Spring Ranchers Forum Proceedings

a program by the

Central Florida Livestock Agents Group

Thursday, March 21, 2013

Yarborough Ranch

1355 Snow Hill Rd.

Geneva, Florida

Spring Ranchers Forum
March 21, 2013
Proceedings

Central Florida Livestock Agents Group

Agents

Jonal Bosques-Mendez (Marion)
Megan Brew (Lake)
Jamie Cohen (Marion)
Ashley Fluke (Osceola)
Sharon Fox-Gamble (Volusia)
Ed Jennings (Multi-County Livestock)
Dennis Mudge (Multi-County Livestock)
Mark Shuffit (Marion)
Joe Walter (Brevard)
Mark Warren (Flagler)

Sponsored by the

Central Florida Livestock Agents Group

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IFAS Extension

SPRING RANCHERS FORUM

a program by the
Central Florida Livestock Agents Group
THURSDAY, MAY 21, 2013
YARBOROUGH RANCH
1355 Snow Hill Road, Geneva

AGENDA

8:30 **Arrival and Registration**

9:00 **Parasite Problems in Small Rumnates FAMACHA Class**
Jonal Bosques-Mendez, Livestock Extension Agent, Lake County, CFLAG, University of Florida/IFAS

10:00 **Heifer Selection for Herd Replacement**
Dr. Todd Thrift, Animal Sciences, University of Florida IFAS

11:00 **Trade Show Break - Allied Industry Sponsors**

Welcome & Introductions
Hosts: Dennis Mudge, CFLAG, IFAS Extension Agent, Orange & Seminole County;
Imogene Yarborough, and Lynn Hanshew, Yarborough Ranches

12:00 **Steak Lunch and Trade Show Break**

12:45 **Recognition and Allied Give-Aways**

1:15 **Freezer Beef Arithmetic**
Mark Shuffit, Livestock Extension Agent, Marion County, CFLAG, University of Florida/IFAS

1:40 **"Dirt & Fert" - Economics of Pasture**
Mark Warren, Livestock Extension Agent, Flagler County, CFLAG, University of Florida/IFAS

2:05 **Ranch Horse Management**
Megan Brew, Livestock Extension Agent, Lake County, CFLAG, University of Florida/IFAS
Ashley Fluke, Livestock Extension Agent, Osceola County, CFLAG, University of Florida/IFAS

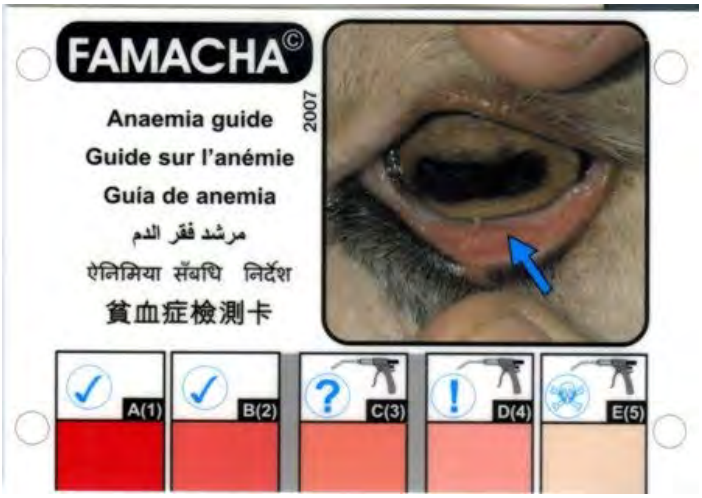
2:30 **Agent Panel - Recent Poisonous Plant Problems in Central Florida (CFLAG Agents)**
Moderator: Dennis Mudge, Multi-County Livestock Extension Agent, CFLAG,
University of Florida/IFAS

3:00 **Evaluation and Final Give-Aways**

Jonael Bosques-Mendez
Marion County, CFLAG, UF/IFAS

Gastrointestinal Parasite Management Decisions for Small Ruminant Herds

Gastrointestinal parasitism is the major problem facing small ruminant producers in Florida and the Southeastern United States. Due to the overuse of antihelmintics and its ability to acquire drug-resistance, *Haemonchus contortus* is the major pest in our humid climate severely affecting sheep, goat and camelid herds. A heavy load of *Haemonchus contortus* can result in the loss of up to half a cup of blood per day per animal. In order to effectively promote animal health in their small ruminant herds, producers need to adopt new parasite monitoring and decision-making tools which can help them reduce parasite problems in their flocks and herds. Research-based educated management decisions are essential to the success of small ruminant operations. The use of the FAMACHA® Chart as a tool to selectively treat and identify animals with a pre-disposition to parasitosis in Florida herds can help Florida ranchers in the decision making process of which animals to keep and which animals to cull. Also, other practices such as management-intensive grazing and managing their pastures can promote small ruminant health by adopting practices that can reduce the chance of re-infection by *Haemonchus corntortus*. A holistic approach to parasite management incorporating these and other practices is essential to maximize profitability of the small ruminant industries in Florida.



AN238

What Does It Cost to Develop a Replacement Heifer?[1]

Matt Hersom, Todd Thrift, and Joel Yelich[2]

The decision a beef cattle producer must address regarding raising or purchasing replacement heifers is a critical decision that will affect the long-term whole-herd cost structure. There are practical considerations and real costs that beef cattle producers need for critical assessment in order to make an informed decision whether to raise or purchase. One aspect that is often overlooked or poorly understood is the practical production costs associated with developing a replacement heifer from the cow herd. This article will highlight some of the important considerations, requirements, and inputs for developing a replacement heifer.

Capacity

The first issue to address is do you have the capacity to develop replacement heifers? Heifers are a different animal than the mature cow, and, as such, need different levels of management. Heifers require closer attention in the areas of growth, health, and nutrition to meet development program goals. Nutritional programs for heifers need to be tailored to meet the growth requirements necessary to move a 500 pound calf to an 800 pound heifer that is physiologically ready to be bred. This nutritional regime can necessitate improved feeding equipment (feed bunks, hay rings, feed storage) that might not be required for the cow herd. Heifers also require additional management inputs for health processing. Are you prepared to accept the additional labor and time investment to adequately vaccinate, observe, and treat sick heifers? Likewise, does your operation have the resources to manage heifers separately from the mature cow herd? Developing replacement heifers have different nutritional requirements, social dominance, and breeding management issues that indicate separate management from mature cows.

Genetics

When developing a replacement heifer from the existing cow herd, a number of genetic issues should be considered. First, clearly, will the potential replacement heifer be good enough to return to the cow herd, or are there better genetics to be had? How would this heifer alter the overall genetic base of the cow herd? Will she be just as good as the top 20% of herd cows, will she be average, or will she be "just another cow"? Secondly, what is the potential heifer's sire type? Is she to be from a terminal type sire? If so, this heifer may not fit the production environment that the cow herd experiences annually. Finally, bulls with lower birth weight EPD's and smaller actual birth weight should be utilized on heifers—do you have the bull power necessary to

1. This document is AN238, one of a series of the Department of Animal Sciences, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date April 2010. Visit the EDIS Web site at http://edis.ifas.ufl.edu.

2. Matt Hersom, assistant professor; Todd Thrift, associate professor; Joel Yelich, associate professor; Department of Animal Sciences; Institute of Food and Agricultural Sciences; University of Florida; Gainesville 32611.

utilize on both replacement heifers and mature cows? Much of the improvement in the annual calf crop can be accomplished with improved bull selection, but turnover in the cow herd is also an opportunity for genetic improvement through the development or purchase of genetically-improved heifers.

Economics

If you've determined that you have the capacity and the cow herd has the genetic base to develop replacement heifers, the final consideration is economic. Feed costs, forage/pasture costs, and other finances need to be evaluated for long-term feasibility. Table 1 presents a simplified example of the base costs generally associated with taking a heifer from weaning through 60 days post-breeding (pregnancy check time). For this example, we will assume that we have 100 potential replacement heifers at weaning, start the development program in early November, initiate the breeding season in March, and manage these heifers through pregnancy check in late May. There will be a 1% assumed death loss, and 10% of the heifers will not be pregnant and can therefore be marketed. Note, however, that this example does not include any labor costs associated with managing the replacement heifer group, nor does it take into account the infrastructure required to manage the heifers as a separate group. The calculations are for illustrative purposes only.

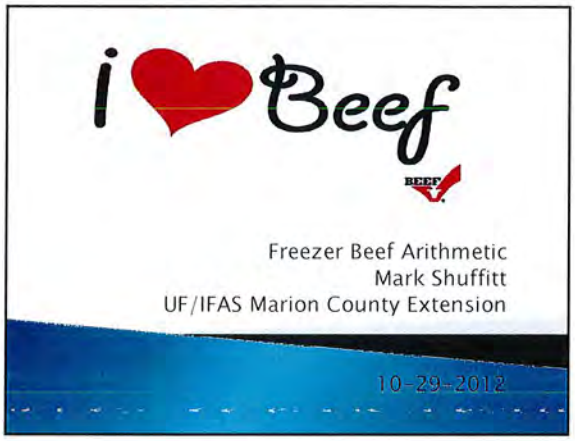
Our sample estimate shows that the largest proportion (53%) of the cost is associated with retaining the calf. The calf cost is the price the producer would have received if the heifer was sold at weaning. This price will vary according to the quality of the heifers, the number of heifers marketed, and market timing. It is imperative to utilize a realistic value of the heifer.

Feed costs to develop heifers account for 33% of the total cost of production to get a heifer from weaning to breeding. Inputs include pasture rent, stored forage, and supplemental feeds. The nutritional program for replacement heifers is critically important, and keeping in mind that any number of successful nutritional programs can be used, each will have its own inherent cost structure and outcome. All other costs (health, breeding, interest, death) amount to slightly less than 5% of total cost. Therefore, key control points in determining the feasibility of raising replacement heifers are the current calf prices at weaning and projected feed costs. The cost to develop a heifer in this scenario is approximately $770. However, this scenario predicts a 90% pregnancy rate for this set of heifers; therefore, the development cost of the non-pregnant heifers has to be spread across the remaining pregnant heifers, resulting in a development cost of $885. The credit of selling the non-pregnant heifers results in a total development cost of $850.

Compare this brief analysis and your particular labor and financial situation to what purchasing a bred heifer would cost. Forage resources, supplement availability, and differences in calving season will vary these costs considerably. What is imperative is that as a beef cattle producer interested in developing replacement heifers, you are keenly aware of and can accurately determine the true costs as related to your operation. In this scenario, could bred replacement heifers of the same genetic quality be purchased for less than $850? High-cost replacement heifers will become high-cost cows in the herd in that they will have to produce more pounds of weaned calves annually to recover their development cost and return a profit to the producer. Low-cost replacement heifers will become low-cost cows and have greater potential for a greater return on investment with potential for profitability.

Table 1. Example of simple costs associated with developing a replacement heifer

Item	Amount	Description
Calf cost	$ 450.00	500 lb calf valued at $0.85/lb
Supplement	$ 71.55	Priced at $180/ton fed at 4.5 lb/heifer for 150 days and 2 lb/heifer for 60 days
Forage	$ 200.00	Hay priced at $45/900 lb bale, fed for 150 days, 4,000 total lbs offered
Mineral	$ 10.50	Mineral priced at $20/50 lbs, fed for 210 days, 2 oz./day
Total Feed	$ 282.05	210 days of feeding, heifers gaining 1.75 lb/day
Land/Pasture	$ 10.81	Opportunity cost to use land; priced at $20/acre, 0.5 acre/heifer for 5 months, and 2 acre/heifer for 2 months
Basic Health	$ 15.00	Starter vaccinations, de-worming, etc.
Breeding	$ 12.00	Bull cost
Opportunity cost	$ 6.47	Interest on calf value at weaning, 2.5% interest for 210 days (weaning-to-breeding period)
Death loss	$ 4.25	1% death loss on 100 heifers calculated at purchase
Sub-total	$ 769.92	Development cost from weaning to pregnancy check
Adjusted cost	$ 855.47	Adjusted to 90% of heifers pregnant
Credit for non-pregnant heifers	$ + 5.33	800 lb at $0.60/lb spread across the remaining 90 heifers
Total	**$ 850.14**	**Cost to take a heifer from post-weaning to late-spring pregnancy**



Freezer Beef Arithmetic
Mark Shuffitt
UF/IFAS Marion County Extension

10-29-2012

1,000 lb Steer

- Avg. carcass weight 61.5% = 615 lbs.
- Fat, bone, loss (183) lbs.
  Retail beef cuts 432 lbs.
- Additional variety meats ~27 lbs.
  - Liver, tongue, tripe, sweetbreads

Chuck (26.8%)

Blade roast	59.3	
Stew or ground beef	32.1	
Arm pot roast	22.3	
Cross rib pot roast	20.6	
Fat & bone		30.5
Total	134.3	30.5

Brisket (3.8%)

Boneless	9.4	
Fat & bone		14.0
Total	9.4	14.0

Shank (3.1%)

- Cross cut
  Typically stew meat & soup bones 19.1
  Total 19.1

Rib (9.6%)

Rib roast	24.2	
Rib steak	12.4	
Short ribs	4.7	
Braising beef	2.7	
Ground beef	3.5	
Fat & bone		11.5
Total	47.5	11.5

Short Plate (8.3%)

Plate, stew, short ribs	40.8	
Fat & bone		10.2
Total	40.8	10.2

Loin (17.2%)

Porterhouse steak	18.7	
T-bone steak	9.5	
Top Loin steak	5.2	
Sirloin steak	41.4	
Ground beef	2.9	
Fat & bone		28.1
Total	77.7	28.1

Flank (5.2%)

Flank	3.2	
Ground beef	12.6	
Fat		16.2
Total	15.8	16.2

Round (22.4%)

Top round (inside)	21.0	
Top round (outside)	20.3	
Tip	13.1	
Stew	8.3	
Rump	4.8	
Kabobs or cubes	2.1	
Ground beef	14.2	
Fat & bone		54.0
Total	83.8	54.0

Misc. (3.6%)

Kidney, hanging tender	3.6	
Fat, suet, cutting losses		18.5
Total	3.6	18.5

My Costs

Avg. carcass weight (61.5% of live weight)		615 lbs.
Fat, bone, loss		(183) lbs.
Retail beef cuts		432 lbs.

1,000 lb steer @ $2.00/lb	=	2,000.00
Harvest fee	=	40.00
Cut & wrap fee (615 x $.50) ($0.50/lb dressed wgt.)	=	307.50

Total $2,347.50

$2,347.50 / 432 lbs = $5.43/lb. avg.

Retail Value

- Chuck 134.3 lb. @ $4.99 = $604.00
- Brisket 9.4 lb. @ $5.99 = $ 56.00
- Shank 19.1 lb. @ $2.99 = $ 57.00
- Rib(Roast & Steak)
  36.8 lb. @ $11.99 = $404.00
- Short Plate 40.8 lb. @ 5.99 = $244.00

Retail Value

- Lion (Porterhouse & T-bone)
  28.2 lb. @ $11.99 = $338.00
  (Sirloin steak)
  41.4 lb. @ $4.99 = $207.00
- Flank steak 3.2 lb. @ $7.99 = $26.00
- Round (Top, Bottom & Tip)
  54.4 lb. @ $5.69 = $310.00
- Ground beef 60 lb. @ 3.49 = $209.00

Total $2,455.00

SS-AGR-176

Fertilizing and Liming Forage Crops[1]

Y.C. Newman, C. Mackowiak, R. Mylavaparu, and M. Silveira[2]

Plants require many essential nutrients for growth. Those nutrients required by plants in large quantities are called macronutrients, and they are nitrogen (N), phosphorus (P), and potassium (K). Those required in moderate quantities are called secondary nutrients, and they are calcium (Ca), magnesium (Mg), and sulfur (S). There are also nutrients that are needed in very little amounts but are as essential for plant growth as the macro and secondary nutrients, and they are called micronutrients (iron, copper, zinc, manganese, boron, molybdenum, and chlorine). The soil can supply the plant with most, if not all, of the macro, secondary, and micronutrients, but often the supply of one or more of the nutrients is insufficient for optimum growth.

Nitrogen is the nutrient that grass pastures use the most, and when used in a balanced fertilization, it often results in increased forage quality and production. Phosphorus may be deficient in some soils, but other Florida soils are high in native P. Some forage crops may extract sufficient P from the subsoil, even when the P level in the surface soil is low. Potassium (K) may be needed by some forage crops. Under intensive hay or silage production where nutrients are removed from the land, annual applications of P and K are typically required. Potassium is fairly mobile in sandy soils and can quickly become deficient. Calcium, magnesium, sulfur, and some micronutrients may also become deficient in the soil if soil fertility is overlooked.

While routine soil tests do not include a micronutrient analysis, it is suspected that in some areas of Florida S deficiency may be seen in some years and on some crops. Sulfur deficiency may be seen under intensive hay or silage production. Sulfur deficiency symptoms are pale green leaves mainly in young leaves, similar to nitrogen deficiency, but nitrogen deficiency symptoms show pale leaves in older and new leaves. If a producer is concerned or suspects a sulfur deficiency, some sulfur may be added by using ammonium sulfate as the nitrogen source in the first spring application (just be aware that ammonium sulfate is an acidifying fertilizer). Use of other S fertilizers such as sulpomag or gypsum is another option when no additional N is needed or if your pH is moderately acidic.

Under most circumstances, micronutrients are not deficient in pastures and therefore should not be applied until a deficiency of a specific nutrient is confirmed. A suggestion for new plantings of forages on unplanted and unfertilized flatwood soils is to apply 3 lb/acre of copper with the initial fertilization.

Only the nutrients that are needed by the crop should be included in the fertilizer. For example, if a soil test indicates that phosphorous is adequate, no phosphorus should be included in the fertilizer. Banking fertilizer in the soil is not a profitable method for managing the nutrition of crops, plus there is a high risk of environmental pollution.

1. This document is SS-AGR-176, one of a series of the Agronomy Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. This publication is also part of the *Florida Forage Handbook*, an electronic publication of the Agronomy Department, originally written by C.G. Chambliss; revised by Yoana Newman. For more information you may contact the editor of the *Florida Forage Handbook*, Y. C. Newman (ycnew@ufl.edu). Revised January 2008. Reviewed April 2011. Please visit the EDIS website at http://edis.ifas.ufl.edu.

2. Y.C. Newman, assistant professor, Agronomy Department; C. Mackowiak, assistant professor, Soil and Water Science Department; R. Mylavaparu, associate professor, Soil and Water Science Department; M. Silveira, assistant professor, Soil and Water Science Department. Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL 32611.

How does a manager decide if fertilizer or lime should be applied to a pasture or forage crop? Fertilizer and/or lime should be applied (1) if an increase in forage growth can be expected, (2) if the extra forage is needed, and (3) if a return on the investment can be expected. The experience of the forage manager, along with soil testing for pH, P, and K, can be used in making a decision about liming and fertilizing with P and K, especially for hay or silage production. There is no point in fertilizing to reach maximum yields if the extra forage produced is not used. To make a profit on the investment, the forage must be utilized or harvested, and the product (animal weight gain, milk, hay, or silage) must be marketed.

Fertilizer should usually be applied at the beginning of the growing season. Warm-season perennial grasses should be fertilized in the early spring (February to March). Spring fertilization stimulates production at a critical time. Some pasture grasses may be given an additional application of N in June if extra forage is needed, but this is usually not the case for a beef cow/calf operation. Although bahiagrass gives little, if any, response to a late-summer/fall application, limpograss, rhodesgrass, and stargrass do. These grasses can be fertilized in the late summer or early fall to extend the grazing season or, in the case of limpograss, for stockpiling. Timely application of fertilizer can be used to increase forage yield and quality, improve stand persistence, and provide for better distribution of forage across the growing season. The producer should consider that the response obtained from an application of fertilizer is influenced by other factors such as solar radiation, temperature, soil moisture, and grazing management. For example, overgrazing or excessive defoliation limits the ability of the plant to respond to the added nutrients and thereby reduces potential yield.

Some grasses, such as the stargrasses and some of the hybrid bermudagrasses, need to be fertilized annually or maintained in a high-fertility environment in order to keep a good stand. On the other hand, some ranch managers with large, extensive operations may only fertilize their bahiagrass or limpograss once every three years. These grasses can persist under minimum fertility if they are not overgrazed or mismanaged.

Fertilization Recommendations for Specific Forages

Fertilizing for Establishment of Perennial Grasses

Applying nutrients on a clean-tilled seedbed before plant roots are present increases the risk of losing some or all of the nutrients through leaching. Heavy rainfall events on the sandy soils of Florida can move N and K downward in the soil profile and out of reach of plant roots that will be developing later. Therefore, it is suggested that, where possible, nutrients (fertilizer) not be applied until plant roots are present to take them up. On the other hand, biosolids, poultry litter, manures, and composts can be lightly incorporated into the seedbed. They have a slower nutrient release than mineral fertilizers and the organic matter may provide some additional tilth and moisture retention to the soil.

For establishment of new plantings, apply 100 lb N/acre and split application as follows: apply 30 lb N/acre, all of the soil test recommended P_2O_5, and 50% of the K_2O as soon as plants emerge. Apply the remaining K_2O and 60–70 lb N/acre 30–50 days later.

When the new plants are small, only a limited amount of N and K_2O are applied, with additional N and K_2O being applied later to encourage the new plants to continue growing, spreading, and developing into a full and complete stand of grass.

Fertilizing Bahiagrass

GRAZED BAHIAGRASS

Phosphorus Fertilization

In order to receive phosphorus fertilizer recommendations for established bahiagrass, soil AND tissue samples should be submitted to the Extension Soil Testing Lab (ESTL) at the same time. As per the preliminary research findings, soil tests alone are not adequate to determine bahiagrass P needs. A companion tissue test has therefore been added to the testing procedures along with the soil test to determine the P fertilization needs. Producers are strongly encouraged to simultaneously test soil and tissue samples if bahiagrass pastures have not received P fertilization for long periods. Phosphorus should not be applied if tissue P concentrations are at or above 0.15%, even if soil tested Very Low or Low in P. For Medium and High soil P levels, P application is not recommended since there is no added benefit of P fertilization on bahiagrass yields.

If P recommendations are not desired and the producer is only interested in either the test for soil pH and lime requirement recommendations, or the test for soil pH, lime requirement, K, Mg, and Ca recommendations, the soil sample alone can be submitted to the ESTL. In this case, the soil test report will not include P fertilizer recommendations. (Please choose the appropriate test from the Producer Sample Submission Form).

Both the consolidated representative soil and the tissue samples should be collected simultaneously from each field of up to 40 acres.

ESTL testing procedures and recommendations for P for bahiagrass may be adjusted as and when field research data becomes available.

MAINTENANCE FERTILIZATION

Four fertilization options are presented below for established bahiagrass pastures. Choose the option which most closely fits your fertilizer budget, management objectives, and land capability. If you will be grazing only your bahiagrass, you should carefully consider the potential for economical return on your investment in fertilizer before using the Medium-Nitrogen or High-Nitrogen options described below. The added forage produced for grazing animals may not be worth the added cost.

• *Low-Nitrogen Option*: Do not use this option if you cut hay since nutrient removal by hay is much greater than by grazing animals. This option results in the lowest cost of purchased fertilizer. Apply 50–60 lb N/acre in the early spring. Do not apply K, recognizing that N will be the limiting nutrient in this low-cost option. Apply 25 lb P_2O_5/acre if your soil tests Very Low or Low in P and tissue P concentration is below 0.15%. Do not apply P if tissue P concentration is at or above 0.15%, even if the soil tests Very Low or Low in P. For Medium and High soil P levels, neither P application nor tissue analysis is recommended since there will be no added benefit of P fertilization on bahiagrass yields.

• *Medium-Nitrogen Option*: Apply 100 lb N/acre in the early spring. Apply 25 lb P_2O_5/acre if your soil tests Very Low or Low in P and tissue P concentration is below 0.15%. Do not apply P if tissue P concentration is at or above 0.15%, even if the soil tests Very Low or Low in P. For Medium and High soil P levels, neither P application nor tissue analysis is recommended since there will be no added benefit of P fertilization on bahiagrass yields. Apply 50 lb K_2O/acre if your soil tests Very Low or Low in K and none if it tests Medium or High.

• *High-Nitrogen Option*: Apply 160 lb N/acre in two applications of 80 lb N/acre in early spring and early summer. Apply 40 lb P_2O_5/acre if your soil tests Very Low or Low in P and tissue P concentration is below 0.15%. Do not apply P if tissue P concentration is at or above 0.15%, even if the soil tests Very Low or Low in P. For Medium and High soil P levels, neither P application nor tissue analysis is recommended since there will be no added benefit of P fertilization on bahiagrass yields. Apply 80 lb K_2O/acre if your soil tests Very Low or Low in K and 40 lb K_2O/acre if it tests Medium. No K should be applied if your soil tests High or Very High in K. The fertilization rates suggested in this option are high enough to allow bahiagrass pasture to achieve well above average production. Management and environmental factors will determine how much of the potential production is achieved and how much of the forage is utilized. A single cutting of hay can be made without need for additional fertilization.

BAHIAGRASS CUT SOMETIMES FOR HAY

For a single cut per year from pastures:

If you used the **Low-N option** of pasture fertilization, apply 80 lb N/acre no later than six weeks before the growing season ends. Apply 50 lb K_2O/A if your soil tests Very Low or Low in K, and none if it tests Medium or High. Apply 25 lb P_2O_5/acre if your soil tests Very Low or Low in P and tissue P concentration is below 0.15%. Do not apply P if tissue P concentration is at or above 0.15%, even if the soil tests Very Low or Low in P.

Interpretation for Bahiagrass Soil and Tissue Test		
SOIL TEST	TISSUE TEST	RECOMMENDATIONS
P MEDIUM/HIGH	NO TISSUE TEST	0
P LOW/VLOW	P= or >0.15%	0
P LOW/VLOW	P<0.15%	25 or 40 lbs P_2O_5/acre†
†Recommended amount of P_2O_5 depends upon nitrogen option chosen.		

If you used the **Medium-N option** of pasture fertilization, apply an additional 80 lb N no later than six weeks before the growing season ends. Apply 50 lb K_2O/acre if your soil tests Very Low or Low in K, and none if it tests Medium or High. Apply 25 lb P_2O_5/acre if your soil tests Very Low or Low in P and tissue P concentration is below 0.15%.

If you used the **High-N option** of pasture fertilization, you do not need any additional N fertilization to make one cut of hay. Apply 80 lb K_2O/acre if your soil tests Very Low or Low in K and 40 lb K_2O/acre if it tests Medium. Apply 40 lb P_2O_5/acre if your soil tests Very Low or Low in P and tissue P concentration is below 0.15%.

BAHIAGRASS GROWN ONLY FOR HAY

For multiple cuts of hay: Apply 80 lb N/acre in early spring. Also in spring, apply 80 lb K_2O/acre if your soil tests Very Low or Low in K, and 40 lb K_2O/acre if it tests Medium. Apply 40 lb P_2O_5/acre if your soil tests Very Low or Low in P and tissue P concentration is below 0.15%. Apply an additional 80 lb N and 40 lb K_2O/acre after each cutting, except the last in the fall. Include 20 lb of P_2O_5/acre after each cutting if the soil tested Very Low or Low in P.

BAHIAGRASS FOR SEED PRODUCTION

Apply 60–80 lb N/acre in February or March. At the same time, apply 80 lb K_2O/acre if your soil tests Very Low or Low in K, and 40 lb K_2O/acre if it tests Medium. Apply 40 lb P_2O_5/acre if your soil tests Very Low or Low in P and tissue P concentration is below 0.15%. Graze until May, June, or July, depending on variety. Remove cattle before seed heads start to emerge, and apply an additional 60–80 lb N/acre.

If the bahiagrass is not grazed, do not apply fertilizer in February or March since this may stimulate excessive top growth. Mowing from February to April may be needed to remove excessive top growth. Apply 60–80 lb N/A before seed heads first appear. Apply 25 lb P_2O_5/acre if your soil tests Very Low or Low in P and tissue P concentration is below 0.15%. Do not apply P if tissue P concentration is at or above 0.15%, even if the soil tests Very Low or Low in P. For Medium and High soil P levels, neither P application nor tissue analysis is recommended. Apply 50 lb K_2O/acre if your soil tests Very Low or Low in K and none if it tests Medium or High. Fertilize Pensacola in March/April and Argentine and Paraguay in May/June.

Special Note If Applying Manure or Biosolids

A different set of economic factors are usually considered when waste materials rather than purchased fertilizer are supplying the nutrients. Additionally, it is often impractical to follow the application timings discussed in this publication when using waste materials from other operations.

Fertilizing Established Pastures of Bermudagrass, Stargrass, Digitgrass (Pangola), Rhodesgrass, and Suerte

For grazed stands, apply 80 lb N/acre, all of the soil test recommended P_2O_5, and 50% of the K_2O in early spring. Apply an additional 60–80 lb N/acre and the remaining K_2O at midseason. In central and south Florida, the midseason application can be delayed and applied in September to early October for fall production on stargrass, hybrid bermudagrasses, and rhodesgrass. Under intensive management in central and south Florida, up to 200 lb N/acre/year may be economically viable for stargrass and bermudagrass. In this situation, apply 80 lb N/acre, all of the P_2O_5, and 50% of the K_2O in early spring. Follow with 50 lb N/acre in midseason, and 70 lb N/acre and the other 50% of the K_2O in mid-to-late September.

Fertilizing Established Pastures of Limpograss

For grazed stands, apply 60 lb N/acre and the entire soil test recommended P_2O_5 and K_2O in late winter or early spring. Apply an additional 60 lb N/acre in late summer or early fall. For a minimum fertilization alternative, ignore the P and K recommendation and apply only 60 lb N/acre/year.

Fertilizing for Hay or Silage Production from Perennial Grasses (excluding bahiagrass)

For multiple cuts: Apply 80 lb N/acre and all of the recommended P_2O_5 and K_2O in early spring. Apply an additional 80 lb N and 40 lb K_2O/acre after each cutting, except the last in the fall. Include 20 lb of P_2O_5/acre in the supplemental fertilizer if the soil tested low or medium in P.

For a single, late season cut from pasture: Apply 80 lb N/acre if you have not applied N in the past two months, and apply the soil test recommended amount of P_2O_5 and K_2O. If you have applied N in the past two months, do not apply any nitrogen now, but do apply the soil test recommended amount of P_2O_5 and K_2O. Any application of fertilizer should be made no later than six weeks before the growing season ends.

Summer Annual Grasses

Species included are sorghum-sudan hybrids, pearl millet, brown top millet, and Japanese millet.

Apply 30 lb N/acre, 50% of the soil test recommended K_2O, and all of the P_2O_5 fertilizer in a preplant or at-planting application. Apply 50 lb N/acre and the remaining K_2O after the first grazing period. Apply an additional 50 lb N/acre after each subsequent grazing period, except the last.

Warm-Season Legumes or Legume-Grass Mixtures

Species included are aeschynomene, alyceclover, desmodiums, hairy indigo, stylo, perennial peanut, and other tropical legumes. Apply all of the soil-test-recommended P_2O_5 and K_2O in spring or early summer when seedlings or regrowth are 3–4 inches tall.

Perennial Peanut Hay Production

Apply all of the soil test recommended P_2O_5 and K_2O in early spring. Make an annual application of 20–30 lb sulfur/acre applied as a sulfate (e.g., gypsum, ammonium sulfate, magnesium sulfate, potassium sulfate, potassium magnesium sulfate). After each hay harvest, apply an additional 15 pounds of P_2O_5 and 40 pounds of K_2O per ton of hay removed, unless the soil tests high or very high.

Cool-Season Annual Grasses

When planting on a prepared seedbed, apply 30 lb N/acre, 50% of the soil test recommended K_2O, and all of the P_2O_5 fertilizer in a preplant or at-planting application. Apply 50 lb N/acre and the remaining K_2O after the first grazing period. Apply an additional 50 lb N/acre after each subsequent grazing period. When overseeding established perennial grasses with cool-season annual grasses, apply 50 lb N/acre plus all of the P_2O_5 and K_2O after emergence. Apply an additional 50 lb N/acre after each subsequent grazing period.

Cool-Season Legumes or Legume-Grass Mixtures

Species included are all true clovers (white, red, arrowleaf, crimson, subterranean), vetches, lupines, and sweet clover. If legumes such as white clover are already established, or if reseeding annual legumes such as crimson clover are re-establishing from natural seed, apply all of the soil test recommended P_2O_5 and K_2O fertilizer in late fall. For new plantings, apply the recommended P_2O_5 and K_2O in a preplant or at-planting application. If legumes are planted in combination with oat, rye, wheat, and/or ryegrass, apply 30 lb N/acre in a preplant or at-planting application plus one additional 50 lb N/acre application after the grass is well established. These recommendations are made assuming adequate soil moisture is available either from rainfall or irrigation. In southern Florida, lack of adequate rainfall during the cool season frequently causes stand failure or limits growth. Under nonirrigated conditions in southern Florida, the probability of inadequate moisture is high and the likelihood that the crop will benefit from applied fertilizer is low, especially on the drier soils.

Alfalfa

Apply all of the soil-test-recommended P_2O_5 and 50% of the K_2O fertilizer in late fall. Apply the remaining K_2O in early spring. If the alfalfa is mechanically harvested rather than grazed, apply an additional 30 lb P_2O_5 and 60 lb K_2O/acre after each harvest. An additional application of 100 lb K_2O/acre in June or July may increase summer survival of alfalfa. Apply 3 lb boron/acre per year to alfalfa in three 1 lb/acre applications. Copper and zinc fertilizer may be needed if soil pH is above 6.5. The lime requirement shown on the soil test report is adequate for established alfalfa. However, if the alfalfa has not yet been planted, apply and incorporate one ton of lime/acre if the soil pH is below 6.6. Lime is especially important for alfalfa establishment. It is not practical to incorporate lime once the alfalfa is planted. Fertilizer should contain 15–20 lb sulfur/acre; apply as a sulfate (e.g., gypsum, ammonium sulfate, magnesium sulfate, potassium sulfate, potassium magnesium sulfate) since elemental sulfur reacts too slowly to supply the sulfur needs of the current crop and elemental sulfur may decrease soil pH.

Liming

The primary reasons for liming acidic soils are to increase crop yield and to enhance fertilizer efficiency. Lime also affects the solubility of other elements; therefore, some plant nutrients are made more available by liming, while toxicities caused by excessive concentrations of other plant nutrients are reduced. In addition to neutralizing soil acidity, calcitic limestone supplies the plant nutrient calcium, and dolomitic limestone supplies both calcium and magnesium. While a correct liming program is beneficial for plant growth, excessive liming can be detrimental. Deficiencies and imbalances of certain plant nutrients may result from excessive lime application.

To obtain maximum benefit from liming and to determine the type and quantity of lime to apply, soil and plant factors must be taken into account. The first step is to properly collect a soil sample from the area to be limed. Samples are normally taken to a depth of 4–6 inches. The soil sample should be sent to a reputable soil testing laboratory for determination of pH and lime requirements.

Lime should be incorporated into the soil whenever possible since lime reacts with soil that it comes in contact with. However, it has little immediate effect on the soil pH below the top inch or so. Therefore, lime should be applied and incorporated 3–6 months prior to planting. The frequency of lime application will depend on many factors, including fertilization program, soil type, and crop. Typically, lime application should seldom be more frequent than every 3 years, with the exception of intensive hay fields that receive high ammonium-nitrogen fertilizer application rates.

If the soil is at or above the target pH, soil calcium in the soil should be sufficient for optimum plant growth. If the soil pH needs to be increased and the level of magnesium is low, liming with dolomitic limestone is a relatively inexpensive method for adjusting the pH and supplying magnesium. Magnesium can be added to the fertilizer.

The target pH for various forage crops is listed in Table 1. All of the recommendations shown in Table 1 are part of the standardized fertilization recommendation system of the UF/IFAS Extension Soil Testing Laboratory. Cool-season legumes are pH specific and most of them require high pH of 6 or higher. Warm-season perennial grasses, on the other hand, perform well at a lower pH. Appropriate lime recommendations are automatically recorded as part of the soil test report.

Other Important Considerations

When applying manure, biosolids, and waste materials, producers may apply higher rates than those recommended for mineral fertilizers since the nutrients present in the waste materials need to be converted into forms that the plants can use. However, the producer should not go above rates that are environmentally acceptable. Additionally, timing of nutrient application may be different than those previously recommended.

When applying lime-stabilized biosolids, attention should be given to the liming effect of this material. Soil pH should be carefully monitored to avoid pH conditions above 6.5. It has been demonstrated that bahiagrass growing in soil conditions of pH 7.0 or above will, very likely, perform poorly compared to bahiagrass growing at lower pH conditions.

For additional information see:

EDIS IFAS fact sheet SL179 *Using Waste Products in Forage Production*.

EDIS IFAS fact sheet SS-AGR-152 *Fertilization of Agronomic Crops* for a more extensive discussion of micronutrients.

For additional information on this and other forage topics, please visit the Forages of Florida website at http://agronomy.ifas.ufl.edu/ForagesofFlorida/index.php.

Table 1. Target pH for different forage crops grown on mineral soils.

Crop Category	Crops Included	Target pH
Bahiagrass	bahiagrass	5.5
Other improved perennial grasses	bermuda, star, rhodes, suerte, and digitgrass	5.5
	limpograss	5.0
Warm-season annual grasses	corn, sorghum, sorghum-sudans, and millets	6.0
Cool-season annual grasses	small grains and ryegrass	6.0
Warm-season legumes or legume-grass mixtures	perennial peanut, stylo, desmodiums, aeschynomene, alyceclover, hairy indigo, and other tropical legumes	6.0
Cool-season legumes or legume-grass mixtures	All true clovers (white, red, arrowleaf, crimson, subterranean), vetches, lupines, and sweet clover	6.0 – 7.0
Alfalfa	Alfalfa	7.0

Ranch Horse Management
Health, Nutrition, and Economics

Megan Brew-Lake County
Ashley Fluke-Osceola County
University of Florida IFAS Extension

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IFAS Extension

Introduction...

- Ranch Horses vs. Pleasure and Show Horses


Conformation

- "You can't ride pretty"
- Choosing the right horse for the right job will minimize injury, minimize maintenance costs, and maximize efficiency


Conformation

- Face
  - Eyes - large, set on corners of the face
  - Throatlatch – thin
  - Nostrils – wide
- Feet and Legs
  - Sound barefoot
  - Large feet, correct hoof angles
  - Pasterns
  - Knees and hocks close to ground
  - Correct angles to knees and hocks
- Body
  - Shorter back in relation to a longer underline

Breed Selection

- Florida Cracker Horse
  - Hardiness, longevity, travel, low maintenance
  - Disposition, size
- American Quarter Horse
  - Size, strength, disposition, muscling
  - Travel, lack endurance, often require more maintenance
- Cracker/Quarter Cross
  - Better disposition with thicker muscling and good endurance
  - May have some undesirable traits



Nutrition

- Diet should be FORAGE based
  - Free choice mineral and fresh water
- Most horses under light-moderate work do not require additional energy in the form of concentrates
  - May need to add concentrate during heavy work
  - Add slowly
- Allow BCS to determine your feeding program
  - 4-5 optimal for working horses

Body Condition Scores

1-3 – too thin
Above horse is a 2

7-9 – too fat
Above horse is a 8.5

4-6 – ideal
Horse to the right is a 5

Workload

- Busy times for working cattle
  - Spring, Summer, Fall
  - Horse will be well conditioned during these times
  - Nutrition important
- Slower times of year
  - Keep horse moderately active with other activities
  - Prepare horse for busy times

Workload

- Be able to recognize signs of exhaustion
  - Horse may appear anxious or nervous
  - Open mouthed breathing
  - Increased capillary refill time and jugular vein refill time
  - Dry mucous membranes and no sweat
  - Irregular pulse and respiratory rate; high and out of rhythm
  - No gut sounds and no anal response
  - Elevated body temperature (Normal 99°-101°F)

Workload

- Treating the exhausted horse
  - Stand horse in a cool, shaded area
  - Rinse horse continuously and provide fan if possible
  - Electrolytes: orally or intravenous
  - Allow recovery time after incident
  - Contact your veterinarian if symptoms persist

Health Management

- What vaccinations does the Florida ranch horse *need*?
  - EWT vaccine: Eastern/Western Encephalomyelitis and Tetanus combo
    - May also get individually as EEE, WEE, Tetanus
  - West Nile vaccine
  - Rabies Vaccine
- Risk based vaccinations
  - Equine Influenza, EHV, Strangles, Rotavirus, Botulism, and Potomac Horse Fever
  - Travelling to events with other horses or to an area of high risk
  - Open vs. closed facilities

Health Management

- Other maintenance
  - Parasite control
    - De-worming
    - Fly control
  - Hoof care
    - Farrier schedule; "Do it yourself" maintenance
    - Select horses with good feet
  - Wounds and Injuries Common to Ranch Horses
    - Saddle sores and Bit sores
    - Abscesses
    - Tendon problems

Toxic Plants

Recent Farm Animal Poisonings

Central Florida

Join University of Florida Livestock/Natural Resources Agent Dennis Mudge on any of the over two hundred farm visits he makes annually, and you will quickly value IFAS and what the County Extension Agents do for farmers.

On-site pasture visits reveal to animal owners dangerous weeds that frequent their animal's grazing areas. Dennis has found that "the average farm or ranch has six to fourteen weeds that they need to become very aware of. They have the potential to make farm animals ill and even cause death when ignored." Control of these weeds is very important for your animal's safety. Identifying poisonous plants is a learned skill that is the responsibility of all animal owners.

Observational Study

Horses: Even the best managed horse farm must include observing opportunistic weeds and dangerous trees. Horse ranches grazing up to wetlands or wood lots especially need to take care.

Recent poisonings have come from American Poke weed. This is a weed that seems to appear over night and often causes gastrointestinal problems including colic, but does occasionally cause death.

Hemlock kills horses every year due to the seriousness of its toxicity. Common in Florida, it is often along fence lines and next to stables.

Bracken Fern must be mentioned in that horses will actually seek it out when they develop a taste for it. Common in Florida wetlands, when present in large amounts it is a serious concern to many. A pasture up to the front door is unwise; ornamentals are often toxic.

Pokeweed

Poison Hemlock

Spotted Hemlock

Bracken Fern

Oleander

Farm/Ranch Case Studies Series

Fact Sheet #032710

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ORANGE COUNTY GOVERNMENT FLORIDA

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Cattle: Lantana kills cattle every year. This plant is very difficult to kill but diagnosis is often easy. Yet cattle experience discomfort and die each year from it.

Wet areas always propose a threat to cattle in that many weeds in these areas are poisonous. Left alone for most of the year, cattle can get in trouble when spending too much time looking for "green feed" or trying to "cool off" in the water. Iris, lilies and horsetail have all killed cattle recently.

When cattle travel daily through wooded areas to reach nearby pastures, care will need to be taken. If they stop to feed, woodland greenery can kill them. Recent poisonings have occurred with Coral ardesia and Coffee senna.


Lantana


Iris


Lillies


Horsetail


Coral ardisia


Coffee senna

Goats: We say that goats can "eat anything"… they are "browsers" and are "tough." Goats too can be killed by toxic plants if they are allowed to eat them. Recent poisonings have occurred from Black Oak, Cherry Laurel, Yellow Jasmine, and Pin Cherry.

A poor practice is to cut off tree branches and throw them to your goats. Goats can clean out areas by picking and choosing what and how they eat. But a farmer who gives toxic trees to his goats as the only food that day will quickly learn how fast he or she can kill them. Jasmine is a vine that is toxic and some varieties are extremely toxic.


Cherry Laurel


Yellow Jasmine


Black Oak


Pin Cherry

Poultry: "Free ranging" poultry is a recent phenomenon in Florida which is, of course, just a return to by-gone practices. If your free ranging poultry escapes the predators, they may not the toxic plants.

Recent poisonings have occurred from poultry eating toxic seeds from Bladderpod, Jimson weed and Sesbania.

Bladderpod

Jimson weed

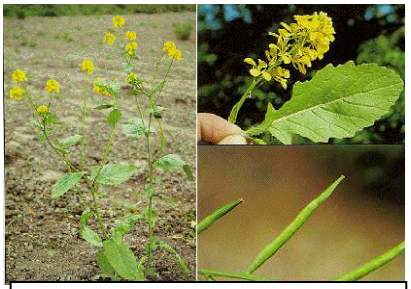
Sesbania

Rabbits: Rabbits allowed to roam a yard or farm yard may also graze on toxic plants. Recently poisonings have occurred with crotons.

Croton

Sago Palm

Farm Dogs: Each year dogs are killed by eating the fruiting flower portion of the sago palm. This is an awful smelling part of the plant, but will kill a dog quickly if he or she devours it.



Mustard

Burdock

Poison Sumac

Even hay is not always safe and northern hay needs to be examined also. Burdock and poison sumac dried in hay will kill any animal.

Cats: Cats eat grass commonly to help them regurgitate hairballs. If shut up inside, they will attempt to do the same with house plants. It may work or it may kill them. Recent poisonings have occurred with English Ivy, begonias and asparagus fern.

English Ivy

Begonia

Asparagus Fern

All Animals and Children: Each year Dennis makes farm visits where animals have died from the following plants: Nightshade, Sicklepod, Chinese Tallow, and butterfly plants like Milkweed, Crotalaria and Cassia. While Nightshade and Sicklepod are weeds that commonly occur, the butterfly plant weeds are escapees from your neighbor's yard.

Their control is very important. Ignoring them could kill your animals. Any farm animal, pet or child can die from eating plants provided for butterflies.

Nightshade

Chinese Tallow

Crotolaria

Cassia

Sicklepod

Milkweed

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SS-AGR-08

Weed Management in Pastures and Rangeland - 2013[1]

B.A. Sellers and J.A. Ferrell[2]

Weeds in pastures and rangeland cost ranchers in excess of $180 million annually in Florida by reducing forage yield, lowering forage quality, and causing animal injury through toxicity or specialized plant organs (thorns and spines). Effective weed management begins with a healthy pasture. Weeds are seldom a serious problem in a well-managed, vigorously growing pasture. Good pasture management involves the proper choice of the forage species and variety, an adequate fertility program, controlled grazing management, and pest management (weeds, insects, and diseases).

If pasture health declines, weeds will exploit the situation and become established. Bare ground is the perfect environment for establishment of weeds. Once established, weeds must be controlled with mechanical or chemical methods. However, unless the pasture-management problem that caused forage decline is corrected, the grass will not re-establish and weeds will re-infest the area.

Integrated weed management is both an economically and environmentally sound approach to weed management. An integrated approach involves scouting, prevention, and control (biological, cultural, mechanical, and chemical) in a coordinated plan.

Scouting

Scouting pastures is the foundation of a sound weed management program, but is often overlooked. Scouting involves routinely walking or driving through pastures and identifying weeds. This defines the scope of the problem and allows the best management practices to be implemented in a timely fashion. The number of weeds, the species present, and their locations are important. Note the dominant species as well as uncommon or perennial weeds. The management strategies adopted should focus on controlling the dominant species, while preventing the spread of less common species. If not managed proactively, the less common weeds in a pasture may become future dominant weed problems.

Proper identification of weeds is the first step toward weed control. A good example is knowing the difference between tropical soda apple (TSA) and red soda apple (cockroach berry). Of the two, only TSA is a troublesome invasive weed that must be controlled. However, some have occasionally confused the two species and allowed TSA to go uncontrolled. Unfortunately, this costly mistake results in TSA spreading throughout the ranch and potentially onto neighboring ranches. If there are questions concerning weed identification, contact your local county Extension office for assistance.

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Some weeds grow best in wet sites (maidencane ponds, depressional areas, ditches, etc.), while others can be found on dry sites (ditch banks, upland areas, and fence rows). Scout pastures for weeds in conjunction with other activities such as checking calves, working cattle, feeding, etc. When a weed is first discovered, remove it or spot treat with an appropriate herbicide. Do not allow that one plant to produce seed and give rise to hundreds of new plants. It is less expensive (in terms of both time and money) to control one plant than to wait and have to control hundreds of plants.

Poisonous plants (e.g., *Crotalaria*, black nightshade, spiny pigweed, lantana, etc.) are commonly found throughout Florida. Animals do not usually choose to graze most poisonous plants when forage is abundant; however, when quality forage is limited because of poor growing conditions or overstocking, they may graze these plants.

Prevention

Prevention is any activity that keeps weeds from infesting a pasture. Most weeds spread by seed. Thus, preventing the movement of weed seeds onto the ranch reduces potential weed pressure. Weed seeds can be transported in hay, harvested grass seed, sod, cattle, mowing equipment, or dispersed by wind, water, and wildlife. Producers should avoid buying hay or grass seed that is contaminated with weed seeds. Refuse to purchase hay from someone who cannot provide a weed-free product. Using certified forage seed reduces weed seed contamination and is highly recommended. Also, consider TSA. Cattle have been shown to excrete TSA seeds for at least 7 days after consumption. If cattle are grazing in a TSA-infested pasture, it is recommended that the cattle are held in a clean area for 10 days before moving them to a new pasture. This will reduce the likelihood of transporting TSA seeds. Remember, "an ounce of prevention is worth a pound of cure."

Control

Cultural Control

Cultural practices improve weed control by increasing the competitiveness of the forage. This involves optimizing forage production through monitoring soil pH, fertility, and, potentially, water management. Generally speaking, a thick sward will prevent weed emergence, will outcompete emerged weeds, and will capture the majority of environmental resources (light, water, nutrients) necessary for growth. The aim of cultural practices is to modify your management program so that the sward is as competitive as possible.

Soil pH is an important factor for forage growth as well as weed establishment. Forage agronomists and soil scientists at the University of Florida have determined the optimum soil pH for most forages grown in Florida. Acidic soils limit plant growth and can result in aluminum and manganese toxicity, and magnesium, calcium, phosphorous, molybdenum, and potassium deficiency. Soil acidity may also result in poor root growth, which can reduce water and nutrient uptake. Weeds that grow under such conditions can be indicators of low soil pH. For example, crowfoot grass germination is optimum at soil pH levels between 4 and 5, which is too low for optimum forage growth. Thus, the presence of crowfoot grass in your pasture may warrant a soil test and corrective action.

Mechanical Control

Mowing is one of the most often used weed control methods in pastures. Mowing improves the appearance of a pasture, temporarily increases forage production, and, if properly timed, prevents weeds from producing seed. Mowing is generally more effective on broadleaf weeds than grass weeds and is more effective on annual weeds than perennial weeds. Carefully consider the cost of mowing and the anticipated effectiveness. As fuel prices increase, it may be more cost-effective to avoid mowing and use other forms of weed control since other weed control methods may be more effective on a given species.

Mechanical weed control does have drawbacks. Large weeds with extensive root systems will not be controlled through mowing alone. Additionally, mowing misses prostrate-growing weeds like crabgrass, spurges, and matchweed. Mowing can also spread vegetative plant stems, allowing the plant (e.g., prickly pear) to root elsewhere. If mowing is performed after seed set, seeds can accumulate on the mowing equipment and worsen the weed problem by spreading seed to other pastures.

Biological Control

Biological control involves the use of biotic agents (e.g., plants, herbivores, insects, nematodes, and phytopathogens) to suppress weeds. Overall, biological control is still in its infancy, but great strides are being made, especially against invasive plants. Two good examples are the tobacco mild green mosaic tobamovirus (TMGMV), and the newly released insect, *Gratiana boliviana*, both used for TSA control. The virus, TMGMV, can be sprayed to control existing TSA plants, while the beetle is used primarily for suppression.

Most biological control agents rarely provide complete weed control, but they usually suppress the weed population to a manageable level. Additionally, biological control agents are rarely fast-acting and time is needed for the agent to suppress a given weed population. For example, the effect of *Gratiana boliviana* is not often seen until the year following the release of the beetle.

Chemical Control

Chemical weed control includes the use of herbicides. Herbicides kill weeds by inhibiting plant processes that are necessary for growth. Herbicides should be selected based on forage species being grown, weed species present, cost, and ease of application. Application method and environmental impact should also be considered.

Proper herbicide choice and application rate are extremely important. Lower than recommended application rates will not provide consistent weed control, while excessive application rates may cause injury to the forage or result in only killing the above-ground portion of perennial weeds. Also, herbicides must be applied at the correct time to be cost-effective.

Preemergence applications are made before weeds germinate and emerge. Understanding the life cycle of the weed is important when using a preemergence herbicide. Some weed seeds germinate in the summer, while others germinate in the winter months. Always refer to the herbicide label for additional information about controlling specific weeds.

Postemergence applications are made after the weeds emerge. The most effective and cost-efficient applications are made when the weeds have recently emerged and are small. For perennial weeds (regrowing from root storage organs), it is advisable to allow them to bloom before spraying, which allows sufficient leaf surface for coverage and ensures that the perennial is transporting photosynthates back to the roots.

Postemergence herbicides may be broadcast over the entire pasture or may be applied as a spot treatment to sparse weed patches. Spot treatment is less costly compared to broadcast spraying. Other application methods include wipers and mowers that dispense herbicide while mowing the weed. In all cases, it is extremely important to carefully read the herbicide label before purchase to determine if that herbicide controls the weeds in your situation.

PRECAUTIONS WHEN USING PHENOXY OR BENZOIC ACID HERBICIDES

1. For information about growth-regulating herbicides not covered below, see IFAS Publication SS-AGR-12, *Florida's Organo-Auxin Herbicide Rule 2012* (http://edis.ifas.ufl.edu/wg051).

2. Application of other pesticides from sprayers previously used for 2,4-D, dicamba, or other phenoxy or benzoic acid herbicides to susceptible crops, may result in injury.

3. Legumes in pastures or rangelands will be injured or killed by these herbicides.

4. Avoid drift to susceptible crops by applying at low pressures and when wind speeds are low and blowing away from susceptible crops. The use of a drift-control additive is advisable.

5. Clean sprayer thoroughly with household ammonia as follows:

a. Flush system with water. Drain.

b. Flush the system with ammonia (1 qt ammonia per 25 gallons water); let it circulate for at least 15 minutes, then flush the system again. Drain again.

c. Remove screens, strainers, and tips and clean in fresh water.

d. Repeat step b.

e. Thoroughly rinse the tank, hoses, booms, and nozzles.

f. Be sure to clean all other associated application equipment.

Forage Tolerance

Not all cultivars of a particular forage species respond similarly to a given herbicide (Table 5). Argentine bahiagrass tolerates most pasture herbicides except Roundup, while Pensacola may be severely injured by metsulfuron-containing products such as Cimarron, Chapparal, and others. All herbicides may be used on stargrass and bermudagrass, with some level of injury from Velpar. *Hemarthria*, also known as limpograss, is the most sensitive to herbicide applications of all forage grasses grown in Florida.

It is important to realize that the response observed from an herbicide application can be variable. For example, the

chance for forage injury can increase or decrease as the rate of herbicide applied either increases or decreases. Additionally, environmental conditions such as high temperature and high relative humidity may increase the potential for herbicide injury. For example, we have observed little or no injury to limpograss from 8 pt/acre 2,4-D amine when applied under cooler conditions, while 4 pt/acre in warmer weather caused moderate to severe injury.

The response of forages in Table 5 is for established forage cultivars. However, 2,4-D + dicamba (2 pt/acre) can be applied to sprigged forage cultivars, except for limpograss, 7 days after planting/sprigging. A forage can be considered established when at least 3 tillers are present on bahiagrass or at least 6 inches of new stolon growth is present on sprigged forages.

Summary

Maintaining healthy, productive pastures will minimize the risk associated with weedy plants. Good pasture management practices such as adequate fertilization, insect control, and controlled grazing will result in healthy pastures. Unfortunately, weeds are present in pastures and the associated loss in forage production can have serious economic implications. An integrated weed management strategy involving prevention, detection, and control is the most economical and environmentally friendly approach to pasture weed management.

Table 1. Weed control in pastures and rangeland.

Trade Name and Rate of Commercial Product Per Acre	Common Name	Remarks
DURING ESTABLISHMENT		
Preemergence to Weeds		
2,4-D Several Brands[1] 1.0 – 2.0 qt of 4 lb/gal formulation	2,4-D amine **or** LV ester 1.0 – 2.0 lb	**Bermudagrass and stargrass only.** Apply after sprigging and before emergence of sprigged bermudagrass. Will not give complete weed control, however, short residual control of seedling broadleaves and certain grasses may be noted for 2–3 weeks if proper environmental conditions exist.
Diuron 4L 1.5 – 4.5 pt/A or Diuron 80 1 – 3 lb/A	Diuron 0.8 – 2.4 lb	**Bermudagrass only**. Will provide fair to good control of crabgrass, crowfootgrass, and goosegrass. Plant sprigs 2 inches deep. If sprigs have emerged at time of application, bermudagrass injury will occur. Do not graze or cut hay within 70 days. Before application, ensure that your product has proper labeling since not all Diuron products are labeled for use in pastures.
2,4-D + dicamba[1] (Weedmaster, others) 2 pt	dicamba + 2,4-D	**Bermudagrass and stargrass only.** Similar to 2,4-D, but often provides greater weed control. Short residual control of seedling broadleaves and certain grasses may be noted for 2–3 weeks if proper environmental conditions exist. **Do not apply to limpograss (*Hemarthria*).**
Postemergence to Weeds		
2,4-D Several Brands[1] 0.5 – 1.0 qt of 4 lb/gal formulation	2,4-D amine	**Do not apply to bahiagrass until plants are 5–6" tall. Do not apply to limpograss (*Hemarthria* sp.).** Bermudagrass can tolerate 2,4-D at any growth stage. Controls most seedling broadleaf weeds. Repeat application may be needed.
2,4-D + dicamba[1] (Weedmaster, others) 2 pt/A	dicamba + 2,4-D	Can be used during establishment of hybrid bermudagrass, stargrass, and pangolagrass. Annual sedges and some grasses will be suppressed if less than 1 inch at time of application. Best results are seen if applications are made 7 - 10 days after planting. **Do not apply to limpograss (*Hemarthria*).**
Banvel, Clarity, Vanquish 1.5 – 2 pt/A	dicamba	Primarily used for establishment of Floralta limpograss (*Hemarthria*). Annual sedges and some grasses will be suppressed if less than 1 inch at time of application. Best results are seen if applications are made 7–10 days after planting.
Outrider 1.0 – 1.33 oz/A	sulfosulfuron	Use for perennial and annual sedge control 30 days after planting of bermudagrass, stargrass, and limpograss. Mix with 2,4-D or 2,4-D + dicamba when broadleaf pressure is also high. Do not apply to bahiagrass or Mulato (*Brachiaria* species) during establishment.
ESTABLISHED STANDS		
Dormant Pastures		
Gramoxone SL 1 - 2 pt	paraquat	For **dormant** bermudagrass or bahiagrass. Apply in 20–30 gallons of water in late winter or early spring (probably in January or February) before grass begins spring green-up. Add 1 pt. surfactant (non-ionic) per 100 gal. spray mix. Do not mow for hay until 40 days after treatment. Can be mixed with 2,4-D or other herbicides for more broad-spectrum control.
Roundup Weathermax 11 oz	glyphosate	Apply in mid- to late-winter months to bermudagrass or bahiagrass pastures and hayfields for the control of weedy grasses. Apply before new growth appears in the spring. Bermudagrass that is not dormant at the time of application may show a 2–4 week delay in green-up. No restrictions exist between application and grazing or haying.
Prowl H_2O 2 - 4 qt/A	pendimethalin	Dormant grass only. Applications of 3 qt/A have provided satisfactory weed control, but late-season escapes should be expected. Provides preemergence control of crabgrass, goosegrass, Texas panicum, sandbur, and other summer annual grasses. A 60-day hay restriction and a 45-day grazing restriction must be observed. Must have activating rainfall or irrigation within 2 weeks or control will be minimal at best.

Trade Name and Rate of Commercial Product Per Acre	Common Name	Remarks
Non-Dormant Pastures		
2,4-D Several Brands [1] 2.0 - 4.0 pt of 4 lb/gal formulation	2,4-D amine **or** LV ester 1.0 - 2.0 lb	**Broadleaf weeds.** Annual weeds should be treated soon after emergence for best control with lower rates. Perennial weeds should be allowed to obtain a leaf surface large enough to allow sufficient spray coverage (about 12"–18" tall). Use amine formulations during warm weather and LV esters during cool weather. Avoid drift. Applications of 2,4-D to limpograss (*Hemarthria* sp.) will cause significant injury during periods of high temperatures and humidity; much less injury has been observed during cool and dry conditions.
Banvel[1], Clarity, Vanquish 0.5 - 2.0 qt	dicamba	**Broadleaf weeds.** Rate depends on weed species and size. Refer to the label for grazing restrictions. Avoid drift. *Hemarthria* sp. has generally exhibited more tolerance to dicamba than 2,4-D.
Chaparral 2.0 – 3.3 oz/A	metsulfuron + aminopyralid	Use on bermudagrass, pangolagrass, stargrass, and limpograss. Do not use on bahiagrass. Controls tropical soda apple, pigweed, blackberry, and many other problematic weed species. Will not control dogfennel. Add a non-ionic surfactant at 1-2 pt/100 gal of solution. Avoid applications during spring green-up.
Cimarron Plus 0.125 – 1.25 oz/A or Cimarron Xtra 0.5 – 2.0 oz/A	metsulfuron + chlorsulfuron	Use on bermudagrass, pangolagrass, and stargrass. Controls several cool-season broadleaf weeds, pigweeds, and Pensacola bahiagrass. Bermudagrass should be established no less than 60 days prior to application. Add a non-ionic surfactant at 1-2 pts/100 gal of solution. Avoid application during spring green-up.
Cimarron Max Part A (0.25 – 1.0 oz) Part B (1.0 – 4.0 pt)	Part A - metsulfuron Part B - 2,4-D + dicamba	Cimarron Max is a two-part product that should be mixed at a ratio of 5 oz *Part A* to 2.5 gallons *Part B*. Depending on the weeds present and the rate range that is selected, this mix will treat between 5 to 20 acres. For specific information on rate selection, consult the product label.
CleanWave 14 – 26.6 oz/A	fluroxypyr + aminopyralid	Excellent tank-mix partner for 2,4-D, GrazonNext, and Remedy. Tank-mix 14 oz with one of these products for dogfennel < 36"; 20 oz for dogfennel between 36 and 60"; 26.6 oz for dogfennel > 60". If tank-mixing with Milestone add 20 oz Cleanwave to dogfennel < 60" and 26.6 oz to dogfennel > 60". Cleanwave is safe on limpograss.
GrazonNext HL[1] 1.6 – 2.1 pt	aminopyralid + 2,4-D	Excellent control of TSA, horsenettle, and other members of the nightshade family. Also controls pigweeds and other broadleaf weeds including less than 20" dogfennel. Do not apply more than 2.1 pt/A/yr. Do not apply to desirable forage legumes or severe injury and stand loss will occur. Do not apply to limpograss. GrazonNext will pass through animals and remain in the waste. Do not mulch sensitive crops with manure if animals have been grazing on GrazonNext-treated pastures. Avoid applications of this product to limpograss pastures during hot and humid conditions.
MSM 60, others 0.3 – 1.0 oz/A	metsulfuron	Use on bermudagrass, pangolagrass, and stargrass. Controls several cool-season broadleaf weeds, pigweeds, and Pensacola bahiagrass. Bermudagrass should be established no less than 60 days prior to application. Add a non-ionic surfactant at 1-2 pts/100 gal of solution. Avoid application during spring green-up.
Impose or Panoramic 4 – 12 fl. oz/A	imazapic	DO NOT apply to bahiagrass. DO NOT apply during spring transition or severe bermudagrass or stargrass injury will occur. In summer months, expect 3–4 weeks of bermudagrass stunting after application, followed by quick recovery and rapid growth. This will reduce harvest yields of that cutting by 30%–50%. If this yield reduction is not acceptable, do not use these herbicides. Yield reductions of subsequent cuttings have not been observed. For control of crabgrass, sandspur, nutsedges, and vaseygrass, use 4 oz/A. For suppression of bahiagrass, use 12 oz/A.

Trade Name and Rate of Commercial Product Per Acre	Common Name	Remarks
Milestone 3 – 7 oz	aminopyralid	Excellent control of tropical soda apple, horsenettle, and other members of the nightshade family. Controls pigweeds and other broadleaf weeds, but does not control blackberry or dogfennel. Can be safely applied under trees. Do not apply more than 7 oz/A/yr. Do not apply to desirable forage legumes or loss of stand will occur. The use of a non-ionic surfactant is recommended. Milestone will pass through animals and remain in the waste. Do not mulch sensitive crops with manure if animals have been feeding on Milestone-treated pastures. Safe on limpograss.
Outrider 1.0 – 1.33 oz	sulfosulfuron	Safe to apply to established bermudagrass, bahiagrass, stargrass, and limpograss. Provides excellent control of annual and perennial sedges.
Pastora 1 – 1.5 oz	metsulfuron + nicosulfuron	**Established Bermudagrass Only**. Can be used to effectively control seedling crabgrass, sandbur, vaseygrass and established johnsongrass. Established vaseygrass will require retreatment for long-term control. If sandbur or crabgrass is greater than 4" tall, only seedhead suppression should be expected. Do not apply more than 2.5 oz/A/yr. Do not apply to limpograss or bahiagrass due to high injury potential.
PastureGard HL[1] 1 – 2 pt	triclopyr + fluroxypyr	Provides excellent control of dogfennel, blackberry, teaweed, and other broadleaf weeds. Less effective on tropical soda apple than triclopyr-ester (Remedy Ultra, others) alone. Forage legumes will be severely injured or lost if present at time of application. Applications of 2 pt/A may result in less than desirable weed control. Do not apply more than 8 pts/A per season. Surfactant should be added to spray mixture at 0.25% v/v.
Remedy Ultra, others 2 pt	triclopyr ester	Provides excellent control of herbaceous and certain woody plants in pasture and rangeland. For best results, apply in 30 or 40 gallons of water per acre. The addition of a non-ionic surfactant at 0.25% v/v will increase control. Applications at air temperatures >85°F may cause moderate to severe bermudagrass injury for 2–3 weeks.
Roundup Weathermax 8 - 11 fl. oz/A	glyphosate	For control of annual grasses in bermudagrass and stargrass. Apply immediately after hay removal, but prior to regrowth. Applications made after regrowth has occurred will cause stunting. Application rates as low as 6 oz/A are often effective for crabgrass and other small annual grass weeds. Do not apply more than 2 qt/A/year. If Roundup Weathermax is applied to a dormant pasture, it cannot be sprayed again that season.
Telar 0.1 – 1.0 oz	chlorsulfuron	For use on established warm-season forage grass species. Telar will control blackberry, pigweeds, wild radish, and selected winter weeds. Not effective on ragweed, tropical soda apple, and other common weeds. Ryegrasses will be severely injured or killed by Telar. Do not apply more than 1.3 oz/A/yr. There are no grazing restrictions for any animals.
2,4-D + dicamba[1] (Weedmaster, others) 0.5 – 4.0 pt	dicamba + 2,4-D amine	See remarks for 2,4-D and dicamba above. This mixture is usually more effective than either herbicide used alone.
Hard-To-Kill Perennial Grasses		
glyphosate 1 – 4 oz per gal	glyphosate 1–3% solution for hand sprayer	**Spot treatment.** Apply when perennial weeds are actively growing. Surrounding forage will be killed if sprayed.
glyphosate 4 – 8 qt to 2 gal water	glyphosate 33–50% solution	**Wiper application.** Apply at speeds up to 5 mph. Two passes in opposite directions. No more than 10% of any acre should be treated at one time.

Trade Name and Rate of Commercial Product Per Acre	Common Name	Remarks
Smutgrass		
Velpar L 2.75 – 4.5 pt **or** Velpar DF 0.9 – 1.5 lb	hexazinone	Apply Velpar to established stands of bermudagrass or bahiagrass when soil conditions are warm and moist and weeds are actively growing. Best control of smutgrass is usually achieved in late spring to early summer when regular rainfall occurs. Some temporary yellowing of the bermuda or bahiagrass will be noted, but plants will soon outgrow this effect. Apply Velpar by ground equipment only, and only **one** application is allowed per year. **KEEP SPRAYS WELL AWAY (AT LEAST 100 FT) FROM THE BASE OF DESIRABLE TREES, ESPECIALLY OAKS.** Check label instructions for further precautions and safe use suggestions.
Pensacola Bahiagrass		
MSM 60, others 0.3 oz/A	metsulfuron	Apply to bermudagrass hay fields early in the season, after bahiagrass green-up but prior to seedhead formation. Early applications are often most effective; fall applications rarely control bahiagrass. Do not apply with liquid fertilizer solutions as poor control may occur. Prolonged periods of dry weather prior to application will greatly decrease herbicide effectiveness. Always include a non-ionic surfactant at a rate of 0.25% v/v. 'Common' or 'Argentine' bahiagrass will not be effectively controlled. Pasture legumes will be severely injured or killed.
Cimarron Plus 0.5 oz/A or Cimarron Xtra 1.0 oz/A	metsulfuron + chlorsulfuron	Same as metsulfuron.
Tropical Soda Apple		
Chaparral 2 – 3 oz	metsulfuron + aminopyralid	Excellent control of TSA plants. Provides preemergence control of TSA seedlings for approximately 6 months after application. There are no grazing or haying restrictions, however, delaying cutting for 14 days will enhance weed control. Not for use on Pensacola bahiagrass.
GrazonNext HL[1] 1.6 - 2.1 pt	aminopyralid + 2,4-D	Excellent control of tropical soda apple. Provides preemergence control of TSA seedlings for approximately 6 months after application. The 1.6 pt/a rate is highly effective on emerged TSA plants, but the 2.1 pt/a rate will provide the greatest length of residual control. Do not apply more than 2.1 pt/a/yr. Will severely injure desirable forage legumes. Do not apply to limpograss. There are no grazing restrictions, but do not harvest for silage or hay for 7 days.
Milestone 5 - 7 oz	aminopyralid	Excellent control of tropical soda apple. Provides preemergence control of TSA seedlings for approximately 6 months after application. The 5 oz rate is highly effective on emerged plants, but the 7 oz rate will provide the greatest length of residual control. Do not apply more than 7 oz/A/yr. Do not apply to desirable forage legumes or loss of stand will occur. Volatility is low. The use of a non-ionic surfactant at 0.25% v/v is recommended.
Remedy Ultra, others [1] 1.0 qt	triclopyr ester	Apply in late spring through summer as a broadcast spray for control of this species. Best results will occur when plants are adequately covered with spray solutions. Application of 30–40 gal/A of herbicide solution will be more effective than 20 or lower. The addition of a non-ionic surfactant at 0.25% v/v will increase control. Retreatment will be required as new seedlings emerge. Spot spray rate is 0.5 – 1.0% v/v.
Prickly Pear Cactus		
Remedy Ultra, others [1] 20% **+** basal oil 80%	triclopyr ester 20% diesel fuel or basal oil 80% (Spot treatment)	Apply as a spot treatment directly to prickly pear pads during spring and summer. Grass will be burned in treated spots but will recover. The addition of diesel fuel drastically enhances herbicide uptake, which will lead to prickly pear control. Prickly pear will die slowly over a period of 6–8 months with a few plants requiring retreatment.

Trade Name and Rate of Commercial Product Per Acre	Common Name	Remarks
Cleanwave 50 oz	fluroxypyr + aminopyralid	Apply Cleanwave at 50 oz/A as a broadcast treatment in water. The use of a surfactant is required. For spot treatment, use a 2% Cleanwave solution. Control is very slow, and it often takes more than 1 year to see satisfactory results.
Blackberry		
Chaparral 2 oz/A	metsulfuron + aminopyralid	Chaparral will provide good to excellent control of blackberry. For best results, apply when moisture conditions are sufficient and blackberry plants are not under drought stress. Late bloom and fall applications of Chaparral are the most effective. DO NOT apply in bahiagrass pastures. Do not mow within 1 year prior to application or control will be greatly reduced.
Cimarron Plus 0.75 oz/A or Cimarron Xtra 2.0 oz/A	metsulfuron + chlorsulfuron	Cimarron will provide good to excellent control of blackberry. Results are best when applied at blooming or late in the fall. Do not mow within 1 year prior to application or control will be reduced. **DO NOT** apply to bahiagrass pastures.
PastureGard HL[1] 2 pt	triclopyr + fluroxypyr	Control similar to Remedy.
Remedy Ultra, others [1] 2 pt	triclopyr	For best control of blackberry, apply 2 pt when blooming and do not mow within 1 year prior to application. Remedy does not control dewberry. Applications made during prolonged periods of dry weather can greatly decrease control. Fall applications often provide more consistent blackberry control.
Telar 0.75 oz	chlorsulfuron	Similar to control with Cimarron. Telar can safely be applied to bahiagrass or bermudagrass.
MSM 60, others 0.30 – 0.5 oz	metsulfuron	Metsulfuron will provide good to excellent control of blackberry. Results are best when applied at blooming or late in the fall. Apply to bahiagrass pastures only as a last resort and expect 6–8 weeks of reduced growth and some stand thinning. Mixing with 1 pt/A 2,4-D amine will help reduce bahiagrass injury when applying in bahiagrass.
Dogfennel		
2,4-D + dicamba[1] (Weedmaster, others) 2 – 3 pt	dicamba + 2,4-D	Apply when plants reach a height of 12–18". Weedmaster is most effective approximately 1 month after dogfennel transition from winter dormancy. Refer to previous comments for dicamba and 2,4-D above.
PastureGard HL[1] 1.5 pt	triclopyr + fluroxypyr	For control of larger dogfennel that has reached 40 inches or more in height.
GrazonNext HL[1] 1.6 pt	aminopyralid + 2,4-D	Apply when plants are less than 30" tall. If plants are larger than 30", tank-mix GrazonNext with 3 pt/A 2,4-D, 1 pt/A PastureGard, or see comments for Cleanwave herbicide.
Cleanwave 14 – 26.6 fl oz	fluroxypyr + aminopyralid	Excellent tank-mix partner for 2,4-D and GrazonNext HL. Tank-mix 14 oz with one of these products for dogfennel < 36"; 20 oz for dogfennel between 36" and 60"; 26.6 oz for dogfennel > 60". If tank-mixing with Milestone add 20 oz CleanWave to dogfennel < 60" and 26.6 oz to dogfennel > 60". CleanWave is safe on limpograss.

Trade Name and Rate of Commercial Product Per Acre	Common Name	Remarks
Mixed Stands: Grass - Clover/Lespedeza Pastures		
2,4-D amine[1] 0.5 – 1.0 pt	2,4-D (0.25 + 0.5 lb)	Apply only one treatment per year to established perennial clover. Slight to moderate injury may occur. See label for specific use information.
Thistles		
2,4-D 2 qt	2,4-D	Highly effective if applied to thistles in the rosette stage. 2,4-D is not effective on thistles that have bolted or flowered. During cool temperatures, the ester formulation of 2,4-D will be most effective.
GrazonNext HL[1] 1.6 – 2.1 pt	aminopyralid + 2,4-D	Excellent control of thistles at any stage of growth.
2,4-D + dicamba[1] (Weedmaster, others) 1.0 – 2.0 qt	dicamba + 2,4-D	Apply late fall to early spring when daytime temperatures are >50ºF. Applications are most effective if applied before flower stalks elongate. The addition of crop oil will increase herbicidal activity. Refer to previous comments for dicamba and 2,4-D above. For small rosettes, 1 qt/A rate is sufficient. For larger rosettes, 1.5–2 qt/A will be required.

[1] For state rules pertaining to application of organo-auxin herbicides in Florida, see EDIS Publication SS-AGR-12, *Florida Organo-Auxin Herbicide Rule 2012* (http://edis.ifas.ufl.edu/wg051).

Herbicide recommendations in this report are contingent upon their registration by the U.S. Environmental Protection Agency. If an herbicide's EPA registration is canceled, the herbicide is no longer recommended.

Table 2. Estimated effectiveness of herbicides on common broadleaf weeds in pastures and hayfields (2,4-D through Impose/Panoramic).[1]

Weed Name	2,4-D	Chaparral	CimarronPlus or Xtra	Banvel or others	Cleanwave	Diuron	GrazonNext	Metsulfuron	Impose/ Panoramic
bitter sneezeweed	E	E	E	E	-	G	E	E	-
blackberry	P	G-E	G-E	F-G	F	P	P-F	G-E	P
bracken fern	P	E	E	P-F	P	P	P	E	-
bullrush	G	-	-	G	P	P	P	-	-
chickweed	F	E	E	E	-	P	F	E	-
crotalaria, showy	G	G	-	G	G	-	G	-	-
cudweed	F	G	G	E	-	-	E	G	-
curly dock	F	E	E	E	-	P	E	E	-
dodder	P	-	-	P	-	P	-	-	-
dogfennel	F-G	P	F	F-G	G	P	F-G	F	-
evening primrose	E	G	G	E	-	G	E	G	-
Florida pusley	P	-	-	P-F	P	E	G-E	-	-
gallberry	G	-	-	E	-	P	-	-	-
goatweed	G	G	G	F-G	P-F	-	-	G	P
goldenrod	F	P	P	G	-	P	G	P	-
honeysuckle	-	-	-	E	-	P	-	-	-
horsenettle	P	E	P-F	G	F	P	E	P-F	-
horseweed	F	G	F	E	-	P	E	F	-
kudzu	P-F	G	P-F	G	P	P	G	P-F	P
maypop	P	P	P	P	-	-	-	P	-
stinging nettle - fireweed	P	E	-	-	G-E	-	E	-	P
palmetto	P	P	P	F	G	P	P	P	P
persimmon	P	-	-	F-G	-	P	P	-	P
pigweed	F	E	E	E	P	F	E	E	G
plantains	E	E	E	E	-	-	-	E	-
pokeberry	G	-	-	E	P	P	P	-	-
prickly pear	P	P	P	F	G	P	P	P	P
ragweed	E	E	G	E	G	G	E	G	F
red sorrel	P	E	E	E	-	F	-	E	-
shepherdspurse	E	-	-	E	-	G	-	-	-
sicklepod	G	G	G	E	G	F	G	G	F-G
thistles	E	E	F	G	G	F	E	F	-
tropical soda apple	P	E	P	F-G	F	P	E	P	P
Virginia pepperweed	G	-	-	E	G	G	-	-	-
wax myrtle	P	P	-	P-F	-	P	P	-	-
wild garlic	G-E	G	G	E	-	P	-	G	-
wild radish	G	G-E	G-E	E	-	P	G	G-E	-

Weed control symbols: E = 90–100% control; G = 80–90% control; F = 60–80% control; P = < 60% control.

Table 3. Estimated effectiveness of herbicides on common broadleaf weeds in pastures and hayfields (Milestone through WeedMaster or others).[1]

Weed Name	Milestone	Outrider	PastureGard	Remedy	Velpar	WeedMaster, others
bitter sneezeweed	E	-	E	E	-	E
blackberry	P	P	G-E	G-E	F	P-F
bracken fern	P	-	P-F	P-F	F	P
bullrush	P	-	P	G	-	-
chickweed	-	-	F	E	E	E
crotalaria, showy	-	-	E	E	-	G
cudweed	E	-	G	E	-	G
curly dock	E	-	F	E	P	E
dodder	-	-	P	P	-	P-F
dogfennel	P-F	P	E	G-E	G	G
evening primrose	E	-	G	E	E	E
Florida pusley	-	-	G	-	-	F
gallberry	-	-	E	E	P	G
goatweed	-	-	F	F	-	G
goldenrod	G	-	G	G	-	G-E
honeysuckle	-	-	P	P	-	E
horsenettle	E	-	F	F-G	-	F
horseweed	E	-	G	G	-	E
kudzu	G	P	F	F	-	F
maypop	-	P	G	F	-	P-F
stinging nettle - fireweed	E	P	E	E	-	F
palmetto	P	P	G	F	P	P-F
persimmon	P	P	F-G	F-G	F	P-F
pigweed	E	-	F	E	G	E
plantains	P	-	-	-	-	E
pokeberry	F	-	P	P	-	E
prickly pear	P	P	F	G[2]	P	P-F
ragweed	E	-	E	E	F	E
red sorrel	-	-	F	E	-	G
shepherdspurse	-	-	G	E	E	E
sicklepod	-	-	G-E	E	-	E
thistles	E	-	G-E	E	E	E
tropical soda apple	E	P	G	G-E	F-G	F-G
Virginia pepperweed	-	-	G	P	E	E
wax myrtle	P	-	F-G	G	P	P-F
wild garlic	P	-	P	-	-	E
wild radish	P	-	G-E	E	E	E

[1]Estimated effectiveness based on rates recommended in this report. Effectiveness may vary depending on factors such as herbicide rate, size of weeds, time of application, soil type, and weather conditions.

[2]When applied as spot-treatment in basal oil.

Weed control symbols: E = 90–100% control; G = 80–90% control; F = 60–80% control; P = < 60% control.

Table 4. Estimated effectiveness of herbicides on common grass and sedges in pastures and hayfields.

Herbicide	bahia-grass	bermuda-grass	broom-sedge	crab-grass	dallis-grass	guinea-grass	johnson-grass	rye-grass	sandbur	smut-grass	vasey-grass	nutsedge
2,4-D	P	P	P	P	P	P	P	P	P	P	P	P
Banvel or others	P	P	P	P	P	P	P	P	P	P	P	P
Chaparral	G	P	P	P	P	P	-	P	P	P	P	P
Cimarron Plus or Xtra	G	P	P	P	P	P	-	P	P	P	P	P
Cleanwave	P	P	P	P	P	P	P	P	P	P	P	P
Diuron	P	P	P	F-G	P	P	P	P	G	P	P	P
GrazonNext	P	P	P	P	P	P	P	P	P	P	P	P
Metsulfuron	G	P	P	P	P	P	-	P	P	P	P	P
Impose/ Panoramic	P-F	P	P	E	F	-	G	F	G-F	P	P-G	G-E
Milestone	P	P	P	P	P	P	P	P	P	P	P	P
Outrider	P	P	P	P	P	P	E	-	-	P	F-G	E
PastureGard	P	P	P	P	P	P	P	P	P	P	P	P
Remedy	P	P	P	P	P	P	P	P	P	P	P	P
Velpar	P	P	P	P	-	-	-	G	-	E	-	P
Weedmaster or others	P	P	P	P	P	P	P	P	P	P	P	P

[1]Estimated effectiveness based on rates recommended in this report. Effectiveness may vary depending on factors such as herbicide rate, size of weeds, time of application, soil type, and weather conditions.

Weed control symbols: E = 90–100% control; G = 80–90% control; F = 60–80% control; P = < 60% control.

Table 5. Tolerance of ***established*** (for at least 6 months) forage cultivars to commonly used herbicides.

Forage Species	Cultivar	2,4-D	Aim	Banvel	Chaparral	Cimarron Plus	Cimarron X-tra	Cleanwave	GrazonNext HL	Impose/ Panoramic	Metsulfuron (MSM 60, others)	Milestone	Outrider	Remedy Ultra, others	Roundup/ others	Pasturegard HL	Telar	Vista	Banvel + 2,4-D	Velpar
Bahiagrass																				
	Argentine	T	T	T	I	I	I	T	T	S	I	T	T	T	S	T	T	T	T	T
	Pensacola	T	T	T	S	S	S	T	T	S	S	T	T	T	S	T	T	T	T	T
Bermudagrass																				
	Coastal	T	T	T	T	T	T	T	T	I	T	T	T	T	I-S	T	T	T	T	T-I
	Florakirk	T	T	T	T	T	T	T	T	I	T	T	T	T	I-S	T	T	T	T	T-I
	Jiggs	T	T	T	T	T	T	T	T	I-S	T	T	T	T	I-S	T	T	T	T	T-I
	Tifton-85	T	T	T	T	T	T	T	T	I	T	T	T	T	I-S	T	T	T	T	T-I
Brachiaria																				
	Mulato	T	I	T	N	N	N	T	T	N	N	T	T	T	S	T	N	T	T	N
Stargrass																				
	Florico	T	T	T	T	T	T	T	T	I	T	T	T	T	I-S	T	T	T	T	NL
	Florona	T	T	T	T	T	T	T	T	I	T	T	T	T	I-S	T	T	T	T	NL
	Okeechobee	T	T	T	T	T	T	T	T	I	T	T	T	T	I-S	T	T	T	T	NL
	Ona	T	T	T	T	T	T	T	T	I	T	T	T	T	I-S	T	T	T	T	NL
Hemarthria																				
	Floralta	I-S	T	T	T	T	T	T-I	I-S	T-I	T	I	T	I	S	I	T	I	I-S	NL

T=tolerant; very little injury if any
I=Intermediate; slight injury, will regrow in approximately 1 month
S=Severe injury; more than 2 months to recover or complete death
N=No current information availableNL=Not labeled

Table 6. Days between herbicide application to forage or pasture for feeding, grazing, or animal slaughter.

Herbicide	Non-lactating Cattle			Lactating Dairy Cattle		Horses
	Grazing	Hay Cutting	Slaughter	Grazing	Hay Cutting	
Banvel						
Up to 1 pt	0	0	30	7	37	0
Up to 1 qt	0	0	30	21	51	0
Up to 2 qt	0	0	30	40	70	0
Chaparral	0	0	0	0	0	0
Cimarron Plus and **Cimarron Xtra**	0	0	0	0	0	0
Cleanwave	0	7	0	0	7	0
2,4-D	0	30	3	7	30	0
GrazonNext	0	7	0	0	7	0
Metsulfuron	0	0	0	0	0	0
Impose or Panoramic	0	7	0	0	7	0
Milestone	0	0	0	0	0	0
Outrider	0	14	0	0	14	0
PastureGard	0	14	3	1 season	1 season	0
Pastora	0	0	0	0	0	0
Prowl H_2O	45	60	0	45	60	45
Remedy Ultra, others	0	14	3	1 season	14	0
Roundup WeatherMax						
Dormant application	0	0	0	0	0	0
Between cuttings	0	0	0	0	0	0
Pasture renovation	56	56	56	56	56	56
Telar	0	0	0	0	0	0
Velpar	0	38	0	0	38	0
2,4-D + dicamba (Weedmaster, others)	0	37	30	7	37	0

NOTES

Spring Ranchers Forum
Held at Yarborough Ranches
Central Florida Livestock Agents' Group
March 21, 2013

Individual Topic Evaluation:	**Useful**	**Somewhat Useful**	**Not Applicable**	**No Answer**
Parasite Problems in Small Ruminates FAMACHA Class Jonal Bosques-Mendez, Livestock Agent, Marion County				
Heifer Selection for Herd Replacement Dr. Todd Thrift, Animal Sciences, University of Florida IFAS				
Freezer Beef Arithmetic Mark Shuffit, Livestock Agent, Marion County, CFLAG, UF/IFAS				
"Dirt & Fert" - Economics of Pasture Management Mark Warren, Livestock Agent, Flagler County, CFLAG, UF/IFAS				
Ranch Horse Management Megan Brew, Livestock Agent, Lake County, CFLAG, UF/IFAS Ashley Fluke, Livestock Agent, Osceola County, CFLAG, UF/IFAS				
Agent Panel - Recent Poisonous Plant Problems in Central Florida Moderator: Dennis Mudge, Multi County Livestock Agent, CFLAG, UF/IFAS				
Was this the first time you attended an Extension Program?	☐ **Yes**		☐ **No**	

How many Spring Ranchers Forums have you attended? (circle one)	1 2 3 4 5 10 15	
Overall Program Evaluation. Answer below only if you attended the Spring Ranchers Forum Last Year.	**YES**	**NO**
Did you share last year's information with anyone?		
Did you improve your animal science skills because of last year's program?		
Have you lowered your pasture costs?		
Did you experience an improved economic return because of last year's program?		
Have you improved your agricultural and environmental skills because of this year's program?		
Are you more aware of weed herbicides because of last year's program?		

Which livestock do you raise?

How did you hear about this year's Spring Ranchers Forum?