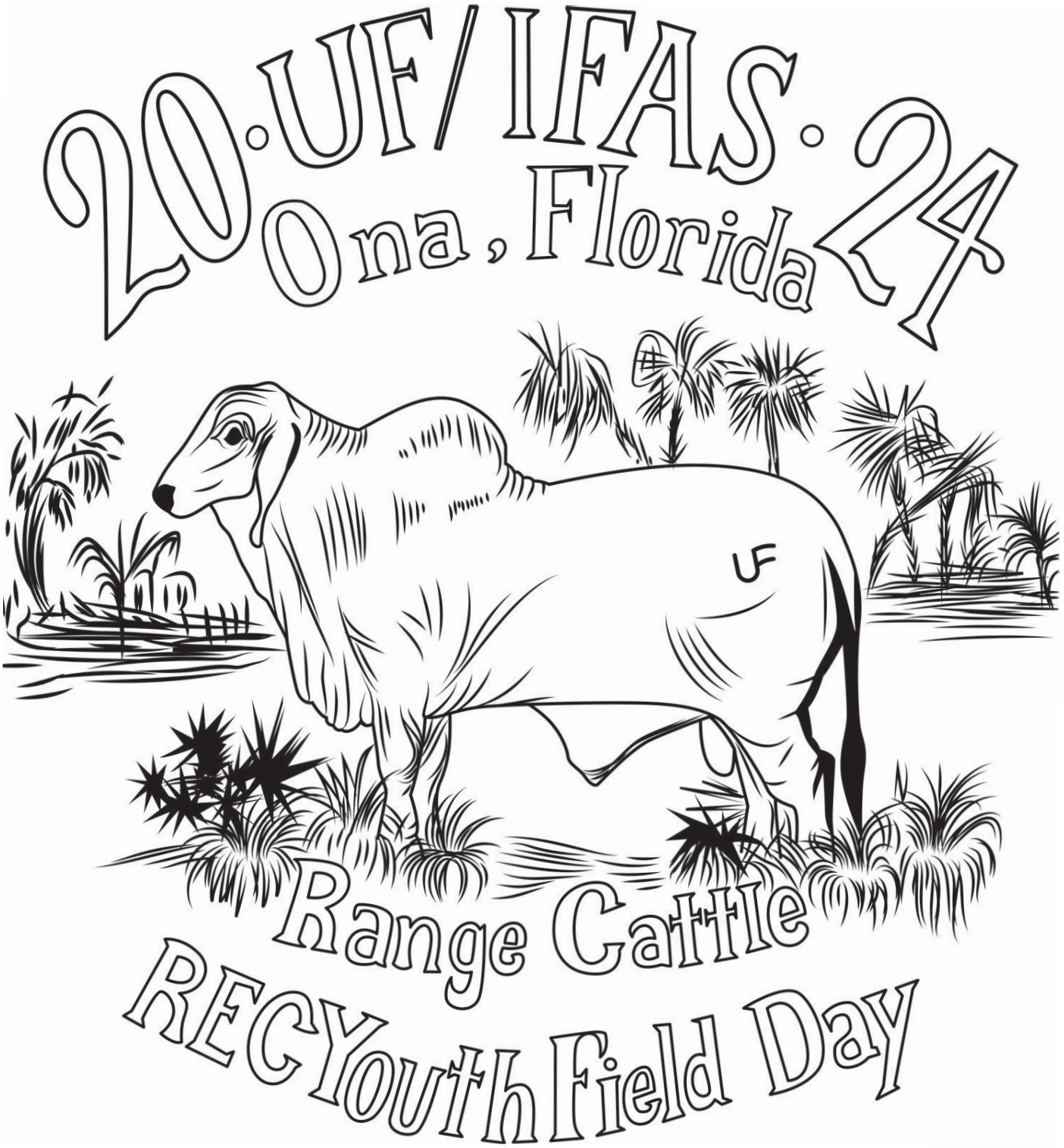

June 27, 2024

UF|IFAS
UNIVERSITY of FLORIDA

~ Table of Content ~

CLASS LITERATURE

Youth Field Day 2024

~ Schedule ~

7:30 a.m. Check-in opens - Take your pre-quiz, vote on your favorite 2025 t-shirt design, pickup or order t-shirts, and enjoy a morning snack.

8:00 a.m. Educational Learning Expo Opens - Visit and learn at every booth to get your bingo card signed then turn it in at 10 a.m. to be entered in a prize drawing at the closing assembly. There will be 3 opportunities to take a 30 min. wagon ride to view some of our cattle and learn from our knowledgeable staff.

10:00 a.m. Morning Assembly – Gather in the courtyard by the picnic table for a quick welcome message and to meet your group leaders.

10:10 a.m. Class Rotations Begin – 5 classes and a lunch break (Each one is 25 min.)

"How Does a Cow's Diet Affect My Wallet?"

Hannah Baker – SSA Beef and Forage Economics – RCREC
and Laura Bennett, Multi-Co. Livestock Agent – Pasco, Hernando, and Sumter Co.

"From Sand to Clay: Evaluating Soil Textures!"

Dr. Golmar Golmohammadi, Seyed Mostafa Biazar Seighalani, Maxwell Naah, & Saba Shaghaghikh, Watershed Hydrology – RCREC and
Don Rainey Agent – S.W. Extension District, Regional Specialized Agent

"Artificial Intelligence for Targeted Weed Control"

Dr. Ana Buzanini & Emily Witt - GCREC

"Ultrasound and Carcass Merit of Youth Market Cattle"

Sonya Crawford, 4-H / Livestock Ext Agent, UF/IFAS Hendry County Extension Service and Amy Perryman, UGC Certified Carcass Ultrasound Field Technician from Perryman Livestock Ultrasound Services, LLC

"Argentine Black and White Tegu: Invader in the Florida Rangelands"

Dr. Hance Ellington & Alex Furst, M.S. Student, Rangeland Wildlife Ecology – RCREC and Florida Fish and Wildlife Commission

1:25 p.m. Closing Assembly - 2025 t-shirt design winner announcement and a prize drawing – at the Grazinglands Education Building.

1:45 p.m. Field Day Ends

Thank you to our Sponsors!

Platinum sponsors

Sarasota County Farm Bureau
A & J Lucky 7 Ranch
Adams Ranch
Arcadia Stockyard
D & S Cattle Co., Inc.
Dakin Dairy
Farm Credit of Florida
Roman III Ranch
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Gold sponsors

Crews Bank & Trust
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Hardee County Cattlemen's Association
Highlands County Farm Bureau
Lee County Farm Bureau
Manatee County Farm Bureau

Sliver sponsor

Sarasota Agricultural Recovery Group
Florida Fence Post Co., Inc.

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 2024

~ Staff ~

Group Leaders (RCREC Staff & Students and others)

Ona White Angus - Lauren Butler, Okeechobee Co. Ext.
Namrata Ghimire, Biological Scientist

Brahman - Connor Crawford, M.S. Student
Vinicius Izquierdo, Ph.D. Student

Angus - Miranda Imeri, Exchange Visitor, Short-term Scholar
Mike Trevino, OPS Tech.

Brangus - Savannah Hall, Volunteer
Amber Womble, Volunteer

Braford - Christa Kirby, Manatee Co. Ext., Livestock Agent
Macy Fussell, Volunteer

RCREC Staff and Students Assisting

Austin Bateman, Clay Newman, Tom Fussell, Jeff Steele, Lauria Gause, Dennis Kalich, Christina Markham, Kim Parks, David Womble, Chadwade Anderson, Zack Bateman, Julian Bernal, Randy Crawfis, Joao Lazarin, David Magana, Emma Matcham, Dr. Tenzy Mncube, Blake Tinsley, Julie Warren, and Grayson Williams.

Others Helping

Dr. Nathan Boyd, Professor & Associate Center Director, UF/IFAS Gulf Coast REC
Dr. Ana Buzanini, Post-Doc, UF/IFAS Gulf Coast REC
Emily Witt, Biological Scientist, UF/IFAS Gulf Coast REC

Youth Field Day Committee

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

Andrea Dunlap, Marketing and Communications Specialist
Dr. Hance Ellington, Assistant Professor, Rangeland Wildlife Ecology
Dr. Golmar Golmohammadi, Assistant Professor, Watershed Hydrology
Dr. Brent Sellers, Professor & Center Director, Pasture & Rangeland Weeds
Hannah Baker, State Specialized Ext. Agent, Beef & Forage Economics
Mohamed Khalil Meliane, Biological Scientist, Rangeland Wildlife Ecology

South Florida Beef Forage Program Members

Laura Bennett, Pasco, Sumter, and Hernando Multi-Co. Livestock Agent
Sonja Crawford, Hendry Co. Ext., 4-H/Livestock Agent
Christa Kirby, Manatee Co. Ext., Livestock Agent
Dr. Rod Greder, Sarasota Co. Ext., Sustainable Agriculture Agent

Others

Don Rainey, S.W. Extension District, Regional Specialized Agent

~ Learning Expo Booths to Visit ~

4-H Youth Development
Work Ready Florida 4-H
Sarah Sarver
sarah.sarver@ufl.edu / cdecube@ufl.edu

Archbold Biological Station
- Florida Wildlife Corridor
Dustin Angell
https://www.archbold-station.org/

Councell Farms
- Bees
Keith Councell
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State Agricultural Response Team
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UF/IFAS Florida Automated Weather Network (FAWN)
– Weather Education
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UF/IFAS Gulf Coast Research and Education Center (GCREC)
Pathology, Entomology, Nematology, and more
Dustin Jacobs
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- Cattle Nutrition
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UF/IFAS Range Cattle REC
- Invisible Fence
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UF/IFAS Sarasota Co. Extension
- Farm & Outdoor Safety
Dr. Rod Greder
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UF/IFAS Sarasota Co. Extension, Master Gardeners
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aellis@scgov.net

Warner University
Abby Crawford
(863) 638-7248
abby.crawford@warner.edu
www.warner.edu

~ 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. http://edis.ifas.ufl.edu/

Florida Automated Weather Network (FAWN) -
Weather data is collected every 15 minutes at 42 sites located across Florida.
Find a FAWN site near you. http://fawn.ifas.ufl.edu/

South Florida Beef Forage Program (SFBFP)-
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.
Join our mail list to stay informed on upcoming events! Email ona@ifas.ufl.edu to join.
http://rcrec-ona.ifas.ufl.edu/

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.
https://sfyl.ifas.ufl.edu/

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/

Argentine Black and White Tegu: Invader in the Florida Rangelands

Dr. Hance Ellington, Asst Professor
Alex Furst, MSc student

Rangeland Wildlife Ecology Lab
https://www.wildlifeontherange.com

Biology

- Large lizard up to 5 feet long
- Long tail and sharp claws
- Long-forked tongue to smell food
- Lots of teeth! Sharp incisors and molars

Diet and Behavior

- Invasive in Florida
- Native to South America
- Eats eggs, fish, fruit, seeds, small mammals, other reptiles, and more
- Omnivores: They will eat anything they can find or catch!
- Loves forests, palmetto patches and burrows
- Can swim!

Established Populations in Florida

- Charlotte County
- St. Lucie County
- Miami-Dade County
- Hillsborough County

Tegu Eggs! Tegus lay an average of 35 eggs per year!

What makes a species invasive in Florida?

1. Nonnative to Florida
2. Introduced intentionally or accidentally
3. Causes harm to economy, ecosystem, or human health

How do invasive species get introduced to Florida?

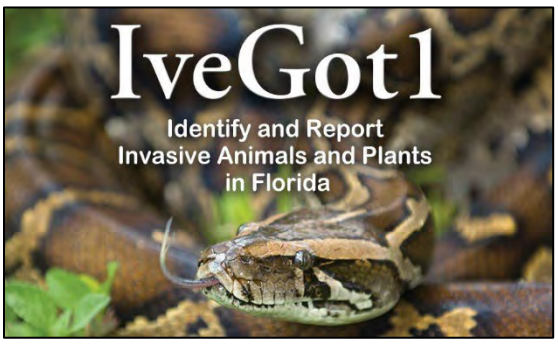
- Escaped pet
- Hitch a ride on cargo
- Brought in to help manage another pest species

Negative Impacts of Tegus in Florida

- Predators to native wildlife
- Outcompetes native wildlife for resources
- Throws our ecosystems out of balance
- Threatens our rangeland species and poultry

How can you help?

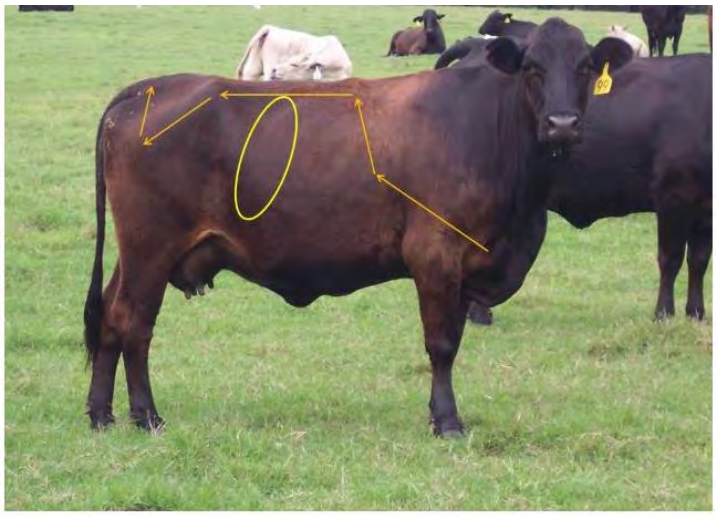
- Report nonnative species:
  Ivegot1 app
  Ivegot1.org
  1 888-Ive-Got1 (483-4681)
- Familiarize yourself with local invasive species present in your community



How Does A Cow's Diet Affect My Wallet?

Hannah Baker – SSA Beef and Forage Economics Laura Bennett – Multi-County Livestock Agent
UF/IFAS Range Cattle REC Pasco/Hernando/Sumter Counties

The goal of every cow-calf producer is to have a productive and economically efficient cow that raises and weans a calf every 365 days. A cow's diet plays a large role in achieving that goal because maintaining a healthy body condition score (BCS) during pregnancy gives her calf a "running start" during the fetal development process. Body condition is a term used to refer to an animal's body fat which can be evaluated in six different locations on cattle and is an estimate of body fat and past nutrition management. Body condition score is also a good predictor of future reproductive performance which responds positively to adequate body condition score. A body condition score of 5 is the magic number for mature cows and has been shown to optimize reproductive performance in terms of the return to estrus, days to conception, calving interval, pregnancy rate, and weaning percentage.



Credit: Matt Hersom, UF/IFAS

BCS is closely connected with fetal programming (development) as well. Sufficient nutrient supply to both the cow and developing fetus can allow the calf to reach its full genetic potential during its lifetime. Adipose tissue and muscle tissue cells are developed in the fetus during mid to late gestation that will influence the future muscle thickness score and carcass quality grade of that calf. Therefore, a calf's future value can be affected by how well the cow's BCS was maintained during pregnancy. Muscle thickness scores are given to calves at weaning based on a scale of 1-5 with 1 being the highest. A high muscle thickness score indicates that the calf will produce a high-quality grade carcass. Carcass quality grades start with prime (most valuable grade) and continue with choice and select (majority of calves), standard, commercial, utility, cutter, and canner. Buyers will potentially pay more for calves with high muscle thickness scores because those calves will produce high quality beef products for consumers.

Providing supplementation to a cowherd can be expensive, especially when looked at as a short-term expense. However, when thinking long-term, supplementing a cow herd during the last stage of pregnancy is an investment worth making because it can potentially increase profits by selling higher quality calves.

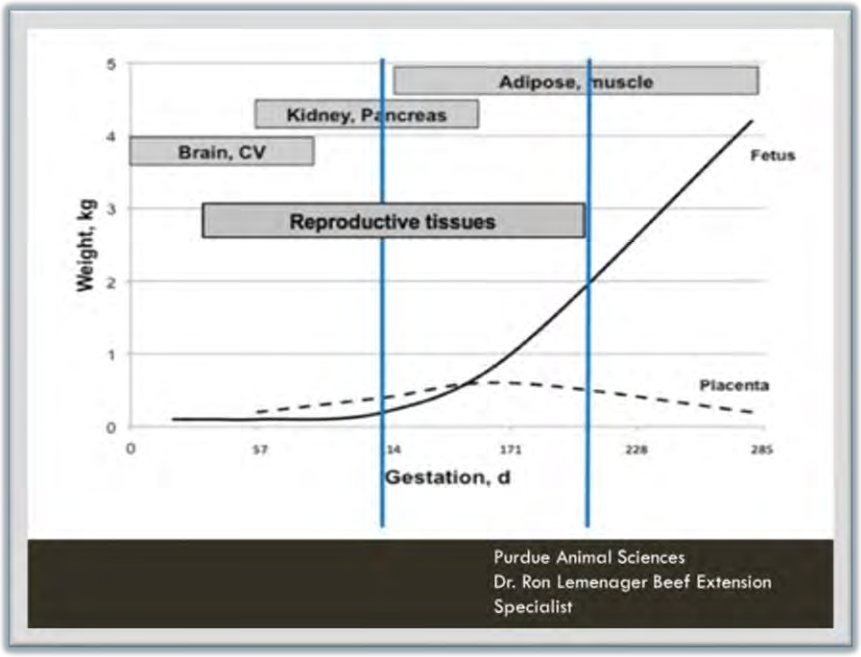
If you would like to learn more about these topics, please visit the following sites:
Body Condition Scoring: https://rcrec-ona.ifas.ufl.edu/virtual-classroom/training/
How to Measure Body Condition Score in Florida Beef Cattle: https://edis.ifas.ufl.edu/an347
Implications of Cow Body Condition Score on Productivity: http://edis.ifas.ufl.edu/an319
Fetal Programming: Fetal Programming: Cow Nutrition and its Effects on Calf Performance | NC State Extension Publications (ncsu.edu)

COW NUTRITION

1

Nutrient requirements for beef cows increase dramatically in the third trimester of gestation (~last 90 days) due to rampant fetal growth. During this trimester, a beef cow needs roughly 2 pounds of a protein supplement per day in addition to grazing forage to meet her nutritional needs. The amount of supplement given will vary based on cow weight and forage nutrient levels.

❖ ***Meeting a cow's nutritional needs improves the long-term health of the calf and the development of adipose and muscle tissue which affects carcass quality.***



2

FETAL DEVELOPMENT

Adipose tissue cells and muscle tissue cells are deposited in a developing fetus during the 2nd and 3rd trimester of pregnancy. Adipose tissue relates to marbling and quality grade in a carcass. Muscle tissue relates to muscle score in a calf and yield grade in a carcass.

❖ ***Proper cow nutrition allows her developing fetus/calf to fully express its genetic potential.***

3

CALF PRICES

After weaning, calves are sold and the price received for each calf is influenced by several factors such as weight, frame size, and muscle score. A muscle score of 1 (1-5) is the highest and a choice grade carcass is a higher quality grade than select.

❖ ***Buyers typically pay a higher price for calves that have a muscle score of 1 because those calves will produce a higher quality carcass.***

Price Differences in Calves & Carcasses (2024)	
Muscle Score 1	**Muscle Score 2**
$335/cwt	$310/cwt
Choice Carcass	**Select Carcass**
$292/cwt	$281/cwt

For questions, contact:
Hannah Baker – h.baker@ufl.edu
Laura Bennett – laurahbennett@ufl.edu

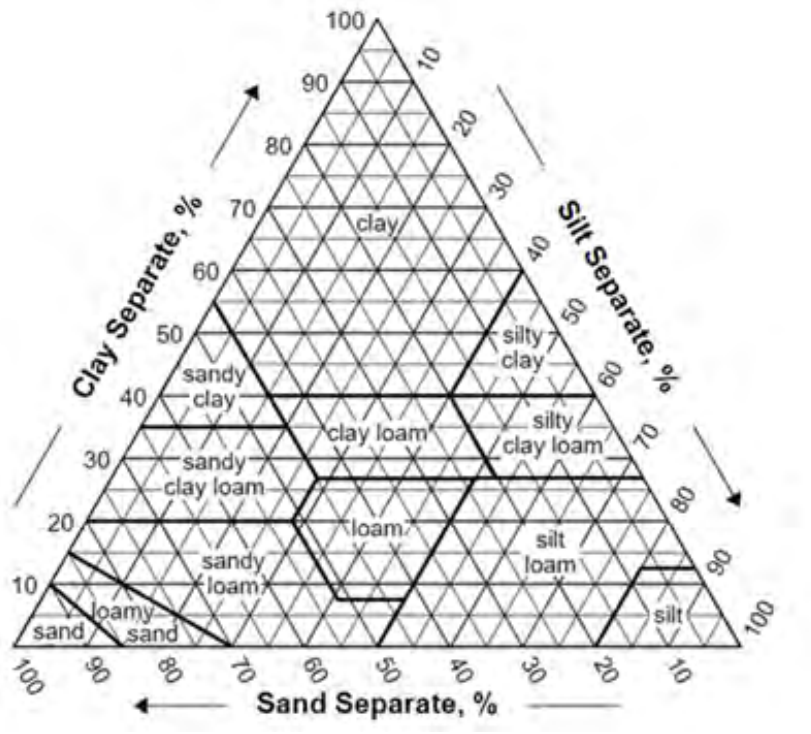
From Sand to Clay: Evaluating Soil Textures!

with Don Rainey, Water Resources Ext. Agent III & Dr. Golmar Golmohammadi, Watershed Hydrology Sepcialist

Soil is a remarkably complex and fascinating ecosystem beneath our feet. Like how people have unique personalities, soils also possess distinct characteristics that set them apart. Among these key characteristics is soil texture, a property that plays a crucial role in determining how soil behaves and interacts with the environment around it.

Soil texture refers to the relative proportions of sand, silt, and clay particles in a given soil sample. These three particle sizes form the building blocks of soil, and their relative abundance can greatly influence a wide range of soil properties. By taking a closer look at soil texture, we can unlock a wealth of knowledge about how soil functions and how we can best manage it for various purposes, from agriculture to environmental conservation.

By examining soil samples and feeling their texture, you can identify the unique characteristics of different soil types. **Sandy soils**, for example, are characterized by their gritty texture, primarily composed of larger, coarser particles. When you rub sandy soil between your fingers, you'll feel the distinct grittiness of the sand grains, which can range in size from very fine to coarse.



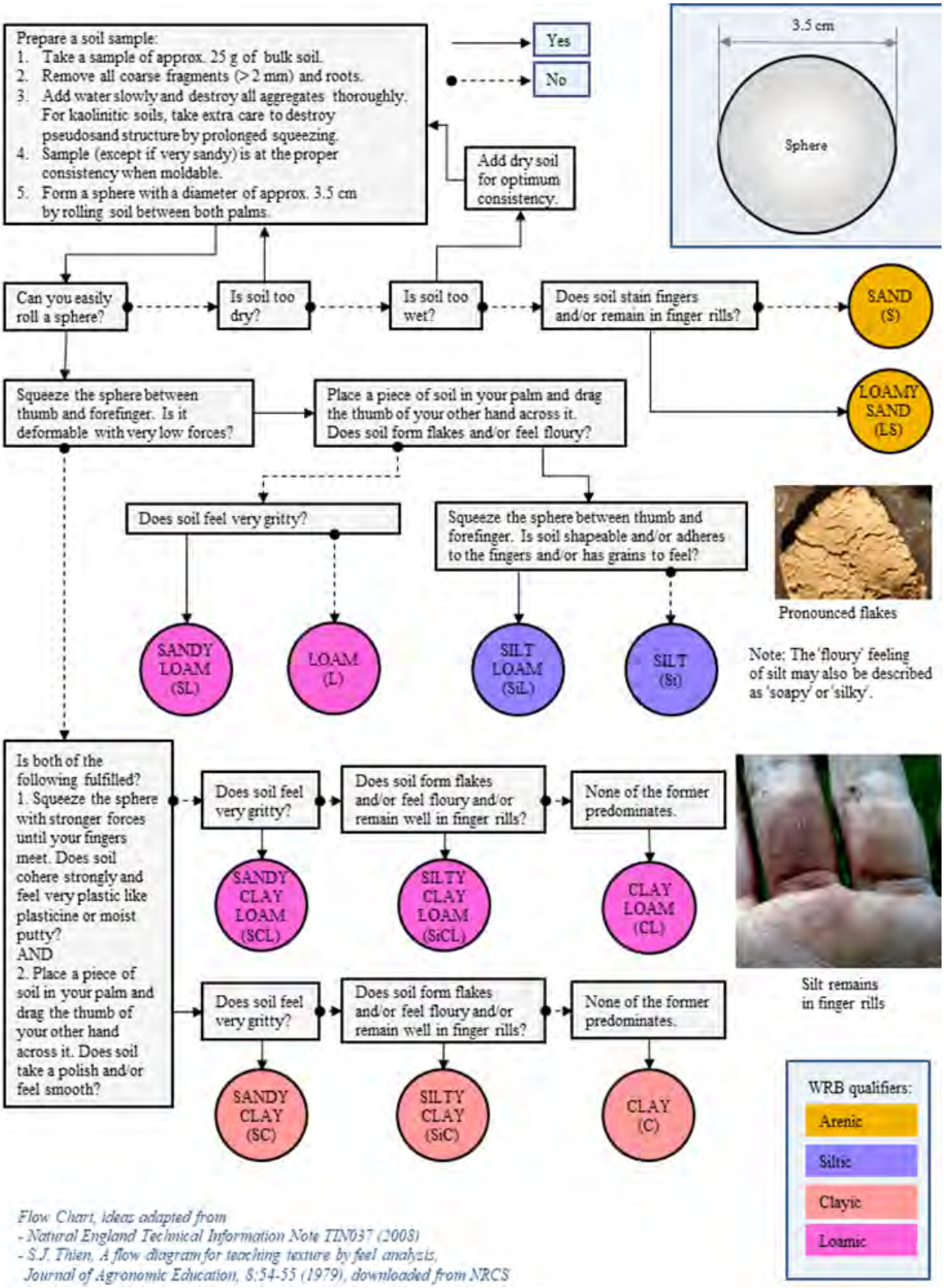
Sandy soils drain water quickly and have lower water retention capacity, requiring more frequent irrigation for plants to maintain adequate moisture levels.

Silty soils have a smooth texture and can retain moisture more effectively than sandy soils. They feel smooth and somewhat slippery when wet and benefit plant growth by providing a consistent water supply to the roots. However, they may still be prone to compaction and can benefit from the addition of organic matter.

Clay soils have an incredibly fine particle size, giving them a sticky, plastic texture when wet. They hold onto water and nutrients tightly and have the highest water retention capacity among the three soil textures. However, they can be prone to waterlogging and poor drainage, which can lead to root rot and reduced oxygen availability for plant roots.

In summary, the texture of soil provides important clues about its properties. Soil texture significantly impacts water retention, drainage, and nutrient retention, all crucial for plant growth.

See a texture by feel worksheet on the following page.



Information Sources:

Soil texture. (2024, May 19). In *Wikipedia*. https://en.wikipedia.org/wiki/Soil_texture

USDA Soil Survey Division Staff - Manually vectorized from File:SoilTextureTriangle.jpg Original source: A scanned JPG on the old USDA domain *http://soils.usda.gov* at the Wayback Machine. According to its full URL this JPG must have been implemented in the online version of the 1993 Soil Survey Manual (SSM).

ARTIFICIAL INTELLIGENCE FOR TARGETED WEED CONTROL

Instructors:
Nathan S Boyd
Ana Buzanini
Renato Furlanetto Herrig

Where to look for more information:
https://gcrec.ifas.ufl.edu/

Summary

Machine vision and AI have become pivotal in advancing weed detection within crops, significantly improving agricultural practices. Machine vision systems, equipped with high-resolution cameras and sensors, capture detailed images of crop fields. These images are then processed using AI algorithms that analyze the visual data to distinguish weeds from crops based on features like shape, color, and texture. Machine learning models are trained on vast datasets to recognize even the subtle differences between various plant species. This precise detection enables real-time identification of weeds, allowing for targeted removal either manually or through automated systems. The application of machine vision and AI in weed detection not only enhances the efficiency and accuracy of weed management but also reduces the reliance on herbicides, leading to more sustainable and eco-friendly farming practices.

Targeted spraying for weed control leverages advanced technologies like machine vision and AI to precisely apply herbicides only to the weeds, leaving the surrounding crops unaffected. This method significantly reduces herbicide usage, as chemicals are not indiscriminately sprayed across entire fields but are instead focused where they are needed most. The reduced herbicide consumption leads to lower costs for farmers and diminishes the environmental impact, preserving soil health and reducing chemical runoff. Additionally, targeted spraying enhances crop safety by minimizing the risk of herbicide damage to crops, promoting healthier plant growth and higher yields. This precision approach not only ensures more efficient weed management but also supports sustainable agricultural practices, aligning with the growing demand for eco-friendly farming solutions.

Targeted Spraying:

the use of cameras or sensors to detect weeds to selectively apply herbicides only where needed.

Ultrasound and Carcass Merit of Youth Market Cattle[1]

Chad Carr, Dwain Johnson, and Mark Shuffitt[2]

Introduction

Market cattle shown at county and state fairs and other youth shows across the United States are food animals. The endpoint value of food animals is primarily based on their carcass merit. The merit of a beef carcass is based on three variables: 1) animal or carcass weight; 2) quality of lean; and 3) quantity of lean.

Most packers want beef carcasses that range from 600 to 950 pounds, which means that the cattle weigh approximately 1000–1400 pounds. Carcasses under 600 pounds are less profitable for most packers because of the greater production costs per pound of carcass. Carcasses over 950 pounds (and certainly those over 1000 pounds) will generate retail cuts larger than what most consumers would prefer. Carcasses outside this weight range customarily receive a discounted price (USDA-AMS 2011a).

Slaughtering animals to evaluate lean quality, actual fat thickness, and ribeye area from chilled carcasses is certainly the preferred method to assess carcass merit. However, if carcass data are not available, ultrasound evaluation of the live animal is an excellent method to predict fat thickness and ribeye area (Greiner et al. 2003; Williams 2001; Perkins et al. 1997; Perkins, Green, and Hamlin 1992).

What is the technician doing in Figure 1?

In Figure 1, the technician is using ultrasound to assess how much external fat and muscle this beef animal has using a real-time ultrasound machine. The ultrasound machine can be described as real-time because it updates the image at a high rate of speed, creating an image similar to a movie. Real-time machines (Figure 2) can be very accurate when used by properly trained technicians (Greiner et al. 2003; Williams 2001).

Figure 1. Technician using real-time ultrasound machine.
Credits: University of Georgia

Figure 3 shows an example of an ultrasound machine image.

1. This document is AN279, one of a series of the Animal Sciences Department, UF/IFAS Extension. Original publication date June 2012. Reviewed July 2018. Visit the EDIS website at http://edis.ifas.ufl.edu.

2. Chad Carr, assistant professor; Dwain Johnson, professor, Department of Animal Sciences; and Mark Shuffitt, Extension agent IV, UF/IFAS Extension Marion County; UF/IFAS Extension, Gainesville, FL 32611.

Figure 2. Real-time ultrasound machine, probe, and accessories.
Credits: Mark Shuffitt

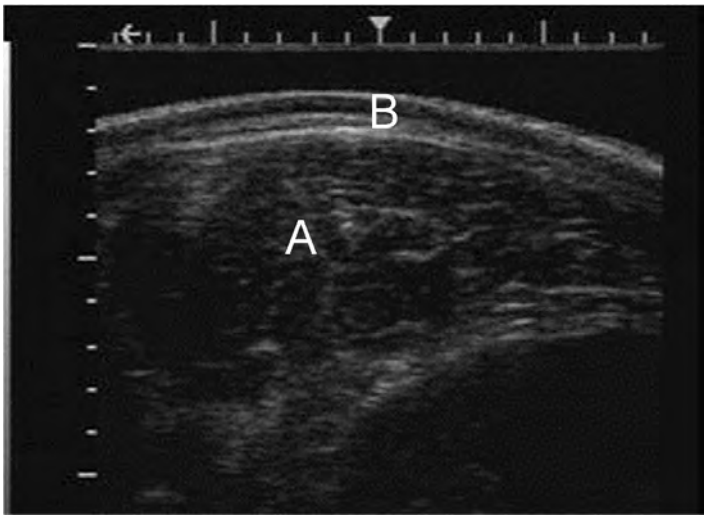


Figure 3. Example real-time ultrasound image of the ribeye (A) and overlying backfat (B).
Credits: Jentech Ultrasound (2011)

What is the technician measuring?

In Figure 3, the technician is using the machine to measure the area of the ribeye (A) and how much fat is deposited over the ribeye (B).

Where is the technician measuring?

Figure 4 shows the area where the technician will measure using the ultrasound. The ultrasound technician will find the last rib (A) and place the probe on the ribeye muscle between the last and 12th rib.

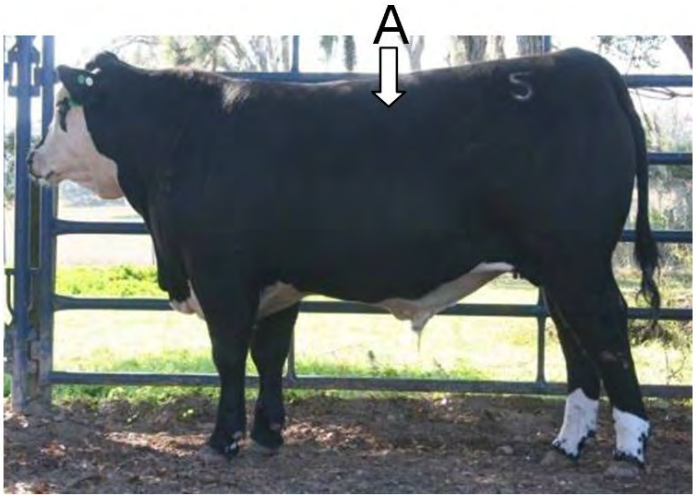


Figure 4. The location represented is the last rib (A).
Credits: University of Florida

After the technician gets the image at the proper location what does the technician do?

Once the technician gets a high quality image, he or she will use the computer to trace the ribeye (A) and fat thickness ¾ of the distance from the middle of the animal (B) (see Figure 5).

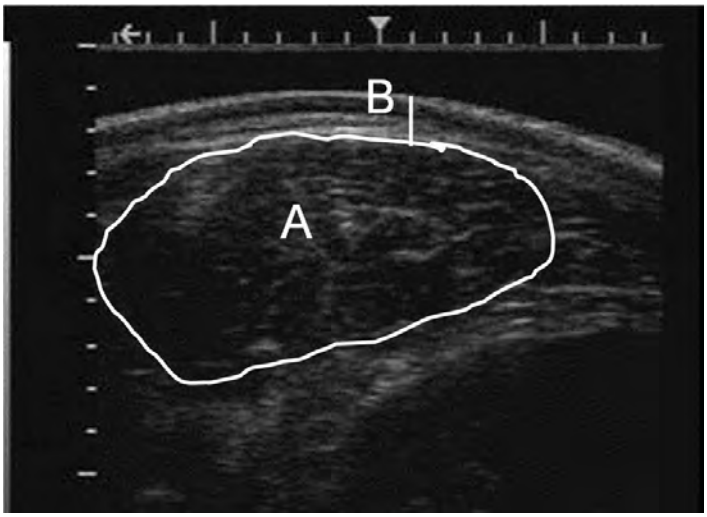


Figure 5. Real-time ultrasound image with ribeye area (A) and backfat depth measured at ¾ the distance from middle of the animal (B) at the 12th/13th rib location.
Credits: Jentech Ultrasound (2011)

How accurate are the ultrasound estimates of fat thickness and ribeye area to the actual carcass measurement?

Greiner et al. (2003) reported the average difference between the ultrasound measurement and carcass measurement for fat thickness to be 0.07 in and ribeye area to be 0.51 in^2. Generally, ultrasound estimates will tend to err toward the middle.

Specifically, Greiner et al. (2003) found that ultrasound measurements slightly overestimated (0.06 in) fat thickness on lean cattle (≤ 0.30 in backfat), slightly underestimated (0.05–0.07 in) fat thickness on cattle with intermediate fatness (0.31–0.59 in backfat), and underestimated fat thickness (0.12 in) on fatter cattle (≥ 0.60 in). The ultrasound measurements overestimated ribeye area by 0.48–0.66 in^2 when cattle had a small ribeye (≤ 12.0 in^2) and underestimated ribeye area by 0.47–0.81 in^2 when cattle had an actual ribeye area ≥ 13.0 in^2.

How well do ultrasound images of fat thickness and ribeye area replicate the actual carcass?

See Figures 6 and 7 for an example of how ultrasound images replicate the fat thickness and ribeye area of the actual carcass.

Figure 6. Ribbing the beef carcass between the 12th and 13th rib.
Credits: Chris Raines

What is the value in determining ribeye area and fat thickness?

Ultrasound images can provide valuable information to cattle producers. The ultrasound measurements for fat thickness and ribeye area, when combined with estimated carcass weight and estimated percentage of kidney, pelvic, and heart fat, can be used to predict USDA yield grade (Table 1).

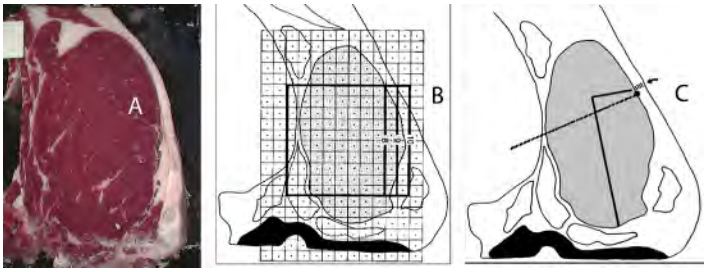


Figure 7. Cross-section of the 12th rib interface (A), measuring ribeye area (B) and fat thickness (C).
Credits: American Meat Science Association

How should hot carcass weight and percentage of kidney, pelvic, and heart (KPH) fat be estimated?

To estimate hot carcass weight, use a standard dressing percentage. Table 1 uses a dressing percentage of 63% to estimate hot carcass weight. Kidney, pelvic, and heart fat percentage is a visual estimate or an actual weight of those three fat depots presented as a percentage of hot carcass weight. The average for KPH percentage of fed cattle was 2.3% in the 2005 National Beef Quality Audit (Garcia et al. 2008). The KPH percentage used for the calculations in Table 3 is 2.5%.

Ultrasound technicians do not have to use the estimates for dressing and KPH percentage suggested in this document, but technicians should use the same percentages for all animals when calculating USDA yield grade.

What does USDA yield grade predict?

The USDA yield grade equation predicts the percentage of boneless, closely-trimmed round, loin, rib, and chuck.

Can marbling within the ribeye be evaluated using ultrasound?

Yes, marbling (or intramuscular fat) can be predicted rather accurately using ultrasound technology. The ultrasound image (Figure 8) looks different because the probe is placed parallel to the spine along the ribeye muscle from the 11th to 13th rib, rather than perpendicular to the spine, which is how to scan for fat thickness and ribeye area. The area within the box (A) is interpreted by a computer program to predict the percentage of intramuscular fat (Figure 8).

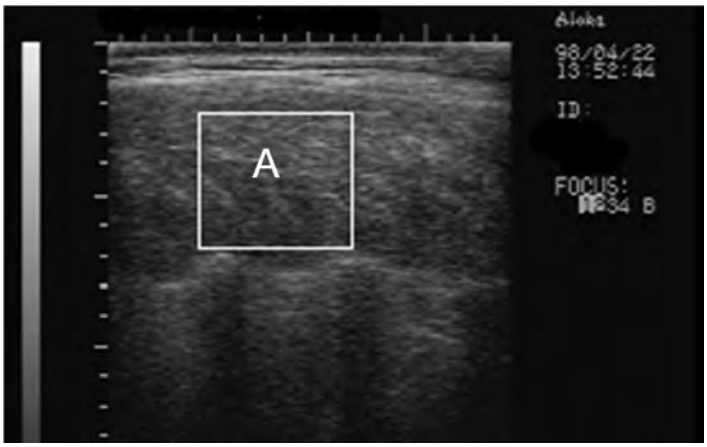


Figure 8. Real-time ultrasound image of a longitudinal rib scan (11th–13th rib) to estimate marbling (or intramuscular fat) within the ribeye. The area within the box (A) is interpreted by the computer to estimate the percentage of intramuscular fat.
Credits: Photo modified from http://www.bovineengineering.com

How accurate are the ultrasound estimates of marbling to the actual carcass measurement?

The review by Williams (2001) reported correlations between ultrasound intramuscular fat and actual carcass marbling scores to range from 0.69 (Perkins et al. 1997) to 0.85 (Brethour 2000).

What is the value in determining intramuscular fat within the ribeye?

Predicting marbling using ultrasound technology is valuable because the percentage of intramuscular fat within the ribeye associates with an approximate USDA marbling score (Table 2; USDA-AMS 1997).

What does USDA marbling score predict?

If the animal is less than approximately 30 months of age, USDA marbling score directly associates with USDA quality grade (Table 2; USDA-AMS 1997). Over a wide range of marbling scores, the amount of intramuscular fat is the driving force in consumer eating satisfaction of beef tenderness, juiciness, and flavor (Smith et al. 1987).

Why does the technician measure fat thickness, ribeye area, and intramuscular fat at that location?

The location used in ultrasound technology is where fat thickness, ribeye area, and USDA marbling score are measured to calculate USDA yield and quality grades (USDA-AMS 1997). Carcass weight and USDA yield and quality grades are the primary drivers of price discovery for market cattle and beef carcasses. Average carcass quality grade base prices are published daily (USDA-AMS 2011b), and average yield grade and carcass weight premiums and discounts are published weekly (USDA-AMS 2011a).

Which carcasses are the best?

The answer to this question is somewhat subjective, but carcass value is objective. The free market system dictates base carcass values and discounts, which the USDA reports weekly (USDA-AMS 2011b). The values reported on March 19, 2012, were used as the adjusted values per hundred weight to calculate the total adjusted carcass value of the set of example carcasses presented in Table 3.

In Table 3, Carcass 6 has the greatest total carcass value by over $200. This advantage is primarily driven by its 70-pound advantage in carcass weight. However, this carcass has excess trimmable fat and will generate some cuts that are too large for many applications. The carcass that maximizes all industry targets the best is Carcass 7. It is a premium choice, yield grade 2 carcass with an optimal carcass weight. Carcass 10 has the same adjusted carcass value per hundred weight as Carcass 7, but it has the second lowest total carcass value because it is such a lightweight carcass.

Cattle with similar total adjusted carcass values should be ranked by adjusted carcass value per hundred weight. Those with the same estimated carcass value per hundred weight should be ranked on final estimated yield grade and/or ribeye per hundred weight.

Conclusion

Ideally, carcass merit should be assessed from actual carcasses. However, when carcass data cannot be collected, ultrasound evaluation of market cattle is an excellent method to accurately assess differences in fat thickness, ribeye area, and percentage of intramuscular fat within the ribeye.

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Table 1. Estimating hot carcass weight and USDA yield grade using real-time ultrasound.

Estimating hot carcass weight			**Example**	**Calculation**
To estimate carcass weight, multiply live weight by 0.63			1278 lbs	1278 × 0.63 = 805.14 lbs
Equation for USDA yield grade			**Example**	**Calculation**
2.5				2.5
	+	2.5 × 12thrib fat thickness, in	0.75 in	2.5 × 0.75 = + 1.875
	+	0.2 × kidney, pelvic, and heart fat, %	2.5 %	0.2 × 2.5 = + 0.5
	+	0.0038 × hot carcass weight, lbs	805.14 lbs	0.0038 × 805.14 = + 3.06
	-	0.32 × ribeye area, in^2	15.1 in^2	0.32 × 15.1 = - 4.832
Calculated USDA yield grade				**3.103**

Table 2. Estimated carcass USDA marbling score from live cattle ultrasound.

Ultrasound intramuscular fat, %	**USDA marbling score**	**Numeric marbling score**	**USDA quality grade**[a]
≤ 1.9	Traces (Tr) 00-90	≤ 3.9	Standard +
2.0-3.0	Slight (Sl) 00-40	4.0-4.4	Select -
3.1-3.9	Slight (Sl) 50-90	4.5-4.9	Select +
4.0-5.5	Small (Sm) 00-90	5.0-5.9	Choice -
5.6-6.9	Modest (Mt) 00-90	6.0-6.9	Choice o
7.0-8.5	Moderate (Md) 00-90	7.0-7.9	Choice +
8.6-9.9	Slightly Ab (Slab) 00-90	8.0-8.9	Prime -
10.0+	Mod Ab (Mab) 00-90	9.0+	Prime o

[a]Assuming an "A-maturity" carcass

Table 3. Example carcass data from live cattle ultrasound.

ID	1	2	3	4	5	6	7	8	9	10
Live weight, lbs	1311	1094	1235	1143	1066	1485	1374	1257	1289	980
Hot carcass weight, lbs (estimated using a 63% standard dressing percentage)	825.9	689.2	778.1	720.1	671.6	935.6	865.6	791.9	812.1	617.4
Fat thickness, in (estimated at the ¾ measurement from the center of the animal at the 12/13th rib location)	0.6	0.3	0.55	0.65	0.4	0.75	0.4	0.35	0.7	0.2
Ribeye area, in^2 (estimated at the 12/13th rib location)	15.7	14	12.9	11.7	13.7	15	15.9	15.6	12.5	12
Kidney, pelvic, and heart fat percentage estimate, %	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
USDA yield grade (calculated using the prediction equation from Table 1)[1]	2.6	1.8	3.2	3.6	2.1	3.6	2.2	1.8	3.8	2
Intramuscular fat, % (estimated within the longitudinal rib scan, 11th-13th rib)	5.4	1.8	3.8	6.1	3	9	5.9	5.3	8.2	5.9
USDA marbling score (estimated from ultrasound intramuscular fat %)	Sm 80	Tr 70	Sl 80	Mt 50	Sl 40	Slab 30	Mt 30	Sm 70	Md 60	Mt 30
Ribeye area adjustment (calculated using USDA yield grade equation)[2]	-1.9	-1.9	-1.2	-1	-1.8	-1.2	-1.8	-2	-0.9	-1.5
Adjusted carcass price per hundred weight, $[3]	184	166	178	185	180	196	187	185	185	187
Total adjusted carcass value, $[4]	1519.71	1144.11	1384.93	1332.2	1208.84	1833.68	1618.71	1465.03	1502.33	1154.54

[1]2.5 + (2.5 × 12 rib fat thickness) + (0.2 × kidney, pelvic, and heart fat %) + (0.0038 × hot carcass weight) – (0.32 × ribeye area)
[2](0.0038 × hot carcass weight) – (0.32 × ribeye area)
[3]From the weekly USDA premium and discount report retrieved at http://www.ams.usda.gov/mnreports/lm_ct155.txt (Accessed March 19, 2012.)
[4]Adjusted carcass value per hundred weight × hundred weight units

UF|IFAS
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UF/IFAS Range Cattle Research and Education Center

Field Day

Thursday
Oct. 10, 2024

8:00 a.m. – 3:00 p.m.

3401 Experiment Station
Ona, FL 33865

Schedule

8:00 a.m. **Check-in**
Visit sponsor booths, student poster displays, and enjoy light refreshments

9:30 a.m. **Opening Assembly**
Welcome, IFAS and FCA Updates

10:00 a.m. **Morning Presentations**
Cattle Market Outlook, Hannah Baker
Artificial Intelligence in Agriculture and Water Management, Dr. Golmar Golmohammadi
Coyote Ecology in Florida's Rangelands, Dr. Hance Ellington
Benefits of Probiotic Supplementation in Cow-Calf Herds, Dr. Philipe Moriel

12:00 p.m. **Steak Lunch / Visit Sponsor Booths**

1:00 p.m. **Field Tour**
What is the Feed Value of Fall Fertilized Forage in South Florida?, Dr. Joao Vendramini
Smutgrass Management Techniques: Broadcast and Spot-treatment Applications, Dr. Brent Sellers
Pasture Management Strategies to Increase Soil Carbon Sequestration and Greenhouse Gas Mitigation, Dr. Maria Silveira

Registration required:
Early (ends 9/13): $20 • General (ends 10/8): $30 • Day of event: $50
rcrec-2024-fd.eventbrite.com

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