/wg006)

Annual Events

- Attend **Florida Bull Test Sale** (http://nfrec.ifas.ufl.edu/florida-bull-test/)

February

Cattle Herd Management

- Check calving cows 2-3 times daily
  - **Beef Cattle Calving Management** (http://msucares.com/pubs/publications/p2558.pdf)
  - Move cows and newborn calves out of calving pasture
    - Record calf birth date, weight, tag calves, (optional: castrate bull calves)
  - Evaluate body condition of nursing cows and increase energy supplement as needed
  - Feed best hay available to nursing cows & heifers
- Monitor & record body condition of breeding herd
  - **Body Condition Scoring Beef Cows** (http://pubs.ext.vt.edu/400/400-795/400-795_pdf.pdf)
- Turn bulls in with replacement heifers
- Watch calves for scours
  - **Calf Scours: Causes, Prevention & Treatment** (http://www.ag.ndsu.edu/pubs/ansci/beef/as776.pdf)
- Check mineral, use high magnesium mineral if grazing winter annuals to prevent grass tetany
  - **Grass Tetany in Cattle** (http://edis.ifas.ufl.edu/ds137)

Pasture Management

- Continue grazing winter annual pastures down to 4 inch stubble (fertilize after grazing)
- Begin grazing overseeded ryegrass once it reaches 8-10 canopy height and remove cattle when grazed down to 3-4 inches
- Plant bermudagrass from dug sprigs while grass is still dormant
- Prepare land to establish new bahiagrass pastures for a March planting

Pest Management

- Burn pastures for thatch removal
  - **Management of Spittlebugs in Pasture** (https://edis.ifas.ufl.edu/ag242)
- Apply dormant season herbicide treatments
  - **Weed Management in Pastures and Rangeland** (https://edis.ifas.ufl.edu/wg006)
- Control thistle
  - **Thistle Control in Pastures** (https://edis.ifas.ufl.edu/ag253)
- Control weeds in newly established pastures
  - **Weed Management during Pasture Establishment** (http://edis.ifas.ufl.edu/ag290)

Annual Events

- Attend the Northwest Florida Beef Conference second Wednesday in February

March

Cattle Herd Management

- Check calving cows 2-3 times daily
  - **Beef Cattle Calving Management** (http://msucares.com/pubs/publications/p2558.pdf)
  - Move cows and newborn calves out of calving pasture
    - Record calf birth date, weight, tag calves, (optional: castrate bull calves)
  - Evaluate body condition of nursing cows and increase energy supplement as needed
  - Feed best hay available to nursing cows & heifers
- Monitor body condition of breeding herd
  - **Body Condition Scoring Beef Cows** (http://pubs.ext.vt.edu/400/400-795/400-795_pdf.pdf)
- Turn bulls in with mature cow herd
- Order vaccines, dewormer, and external parasite control for April working
  - **Vaccinations for the Beef Cattle Herd** (http://www.aces.edu/pubs/docs/A/ANR-0968/ANR-0968.pdf)
  - **External Parasites on Beef Cattle** (https://edis.ifas.ufl.edu/pdffiles/IG/IG13000.pdf)
- Make repairs and adjustments to cow pens for April working
- Check mineral, use high magnesium mineral if grazing winter annuals

Pasture Management

- Prepare land for planting summer annual grasses and legumes on tilled land
  - **Annual Warm-Season Legumes for Florida** (http://edis.ifas.ufl.edu/an259)
  - **Pearl Millet: Overview and Management** (http://edis.ifas.ufl.edu/AG347)
  - **Forage Sorghum: Overview and Management** (http://edis.ifas.ufl.edu/ag343)
- Plant bahiagrass pastures after danger of frost and adequate soil moisture
  - **Agronomic Crop Species and Variety Selection** (http://edis.ifas.ufl.edu/aa113)
  - **Bahiagrass: Overview and Management** (http://edis.ifas.ufl.edu/ag342)
- Fertilize permanent pastures & hay field in late March to early April, based on soil test
  - **Fertilizing and Liming Forage Crops** (https://edis.ifas.ufl.edu/ag179)

Pest Management

- Apply herbicide to control thistles
  - **Thistle Control in Pastures** (https://edis.ifas.ufl.edu/ag253)
- Control weeds in newly established pastures
  - **Weed Management during Pasture Establishment** (http://edis.ifas.ufl.edu/ag290)

April

Cattle Herd Management

- Stop feeding hay and supplements as soon as adequate grass allows
- Work replacement heifers, cows and calves
  - Cows—dewormer, and external parasite control
    - if fly tags are used, alternate between organophosphate and pyrethroid types each year
  - Cull dry cows (cows without calves)
  - Calves— vaccinate, deworm, castrate, growth implant, and weigh
    - Vaccinations: 7-way Clostridial (black leg)
    - IBR-BVD-BRSV-$PI_{3,}$
      - **Vaccinations for the Beef Cattle Herd** (http://www.aces.edu/pubs/docs/A/ANR-0968/ANR-0968.pdf)
- Check bull pasture fences and remove bulls from replacement heifers
- Observe bull condition and success in mature cow herd, rotate and rest if needed
- Check mineral, use high magnesium mineral if grazing winter annuals

Pasture Management

- Plant summer annual grasses and legumes (millet, sorghum x sudan, alyce clover) for grazing, haylage or silage, when there is adequate moisture
  - **Annual Warm-Season Legumes for Florida** (http://edis.ifas.ufl.edu/an259)
  - **Pearl Millet: Overview and Management** (http://edis.ifas.ufl.edu/AG347)
  - **Forage Sorghum: Overview and Management** (http://edis.ifas.ufl.edu/ag343)
- Inspect hay equipment and make needed repairs and maintenance
- Prepare hay storage areas to protect hay quality
- Rotate pastures to prevent overgrazing

Pest Management

- Control weeds in newly established pastures
  - **Weed Management during Pasture Establishment** (http://edis.ifas.ufl.edu/ag290)
- Scout Pastures & control problem weeds prior to maturity
  - **Weed Management in Pastures and Rangeland** (https://edis.ifas.ufl.edu/wg006)

May

Cattle Herd Management

- Remove bulls from mature cow herd
- Booster vaccination of calves (2-4 weeks after initial vaccination)
  - 7-way Clostridial (black leg)
  - modified live IBR-BVD-BRSV-PI_3
- Check mineral feeders

Pasture Management

- Make first hay cutting (weather permitting)
- Fertilize hay fields after each cutting (except the last one)
  - 50-80 lbs N & 40-60 lbs K_20 per acre
- Fertilize newly planted summer annual pastures with 30-40 lbs N per acre and other nutrients as recommended by soil test report after 3-4 inches of initial growth
  - **Fertilizing and Liming Forage Crops (**https://edis.ifas.ufl.edu/ag179
- Rotate pastures to prevent overgrazing

Pest Management

- Control weeds in newly established pastures
  - **Weed Management during Pasture Establishment (**http://edis.ifas.ufl.edu/ag290)
- Scout Pastures & control problem weeds prior to maturity
  - **Weed Management in Pastures and Rangeland** (https://edis.ifas.ufl.edu/wg006)

June

Cattle Herd Management

- Monitor horn fly population and use dust bags or spray as needed
  - **Horn Fly Management** (https://edis.ifas.ufl.edu/in952)
- Check mineral feeders

Pasture Management

- Remove cattle from bahiagrass fields used for seed harvest in mid to late June
- Begin grazing summer annuals when forage canopy is at least 20 inches tall and remove cattle after being grazed to 10 inch stubble height
  - Use limit grazing for 2-3 hours to acclimate cattle and stretch grazing days

Pest Management

- Control weeds in newly established pastures
  - **Weed Management during Pasture Establishment (**http://edis.ifas.ufl.edu/ag290)
- Scout Pastures & control problem weeds prior to maturity
  - **Weed Management in Pastures and Rangeland** (https://edis.ifas.ufl.edu/wg006)
- Control Smutgrass
  - **Smutgrass Control in Perennial Grass Pastures** (http://edis.ifas.ufl.edu/aa261)
- Scout for Armyworms, control if 3 worms/sq. ft. threshold is reached
  - **Management Of Fall Armyworm in Pastures and Hayfields** (http://www.aces.edu/pubs/docs/A/ANR-1019/ANR-1019.pdf)

July

Cattle Herd Management

- Make repairs on working pens and weaning pasture prior to August working
- Monitor horn fly population and use dust bags or spray if needed
  - **Horn Fly Management** (https://edis.ifas.ufl.edu/in952)
- Check mineral feeders

Pasture Management

- Plant bermudagrass pastures and hay fields from cut tops, following adequate rain
- If you have excess forage, consider haylage, baleage, silage or hay harvesting options

Pest Management

- Control weeds in newly established pastures
  - **Weed Management during Pasture Establishment** (http://edis.ifas.ufl.edu/ag290)
- Scout Pastures & control problem weeds prior to maturity
  - **Weed Management in Pastures and Rangeland** (https://edis.ifas.ufl.edu/wg006)
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  - **Management Of Fall Armyworm in Pastures and Hayfields** (http://www.aces.edu/pubs/docs/A/ANR-1019/ANR-1019.pdf)

August

Cattle Herd Management

- Wean, weigh and sell calves
- Select replacement heifers
  - identify with tag, tattoo or brand
  - deworm/external parasite control
  - start on limited supplemental feed
    - **Improving the Productivity of Beef Heifers in Florida** (http://www.edis.ifas.ufl.edu/an132)
- Pregnancy test cows and cull open cows, aged cows losing teeth, cows with bad udders, cancer eyes, and low calf weaning weight cows as replacements permit
  - **Understanding Pregnancy Diagnosis in Beef Cattle** (https://edis.ifas.ufl.edu/an314)
  - **Culling and Replacement Rate in the Beef Cow Herd** (https://edis.ifas.ufl.edu/an323)
  - Sort pregnant cows into breeding herds by age and body condition score (thin vs. fat)
- Update production records with pregnancy rate, calf weaning weights, cows culled and income from sale
  - **Florida Beef Cattle Ranch Record Book** (http://jackson.ifas.ufl.edu/ag/livestock_ranch_record.shtml)
- Check mineral feeders

Pasture Management

- Annual soil test recommended to prepare fertility for winter and plan for next summer (collect bahiagrass tissue sample for IFAS phosphorus recommendation)
  - **Producer Soil Test Form** (https://edis.ifas.ufl.edu/pdffiles/SS/SS18600.pdf)
- Apply lime, if recommended by soil test report
  - **Fertilizing and Liming Forage Crops** (https://edis.ifas.ufl.edu/ag179)
- Harvest bahiagrass seed from pastures set aside for late seed production

Pest Management

- Scout Pastures & control problem weeds prior to maturity
  - **Weed Management in Pastures and Rangeland** (https://edis.ifas.ufl.edu/wg006)
- Control Smutgrass
  - **Smutgrass Control in Perennial Grass Pastures** (http://edis.ifas.ufl.edu/aa261)
- Scout for Armyworms, control if 3 worms/sq. ft. threshold is reached
  - **Management Of Fall Armyworm in Pastures and Hayfields** (http://www.aces.edu/pubs/docs/A/ANR-1019/ANR-1019.pdf)

September

Cattle Herd Management

- Move weaned heifers to pasture and continue limited feeding
- Order pre-breeding vaccines and dewormer for October working
  - **Vaccinations for the Beef Cattle Herd** (http://www.aces.edu/pubs/docs/A/ANR-0968/ANR-0968.pdf)

Pasture Management

- Select varieties and order seed for annual winter pastures
  - **Cool-Season Forage Variety Recommendations for Florida** (https://edis.ifas.ufl.edu/aa266)
- Prepare land for winter pastures,
  - Add lime or dolomite if needed prior to disking for faster incorporation
- Heavily graze pastures to be overseeded for winter pastures

Pest Management

- Scout Pastures & control problem weeds prior to maturity
  - **Weed Management in Pastures and Rangeland** (https://edis.ifas.ufl.edu/wg006)
- Control blackberries
  - **Blackberry and Dewberry: Biology and Control** (http://edis.ifas.ufl.edu/ag238)
- Scout pastures for poisonous weeds, spray, mow, or remove if found
  - **Poisonous Plans of the Southern US** (http://www.aces.edu/pubs/docs/A/ANR-0975/ANR-0975.pdf)
- Scout for Armyworms, control if 3 worms/sq. ft. threshold is reached
  - **Management Of Fall Armyworm in Pastures and Hayfields** (http://www.aces.edu/pubs/docs/A/ANR-1019/ANR-1019.pdf)

Annual Events

- Submit entries to the **Southeastern Hay Contest** (https://sehaycontest.wordpress.com)

October

Cattle Herd Management

- Pre-breeding Cow & Heifer Vaccination (1 Month prior to breeding)
  - vaccinate with IBR, BVD, BRSV, PI_3 , vibrio-lepto, 7-way clostridial
    - **Vaccinations for the Beef Cattle Herd** (http://www.aces.edu/pubs/docs/A/ANR-0968/ANR-0968.pdf)
  - remove fly tags
  - deworm
  - record body condition scores
- Feed weaned heifers limited supplement
- Inventory hay and purchase additional if necessary (2 tons/cow)
  - Forage test hay to determine supplement needs
    - **Forage Testing** (https://edis.ifas.ufl.edu/aa192)
- Evaluate and repair hay feeding equipment and replace as needed
  - Hay rings, spears, trailers
- Move yearling heifers to clean, dry calving pasture & record body condition
- Put together calving emergency kit
  - Vet phone numbers, O.B. chains, calf puller, gloves, lube, antibiotic, syringe and needles, prolapse S needle and surgical thread, antibacterial soap, bucket and a clean towel, colostrum and milk replacer
    - **Calving Time Management for Beef Cows and Heifers** (http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-9389/E-1006web2014.pdf)
- Evaluate breeding bulls secure needed replacements
    - **Considerations for Selecting a Bull** (https://edis.ifas.ufl.edu/an218)
- Increase supplementation to weaned replacement heifers and start feeding hay

Pasture Management

- Plant prepared seedbeds with annual winter forages (ryegrass, oats, rye, wheat, clovers, vetch) for grazing, haylage or silage when there is adequate moisture after Oct 15
    - **Agronomic Crop Species and Variety Selection** (http://edis.ifas.ufl.edu/aa113)
- If considering alfalfa as monoculture, adjust pH near 7.0 and use a prepared seedbed

Pest Management

- Scout for Grass Loopers, control if 3 worms/sq. ft. threshold is reached
    - **Management Of Fall Armyworm in Pastures and Hayfields** (http://www.aces.edu/pubs/docs/A/ANR-1019/ANR-1019.pdf)
- Control blackberries
    - **Blackberry and Dewberry: Biology and Control** (http://edis.ifas.ufl.edu/ag238)
- Scout pastures for poisonous weeds, spray, mow, or remove if found
    - **Poisonous Plans of the Southern US** (http://www.aces.edu/pubs/docs/A/ANR-0975/ANR-0975.pdf)
- Use nonselective herbicide on pastures that are due for renovation

Annual Events

- Attend Sunbelt Expo 3rd week of October (SE Hay Contest Results)

November

Cattle Herd Management

- Check calving heifers 2-3 times daily
  - Move heifers and newborn calves out of calving pasture
    - Record calf birth date, weight, tag calves, (optional: castrate bull calves)
  - Evaluate body condition of nursing heifers and increase energy supplement as needed
  - Feed best hay available to nursing heifers
- Begin hay supplementation as needed
  - **Strategies for Cost-Effective Supplementation of Beef Cattle** (http://edis.ifas.ufl.edu/an085)
- Develop winter supplementation plan based on forage quality test results
- Begin feeding high magnesium mineral 30 days prior to grazing winter annual pastures
  - **Grass Tetany in Cattle** (https://edis.ifas.ufl.edu/ds137)
- Pre-breeding bull evaluation
  - breeding soundness exam (BSE)
  - vaccinate for vibrio/lepto, IBR, BVD, BRSV, PI_3
  - Parasite control
- Move mature cows to clean, dry calving pasture & record body condition
  - **Implications of Cow Body Condition Score on Productivity** (https://edis.ifas.ufl.edu/an319)
- Check fences in fields to be used for winter pastures and make needed repairs

Pasture Management

- Plant overseeded winter grazing on hayfields or pastures (ryegrass, clovers, vetch, and other miscellaneous winter forages)
- Fertilize winter pastures at 30-40 lbs N per acre and other nutrients as recommended by soil test report after canopy reaches 2-3 inches
- Check fences in winter pastures and make any needed repairs

Pest Management

- Scout pastures for poisonous weeds, spray, mow, or remove if found
  - **Poisonous Plans of the Southern US** (http://www.aces.edu/pubs/docs/A/ANR-0975/ANR-0975.pdf)

Annual Events

- Celebrate Farm-City Week in your community (Week before Thanksgiving)

December

Cattle Herd Management

- Check calving cows and heifers 2-3 times daily
  - Move cows and newborn calves out of calving pasture
    - Record calf birth date, weight, tag calves, (optional: castrate bull calves)
  - Evaluate body condition of nursing cattle and increase energy supplement as needed
  - Feed best hay available to nursing cows & heifers
- Begin supplementing bulls 60 days prior to breeding
  - **Nutritional Management of Bulls** (https://edis.ifas.ufl.edu/an211)
- Watch calves for scours
- Feed high magnesium mineral if grazing winter annuals and watch for grass tetany
- Summarize annual cattle herd performance & financial records
- Prepare record book or calendar to keep herd records for the year ahead
  - **Florida Beef Cattle Ranch Record Book** (http://jackson.ifas.ufl.edu/ag/livestock_ranch_record.shtml)

Pasture Management

- Begin grazing winter annual pastures when forage canopy is 10-12 inches tall and
  - Remove cattle when forage is 4 inches tall
  - If possible, limit-graze for 2-3 hours per day, plus free choice hay to stretch grazing
- Watch for grass tetany on winter pastures (feed high magnesium mineral)
  - **Grass Tetany in Cattle** (https://edis.ifas.ufl.edu/ds137)
- Lime permanent pastures, based on recommendations from soil test report
  - **Fertilizing and Liming Forage Crops** (https://edis.ifas.ufl.edu/ag179)

Pest Management

- Calibrate sprayers and replace nozzles and screens as needed
  - **Calibration of Herbicide Applicators** (http://edis.ifas.ufl.edu/wg013)