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UF/IFAS
Range Cattle REC

Youth Field Day 2022
Ona, FL

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Youth Field Day 2022

~ Schedule ~

8:10 a.m. Check-in opens

9:00 a.m. Welcome – Instructions – Meet your group leaders

9:10 a.m. Groups begin class rotations (30 minutes each)

"The Invaders"

Dr. Brent Sellers, Pasture and Rangeland Weed Management - RCREC

"How Water Moves and Why You Need to Know"

Dr. Golmar Golmohammadi, Watershed Hydrology and Biogeochemistry - RCREC
Don Rainey Agent – S.W. Extension District, Regional Specialized Agent

"Forage Quality: What is it & why is it important?"

JK Yarborough, Livestock and Natural Resources Agent – Orange Co.
Hiran Silva, Forage Agronomy – RCREC
Jaime Garzon, Forage Agronomy - RCREC

"What's in the Feed Stuff?"

Chris Prevatt, Beef Cattle and Forage Economics, State Specialized Agent II – RCREC
Kalan Royal, Ag & Natural Resources Agent – Highlands Co.
Matt Warren, Environmental Manager - FDACS

"Drones in Science"

Bethany Wight, Rangeland Wildlife Ecology, Biological Scientist – RCREC
Dr. Hance Ellington, Rangeland Wildlife Ecology, Assistant Professor - RCREC

1:30 p.m. 2023 t-shirt design winner announcement and a prize drawing – at the tent

1:40 p.m. Field Day Ends

Thank you to our Sponsors!

Platinum level sponsors

Hardee Soil and Water Conservation District
Highlands Soil and Water Conservation District
Sarasota County Farm Bureau
Lee County Farm Bureau
Roman III Ranch
Dakin Dairy – sponsorship +milk 😊
Flying H Ranch

Gold level sponsors

DeSoto-Charlotte County Farm Bureau
Highlands County Farm Bureau
Florida Fence Post
Hardee Ranch Supply, Inc.
Hardee County Farm Bureau

A very special "Thank You" to everyone who has had a part in today's program! We are very grateful for your time, assistance, support, and donations!

Youth Field Day 2022

~ Staff ~

Group Leaders (RCREC Staff & Students and others)

Ona White Angus- Leandro Vieira, Ph.D. Student
Ester Ricken, Exchange Visitor

Brahman - Joao Lazarin Silva, Exchange Visitor
Julie Warren, Biological Scientist

Angus - Lauren Butler, Okeechobee Co. Ext., Livestock Agent & CED
Taylor McKinney, Pasco Co. Ext., Intern

Brangus - Christa Kirby, Manatee Co. Ext., Livestock Agent
Edder Antunez, Wildlife Lab Technician

Braford - Conner Crawford, OPS Data Entry Technician
Sam Nunn, Wildlife Lab Technician

RCREC Staff and Students Assisting

Austin Bateman, Lauria Gause, Dennis Kalich, Christina Markham, Jacob Miller, Joseph Noel, Kim Parks, David Womble, Hiran Silva, Marta Kohmann, Alejandra Areingdale, Bri Ryver, David Magana, Jaime Garzon, Kameron Traxler, and Nauara Lage.

Seminole Tribe Extension Office Assisting

Kim Clement, Kevin Thompson, and Camryn Thomas.

Youth Field Day Committee

<u>UF/IFAS Range Cattle REC Members</u>

Andrea Dunlap, Communications Specialist

Dr. Hance Ellington, Rangeland Wildlife Ecology, Assistant Professor
Dr. Golmar Golmohammadi, Watershed Hydrology and Biogeochemistry, Assistant Professor
Chris Prevatt, Beef Cattle & Forage Economist, State Specialize Agent II
Dr. Brent Sellers, Weed Science, Professor & Center Director
Bethany Wight, Rangeland Wildlife Ecology, Biological Scientist
Julie Warren, Animal Science, Biological Scientist

South Florida Beef Forage Program Members

Lauren Butler, Okeechobee Co. Ext., Livestock Agent & CED
Sonja Crawford, Hendry Co. Ext., Livestock & 4-H Agent
Rod Greder, Sarasota Co. Ext., Sustainable Agriculture Agent
Christa Kirby, Manatee Co. Ext., Livestock Agent
Kalan Royal, Highlands Co. Ext., Livestock and Natural Resources Agent

Others

Don Rainey, S.W. Extension District, Regional Specialized Agent
Matt Warren, Florida Department of Agriculture and Consumer Services Environmental Manager
JK Yarborough, Orange Co. Ext., Livestock and Natural Resources Agent

~ Expo Participants ~

UF/IFAS and Progressive Agriculture Foundation
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UF/IFAS Gulf Coast Research and Education Center
Christine Cooley
www.gcrec.ifas.ufl.edu/

Warner University
Abby Crawford
(863) 638-7248
agstudies@warner.edu
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UF/IFAS Range Cattle Research and Education Center - Quick Facts

- **This Station was established in 1941** for two purposes: 1) to learn how to produce quality forage on the sandy cut-over pinelands; 2) to investigate breeding, feeding and management of beef cattle.
- Much of the proposed land had been sold during the 1915 boom in 10, 20 and 40-acre tracts to people throughout the U.S.A. In the late 1920s when the land boom broke most of the Station area was returned to the county because of unpaid taxes. Hardee Farms and Ranch Inc., Wauchula, redeemed the tax certificates and later sold a large part of the land to the Station Trustees at $2.25 per acre. Funds for the **purchase of this land** were obtained through private donation and grants from the Hardee Board of County Commissioners.
- The center has been its current size (**2,840 acres**) since 1960.
- **Modern conveniences**: Electric power was provided in 1946, an all-weather road in 1952, and phone service in 1954.
- **The purpose of the center** is to conduct research and provide information that will solve problems related to improving profitability of beef cattle and forage operations in Florida.
- The center has **7 faculty members** doing work in soil and water science, animal science (beef cattle), forages, weed science, economics, and wildlife ecology & conservation.
- The center has **21 support personnel**- office manager, research coordinator/farm manager, herdsman, biological scientists, communications specialist, custodian, ag. technicians, auto/equipment mechanic, field work assistant, maintenance and a secretary.
- Currently there are 3 **Ph.D. students, 3 M.S. students, and 3 exchange visitor research scholars** at the center. Students come to the center to do research toward the degree they are pursuing. We have hosted them from Brazil, Honduras, India, Africa, China, Japan, Turkey, Russia, and North America.
- Currently the Range Cattle REC has about **600 mature cows, 100 yearling heifers, and 35 bulls**. **Breeds** include Ona White Angus, Angus, Brangus, Braford, Brahma, and various crosses.

Contact us:
Phone - 863-735-1314
Fax - 863-735-1930
E-mail - ona@ifas.ufl.edu
Website - http://rcrec-ona.ifas.ufl.edu

Range Cattle REC Cattle Management

Herdsman, Austin Bateman

January

1. Cow breeding season begins (1st week)
2. Early wean calves from 1st calf heifers (1st week)

April

1. Remove bulls following 90-day breeding season:
    a. Vaccinate bulls with Cattlemaster 4 + VL 5, Ultrabac 8, and worm
2. Work all cows and calves;
    a. Weigh and Body Condition Score (BCS) Cows
    b. Weigh calves
    c. Worm cows
    d. Vaccinate calves with Bovi-Shield Gold 5, Ultrabac 8, One-Shot pasturella, worm
3. Pregnancy check yearling heifers via ultrasound;
    a. Vaccinate heifers with Cattlemaster 4 + VL 5, and worm

June

1. Pregnancy check cows and Brucella test
2. (greater than or equal to 30 days from prior) Vaccinate calves with Bovi-Shield Gold 5 and Ultrabac 8, One-Shot pasturella, and worm

July

1. (greater than or equal to 30 days from prior) Wean claves and ship

August

1. Work replacement heifers before going onto fall studies;
    a. Brand, Bangs vaccinate, worm

September

1. Work and sort mature cowherds prior to winter feeding studies;
    a. Vaccinate with Cattlemaster 4 + VL5, Ultrabac 8, and worm

October

1. Work bulls;
    a. BSE exam, Brucella test, trich test
    b. Vaccinate with Bovi-Shield FP4 + VL5, Ulrabac 8, and worm

December

1. Begin heifer breeding as per schedule

~ Web Resources ~

ASK IFAS powered by Electronic Data Information Source (EDIS) –
EDIS is the Electronic Data Information Source of UF/IFAS Extension, a collection of information on topics relevant to you: profitable and sustainable agriculture, our environment and natural resources, 4-H and other youth programs, Florida-friendly landscapes, communities that are vibrant and prosperous, and economic well-being and life quality for individuals and families.
http://edis.ifas.ufl.edu/

Florida Automated Weather Network (FAWN) -
Weather data is collected every 15 minutes at 43 sites located across Florida.
Find a FAWN site near you… http://fawn.ifas.ufl.edu/

South Florida Beef Forage Program (SFBFP)-
The South Florida Beef-Forage Program is composed of extension faculty representing Charlotte, Citrus, Collier, DeSoto, Glades, Hardee, Hendry, Hernando, Highlands, Lee, Manatee, Okeechobee, Pasco, Polk, Sarasota and Sumter counties and the Seminole Tribe of Florida, in addition to research faculty and extension specialists located at various research centers and departments at the University of Florida. A major goal of this program is to coordinate extension and research activities for enhanced forage and cattle production in Central and South Florida.
https://sfbfp.ifas.ufl.edu/

UF IFAS Range Cattle REC –
Learn about upcoming events, see program and contact information for faculty members, and view media resources in the virtual classroom.
http://rcrec-ona.ifas.ufl.edu/

Take a virtual tour of the Center!
https://youtu.be/Y3bWDGQKGbI

UF IFAS Extension – Solutions for your life –
Each Florida County has an extension office. Do you know about yours? Follow this link to locate your local office and find out about the services they offer. Here you will also learn about the Research Centers and Demonstration Sites in Florida.
http://solutionsforyourlife.ufl.edu/map/

Want to learn more about joining the Gator Nation? –
Degrees, admissions, tuition, aid, how to apply, and request information, visit:
https://ufonline.ufl.edu/admissions/admissions-team/

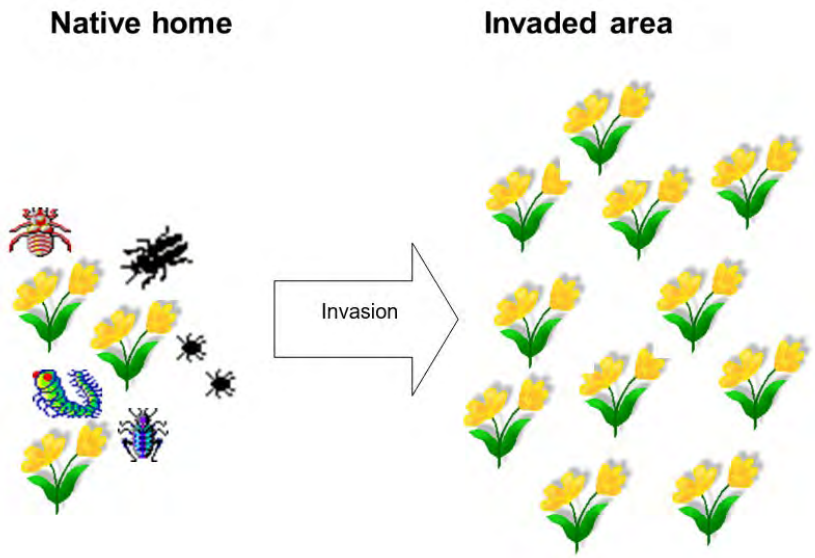
The Invaders

Brent Sellers, Extension Weed Specialist

Over 1.5 million acres of Florida's public lands have been invaded by alien (exotic, non-native) plants such as melaleuca, Brazilian pepper tree, cogongrass, and climbing ferns. Invasive plants have no boundaries, and millions of acres of agricultural and private land are also affected. While many non-native, invasive species are found in pastures and rangeland, tropical soda apple, smutgrass, and cogongrass are probably the top three.

Native plants provide food and shelter for animals, and provide stability to our shorelines, natural areas, and fields. Native plants grow in harmony and balance with other plants and animals. Because a native plant species usually does not take over an area, there is a lot of diversity. Diversity exists when species growth is inhibited by natural factors including: 1) competition with other native species, 2) diseases, 3) feeding by insects and other animals, and 4) climate.

Invasive plants are non-native. These plants can displace native plants and negatively affect other organisms. Remember native plants have natural enemies, but invasive plants do not. This means that invasive non-native plants have nothing to hold them back. As a result, when an invasive plant invades, it often eliminates native plants, which can also result in a decrease in wildlife because of lack of food. Not only do invasive plants affect wildlife, but they can affect us as well. Think about recreational activities such as hiking, boating, and fishing. If a river or stream is infested with water hyacinth, boating and fishing is very difficult.



There is a difference – not all non-native plants are invasive. Many of our food crops in the U.S. are non-native including corn, tomatoes, citrus, soybean, etc., but they are not invasive.

Other non-native plants are sold by nurseries for landscaping and ornamental purposes. Many times, these non-native plants will not make it on their own unless we take care of them.

Non-native plants arrive here in Florida many ways. We import them for food, but in most cases, we bring them in to make our homes, gardens, golf courses, and parks pretty. Many aquarium owners dispose of their unwanted aquatic plants into ponds or rivers. We import a lot of materials, and ship ballast water may also contain whole plants or fragments of plants.

Plant Assessments. The University of Florida-IFAS Plant Assessment is a tool that we scientists use to determine if a plant is invasive or predict it to be invasive if it is introduced. We use this assessment to guide our recommendations for planting many of our non-native species in Florida. This is not a law, however, so anyone can grow a non-native plant, unless it is listed on the Florida or U.S. noxious weed list.

The activity today will focus on how an invasive species affects native species populations. First, we will illustrate how a native species survives for a few "years". We will follow by introducing an invasive species so everyone can see how non-native invasive species are detrimental to our environment.

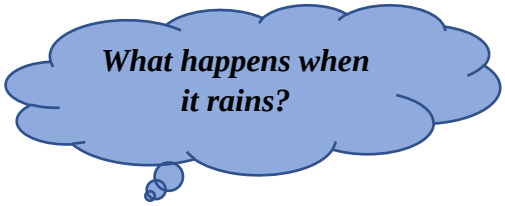
Everyone lives on a watershed!

What is a watershed?

A watershed is a region or area draining into a particular watercourse or body of water

What is a waterbody?

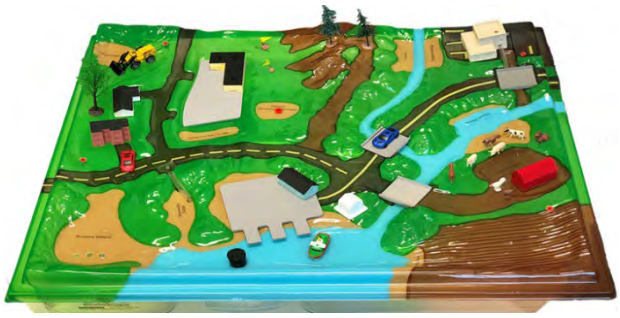
A waterbody is any river, lake, stream, ocean, pond, or wetland; waterbodies receive runoff waters from a watershed.



enviroScape is a model of a watershed to observe and simulate, in real-time, the interactions of precipitation with various land-use practices and the impacts they have on streams, lakes, water supplies, and groundwater.

Watch the rain as it runs off the streets, parking lots, and the land. You can see it pick up the soil and contaminants, carrying them to the waterbody. This flow is called runoff.

Urban and Coastal enviroScape models will demonstrate the point source and nonpoint source, follow the flow of rain, and what it picks up along the way.



Urban model

Coastal model

Point Source Pollution is pollution that flows from pipes or comes from specific points such as industrial plants, sewage treatment plants, and stormwater drains.

Nonpoint Sources Pollution comes from many human activities on and with the land and occurs when rainfall carries contaminants, such as fertilizers and pesticides, oils, grease, and trash from yards, fields, and roads to the nearest waterbody.

Nonpoint Source Pollution does not result from a discharge at a specific, single location but generally results from land runoff, drainage, or seepage, after a rain event.

Stormwater management

Stormwater that runs off your property can drain fertilizers, pesticides, household chemicals, and manure into the soil and waterbodies, causing negative impacts on water quality. Protect the health of your family, livestock, pets, and neighbors by using best practices for stormwater management.

<u>The Watershed Escape - Scavenger Hunt Activity (10 minutes)</u>

So how many stormwater features can you identify at the research center?

Instructions on how to play:

1. Students will be asked to find five designed objects related to a vocabulary term mentioned in the **enviroScape** lesson within a given time. For example, gutter, downspout, impervious surface, yard liter, etc.
2. These objects are located within the research center grounds (a designated space).
3. Students will use clue cards found at each object (blue card) along with a sealed envelope that contains a secret word.
4. Students will need to collect all five secret word cards, keeping them unopened – don't look!
5. Once the students have found all five stormwater-related objects and collected all five cards, they will return to the station leader for further instructions.
6. The students will then try to put the secret word cards together to decipher the secret word phase to unlock the watershed room.
7. Once the group has figured out the secret word, they will tell the station leader.
8. If the correct phase, they will have succeeded in unlocking the room and advance to the next station.

Forage Testing[1]

J. M. Vendramini, M. S. Silveira, J. D. Arthington, and A. R. Blount[2]

Why test forage?

Forage testing provides useful information about the nutritive value of forage. This information can be used to adjust the amount and composition of nutritional supplements offered to livestock consuming forage. The correct adjustments can reduce costs of forage production and optimize the amount of nutrients imported to the property.

Where to Send Forage Samples and What Testing Results Will Be Provided

The UF/IFAS Forage Extension Laboratory is located at the Range Cattle Research and Education Center in Ona, Florida. The laboratory provides forage testing for Florida's livestock producers and forage producers. Results of the tests include crude protein (CP) and total digestible nutrients (TDN).

Mail samples to Forage Extension Laboratory, UF/IFAS, Range Cattle REC, 3401 Experiment Station, Ona, FL, 33865.

Beyond understanding the nutrient quality of your forage, it is also valuable to understand how your forage samples compare with other such samples submitted to the laboratory. On an annual basis, the Forage Extension Laboratory publishes the average forage nutritive values by forage species (Table 1).

Nutritive-Value Parameters and Definitions

The nutritive-value parameters reported by the Forage Extension Laboratory are as follows:

1. Dry matter (DM): DM refers to the portion of the forage after water is excluded. All nutritive-value parameters are reported on a "dry matter basis," thus results of samples with different DM concentrations can be compared. Dry matter concentration is important for conserved forage—such as hay, haylage, and silage—because this measure indicates how the conservation process may impact forage nutritive value. Dry matter concentration for hay should be approximately 85%–92%, haylage 40%–60%, and silage 30%–40%.

2. Crude protein (CP): CP is the nitrogen and amino acids in feeds. An estimate of forage total crude protein is obtained by multiplying total nitrogen concentration by a constant of 6.25. Adequate CP concentrations in the forage are dependent on forage species and animal requirements. For more information, see EDIS Publication AN190, *Basic Nutrient Requirements of Beef Cows* (https://edis.ifas.ufl.edu/an190).

1. This document is SS-AGR-63, one of a series of the *Florida Forage Handbook*, Agronomy Department, UF/IFAS Extension. Original publication date April 2001. Revised June 2015, July 2018, and May 2022. Visit the EDIS website at https://edis.ifas.ufl.edu for the currently supported version of this publication.

2. J. M. Vendramini, professor, Agronomy Department, UF/IFAS Range Cattle Research and Education Center; M. S. Silveira, professor, Department of Soil, Water, and Ecosystem Sciences, UF/IFAS Range Cattle REC; J. D. Arthington, professor, Department of Animal Science, and A. R. Blount, professor, Agronomy Department, UF/IFAS North Florida REC; UF/IFAS Extension, Gainesville, FL 32611.

3. Total digestible nutrients (TDN): TDN represents the energy concentration in the forage, the sum of digestible fiber, starch, sugars, protein, and fat in the forage. Energy is the nutrient required by cattle in the greatest amount and usually accounts for the largest proportion of feed costs.

4. Neutral detergent fiber (NDF): NDF represents plant cell wall components (hemicelluloses, cellulose, lignin), which are more or less degradable, depending on the stage of maturity and degree of lignification of the forage. In general, as NDF increases, voluntary forge intake is reduced.

5. Acid detergent fiber (ADF): The ADF component of forage is determined when either the NDF residue or an intact forage sample is processed in a detergent solution primarily containing sulfuric acid. The remaining fiber residue, mostly cellulose and lignin, is called ADF. In general, as ADF increases, forage digestibility is reduced.

How to Collect a Sample

Properly collecting and identifying a sample is very important. A sampling device or tool is needed for collecting hay samples. Several commercial types are available. These tools usually consist of a tube — with a cutting edge on one end and a shank on the other — that is fastened in the chuck of an electric drill or hand brace. The sampler is driven into the end of a rectangular bale or the rounded side of the round bale. Collect a single core sample from each of 12 bales for a particular lot of hay. To ensure the sample is representative, combine the 12 cores into one sample. The outer layer of weathered round bales should be pulled away before sampling. Each hay cutting, type of hay, etc., should be sampled and analyzed separately. Each hay cutting or lot should be identified and stored separately.

Silage samples can be collected from the face of a bunker silo as it is being fed and from the unloader of an upright silo. Bagged silage can be sampled by cutting small slits along the side of the bag and penetrating the hay sampler to collect the material. Producers must reseal the slit with waterproof tape after collection.

Collect silage from five or six places along the bag, mix well, and extract a single sample to send to the laboratory. Immediately place the sample in a plastic bag and seal it. If the sample is not mailed right away, place the sample in a refrigerator or freezer.

Pasture samples can be collected and analyzed by plucking the forage with your fingers at the height the animals are grazing it. However, keep in mind that, when adequate pasture forage is available, cattle may select forage with a better nutritive value than the forage sampled by hand plucking. One practical example of selection can be found in limpograss pastures with good forage availability. In this example, cattle will typically select leaves that have greater nutritive value than hand-plucked samples collected with leaves and stems. In this case, forage testing results may suggest that cattle would respond to protein supplementation. However, in fact, the animals are already consuming adequate amounts of protein from forage selection and may not respond to supplementation.

Scissors or some other cutting device also can be used. If possible, these samples should be dried before sending to the laboratory. If drying is not possible, mail the sample immediately after it is harvested. Your results are only as good as your sample!

Additional Information and Testing Procedures

Nutritive value results (Table 1) are reported by forage species. Forage species not included in this publication were not received by the laboratory in sufficient numbers to be included in this annual report. Crude protein and TDN were analyzed in all samples. Dry matter (DM), NDF, and ADF were analyzed in selected samples submitted by dairy producers participating in the Southeast Dairy, Inc., Check-Off Program.

The UF/IFAS Forage Extension Laboratory sample processing and analyses are as follows:

- Forage samples are dried at 55°C in a forced-air oven for DM determination.
- Total digestible nutrients (TDN) are estimated using the "in vitro" dry matter digestibility (IVDDM) procedure described by Goering and Van Soest (1970). (USDA-ARS Agric. Handb. 379. U.S. Gov. Print. Office, Washington, DC). modified for the Ankom Daisy II In Vitro Digester (Ankom Technol. Corp., Fairport, NY).
- Crude protein was calculated by multiplying nitrogen concentration by 6.25.
- Nitrogen is determined by combustion using the Flash EA 1112 Series (Thermo Electron Corporation, Waltham, MA).

- Neutral detergent fiber (NDF) and acid detergent fiber (ADF) are analyzed using an Ankom 2000 Fiber Analyzer (Ankom Technology Corp., Fairport, NY).

Many laboratories provide forage testing results based on the NIRS procedure. The NIRS procedure is often valid, depending upon the set of forage samples originally used to establish the procedure's equations. In general, wet chemistry procedures are more accurate.

If you do not know how to interpret the results, contact your County Agricultural Extension Office, or the UF/IFAS Forage Extension Laboratory at jv@ufl.edu.

The authors sincerely thank the Dairy Check-Off Program for sponsoring forage testing for the Southeast Diary, Inc. producer samples.

References

Ankom Technology Corporation. 1998. "Method for Determining Acid Detergent Fiber, Neutral Detergent Fiber and Crude Fiber, Using the Ankom Fiber Analyser." Ankom Technology Corporation, 14 Turk Hill Park, Fairport, New York 14450, USA.

Goering, H.K., and P.J. Van Soest. 1970. "Forage fiber analysis (apparatus, reagents, procedures, and some applications)." *USDA Agric. Handb. 379*. U.S. Gov. Print. Office, Washington, DC.

Hersom, Matt. 2007. *Basic Nutrient Requirements of Beef Cows*. Gainesville: University of Florida Insitute of Food and Agricultural Sciences. https://edis.ifas.ufl.edu/an190

Table 1. Dry matter (DM), crude protein (CP), total digestible nutrients (TDN), acid detergent fiber (ADF), and neutral detergent fiber (NDF) of forage samples submitted to the Forage Extension Laboratory at the Range Cattle Research and Education Center–Ona, FL (October 2006 to December 2014).

Forage Species	Number of Samples	CP	TDN	ADF	NDF
Bahiagrass[a]	813	6.8 ± 3.0	50 ± 3	--	--
Bermudagrass	1346	11.1 ± 3.7	53 ± 2	40 ± 4	72 ± 4
Stargrass	312	8.0 ± 3.0	52 ± 5	46 ± 9	71 ± 15
Limpograss	730	4.1 ± 3.0	53 ± 9	41 ± 3	70 ± 5
Corn Silage	87	8.0 ± 2.0	78 ± 8	30 ± 2	43 ± 8

[a]ADF and NDF analysis performed only on samples submitted by dairy producers. Bahiagrass was not analyzed for these nutrient constituents.

What's in that Feed Stuff?

Chris Prevatt, Matt Warren, and Kalan Royal

Feed costs can account for a large proportion of cash costs in beef cattle operations. Today we will take a deeper look at supplementing beef cattle. Energy and protein supplementation are often required to properly balance diets for growing cattle and for meeting the nutritional needs of lactating cows. This is especially true when low quality stored forages are the majority of the diet, as is often the case during the winter hay feeding period.

Energy

Corn (88% TDN, 9% CP)
Citrus Pulp Pellets (79% TDN, 7% CP)

Energy is a critical nutrient in all beef cattle diets. Energy provides the body with the ability to do work. For Beef Cattle, work includes growth, reproduction, movement, feed digestion, and for Cows, lactation. Sometimes, energy supplementation is needed to meet the animal's nutrient requirements. In beef cattle rations energy is usually expressed as Total Digestible Nutrients (TDN). Protein, carbohydrates, and fats provide the energy in beef cattle diets. Beef Cattle require energy for grazing, traveling, growth, fetal development, milk production, maintenance, reproduction, and digestion. When digestible energy becomes limiting in beef cattle diets, both intake and animal performance can suffer. For optimal animal performance, adequate amounts of digestible energy are required!

Protein

Cottonseed Meal (76% TDN, 41% CP)
Dried Distillers Grain (89% TDN, 28% CP)
Corn Gluten Feed (80% TDN, 22% CP)
Whole Cottonseed (95% TDN, 23% CP)

Protein is a critical nutrient in all beef cattle diets. Sometimes, protein supplementation is needed to meet the animal's nutrient requirements. In beef cattle rations energy is usually expressed as crude protein (CP). Protein is one of the main building blocks of the body. It is a major component of muscles, the

nervous system and connective tissue. Adequate dietary protein is essential for maintenance, growth, lactation and reproduction. Young, growing cattle, in particular, need relatively high levels of crude protein in their diets to support muscle growth. Some signs of protein deficiency include lowered appetite, weight loss, poor growth, depressed reproductive performance, and reduced milk production. Providing adequate protein in beef cattle diets is important for animal health and productivity, as well as ranch profitability.

Fiber

Cottonseed Hulls (45% TDN, 5% CP)
Mixed Grass Pasture Hay (50% TDN, 9% CP)

Fiber is all about keeping the rumen functional. Cottonseed hulls and Mixed Grass Pasture Hay are popular in drylot situations because they satisfy the "roughage factor" in the rumen. For the rumen to work correctly, it has to have a slowly degrading fiber that will scratch the walls of the rumen to stimulate muscle contractions in the wall of the rumen. This keeps the contents of the rumen agitating, this is just like the contents of a washing machine, this allows the microorganisms to attach to the material and begin fermentation. In pasture situations, the forages that livestock eat supply the fiber needed for the "roughage factor" in their diets.

Forages (Bahiagrass, Bermudagrass, Limpograss, Stargrass, Crabgrass, etc.)

Beef cattle diets in Florida are primarily forage based. The energy and protein composition of forages typically varies by forage species, soil nutrients, and forage maturity. Cool-season annual forages like annual ryegrass tend to contain higher crude protein levels than warm-season forages like bahiagrass. Quality concentrations in forages also generally decreases with increasing forage maturity. As plants mature, cell walls become more lignified and less digestible. Forage digestibility declines tremendously when forages become over mature before cutting or grazing. High temperatures tend to increase plant lignification (production of the indigestible compound lignin), thus lowering digestibility in forages. Highly lignified forages are slower to digest than less lignified forages and feeds. Increasing lignin levels in forages cattle consume increases time the forage spends in the rumen, decreases dry matter intake, and reduces animal performance. While many factors affect forage digestibility and ultimately TDN, the primary factor producers can control is forage maturity.

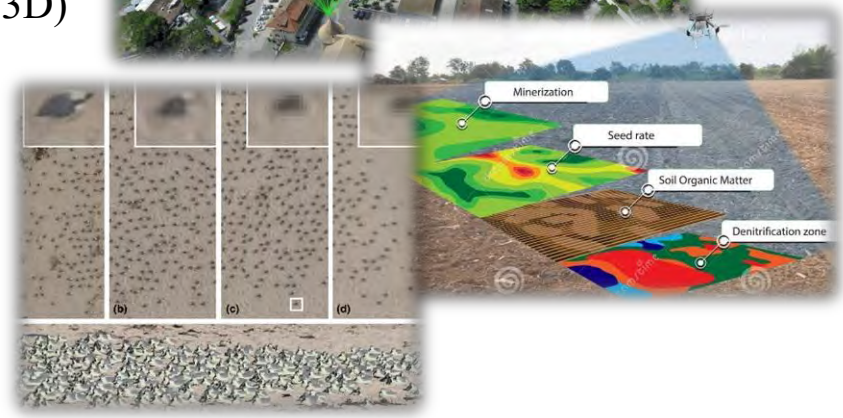
Summary

Digestible energy, as compared to crude protein, is more likely to be deficient in forage-based beef cattle diets in Florida. Protein, carbohydrates, and fats serve as energy sources in beef cattle diets. There are several options available for supplemental energy, protein, and fiber sources for beef cattle diets. Young, growing cattle and lactating cows are classes of cattle most likely to require energy and protein supplementation. Prices, forms, and nutrient density of supplements vary widely. For more information on supplementation and forage in beef cattle diets, please contact your local UF/IFAS County Extension office.

Drones in Science

UF IFAS UNIVERSITY of FLORIDA
Range Cattle Research & Education Center

Drone or UAV (Unmanned aerial vehicle) – an aircraft piloted by remote control and/or onboard computers



Applications in Science:

- High Resolution Mapping (2D and 3D)
- Vegetation or Habitat Monitoring
- Wildlife Tracking and Monitoring

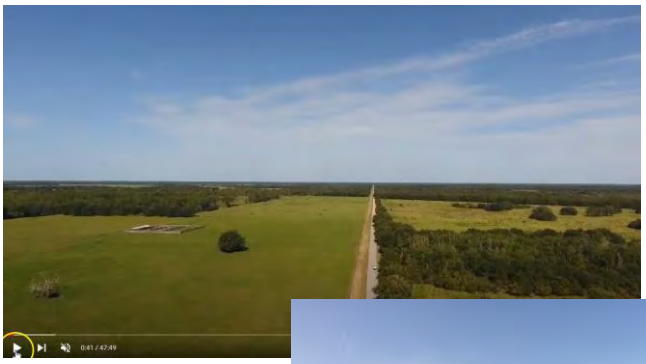
How the Rangeland Wildlife Ecology Lab uses drones:

Habitat Monitoring:

- Pre and Post Burning
- Timber Harvest

Cinematography:

- Virtual Tour of the RCREC



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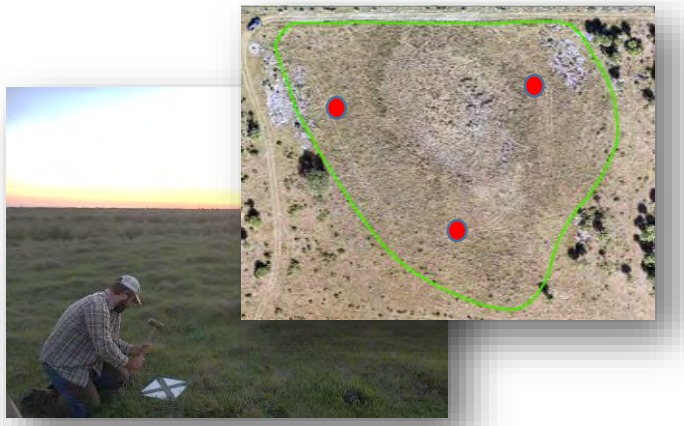
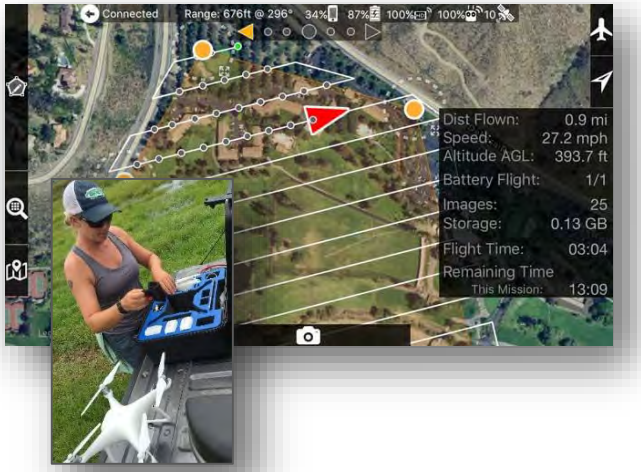
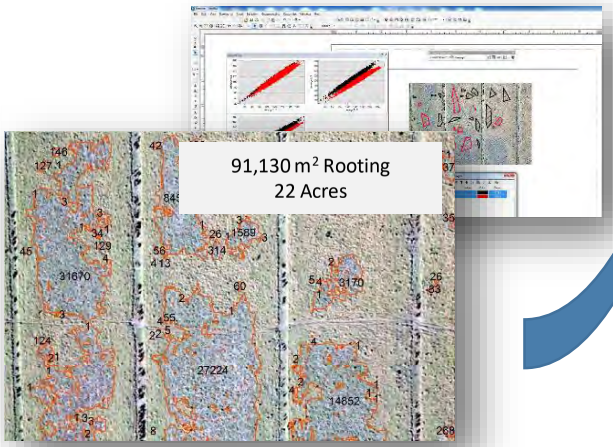
Drone Data Pipeline:

Flight Planning → Ground Control Points → Conduct Flight





Raw Images → Create Mosaic → Conduct Analyses



Ability to repeat exact flight over time

Childhood Agricultural Injuries (U.S.)
2020 Fact Sheet

National Children's Center for Rural and Agricultural Health and Safety

60% Of household youth were *not* working when they were injured in agriculture.

Population at Risk

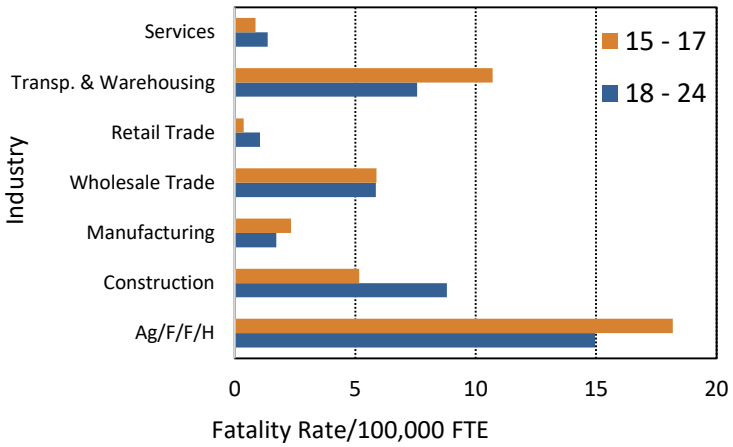
Farms	• In 2018, there were approximately 2.03 million farms in the United States.[1]
Children	• About 893,000 youth lived on farms in 2014 and more than half (51%) worked on their farm.[2] • More than 265,600 non-resident youth were hired in agriculture in 2014.[2] • Approximately 23,883,000 youth visited farms in 2014.[2]

Fatal Childhood Agricultural Injuries

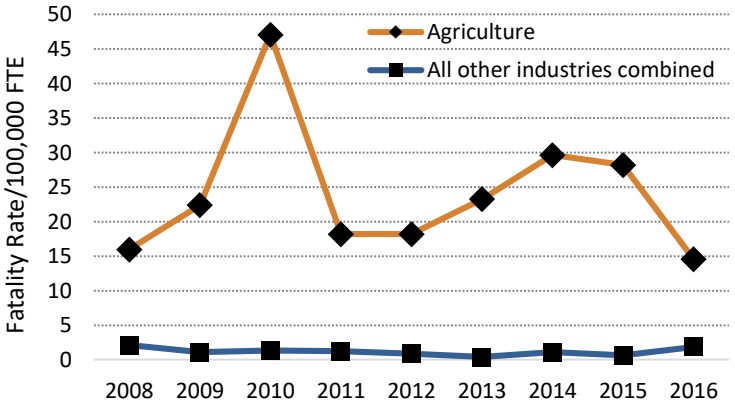
All Youth	• A child dies in an agriculture-related incident about every 3 days.* • Of the leading sources of fatalities among all youth, 47% involved transportation (including tractors), 20% involved contact with machinery, and 13% involved violent contact with animals and other humans.[3] • Youth under age 16 have 12 times the risk of ATV injuries compared to adults.[4]
Working Youth	• From 2001 to 2015, 48% of all fatal injuries to young workers occurred in agriculture.[5] • Since 2009, youth worker fatalities in agriculture has exceeded all other industries combined.[5] • In 2016, young workers were 7.8 times more likely to be fatally injured in agriculture when compared to all other industries combined (14.57 per 100,000 FTE vs 1.87 per 100,000 FTE).[5] • Transportation incidents were the most common fatal event, with **tractors** and **ATV/UTVs** as the primary vehicle sources.[5]

Fatality Rates for Young Workers Across Industries

Ages 15-24, 2011-2017



Ages 15-17, 2008-2016



Ag/F/F/H = agriculture, forestry, fishing, and hunting; FTE = full-time equivalent; Transp. = transportation; Ages 15-17 unless otherwise stated
Source: Fatal injury totals were generated by NIOSH researchers with restricted access to the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) microdata; additional information at bls.gov/iif/oshcfoi1.htm[6]

* From reported 115 agriculture-related deaths annually from 1995 to 2000.[3]
* From estimated 11,942 injuries in 2014.[7]
† Household youth are youth who live on a farm.

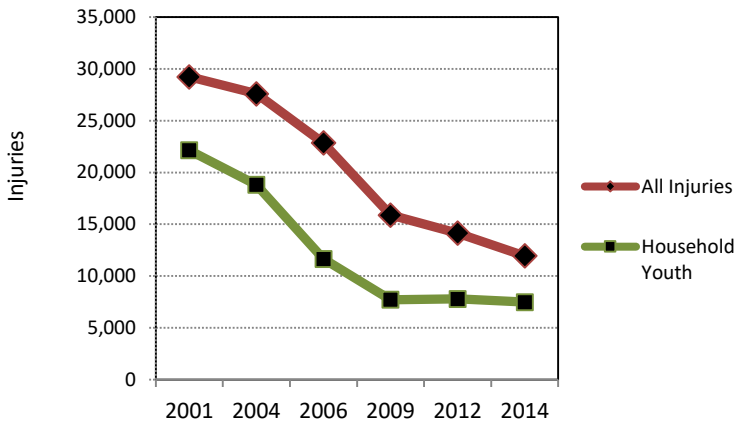
NOTE: There is no central repository of childhood agricultural injuries. This fact sheet draws from the best available data.

Nonfatal Childhood Agricultural Injuries

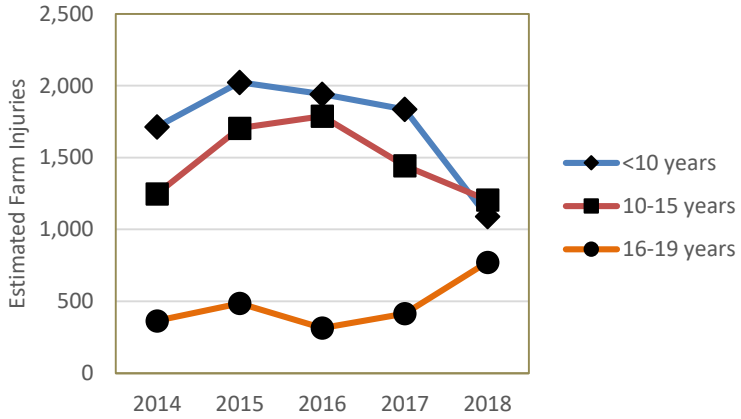
All Youth

- Every day about 33 children are injured in agriculture-related incidents.**
- In 2014, an estimated 7,469 household† youth were injured on a farm and 60% of them were not working when the injury occurred.[7]
- An estimated 738 hired youth were injured on farms in 2014.[7]
- Approximately 3,735 visiting youth were injured on farms in 2014.[7]
- Vehicles were the leading source of injury for household working youth, including ATVs.[7]
- Animals were the leading source of injury for both household non-working youth and visitors.[7]

Nonfatal Injuries – All Youth



Household Youth† Injuries by Age



Note: Data from the Childhood Agricultural Injury Survey (CAIS) do not include injuries to contract laborers. Data are also from United States Consumer Product Safety Commission National Electronic Injury Surveillance (NEISS), 2018.

References

1. USDA, NASS publications: Farms and Land in Farms, 2018 Summary, April 2019. Available at: https://downloads.usda.library.cornell.edu/usda-esmis/files/5712m6524/j098zk725/9z903749k/fnlo0419.pdf
2. Childhood Agricultural Injury Survey (CAIS) Results. Available at: https://www.cdc.gov/niosh/topics/childag/cais/demotables.html
3. Perritt KR, Hendricks K, Goldcamp E. (2017). Young worker injury deaths: a historical summary of surveillance and investigative findings. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. https://www.cdc.gov/niosh/docs/2017-168/pdfs/2017-168.pdf
4. Rodgers GB, Adler P. Risk factors for all terrain vehicle injuries: a national case control study. Am. J. Epidemiol. 2001,153, 1112–1118. PMID: 11390331
5. NIOSH [2019]. Analysis of the Bureau of Labor Statistics Census of Fatal Occupational Injuries microdata. Morgantown, WV: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. Unpublished.
6. Guerin, Rebecca J, PhD; Castillo, Dawn, MPH; Hendricks, Kitty J, MA; Howard, John, MD JD; Piacentino, John, MD MPH; et al.American Journal of Public Health; Washington Vol. 110, Iss. 1, (Jan 2020): 69-71. DOI:10.2105/AJPH.2019.305393
7. NIOSH (2016). Analyses of the 2014 Childhood Agricultural Injury Survey (CAIS). Morgantown WV: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Division of Safety Research. Unpublished.
8. Leigh JP, Du J, McCurdy SA. An estimate of the U.S. government's undercount of nonfatal occupational injuries and illnesses in agriculture. Ann Epidemiol. 2014;24(4):254–259. doi:10.1016/j.annepidem.2014.01.006

There may be over 4 times more injuries than are reported. As many as 88% of agricultural injuries and illnesses are not captured by traditional surveillance methods.[8]

Visit CultivateSafety.org for information and resources to prevent child agricultural injuries.

Visit AgInjuryNews.org to monitor and explore the latest injury reports, news stories, and trends.

National Children's Center for Rural and Agricultural Health and Safety
Funded by National Institute for Occupational Safety and Health grant number 5U54 OH009578

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Progressive Agriculture SAFETY DAY®

WHEN: Oct. 29 (Saturday), 8:30 a.m. to noon
WHERE: Farm Bureau, 7289 Palmer Blvd, Sarasota

A fun-filled day of learning for children ages 8-18 years old.
Topics for demonstrations and discussions include:

ATV Safety
PTO Safety
Equipment Safety
First Aid/Emergency
Poisonous Plants
Shop Safety
Animal Safety
Hidden Hazards
Hand Signals
Sun Safety

Registration fee: $5 per person
(includes snacks, T-shirt, hat, and take-home "goody" bag)

Register at www.eventbrite.com/e/361782981637

For additional information, contact:
Rod Greder, Sustainable Agriculture Agent, UF/IFAS Extension Sarasota County
941-861-9810 or rgreder@ufl.edu

If you require special accommodations to attend one of our events, please send advance notice to 941-861-9900 or sarasota@ifas.ufl.edu.

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