

**75 YEARS OF SERVICE TO THE CATTLE INDUSTRY
1941 - 2016**



**UF/IFAS RANGE CATTLE RESEARCH
AND EDUCATION CENTER
Ona, Florida**

A large, arched sign made of brick pillars and a blue central panel. The sign features the University of Florida logo and the text 'UF/IFAS Range Cattle Research and Education Center'. The sign is set in a grassy field with palm trees in the background.

UF UNIVERSITY of
FLORIDA
UF/IFAS
Range Cattle
Research and Education Center

Our Vision

*To be the worldwide leader
in research and education
impacting tropical and
subtropical grazinglands*

Our Mission

*Provide science-based
information to address the
challenges affecting owners
and managers of
grazinglands*

**A Division of the Institute of Food and Agricultural
Sciences of the University of Florida**

A Message from the Center Director



Dr. John Arthington
Professor and Center Director

As we reflect on our history, I am continually proud of the outstanding success of our Center's programs. For over 75 years, we have pursued a single mission - to serve the owners and managers of Florida's grazinglands. During this time certain characteristics have become a way of life for our faculty. The top of this list is our commitment to scholarship and a personal dedication to the clientele we serve. This commitment has been handed down from each Center Director, starting from Dr. Kirk at our establishment, to Dr. Chapman in 1965, to Dr. Pate in 1983, and today to myself almost 12 years ago. Our clientele expect and receive knowledge, respect, dedication, and responsiveness from our faculty, but this isn't enough. Our Center's commitment to scholarship is the foundation that we've built our success and it's this foundation that will guide us in the future.

I realize the term "scholarship" is often used generically to describe many processes of academic pursuit, but we view it differently. For an explanation, we describe scholarship as creative intellectual thought, validated by peers, and communicated broadly. I like this definition. It is a simple, concise explanation that adheres to our Center's tripartite commitment to the Land Grant University mission. Creative intellectual thought is the pursuit of science and discovery. It is the first step

of the scientific process, the development of a meaningful rationale, and hypothesis testing. The next step is peer-validation. This step is likely the most critical element of effective scholarship, but too often ignored. Lastly, scholarship must be communicated broadly. This reflects our commitment to the principles and ideals of cooperative Extension - to develop and extend meaningful, validated science, to solve problems impacting the stakeholders we serve.

Often, science is created without a commitment to the peer-review process. This is unfortunate. Our faculty differentiate themselves by fully embracing the pursuit of peer-validation of their science.



This characteristic didn't begin with my directorship. The Journal of Animal Science, the World's leading scientific journal for the study of animal production, published a paper from our faculty in their first journal printing. Although this occurred nearly 75 years ago, the basis for our commitment to science remains unchanged. Today, the top agricultural journals routinely publish the science created by the Ona faculty. Annually, our Center is among the leading UF/IFAS Units for the metrics reporting the volume of published science. We often say, "If it's not peer-reviewed, it's just our opinion." Our peer-reviewed science has resulted in improved forage crops, fertilizer practices addressing both economic and environmental pressures, chemical and cultural weed control systems, cowherd nutrition protocols, and manage-

ment considerations that strengthen the natural resources associated with our grazing landscapes. These science-based discoveries are visible on every ranch in Florida. It's these outcomes that continually foster and strengthen the long-term relationships between the Ona faculty and the stakeholders we serve.

Please join me in congratulating the former and current faculty and staff of the UF/IFAS Range Cattle Research and Education Center. This 75 year anniversary milestone is a wonderful opportunity to celebrate our successful history and to look forward in anticipation of new science and the resulting relationships of the next 25 years.

UF/IFAS Range Cattle Research and Education Center

Established in 1941 through the efforts of legislators, cattlemen, and local citizens, the UF/IFAS Range Cattle Research and Education Center (RCREC) is the only university-owned subtropical center of its kind in the United States focused on the enhancement of livestock, forages, and the natural resources of Florida's grazinglands. Located in south central Florida approximately 45 miles east of the Gulf of Mexico and 100 miles west of the Atlantic Ocean in Hardee County, the RCREC is near 80% of Florida's 1.7 million beef cattle. Through decades of working closely with cattlemen, we've come to be known as "The Cattlemen's Research Center." With its 2,840 acres of native and improved pastures, it is the largest in area of University of Florida's 11 research and education centers, which are located throughout the state. With its 700+ beef cattle, researchers have an ideal field laboratory for research and Extension programs, benefiting Florida's grazinglands owners and managers.

Best wishes for the next 75 years!

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75th Anniversary Celebration & Field Day

October 27, 2016

Register by Oct. 25 • <https://rcrec-fd-2016.eventbrite.com> • Registration Fee \$20

Field Day Opens 8:00 a.m.

Sponsor booths open, student posters displayed, light refreshments provided

Program 9:05 a.m.

Welcome John Arthington, UF/IFAS Range Cattle REC, Professor and Center Director
 UF/IFAS Remarks Jack Payne, UF Senior Vice President for Agriculture and Natural Resources
 FCA Remarks Ned Waters, President, Florida Cattlemen's Association
 Jim Handley, Executive Vice President, Florida Cattlemen's Association

UF/IFAS Range Cattle REC Faculty Presentations

Raoul Boughton, Asst. Prof., Rangeland Ecosystems and Wildlife
 Chris Prevatt, Regional Specialized Agent II, Livestock and Forage Economics
 Philippe Moriel, Asst. Prof., Beef Cattle Nutrition and Management

Key Note Speakers Erik Jacobsen, Deseret Cattle & Citrus
 Jim Strickland, Strickland Ranch

Historical Perspectives Looking back on 75 years with Faculty, Staff, & Students

Lunch 12:15 p.m.

Sponsor Booths / Student Posters & Exhibits / Lab Tours 12:15 – 4:00 p.m.

Field Tour of Faculty Beef Enhancement Projects. Departure options: 1:30 or 2:00 p.m.

John Arthington "Managing Free Choice Intake of Mineral among Grazing Beef Cows"
 Prof. and Center Dir., Beef Cattle Nutrition and Management
 Brent Sellers "Insight into Broomsedge Management in Bahiagrass Pastures"
 Assoc. Prof. and Assoc. Center Dir., Pasture and Rangeland Weed Management
 Joao Vendramini "Fertilizer Efficiency of Limpograss Cultivars"
 Assoc. Prof., Forage Management
 Maria Silveira "Biosolids Research and Demonstration Site"
 Assoc. Prof., Soil Fertility and Water Quality

Field Day Ends / Special Tours By Request 4:00 p.m.

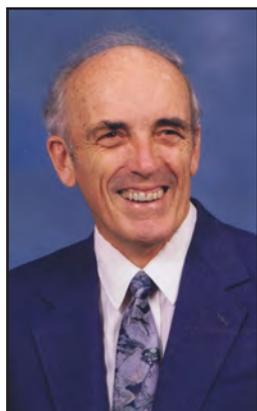
75 Years, Four Center Directors

Through its 75 years, the UF/IFAS Range Cattle Research and Education Center (RCREC) has been blessed to be governed by 4 long term leaders, Dr. W.G. Kirk, Dr. H.L. Chapman, Dr. F.M. Pate, and the present Center Director Dr. J.D. Arthington.



Dr. W. Gordon Kirk was born in 1898 in Kirkton, Ontario, Canada. After operating his own farm for a time, he attended the University of Saskatchewan where he received his B.S.A. degree. Afterwards, he worked as an instructor in the animal husbandry department of the university. He went on to attend Iowa State College where he obtained his M.S. and Ph.D. in Animal Husbandry and Nutrition. He spent 2 years running a meat packing plant and doing extension work in Iowa before coming to Florida in 1936 to join the staff at the University of Florida (Florida Experiment Station and College of Agriculture). When the Range Cattle Experiment Station was established in 1941, he was appointed its Director. Dr. Kirk served in that role until he retired in 1965. Through his leadership, the Range Cattle Station added faculty and staff, established infrastructure, developed research and extension programs and hosted field days and numerous visitors. He made scrap books to chronicle those RCREC's early years through photos and newspaper clippings (these will be displayed at our 10/27/16 field day). He lived with his wife Bessie in Wauchula

until his passing in 1979.



Dr. Herb Chapman was born in 1923 in Kansas City, Missouri and grew up in Hillsborough County, Florida where he graduated from Plant City High School. He attended the University of Florida (UF) for a time, but left to serve two years in the United States Navy before returning to complete his B.S. degree in Agriculture in 1948. He taught vocational agriculture for 2 years and returned to UF where he obtained his M.S. in Agriculture. After graduation in 1951, he was hired as the assistant animal husbandman at the Belle Glade Agricultural Research and Education Center where he worked for 2 years before heading to Iowa State University to obtain his Ph.D. degree. In 1955, after graduation, he returned to Belle Glade as an Assistant Professor in Animal Nutrition and rose to Associate Professor in 1957, and Professor in 1963. At Belle Glade, his research emphasized mineral nutrition and supplemental feeding of brood cows and steers. He also conducted post-doctoral research with copper at the Oak Ridge Institute of Nuclear Science. In 1965, Dr. Chapman accepted the position of Center Director at the Range Cattle Station, Ona where he continued his research and promoted program development emphasizing cooperative research between faculty at research centers and the main campus. His major emphasis was to direct forage and beef cattle research as it relates to commercial grower needs. During his time as Center Director, faculty and sup-

port staff were added and new facilities were built including labs, animal nutrition facilities, and offices. After his retirement in 1982, Dr. Chapman worked as General Manager of Agriculture Operations for Maran Groves. He enjoyed painting and co-authored several books with his wife Muncy. They settled in Vero Beach, Florida where Dr. Chapman died on January 16, 2015, at the age of 91.



Dr. Findlay Pate was born in 1941, in Davisboro, Georgia. He obtained his B.S. in Animal Science from the University of Georgia in 1965, M.S. in Animal Nutrition from Oregon State University in 1967, and Ph.D. in Animal Nutrition in 1970. After graduation, he was hired as an Animal Scientist Assistant Professor at the Everglades Research and Education Center in Belle Glade. He became an Associate Professor in 1975 and a Professor in 1982 before moving to the Ona in 1983 as Center Director. His research focused on nutritional studies with molasses-based supplements for grazing brood cows and growing heifers as well as cow-calf and pasture management studies. Dr. Pate retired in June 2005 after 35 years of service, with the last 22 years as Center Director in Ona. As an IFAS leader, he was widely known for his strong support of the Florida cattle industry and asked that all programs at Ona be directed toward improving the lives of Florida cattle ranching families. He was widely recognized for his support of county extension faculty, which was always a visible component of research and edu-

cation programs. In his free time he enjoyed hunting and was an avid outdoorsman. He and wife Vicky settled in Wauchula. Dr. Pate died on March 21, 2006, at the age of 65.



Dr. John Arthington was born in 1969 in Indianapolis, Indiana. He obtained his B.S. in Animal Science in 1991 from Purdue University and then moved to Kansas State University where he obtained a M.S. (1993) and Ph.D. (1995) in Animal Science. After graduation, he spent three years working for American Protein Corporation in Ames, Iowa as a Technical Research Scientist. In 1998, he was hired as an Assistant Professor of An-

imal Science at the RCREC, Ona. Dr. Arthington was promoted to Associate Professor in 2004, Associate Professor & Center Director in 2005, and Professor & Center Director in 2009. His research focuses on optimization of cow/calf productivity in subtropical environments. While his extension efforts focus on educating cattle producers on cost-effective supplementation strategies to fortify the nutritional needs of grazing cattle, with specific focus on mineral nutrition. Through his leadership, the Center has added faculty and staff positions, broadened its graduate and exchange visitor student programs, improved facilities, and increased endowments. With additional improvements on the way, it can be expected that the RCREC will see many more prosperous years under his leadership. He, his wife Victoria, and two daughters (Anne Marie and Emma) live in Punta Gorda and enjoy traveling and boating in their spare time.

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Early History of the UF/IFAS Range Cattle Experiment Station, Ona

By Dr. W. Gordon Kirk

First Published in the Florida Cattleman and Livestock Journal, June 1966



The Range Cattle Experiment 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.

Early Planning

In 1935, President Roosevelt asked each county in the 48 states to make a survey of its agricultural conditions. The same year because of this directive the Planning Board of Hardee County consisting of the Board of County Commissioners, Farm Security Administration, Extension Service, School Board and interested citizens first met in the Vocational Agricultural Building, Sunset Park, Wauchula, to plan for the improvement of agriculture in the county. A survey showed that 95 percent of Hardee County was used for beef production, that only a limited area had been planted to improved grasses and, as one member said, good or purebred bulls were "a curiosity." The planning centered around way and means of developing the cattle industry since it appeared to be the most important.

A "model farm" was suggested, but lack of funds for operation was too great an obstacle to overcome. After many discussions it was decided to request the State Legislature approve the establish-

ment of a Branch Station of the Agricultural Experiment Station that would not only be of benefit to Hardee County but to all central and south Florida. Later, the Hardee County Cattlemen's Association accepted this as a project and worked vigorously towards its successful fulfillment. Three people, C. D. Ivey, County Commissioner and farmer, Limestone; W. C. King, cattleman and businessman, Zolfo Springs; and H. L. Miller, County Agent, Wauchula; deserve recognition for their untiring work in the early stages of this project. Many local people and others outside Hardee County assisted whole-heartedly in the numerous legislative and planning details necessary in realizing this objective.

Committees of dedicated people from Hardee County made several trips to Gainesville from 1937 to 1939 to obtain approval for the proposed development from Dr. J. J. Tigert, president of the University of Florida and Dr. Wilmon Newell, director, Florida Agricultural Experiment Station. Dr. A. L. Shealy, head, Animal Husbandry Department, recognized the value of a grass-livestock program for central Florida and were instrumental in helping to formulate plans for the type of work which might be undertaken in the proposed project.

Available Land

The next step was to secure an option on sufficient range land. An area of 3,000 acres was selected after a search of the records and inspection of available land by a committee from Hardee County and representatives from the Agricultural Experiment Station, Gainesville. A survey showed that the cut-over pineland, with numerous pond and prairie areas was a typical sample of millions of acres in central and south Florida.

Much of the proposed area 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.

Legislative Action

Early in 1937, negotiations had reached a point where legislative action was necessary to authorize the project as a unit of the Florida Agricultural Experiment Station system and to provide funds for its operation. The Hardee County Cattlemen's legislative committee prepared a bill and had it presented to the 1937 State Legislature. Approval was obtained for the establishment of a Branch Station, but no funds appropriated for its operation. Two years later, the State Legislature appropriated \$25,000 for the biennium beginning July 1, 1939. These funds were to build, equip, and operate a Range Cattle Experiment Station. The State Budget Commission released only \$16,000 of this amount since the transfer of deeds by the Board of County Commissioners to the State Board of Education for the first 1,000 acres were not accepted until November 1940. Later deeds for the 1,645 acres were accepted. An additional 195 acres were purchased from receipts of sale of cattle and last 10 acres were obtained in 1960. The total of 2,840 acres is in one block with head quarters in the center of the area.

Improvements

The first improvements were started on January 12, 1941, with the cooperation of the Federal Works Progress Administration. This work consisted in clearing an entrance road and building



First office building at Ona as seen in 1948, was completed in 1949.

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Early History of the UF/IFAS Range Cattle Experiment Station, Ona

By Dr. W. Gordon Kirk

First Published in the Florida Cattleman and Livestock Journal, June 1966
Continued...

sites. The project was closed on June 28, 1941, when one-seventh completed, and all available labor taken for the construction of the air field at Avon Park.

By September, 1941, the Station herd consisted of grade cows obtained from the Main Station, Gainesville, the Everglades Station, Belle Glade, and 25 calves purchased from Stuart Brothers, Bartow. Electric power was provided in 1946, an all weather road in 1952, and phone service in 1954.

Results of the research program have been presented at Field Days, through publications of bulletins, scientific papers, talks, and articles in magazines and newspapers. A large number of people from Florida and other states and foreign countries have visited the Range Station, the exchange of experiences assisting in the development of the livestock program.

Future Opportunities

Many changes have taken place in the beef cattle industry of central Florida since 1941. At that time most of the land adjacent to the Station was open range with small areas fenced for vegetable production and citrus. Currently a large area of central Florida has been planted to citrus with a yearly increase in production of fruit. Vegetable growing and pasture improvement are closely associated on many farms and ranches. There are millions of acres of land in central and south Florida yet to be improved.

The research program of the past



Staff at the Range Cattle Station, 1948

Left to right, Dr. Elver M. Hodges, agronomist; Horace J. Fulfor, animal husbandman; Dr. W. Gordon Kirk, animal scientist and center director; and David W. Jones, soil technician.

25 years has gone far toward fulfilling the purposes for which the Station was established; 1) production of quality forage; 2) improvement in feeding, breeding, and management of beef herds. In the years ahead, however, there will be a greater challenge to produce more and higher quality beef for the ever increasing population. According to the DARE Report of 1964, Florida, in 1963 produced 38.6 percent of the beef consumed within the state, but only 20 percent of the beef graded Standard or higher. It is estimated that by 1975 the State

will produce 700 million pounds of beef and that this will supply 41.9 percent of the need and 20 percent of the higher quality beef consumed. This indicates that

there are still more opportunities for improving beef production in Florida.



Working crew at the Range Cattle Station

...Front row from left are Dr. W.G. Kirk, Preston Woods, Paul Murphy, Carl Hines. Back row from left are Dr. George K. Davis, F.M. Peacock, L.K. Mosley, O.C. Coker, and Shelton Roberts (year unknown)



Bessie and Dr. W. Gordon Kirk standing in front of the home they lived in at the Center. (year unknown)



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Photos of the Range Cattle Experiment Station 1940's-1950's



Planting sugar cane, 1944.



Staff at the Range Cattle Station, 1942. Left to right, Dr. E.M. Hodges, G.A. Tucker, and Dr. W.G. Kirk.



4-H halter fitting demonstration, 1952.



Children of Station staff traveling to the school bus stop by tractor, because of muddy roads.



Dr. Kirk visits with Dr. and Mrs. David Fairchild.



Staff at the Range Cattle Station, 1952. Left to right, Don Lee, Dr. E.M. Hodges, Betty Gause, D.W. Jones, and Dr. W.G. Kirk.



Unloading wagon on stack silo, 1958.



Community event: Opening of road from Limestone to Arcadia, 1952.



D.W. Jones and Jim Norris planting corn, 1955.



UF/IFAS Range Cattle Research and Education Center Photos 1960's-2000's

Staff at the Range Cattle REC, in 1991. Front to back, left to right: Shirley Searcy, Janice Moye, Toni Wood, and Carol Piacitelli. Standing, Tom Sherrill, Ester Mueller, Alvin English, Christina Markham, Buddy Richardson, Jean Triebwasser, Bobby West, and Joy Mosely.



Staff at the Range Cattle REC, in 1991. Left to right: Hartsell Bishop, Matthew Tomlinson, George Painter, Carey Willis, Keith McLeod, Art Luke, Emory Wilson, Jose Moreno, David Royal, and Dawson Reed.



Office building, completed 1969.



Filed Day Staff 1987: Dr. Bill Brown, Dr. Roger West, Ralph Palaez, Sid Sumner, Dr. Bill Kunkle, and Dr. Findlay Pate.



Baling hay, 1973.



Dr. Findlay Pate, Mike Adams, and Dr. John Arthington



Left to right, Dr. Carol Chambliss, Dr. Martin Adjei, and Pat Hogue



Carey Willis and Matthew Tomlinson.



Clay Newman, Austin Bateman, Dr. Arthington and others on weaning day.



Dr. Martin Adjei talks about controlling mole crickets at field day.

1942 - 2016



CR 663 and Goose Pond Road



Goose Pond Road and Experiment Station Road



Five acre bridge off from Experiment Station Road.

UF/IFAS Range Cattle Research and Education Center Veteran Staff

The UF/IFAS Range Cattle REC (RCREC) has a history of employees being hired and staying on for many years. Indeed, it is a great place to work. Looking back through the files it is neat to see how many folks (many in temporary positions) have worked here. There are many who worked for just a few months, perhaps high school students in a summer job, some for a few years. Many individuals have connections and stories of time spent at the RCREC. Since 1941, there has been a long standing tradition that faculty and staff hired in full time positions, stay, often for their entire career.

The RCREC Center Directors each spent long years at Ona after beginning their career elsewhere with UF. Name and years at Ona: Dr. Kirk (24), Dr. Chapman (16), and Dr. Pate (22). The present Center Director, Dr. Arthington has thus far completed 18 years at Ona.

Many faculty members have had long careers at Ona. Dr. Elver Hodges is the RCREC's eldest living faculty member just turned 104 years old. He worked at the Center for 39 years, from 1942 to 1980. Mac Peacock, a beef cattle geneticist, worked at Ona for 34 years from 1952 to 1986. Dr. Charles Dantzman worked as a soil scientist at Ona for 26 years from 1959 to 1985. Dr. John McCaleb was an agronomist, working for 18 years from 1955 until his death in 1973. Dr. Dave Jones worked at Ona for 11 years from 1946 to 1957 prior to a long career as an extension agronomist in Gainesville. Dr. Paul Mislevy, forage agronomist, worked for 35 years, from 1971 to 2007, Dr. Rob Kalmbacher, range agronomist, worked for 30 years, 1975 to 2005, Dr. Buddy Pitman, forage agronomist, contributed 13 years of service from 1980 to 1993, Dr. Bill Brown, beef

cattle nutritionist, worked for 14 years, from 1984 to 1998, and Dr. Jack Rechcigl, soil scientist worked for 14 years, from 1986 to 2000. Dr. Martin Adjei, an agronomist, worked 9 years, from 1997 to 2006 when he was tragically killed in an automobile accident.

Past technicians who worked for 10 or more years including O.C Coker, Marvin Richardson, Viri Coker, Ralph Durrance, H.A. Frazee, Rodney Harn, Shelton Roberts, Carl Hines, and Junior McClelland. Lab technicians include Shirley Searcy, and Bobby West. Biological scientists include Jose Moreno and Toni Wood. Jose continues to work for UF at the UF/IFAS Gulf Coast REC in Balm.

Past support staff include agricultural assistants, Matthew Tomlinson, Hartsell Bishop, Buddy Richardson, Alvin English, Ester Muller, Art Luke, Carey Willis, Emory Wilson, and Tom Sherrill. Mechanics include: Dawson Reed, James Lucas, George Painter, and Hector Jose Aldana. Office manager: Janice Moye, custodian: Jean Triebwasser, chemist: Carol Piacitelli, and research coordinator: Buck Redding and David Royal.

The present RCREC faculty and staff are on their way to continuing the tradition. Faculty and years of service: Dr. John Arthington (18), Dr. Brent Sellers (12), Dr. Joao Vendramini (10), Dr. Maria Silveira (10), Dr. Phillippe Moriel (new), Dr. Raoul Boughton (2), and Chris Prevatt (2).

Special thanks to Julie Warren, Christina Markham, and Juliana Ranches with preparing this article.

Current Staff & Their Years of Service



Front, left to right, Lauria Gause, secretary (3); Bethany Wight, Sr. Ag. Tech. (2); Christina Markham, Office Manager (33); and Julie Warren, Biological Scientist (3). Back, left to right, Andrea Dunlap, Educational Media/Communication Coord (17); Kim Parks, Custodian (13); Joseph Noel, Ag. Asst. (10); and Cindy Holley, Biological Scientist (29).



Left to right, Dennis Kalich, Research Coord./Farm Manager (23); Austin Bateman, Research Coord./Herdsman (11); Clay Newman, Ag. Asst./Assistant Herdsman (10); Jacob Miller, Ag. Asst. (2); Tom Fussell, Ag. Asst. (3); Terry Neels, Sr. Ag. Asst. (14); Jeff Steele, Sr. Ag. Asst. (15); Wyatt Kofke, OPS (2); Ryan Nevling, Ag. Asst. (7); Randy Crawfis, Maintenance Mechanic (7).

Dr. Elver Hodges - First Agronomist at the Range Cattle Experiment Station Turns 104

Dr. Elver M. Hodges was the first agronomist at the Range Cattle Experiment Station. He arrived in 1941 and worked for 39 years, retiring in 1980. This year he turned 104. As expected through these years he has seen many changes, including those in transportation and the development of technology, but he has also seen great improvements in agricultural practices.

When Dr. Hodges arrived at the Range Cattle Experiment Station (now called the UF/IFAS Range Cattle Research and Education Center), there were no fences, paved roads, electricity, and only cracker cows. The work days were long and hard. The work week was Monday through Saturday from 8:00 a.m. – noon and from 1:00 p.m. – 6:00 p.m. Pine stumps littered the fields left over from earlier timber harvests, so a steel wheeled tractor had to be used - because rubber tires were too easily punctured by the stumps. During these early years the Station relied on horses and they had one work truck. Dynamite was used to remove stumps, the soil was sandy and of poor quality, and mole crickets were a problem - times were hard. In 1942, grasses were brought in

with the assistance of the USDA. One of those grasses was Pangola digitgrass, which they found did well when copper was added to the soil and if properly managed – if over grazed, the cattle would kill it. Around that same time, research was done on Pensacola bahiagrass which later became a valuable forage for Florida cattlemen. Dr. Hodges did extensive testing on many grasses, legumes and other forages which ultimately benefited Florida cattlemen. Through his 39 years of service, Dr. Hodges worked diligently to develop and release improved forages and new management techniques, which when implemented by Florida cattlemen, greatly improved the value of their operations.

Today, when asked about the top concerns in those early days (1940-1950), Dr. Hodges said they were: contending with a combination of improved pasture and native range in one grazing system, introducing English and Brahman genetics into the system, the treatment of screw worms, and the change in cattle management from open range to fenced areas.



Dr. Hodges, wife Ruth, and their daughters Margaret, Lucinda, & Kathy, 1954

75 Years...

*has made a world of difference
in Florida's cattle production...*

Thanks to the

ONA Research Center

Florida cattle production has changed a lot in the past 75 years. Many of these changes are results of the research done at the Ona Research Center of the University of Florida Institute of Food and Agricultural Sciences. Suga-Lik™ and Westway Feed Products LLC appreciate what you have done and would like to take this opportunity to say THANK YOU.

Through your efforts we have learned a lot about animal nutrition and ways to increase performance in Florida calf crops. Along the way, ONA along with United States Sugar Corporation (and then Westway Feed Products LLC) have found a substantial place in the industry for our fine molasses based products.

The secret to the 75 years of success has been cooperative efforts between industry and our university. We greatly appreciate you doing your part. We will keep doing ours! Together, we will continue to progress and keep our nation supplied with a safe, nutritious and sustainable BEEF!



Florida Agriculture Hall of Fame inductee, 2014.
Kathy Hodges, Dr. Hodges, Lucy Hodges Lipp, Debbie Boyd Kuhns, and Margaret Hodges Blanco

UF/IFAS Range Cattle Research and Education Center (RCREC) Programs

The RCREC addresses important issues spanning a broad scope of overlapping topics relevant to Florida's grazinglands, such as forage management, fertilization, soil and water, beef cattle management and nutrition, invasive animal and plant management, wildlife, and the economics of beef and forage production.

Presently, the RCREC houses 7 faculty programs with 18 support staff. In ad-

dition to research and extension projects, the RCREC's faculty mentor graduate students, exchange scholars, and interns.

The preceding articles provide a highlight from each faculty member regarding work they are presently doing in response to the research priorities outlined by the Florida Cattlemen's Association. For more information, visit their program page on the RCREC website: <http://rcrec-ona.ifas.ufl.edu>.

John Arthington Professor and Center Director Beef Cattle Nutrition and Management



In almost all production situations grazing cattle require supplemental nutrients to support optimal performance. Deficits can vary dramatically depending on many factors, most notably region, season, and weather patterns. Around the World, almost all grazing cattle are deficient in sodium, thus supplemental salt has been recognized as vital to the health and performance of grazing livestock. Micro-minerals are also often found to be deficient in grazed forage. The most commonly found micro-mineral deficiencies are copper, zinc, cobalt, and selenium. In tropical and subtropical climates, where a large percentage of the World's beef is produced, cattle are typically enrolled in year-long grazing schedules. In these environments, supplementation strategies are critical to cowherd productivity. Often, free-choice, salt-based mineral supplements are offered with the anticipation of adequate intake to offset nutrient deficiencies. Variation in free-choice intake, however, is a common problem impacting

the efficacy of this management system. Although many contributing factors exist, variation due to changing season of the year is one common factor. Generally, as moisture content of forages increase, intake of salt-based, free-choice supplements also increases. In one 3-year study conducted in southern Florida, cows were offered supplement in amounts to provide their targeted intake on a weekly basis. All unconsumed supplement was measured weekly and the results were calculated as a percent refusal. During the dry season, when forage moisture was low, the percent refusal was high (i.e. voluntary intake was low); however, during the wet season, when forage moisture was high, voluntary intake was at or above the targeted amount.

Although clearly a considerable challenge, the need to understand the factors impacting variation in free-choice, salt-based supplement intake is evident. Through funding support in 2015, by the Florida Cattlemen's Association, our team engineered and developed RFID (radio-frequency identification) technology to accurately assess the frequency of individual animal visits to a mineral feeder. Six portable units were constructed (See photo). With this technology, we can now estimate the impact of individual cow or calf free-choice mineral intake variation and how this variation impacts individual trace mineral status, notably copper and selenium.

Initial evaluation of the equipment has shown that the technology accurately accounts for individual visits to the mineral feeder. This equipment can be utilized in multiple studies, such as those aimed at assessing variation in individual mineral intake and subsequent mineral status when impacted by; (1) breed of animal (i.e. *Bos indicus* vs. *Bos taurus*), (2) season of the year, (3) method of mineral delivery (i.e. salt-based, liquid, low moisture block), and (4) mineral formulation (i.e. source of ingredients, drug inclusions, and salt content). Using these new research tools, we will seek additional funding in 2016/2017 to begin to address some of these important research objectives.

Dr. Arthington is in his 18th year at the Center and is assisted in his program by Andrea Dunlap. Presently he advises 2 Ph.D. students, Jose Acer-Cordero and Juliana Ranches. He came

to work at the Center from Iowa after working for 3 years in private industry. He received his B.S. from Purdue and his M.S. and Ph.D. from Kansas State University. He and his wife Victoria live in Punta Gorda.

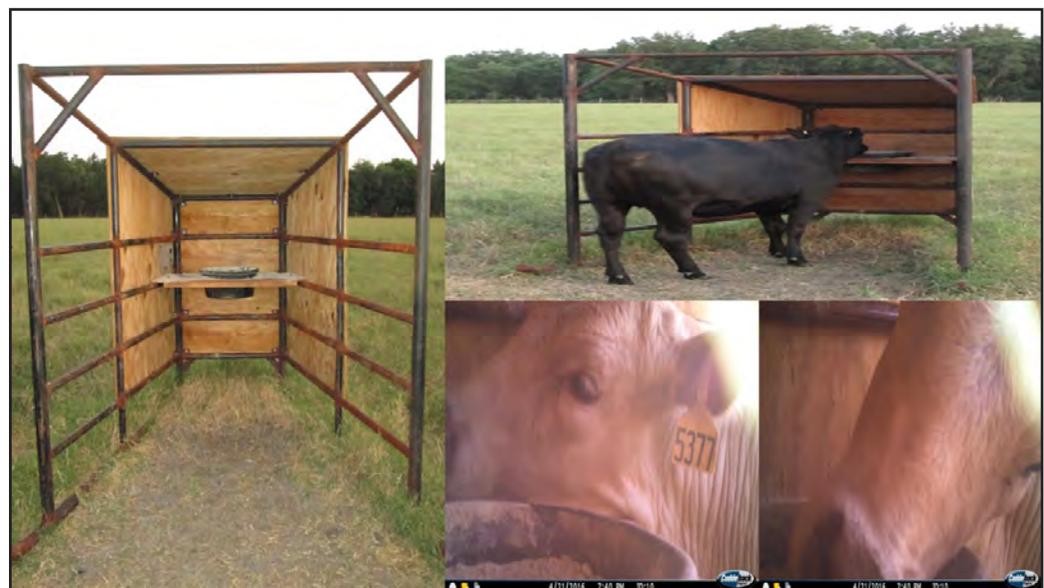
E-mail: jarth@ufl.edu
Phone: 863-735-1314 ext. 202



Lab tour at the 2010 Field day.



Speaking at a 2009 Field day.



Portable mineral feeder; calf at feeder; and close up images of calf eating mineral taken using a game camera mounted inside the feeder.



September 23, 2016

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Kissimmee, Florida 34742-1929
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Website: FloridaCattlemen.org

Dr. John Arthington
Center Director
University of Florida Institute of Food and Agricultural Sciences
Range Cattle Experiment Station
3401 Experiment Station Road
Ona, Florida 33863

Dear John,

It is with extreme pleasure to have this opportunity to offer my congratulations as you mark the occasion of the 75th anniversary of the UF/IFAS Range Cattle Experiment Station. As you are well aware this station was established through the joint efforts of the cattle producers in the Hardee County and surrounding counties area, the Florida Cattlemen's Association and the University of Florida, Institute of Food and Agricultural Sciences.

The foresight and recognition of the need for a research and education center in the heart of Florida's Cow Country has proven to have been a very wise and far reaching decision. The entire cattle industry in the state of Florida, Southeast and world has and continues to benefit from the fine work done by the team of researchers, extension personnel and instructors who have been a part of the programs conducted through this facility.

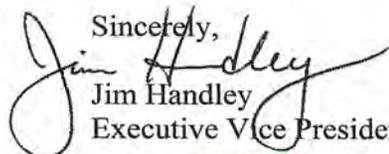
I cannot identify a single ranch involved in the cattle business of our great state that has not been positively impacted by work done and knowledge generated by the all the wonderful people who served and worked at and /or thru the Ona Station. The breadth of programs is far reaching including work in the following areas: breeding, nutrition, forages, soils, weed control, fertilization, cattle development, personnel management, mineral supplementation, rotational grazing, reproduction efficiency, business management, economics, wildlife and habitat management.

On behalf of the Florida Cattlemen's Association Congratulations and Thank you to everyone that has had a role in the operations and work of this great station. We value greatly the service this facility provides our industry and we are very pleased with the personnel, the current physical condition of the ranch and the programs underway there.

We eagerly look forward to the new management practices, varieties and improved efficiencies future research will develop in the years ahead.

Our organization stands ready to assist you in any way necessary to enhance the work of your fine station. Thank you for you service to our industry and the citizens of the state of Florida.

Sincerely,


Jim Handley
Executive Vice President

President
NED WATERS, Bartow

President-Elect
KEN GRINER, Chiefland

1st Vice President
ALEX JOHNS, Okeechobee

2nd Vice President
MATT PEARCE, Okeechobee

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Executive Vice President
JIM HANDLEY, Kissimmee

UF/IFAS Range Cattle Research and Education Center (RCREC) Agronomy Program

Brent Sellers

Associate Professor and Associate Center Director Pasture and Rangeland Weed Management



Broomsedge species are native, perennial bunchgrasses with an average life span of 3 to 5 years that are becoming problematic in bahiagrass pastures. Many extension specialists in the southeastern US indicate that soil testing followed by the appropriate amendments is the only way to manage broomsedge. However, with over 18 species of broomsedge present in Florida, an overall recommendation is not likely attainable. For example, bushy bluestem appears to grow better in alkaline soils while purple bluestem grows in acidic soils. Therefore, liming alone may not result in a decrease in density over time. Phosphorus applications have been suggested to eliminate broomsedge, but this has not been documented where subsoils are typically rich in phosphorus. Since no herbicides can selectively remove broomsedge, different management programs must be evaluated for their effectiveness. Therefore, our objective is to determine if soil amendments will reduce broomsedge density.

This research was initiated in 2012 near Ona and Arcadia, and in 2013 near St. Cloud. Treatments included a 3-way factorial of 0 or soil-test recommended lime, 0 or 500 lb/A 10-5-10 fertilizer, and 0 or 25 lb/A micronutrient mix (Frit 503G). Only the Ona location required

an application of lime in 2012 (2 ton/A; initial soil pH = 4.3). Soil pH at Arcadia tested 7.7, and elemental sulfur has been applied annually at 100 lb/A in place of lime. No lime has been added to the St. Cloud location (soil pH = 5.5). Each location is also composed of different broomsedge species, with purple bluestem at Ona, bushy bluestem at Arcadia, and broomsedge bluestem at St. Cloud. Broomsedge density at each site has been counted annually at four geo-referenced locations within each plot.

Treatments did not result in a reduction in broomsedge densities until after 3 years of application; no change in broomsedge density has been documented at St. Cloud since it was initiated one year after Ona and Arcadia. Application of lime at the Ona location increased the soil pH from 4.3 to 5.0. A 43% reduction in purple bluestem density was observed by the addition of lime alone. Similarly, annual applications of N-P-K has resulted in a 38% decrease in purple bluestem density. Sulfur application has had no impact on soil pH in Arcadia, and only annual applications of N-P-K fertilizer has resulted in a decrease in bushy bluestem density by 77%. However, it is important to point out that bushy bluestem density has decreased at this location by 40% without any treatment (no sulfur, lime, or micronutrients). Micronutrients have shown no effect on broomsedge density at either location.

At this point in time, we do not know whether it is the N, P, or K portion of the fertilizer that is affecting broomsedge populations. Additionally, it is too early to suggest that annual applications of N-P-K fertilizer will have long-term impacts on broomsedge densities across the state. These

sites will continue to be evaluated for at least two more years.

This research was supported by the Florida Cattleman's Association.

Dr. Sellers is in his 12th year at the Center and is assisted in his program by Joseph Noel. Presently he advises 1 Ph.D. student, Jose Luiz Dias and 2 M.S. students, Logan Martin and Olivia Zugay. Brent came to work at the Center from Missouri. He received his B.S. and M.S. from Purdue University and Ph.D. from the University of Missouri. He and his wife Mary Shannon live in Bowling Green.

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Speaking at the 2010 Field day.



Teaching at the 2014 Youth Field day.



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Pasture WEEDS



Cogongrass

Coffee Senna

Caesar Weed

Broomsedge

Blackberry



Lantana



Horseweed



Hairy Indigo



Goatweed



Flat Top Goldenrod



Fireweed



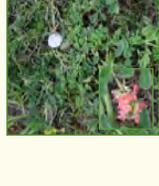
Dogfennel



Dayflower



Cutleaf Ceranium



Creeping indigo



Smutgrass



Smooth Crotalaria



Sida



Sicklepod



Showy Crotalaria



Ragweed



Pusley



Prickly Pear



Maypop



Matchweed



Wild Radish



Whitehead Broom



Tropical Soda Apple



Thistle



Spiny Pigweed



Spiderwort



Spanish needles



Soft Rush

For more information
contact your local
UF/IFAS Extension office

Weed Product	Blackberry	Broomsedge	Caesar Weed	Coffee Senna	Cogongrass	Wild Radish	Whitehead Broom	Tropical Soda Apple	Thistle	Spiny Pigweed	Spiderwort	Spanish needles	Soft Rush
2,4-D	P	P	P	G-E	P	P	P	P	E	E	E	E	P
Chlorimif	G-E	P	P	G	P	P	P	P	E	E	E	E	P
Glyphosate	F	C-E	E	E	G	E	E	E	E	E	E	E	P
Glufosinate	P	P	P	P	P	P	P	P	E	E	E	E	P
Metolachlor	C-E	P	P	G-E	P	P	P	P	E	E	E	E	P
Paraquat	G	P	E	G-E	P	P	P	P	E	E	E	E	P
Trifluralin	G	P	E	E	P	P	P	P	E	E	E	E	P
Triclopyr	F	P	G	G-E	P	P	P	P	E	E	E	E	P
Trifluralin	F	P	G	G-E	P	P	P	P	E	E	E	E	P
2,4-D + dicamba	P-F	P	P	G-E	P	P	P	P	E	E	E	E	P
Valpar	F	-	-	-	P-F	-	-	-	-	-	-	-	-

¹ Regrowth likely within a 6-week period
² Products containing metolachlor should not be applied to bahiagrass

Legend
E - Excellent
G - Good
F - Fair
P - Poor

UF/IFAS Range Cattle Research and Education Center (RCREC)

Wildlife Ecology and Conservation Program

Raoul Boughton Assistant Professor Rangeland Ecosystems and Wildlife



Through ranch development and management the cattle industry has modified and manipulated natural landscapes to improve production of beef. Upon first thought this might be detrimental to wildlife, and for some species that is definitely true, but for others the story is not so simple, and in certain cases the ranch environment is actually preferred. This is particular important for wildlife species that are Threatened, Endangered or have been on the decline that use ranch modified habitats. Examples on Florida ranches include Crested Caracara, Wood Storks, and Burrowing Owls to name a few. One major role of the Rangeland Wildlife and Ecosystem program is to work with ranchers on ranches to identify how important ranch habitats are. You may ask "Why is it so important to know?"

I have two answers for you. The first is these large connected ranch environments provide the core habitat for many species and as ranch habitats are slowly developed, the last bastion for some species will be lost. The second is that ranches have conservation value and understanding how ranch habitats are important to a species will increase that value. In turn a thorough understanding should provide the populace and agencies information that will argue for increased

dollar incentives to be provided to ranchers to be both beef producers and best practice wildlife managers. From a ranching perspective this can be thought of as diversifying your business.

A number of incentive and cost share programs already exist, at federal and state levels. Two excellent examples are the USDA NRCS Working Lands for Wildlife program that restores habitat critical to 7 species of wildlife on working lands, and the USDA NRCS Agricultural Conservation Easement Program that will pay up to 50–75% of the land value to conserve current practices that support both agriculture and conservation goals. The more data provided to show the importance of private ranch lands to wildlife the more potential there will be for expanding and extending funding programs.

We have just embarked on a project to understand the importance of rangelands to the Florida Burrowing Owl, or Ground Owls as a true cracker would call them. If you don't know, the species has been declining in many places especially along both the east and west coast where development has removed habitat and owls can no longer survive. These little owls are grassland specialists and you can see them hovering across pasture to forage. They excavate 6–10ft burrows in higher drier ground in which they lay eggs, raise their young, and can be found near during the breeding season. Interestingly, these little owls use pasture as habitat, and what we believe is that short cropped (grazed) pasture is preferred and that ranching is providing habitat to support populations of this species of special concern. Functionally the species is

coexisting with cattle on ranches and cattle may improve their habitat through maintaining low vegetation and providing manure nutrients that attracts invertebrate food sources.

During this project we will be documenting breeding success, population stability, and site fidelity of rural Burrowing Owls, and comparing them to urban populations. Elizabeth White a doctoral graduate student is leading the project and has just started the process of marking all the birds with bands (see photo) so we can track them over time. Some of the questions being asked include: How much space does each breeding pair need in rural and urban habitats? What is the population structure of owls across Florida? Is it one big population where juveniles disperse widely, or are populations isolated? We will answer that question using DNA and genetic analyses to see how alike or different populations are.

This little owl is an iconic species of grasslands in Florida and in this project we will document how important ranch habitats are to supporting populations of Florida Burrowing Owls. The work on Burrowing Owls is one example where the Rangeland Wildlife and Ecosystems Program can help collect data to support species continued existence. As well as, provide information to the public and agencies to help raise awareness and funds to support best management conservation practices that ranchers can then provide on their ranches. One day like Gopher Tortoises ranchers may be able to provide habitat to receive urban Burrowing Owls that would have been destroyed by development if not translocated.

Dr. Boughton is in his 2nd year at the Center and is assisted in his program by Bethany Wight. Presently he advises 2 Ph.D. stu-

dents, Wes Anderson and Elizabeth White and 3 M.S. students, Julie Burford, Sam Baraoidan, and Ke Zhang. Raoul came to work at the Center from Venus, where he worked for two years at Archbold Biological Station. He received his B. App. Science from Southern Cross University in Australia and Ph.D. from the University of Memphis, in Tennessee. He and his wife Elizabeth live in Lake Placid.

E-mail: rboughton@ufl.edu
Phone: 863-735-1314 ext. 216



Elizabeth White places a band on a Burrowing Owl.



Speaking about native grasses to Grazing Management School attendees.



Collecting coyote data and fitting with a GPS collar for tracking.



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New Technology Allows Researchers to Measure Seasonal and Long-term Changes in Plant Growth

By Raoul Boughton

Understanding the role of terrestrial ecosystems including agricultural systems in the global carbon [C] cycle requires better analyses of the spatial and temporal variation in biologically-mediated sources and sinks of C. Phenological events such as spring leaf emergence and autumn senescence exert strong control on primary productivity and are therefore critical to ecosystem C cycling. Phenology also influences hydrologic processes, as leaf-out is accompanied by an increase in evapotranspiration; nutrient cycling processes, as senescence results in fresh litter (nutrient) inputs to the ecosystem; and feedbacks to the climate system, as the amount and condition of foliage present affects surface energy balance,

albedo, and surface roughness. Phenology has been shown to be a robust integrator of the effects of year-to-year climate variability and longer-term climate change on natural systems (e.g., recent warming trends). Experimental studies have shown how other global change factors (e.g., elevated CO₂ and N deposition) can also influence phenology. There is a need to better document biological responses to a changing world, and improved phenological monitoring at scales from individual organisms to ecosystems, regions and continents will contribute to achieving this goal.

The Range Cattle Research and Education Center (RCREC) and Archbold Biological Station-MacArthur Agro-ecology Research Center through their collaborative relationship in the

USDA Long Term Agro-ecosystem Research Network have erected several phenocams to measure phenology in grazed ecosystems. The cameras can be viewed on the PhenoCam Network website (<https://phenocam.sr.unh.edu/webcam/about/>).

RCREC Range Flatwoods site <https://phenocam.sr.unh.edu/webcam/sites/ufona/>

Archbold-MacArthur Agro-ecology Research Center Grazed Semi-native Pasture <https://phenocam.sr.unh.edu/webcam/sites/archboldavirx/>

Archbold-MacArthur Agro-ecology Research Center Grazed Wetland <https://phenocam.sr.unh.edu/webcam/sites/archboldwet/>

Archbold-MacArthur Agro-ecol-

ogy Research Center Bahiagrass Grazed Pasture <https://phenocam.sr.unh.edu/webcam/sites/archboldpnot/>

For more information contact Dr Raoul Boughton or Dr Maria Silveira at the RCREC, or Dr Elizabeth Boughton at MacArthur Agro-ecology Research Center.



RCREC Range Flatwoods Phenocam.



UF/IFAS Range Cattle Research and Education Center Advisory Council

Pictured left to right, seated: Chuck Syfrett, Edgar Davis, Terry Weaver, Cliff Coddington, standing: Joe Hilliard II, Jim Strickland, Cary Lightsey, Jim Selph, and Mike Adams with John Arthington. Missing from photo: Mark Griffin, Wade Grigsby, and Wes Williamson.

UF/IFAS Range Cattle Research and Education Center (RCREC) Animal Science Program

Philippe Moriel Assistant Professor Beef Cattle Nutrition and Management



Forage is usually energy deficient, and consequently, energy supplementation is often required for growing animals. However, expenses associated with energy supplementation can significantly increase production costs and become unattractive to cow-calf producers. A typical approach to decrease these expenses is to reduce the frequency of supplementation, such as 3 times weekly (Monday, Wednesday, and Friday) instead of daily, to minimize costs of labor, fuel, and equipment. Our recent studies demonstrated that decreasing the frequency of energy supplementation negatively impacted puberty achievement of heifers and growth and immunity of steers. For instance, the percentage of heifers reaching puberty at the start of breeding season (33 vs. 21 %) was greater for heifers supplemented daily compared to heifers supplemented 3 times weekly. Also, recently weaned steers supplemented 3 times weekly had 20% lower average daily gain and 21% of those calves did not respond to the vaccination against bovine respiratory disease pathogens compared to calves supplemented daily. Our ongoing studies are focusing on strategies that will allow producers to decrease the frequency of energy supplementation without experiencing the negative effects mentioned above.

Replacement heifers should calve by 24 months of age to achieve maximum lifetime productivity and conceive early in the breeding season to have enough time to rebreed and wean heavier calves. Providing the correct nutrition that will allow the heifer to achieve these goals is crucial and has been the focus of our program. For instance, we demonstrated that cottonseed meal and molasses could be offered separately rather than in a slurry form without affecting growth and reproductive performance of beef heifers. By using this approach, cow-calf operations should be able to further reduce labor and feed costs, leading to greater profitability. We also focus on identifying strategies that can enhance growth of young heifers and optimize feed resources and profitability of cow-calf operations. For example, limit-feeding a high-concentrate diet in drylot for 90 days after early-weaning increased the percentage of pubertal heifers at the start of the breeding season compared to normally-weaned heifers (80 vs. 40%).

Recent scientific findings have demonstrated that nutrition of cows and heifers during gestation (Fetal-programming) might permanently modify the offspring metabolism and induce long-term consequences to offspring health, growth, and immunity. Our recent project demonstrated that calves born to cows that experienced a 30% energy deficiency during the last 40 days of gestation had poorer immune response at weaning and produced less antibody against bovine viral diarrhea virus after vaccination compared to calves born to dams fed to meet energy requirements during late gestation. These results reinforce the importance of

our studies evaluating the impact of nutritional management of pregnant females on subsequent offspring performance.

Dr. Moriel is in his 1st year at the Center and is assisted in his

program by Julie Warren. Presently he advises 2 M.S. students, Matheus Piccolo and Gleise da Silva. Philippe came to work at the Center from North Carolina, where he worked for two years with North Carolina State

University. He received his B.S. from Sao Paulo State University in Brazil, his M.S. from the University of Wyoming, and Ph.D. from the University of Florida. He and his wife Karin live in Wauchula.

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Phone: 863-735-1314 ext. 208



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WEDNESDAY, NOVEMBER 2, 2016

8:00 A.M. SEE PASTURE, CATTLE & WILDLIFE

11:00 A.M. FLA. BRAFORD BREEDERS MTG.

12:00 NOON LUNCH

1:00 P.M. Guest Speaker

5:00 P.M. RECEPTION/DINNER

AUCTION DAY

THURSDAY, NOVEMBER 3, 2016

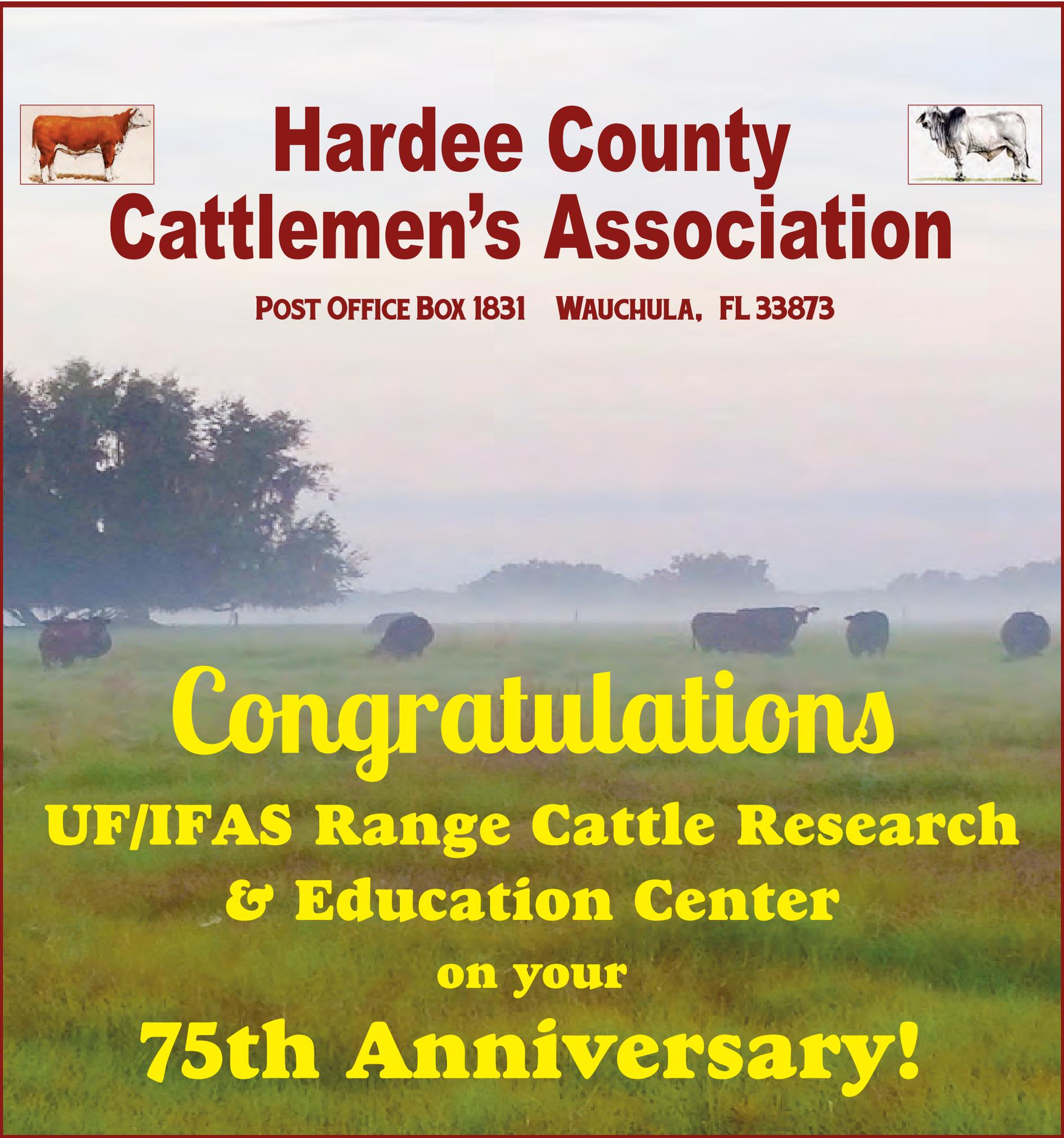
11:00 A.M. BBQ LUNCH
★ The St. Lucie County Cattlewomen
Cake Auction

12:00 NOON **CATTLE AUCTION**
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Cake Auction



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& Education Center**

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75th Anniversary!

UF/IFAS Range Cattle Research and Education Center (RCREC) Livestock and Forage Economics Program

Chris Prevatt Regional Specialized Agent II Livestock and Forage Economics



The expansion of the U.S. cattle herd has begun increasing the supply of beef which has created shrinking revenues for cattle producers across Florida. In order to weather the storm of herd expansion many producers will have to begin monitoring their production costs more closely as profitability will be challenged

in the years ahead. The livestock and forage economics program at the Range Cattle REC has begun working with ranchers on ways they can reduce their cost of production and monitor profitable outcomes.

Some of the ways we are doing this is by developing more extensive cattle and forage budgets that can be used to help cattle producers better analyze their operations. Due to the many different outcomes, both profitable and unprofitable, can arise from the unlimited combinations of animal and forage production practices, production costs, and market prices received by cow-calf producers. Thus, an understanding of which combinations are profitable will help guide

cow-calf producers to make plans and decisions that will improve their cow-calf operation.

Cow-calf producers can make more profitable management and marketing decisions by using enterprise budgets. Forage and cow-calf budgets have been developed that can be modified for an individual cattle producer. These budgets allow an individual to evaluate potential outcomes for their operation. In addition, a decision aid that projects cow-calf profitability based on projected animal performance, production costs, and market prices was developed. This decision aid allows cow-calf producers to analyze the different variables that affect cow-calf profitability to determine what combination of levels of animal performance, production costs, and market prices are profitable. The tables, which

include a sensitivity analysis, provide a visual for producers to identify the profitable outcomes using their base projections. Producers then have the opportunity to use their individualized projections to formulate plans for their cow-calf operation to be profitable for the coming year.

The use of enterprise budgets and decision aides enable producers to examine their expected levels of performance and cost. This prior planning provides cow-calf producers with the necessary economic information and time to make management adjustments that will result in more profitable outcomes.

To view budgets and decision aids, go to: <http://rcrec-ona.ifas.ufl.edu/Economics/index.shtml> or contact Chris.

Chris is in his 2nd year at the

Center. He came from Alabama where he received his B.S. and M.S. from Auburn University. He and his wife Tisha live in Port Charlotte.

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Speaking at the University of Georgia Beef Cattle Short Course, 2015.



Teaching at the 2015 Youth Field Day.



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Tech Services: Bob Simon - 815.748.7328



The Florida Cattle Market Price Watch is a monthly beef cattle marketing report that allows producers to compare current cattle market prices with past market prices. The report uses the August Feeder Cattle Futures Contract which is traded daily on the Chicago Mercantile Exchange. This report is published monthly in the Florida Cattlemen's Magazine and on the UF/IFAS Range Cattle Research and Education Center website (<http://rcrec-ona.ifas.ufl.edu/Economics/index.shtml>).

Figure 1 compares the August 2016 Feeder Cattle Futures Prices with the previous year and the 3-year average of the August Feeder Cattle Futures Prices. This chart provides cattle producers with price information about the direction of feeder cattle market prices.

The August 2016 Feeder Cattle futures contract decreased by \$42.59/cwt. since the beginning of the contract (August 28, 2015). Based on the futures price decrease of \$42.59/cwt., Florida feeder cattle revenues are correspondingly expected to decrease by approximately \$319.43/hd. (\$42.59/cwt. * 7.5 cwt.) on a 750-pound feeder steer which amounts to \$21,295.00 per truckload (50,000 lbs.). The August 2016 Feeder Cattle futures contract high, contract low, and price range since September 2015 was \$188.70, \$134.40, and \$54.30/cwt., respectively. The price range between the high and low of the August 2016 Feeder Cattle Futures Contract was \$54.30/cwt. on a 750-pound feeder steer which totals \$407.25/hd. and \$27,150.00 per truckload.

Figure 2 provides an example of

how producers can use the August 2016 Feeder Cattle Futures Contract to project their future cash marketing price and expected profitability. The use of the August 2016 Feeder Cattle Futures Contract combined with the historical basis for Florida Feeder Calves determines the "Expected Cash Price" for Florida feeder calves well in advance of delivery. The "Expected Cash Price" can be used by cattle producers to evaluate profitability and marketing opportunities by comparing the Expected Cash Price with their Breakeven Price and Price Objective for their Florida feeder calves.

The feeder calf Breakeven Price is the amount of money that feeder calves must be sold for to cover their production costs. At this price, the cattle producer would not realize any profit, but would not lose money. The breakeven price in Figure 2 is the sum of the variable and fixed production costs divided by the sale weight of the feeder calves. The breakeven price (solid red line) was estimated to be \$783.30/hd. or \$142.42/cwt. (\$783.30/hd. divided by 5.50 cwt.). The breakeven price includes production costs of \$765/hd. and death loss of \$18.30/hd.

The feeder calf Price Objective is the amount of money that feeder calves must be sold for to meet the financial objectives of the producer. The price objective in Figure 2 is the sum of the variable and fixed production costs, family living withdrawal, and growth capital and retirement divided by the sale weight of the feeder calves. The price objective was estimated to be \$933.30/hd. or

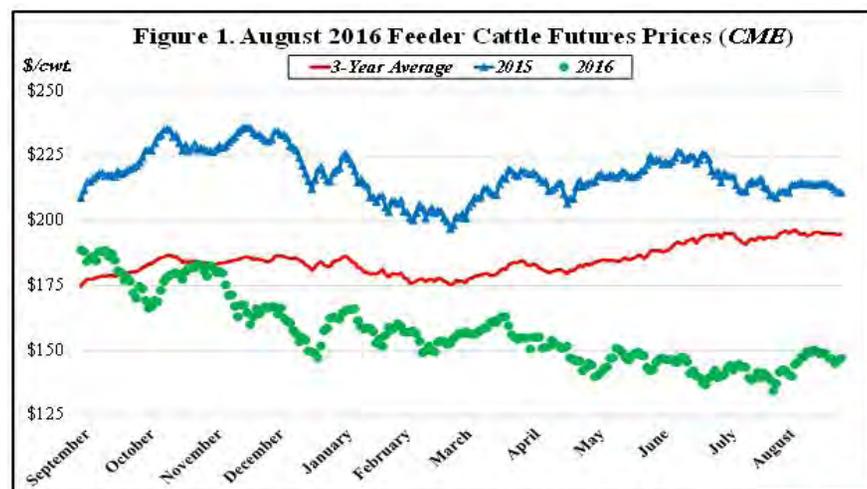
\$169.69/cwt. (\$933.30/hd. divided by 5.50 cwt.). The breakeven price includes production costs of \$765/hd., death loss of \$18.30/hd., family living withdrawal of \$100/hd., and growth capital and retirement of \$50/hd.

The Expected Cash Price is the price estimate that Florida cow-calf producers who market their feeder calves during the summer months should expect for 550 lb. feeder calves based on the daily assessment of the traders trading the August 2016 Feeder Cattle

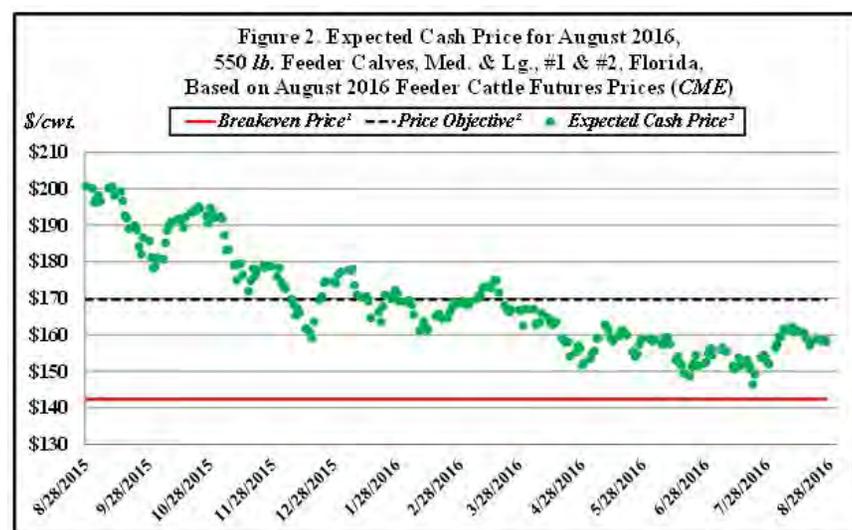
Futures Contract. The expected cash price is equal to the daily August 2016 Feeder Cattle Futures Contract closing price plus an expected August 2016 South Florida 550 lb. Feeder Calf Basis of \$12/cwt. The resulting Expected Cash Price is generated daily so that producers can evaluate marketing opportunities well in advance of their actual August 2016 marketing of feeder calves.

Note that the August 2016 Feeder Cattle Futures Contract began trading in late August 2015. In

Figure 2, the Expected Cash Price for feeder calves declined over time, but it stayed above the breakeven price allowing cattle producers to remain profitable in 2016. Additionally, the August 2016 Feeder Cattle Futures Contract during the first three months provided many producers with an opportunity to lock in profits above their price objective. This Florida Cattle Market Price Watch provides an example of how cattle producers can utilize cattle market price information to make decisions.



Beginning of Contract: \$188.70/cwt. End of Contract: \$146.11/cwt. Price Change: \$42.59/cwt.
August 2016 High: \$188.70/cwt. August 2016 Low: \$134.40/cwt. Price Range: \$54.30/cwt.



UF/IFAS Range Cattle Research and Education Center (RCREC) Soil and Water Sciences Program

Maria Silveira Associate Professor Soil and Water Sciences



Land application of biosolids is an environmentally sound management practice for disposal and recycling of wastewater residuals. Biosolids contain essential nutrients and organic matter that can improve soil fertility conditions and crop production. Perennial pastures are good candidates for receiving biosolids as a nutrient source because of their relatively high nutrient requirements relative to most agronomic crops. Although most biosolids applied to pastures convey significant agronomic benefits, concerns over accumulation of nutrients in soils and subsequent impacts on water quality limit land application of biosolids in Florida. Pastures represent the major cropping system where biosolids are recycled in Florida, yet limited information is available to document and support agronomically and environmentally-sound biosolids recycling programs in forage systems. Most studies of the implications of land application of biosolids were conducted under greenhouse and laboratory conditions, and extrapolation to field conditions is problematic. Although these previous research efforts were instrumental in developing guidelines for safe land application of biosolids in many areas of Florida and nationally, the results obtained from these studies are not universally applicable. Large-scale field trials are essential to accurately assess the risks and benefits of

land application of biosolids to pastures in Florida. In addition, the ability of biosolids to restore and protect soil quality needs further attention. Information is needed to establish soil fertility programs that promote ecosystem services such as soil organic matter accumulation and carbon sequestration while reducing farmer's dependence on commercial fertilizers. Pastures in Florida are typically low-input systems and have been historically under fertilized and often overgrazed. Biosolids can be valuable resources to improve the sustainability of degraded pastures and to restore ecosystem functions.

To address FCA Research Priority 9 (Land Application of Biosolids on Pastures), a field trial was established in 2015 at the UF/IFAS Range Cattle REC to evaluate the agronomic benefits of biosolids application on bahiagrass (*Paspalum notatum* Flugge) pastures. Bahiagrass, soil, and water quality responses will be evaluated and the results are expected to generate important science-based information suitable for demonstrating and promoting the agronomic and environmental benefits of land application of biosolids to pastures in Florida.

Dr. Silveira is in her 10th year at



the Center and is assisted in her program by Cindy Holley. Presently she advises 1 Ph.D. student, Yanyan Lu. She came to work at the Center from Texas where she had worked for a year at Texas A&M University. She received her B.S., M.S., and Ph.D. from the University of Sao Paulo in Brazil. She and her husband Joao live in Wauchula.

E-mail: mlas@ufl.edu
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Speaking at the 2010 Field Day.

Speaking to the the Long-Term Agroecosystem Research group, 2016.



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UF/IFAS Range Cattle Research and Education Center (RCREC) Agronomy Program

Joao Vendramini Associate Professor Forage Management



The forage management program has focused on development and utilization of new limpgrass cultivars. A research project concluded in 2015 demonstrated that the new hybrid "Gibtuck" had greater forage accumulation and nutritive value than Floralta when stockpiled from October to January at Ona. In addition, stockpiled Floralta and Gibtuck had sufficient herbage quantity and quality to maintain the body condition score of a mature Brangus cows in the first month (January) of grazing with no supplementation. Although there was sufficient forage quantity to stock the pastures with 1 cow/0.75 acres in February and March, supplementation was required due to the limiting nutritive value of the pasture. A recent research project was initiated in 2016 to evaluate the fertilizer use efficiency of the new limpgrass cultivars and investigate further the potential of limpgrass hybrid called number "1" for potential release. Although number 1 was not included in the first round of release in 2014, we believe that it has some positive traits that may be beneficial to forage and livestock production in Florida. The results from this research project will be available in 2017.

The use of warm-season legumes to increase nutritive value and offset the cost of nitrogen

fertilizer in warm-season grass pastures has also been a topic of interest in the forage management program. The initial project with *Arachis pinto* (perennial peanut propagated by seed) was finalized and it was concluded that pinto peanut is a perennial warm-season legume when intercropped in warm-season grass pastures in South Florida. Pinto peanut was overseeded into established Jiggs pastures and increased ground cover and contribution in the total forage mass of the pastures in 2 years. However, the production of the cultivar tested, "Amarillo," was limited to 5% of the total herbage mass of the pasture. Pinto was also seeded with Argentine bahiagrass in newly established pastures and it increased ground cover in the first year after establishment. The next step on the pinto peanut development project will be to try to find more productive cultivars and a reliable and cost-effective source of seed.

The use of haylage, baylage, or round-bale silage by beef cattle producers has increased in the last 5 years due to the development of new wrapping machines. The forage management program has researched different methods to improve bermudagrass, stargrass, and limpgrass preservation as haylage. Wilting the grass to a 50% dry matter concentration has been the most effective management practice to decrease spoilage and improve fermentation. Adding molasses at 2% (40 lb molasses/1 ton of forage) has also increased nutritive value and fermentation of warm-season grass haylage in South Florida. Currently, a series of commercial inoculants have been tested but their effects were not consistent and further evaluation will be necessary to identify those that

consistently improve fermentation of warm-season grass haylage in Florida.

Dr. Vendramini is in his 10th year at the Center and is assisted in his program by Hiran Silva. Presently he advises 1 Ph.D. student, Joao Sanchez and 1 M.S. student, J.K. Yarborough. Joao came to work at the Center from Texas where he had worked for a year at Texas A&M University. He received his B.S. and M.S. from the University of Sao Paulo in Brazil and his Ph.D. from the University of Florida. He and his wife Maria live in Wauchula.

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Speaking at the 2010 Field Day.



Teaching at the 2014 Youth Field Day.

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The University of Florida Forage Extension Laboratory

By Joao Vendramini

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.

How to submit forage samples and what testing results are provided?

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

Forms can be printed from the 'Forage Extension Lab' page on the RCREC website or completed on site if you drop off your samples. You may also mail samples to: Forage Extension Laboratory, UF/IFAS, Range Cattle REC, 3401 Experiment Station, Ona, FL, 33865. Include your completed form and check (\$7 per sample; payable to 'University of Florida').

Beyond understanding the nutritive 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:



Example: newly arrived to the lab, a hay sample and form.

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 (<http://edis.ifas.ufl.edu/an190>).

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 forage 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

Continued on next page...



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	387	6.9 ± 3.0	51 ± 3	--	--
Bermudagrass	792	10.7 ± 3.1	52 ± 4	41 ± 3	74 ± 3
Stargrass	220	8.7 ± 3.8	51 ± 5	47 ± 9	70 ± 15
Limpograss	478	4.3 ± 3.0	54 ± 9	41 ± 4	70 ± 6
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.					

The University of Florida Forage Extension Laboratory

Continued...
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, mix well, and extract 2 handfuls for a single sample. Place the sample in a plastic bag, seal it, and mail. 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 in a clean container, and extract 2 handfuls for a single sample to send to the laboratory. Immediately place the sample in a plastic bag, seal it, and mail. If the sample is not mailed right away, place it in a refrigerator.

Pasture samples can be collected and analyzed by plucking the forage with your fingers at the height

the animals are grazing it. To get a good representative sample, be sure to take random samples in various locations throughout the pasture. Scissors or some other cutting device may also 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. Mix all the clippings in a clean container and take 2 handfuls placing the grass in a sealable plastic bag for shipping. Remember -Your results are only as good as your sample!

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 limpgrass 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.

Results

The turnaround time for sample processing is approximately 2 weeks from the time of receiving. If you need assistance with reading your results, contact your County Agricultural Extension Office (<http://sfyl.ifas.ufl.edu/map/index.shtml>) or the UF/IFAS Forage Extension Laboratory at jv@ufl.edu.



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New Grass Varieties and Plant Material

By **Andrea Dunlap**

In addition to the forage analysis service the UF Forage Extension Lab provides, the UF/IFAS Range Cattle REC also sells a limited amount of plant material (vegetative cuttings) of improved grass varieties each summer. Those interested can purchase enough plant material to create their own seedbed (about 20–40 bales or 1–2 rolls; enough for a one acre seedbed). For tips and advice on pasture renovations, speak with the livestock or agriculture agent in your county at your local county extension office. They may also suggest a plant material supplier nearby if not, you can check with the RCREC in the spring to see if the grass variety of interest in will be one they will have available. If so, the person interested can have their name added to a request list for that

grass. The grass list is typically created mid–spring and plant material cutting usually begins in July, or when soil moisture is just right for harvesting and planting.

On August 7, 2014 two new limpgrass cultivars were released, Gibtuck, named in recognition of the contributions of Gilbert Tucker to the Florida cattle industry and Kenhy, named in recognition of the contributions Dr. Ken Quesenberry has made as a forage breeder to the Florida cattle industry. Since that date these new grass varieties have been established at several locations in south central Florida.

View this helpful EDIS article, *Five Basic Steps to Successful Perennial Pasture Grass Establishment From Vegetative Cuttings on South Florida Flatwoods*:
<http://edis.ifas.ufl.edu/ag125>



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Bert Tucker standing in Gibtuck.



Dr. Ken Quesenberry standing in Kenhy.



Gibtuck and Kenhy limpgrass varieties released and developed through the efforts of Dr. Lynn Sollenberger, Dr. Joao Vendramini, Bert Tucker, Dr. Ken Quesenberry, and Dr. Ann Blount.

A Forage and Weed Nursery for Pasture Management Education

By Brent Sellers

The forage and weed nursery located at the Range Cattle Research and Education Center near Ona, FL contains 205 species. Of these 205 species, there are 50 forages, and 155 weed species, with 7 of the 155 weeds being commonly found aquatic weeds. This nursery represents forage species that are utilized on both improved pastures and native rangeland. The purpose of the forage and weed nursery is to increase the awareness of ranchers on particular topics including forage quality, pest susceptibility, fertility, livestock stocking rates, plant poisoning, and other important factors related to grazing management. The weed component of the nursery serves as an identification resource for ranchers and ranchette owners.

Beginning in 2006, 205 2 by 2 ft plots were constructed and bordered with recycled 2 by 6 in. plastic timbers. While most species have been planted directly into the soil, some aquatic and invasive species with creeping root systems were buried in 20 gallon plastic barrels. Although we have room for 205 species, 175 have currently become established; however, we are currently resetting the weed garden to help reduce weed contamination in a majority of the weed boxes.

Several extension programs, including grower meetings and county faculty in-service trainings, have been conducted at the RCREC that have involved the use of the weed and forage nursery since its completion in 2006. The nursery is utilized as a resource at these programs to help solidify topics and identification characteristics of troublesome and poisonous plant species. When appropriate, discussions on management of forage species as well as weed species is provided. Time is often spent showing the differences in growth habit of



several of the commonly used forages, their advantages, and potential pests.

Ranchers and ranchette owners who attend educational events or simply stop in at the forage and weed nursery will be able to learn various forage and weed species. Upon further examination, they will be able to learn which forage is best suited for their given situation and what weeds can be expected in their pasture. After learning which forage is best suited for their situation, they can find additional information at the Range Cattle REC concerning proper management and fertility, which can increase the competitiveness of the forage against many of the weed species in Florida. Cultural inputs, such as these, may help growers avoid herbicide applications, which will help them reduce production costs and potentially decrease potential environmental risks associated with herbicides. The poisonous plants located in the forage and weed nursery also give growers an idea of how plant pests can reduce both human and animal welfare.

Funding for the forage and weed nursery has been provided by IPM Florida, Dow AgroSciences, and generous donations of mulch material by Florida Fence Post in Ona. We appreciate their support of this valuable educational resource.



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Average weight differences	
Ivermectin Pour-On (Durvet)	752
DECTOMAX Pour-On	773
21 lb. difference	

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Pounds

Data on file, Study Report No. 2339D-02-003D, Zoetis Inc.

Compared with ivermectin pour-on, cattle treated with DECTOMAX Pour-On demonstrated greater live weight at slaughter.¹

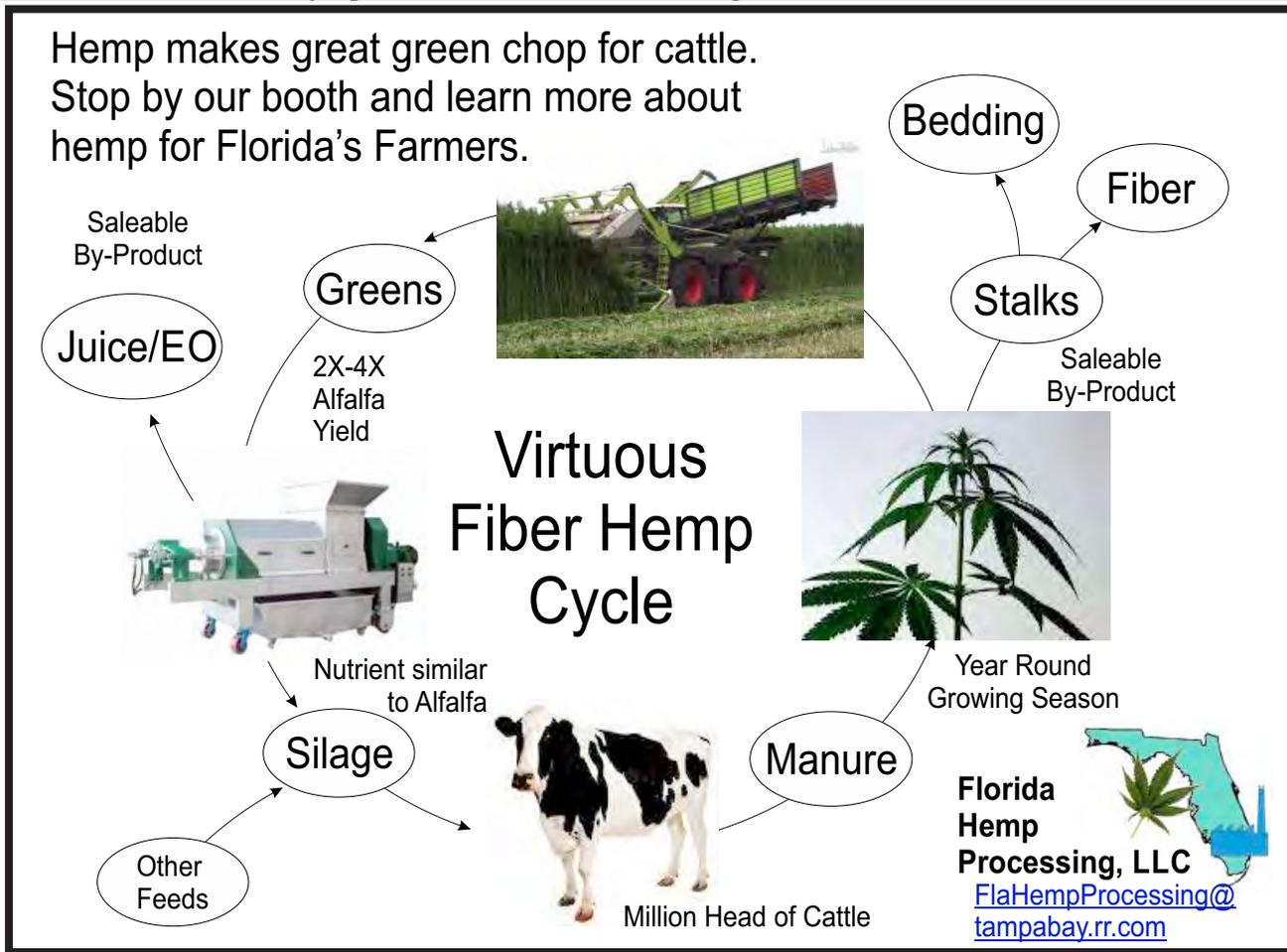
Internal parasites controlled in cattle:

- Gastrointestinal roundworms
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Real-world Solutions at Your Finger Tips - Resources Available to you Through Technology

By Bethany Wight

Sharing and gathering information about the cattle industry in the 1990's involved mail correspondence, a phone call, or visiting a neighbor or research facility. Little was known about technology and the endless possibilities it would unfold. Over 25 years ago the World Wide Web was invented by a British computer scientist and physicist, Sir Tim Berners-Lee, and the world was forever changed. We could have never imagined that we would shop from our living rooms, communicate instantaneously with someone across the world and have information available at our fingertips. Today there are over 1 billion websites and 3 billion internet users a year. The UF/IFAS Range Cattle Research and Education Center (RCREC) at Ona has grown with the development of technology and today researchers are able to access and share information in ways unimaginable to previous generations. The RCREC launched its website around 1996 and today there is a plethora of information available online at <http://rcrec-ona.ifas.ufl.edu>. As we celebrate 75 years of research and extension services, we want to inform you of the many resources available through technology from the RCREC.

On the RCREC's website you will find information on each



First mail delivery to the RCREC in 1952.

of the faculty members, their research and extension projects, and extension resources. Need help calculating your cow-calf budget or feed energy values? Check out the online calculators. Looking for detailed information on a specific topic? Try reading one of the many publications available on topics such as cattle breeding, supplements, nutrition, and weed control. In the virtual classroom section of the website you will find videos and slides on a variety of topics from previous field days, webinars, instructional material on forage testing, and more. Have an agriculture related question? From the homepage, click on the link to 'UF/IFAS Extension – Solutions for your Life': <http://sfyl.ifas.ufl.edu/map/index.shtml> to locate your UF/IFAS County Extension Office and your neighborhood expert. If additional help is needed you can submit a question directly to the RCREC by using the 'Ask a question' tool on the homepage. If you are interested in having a forage sample analyzed by the Forage Extension Laboratory at the RCREC, it couldn't be easier. Simply click the Forage Extension Laboratory link on the homepage, print off the needed form and send it, your sample, and payment. There you will also find information on the best way to collect samples (pasture, hay, silage).

The latest news, timely announcements, and upcoming events can easily be found on the website. In the 'In Focus' section of the homepage you will see timely announcements and news. Visit the 'News' section to view quarterly newsletters, all the way back to 2011; and through the 'Publications' page, in the Range Cattle REC section you can access the newsletter archives which span 1998-2004. You can easily view upcoming events in the 'Calendar'. If you are interested in joining our mail list to receive updates by e-mail or regular mail about upcoming events and our quarterly newsletters, click 'Join the Mailing List' to sign up or call us at 863-735-1314.

Each month a RCREC faculty member contributes an 'Ona Report' article to the Florida Cattleman & Livestock Journal. These reports are now offered by webinar in the 3rd week of each month. If you live nearby, you are welcome to attend these presentations in person. They are held in the Grazinglands Education Building at noon on a day selected by the presenter. To participate in the webinar you simply need a computer or device with internet –no special software is needed, and there is no fee to attend. Once registered you will receive a confirmation email with information on how to join the webinar the day of the

event. Through this convenient technology of webinars, interested persons can participate in these presentations from anywhere with internet access.

The RCREC also has several other program based websites that provide even more information. If you are interested in learning more about wildlife on your property, visit the Rangeland Wildlife and Ecosystem program's website at <http://www.rangelandwildlife.com/>. There you can learn about current wildlife research projects, such as assessing feral swine and coyote populations. Additionally, there is a series of Florida wildlife factsheets that provide general information on common rangeland wildlife species. Another great resource is the UF Weed Science website at <http://weedext.ifas.ufl.edu/>. The weed science site provides information for managing and controlling weeds in various crops, forages, and natural areas. There are also a series of weed science factsheets that provide more detailed information for managing weeds on your property.

Thanks to modern technology real time weather data is also available from Ona through the Florida Automated Weather Network (FAWN) site located at the RCREC. Visit the site at <http://fawn.ifas.ufl.edu/> to access information from Ona or any of the other 41 sites located through-

out the state. You can view the latest observations, graphs, and download data. You can also sign-up to receive freeze alerts from FAWN on your phone or through e-mail. The FAWN site at Ona was established in 1998.

One of the most recent technology endeavors the RCREC has undertaken is social media. The RCREC is proud to be connected online through twitter @UF_IFAS_RCREC, Facebook @UF_IFAS.RCREC, and YouTube at <https://www.youtube.com/channel/UCw8aHPi8cck9Kvh-oDGT4tA>. Consider liking us and following to see all the latest happenings and upcoming events.

As you see, the RCREC has come a long way since the first on-site mail delivery in 1952 and the creation of our website in 1996. Today we are proud to be able to share timely research and extension information with you through the use of technology. We will continue to develop online tools and resources to provide applicable solutions to real-world problems for cattle producers and grazinglands managers.



Educational Opportunites: Webinars, field days, and more!



Christa Kirby (Manatee Co. Ext.) teaches about feedstuffs at the 2014 Youth Field Day.

By Andrea Dunlap

Each year the UF/IFAS Range Cattle Research and Education Center (RCREC) and its faculty host various educational events. Each month a RCREC faculty member contributes an 'Ona Report' article to the Florida Cattleman & Livestock Journal. Beginning this year the Ona Reports have also be offered by webinar. You may take part in the webinar from anywhere as long as you have internet. No special software is needed and there is no fee to attend. Simply register before the event and an e-mail will be sent to you with a link to connect to the webinar at the time of the event. A few minutes before the event is scheduled to begin, click on the link and go through the

steps to join the event – this will take a few minutes. Once you are connected, check your sound. The Ona Report Webinars are held at noon, usually in the 3rd week of the month in which they are published in the Journal. During the webinar, you may use the questions feature of the control panel to type in any questions you may have. During the Q & A session at the end of the presentation, your question will be addressed. Afterwards you will receive a brief survey by e-mail, we appreciate your responses.

Field days are a great way to share information. The primary RCREC field day is held every 18 months, so that it alternates between April and October, allowing faculty to highlight cool and warm season projects. It is usually a full day program with sponsor booths and faculty presentations in the morning, a steak lunch at noon prepared by the Cloverleaf Foundation of Hardee County, followed by an afternoon of field tours. These field visits allow attendees to see research plots first hand to learn about current projects. The Pasture Weed Field Day is held approximately every 2-3 years as new methods of pasture weed control are developed and need to be shared. These events may be held at the RCREC or hosted by a ranch. The next event will be held at a date yet to be determined

at Deseret Ranch in St. Cloud. Youth of all ages enjoy the day long Youth Field Day, which until recently was held annually. The next one is tentatively scheduled for June 2018. At these events, students attend class sessions in groups and engage in hands-on-learning about various agriculture and science topics. The afternoon provides an educational learning expo for students to visit with scientists, college representatives, and agriculture industry representatives.

Faculty also participate in educational sessions presented by the South Florida Beef Forage Program (SFBFP) and the University of Florida (UF). Some SFBFP events include the Grazing Management School, Herd Health Seminar, Winter Supplementation Seminar, and the Reproductive Management School. See their web calendar for upcoming events: <http://sfbfp.ifas.ufl.edu/events.shtml>. Faculty also occasionally share research findings at topic specific field days such as the upcoming Perennial Peanut Field day, the Cogongrass Workshop, the Corn Silage Field Day, or the Ona White Angus Field Day. You may also find them as part of the UF Beef Cattle Short Course that is held each year in May. Aside from local events, faculty often engage in professional conferences and meetings, and presentations at events in var-

ious locations around the United States. Their work occasionally even takes them overseas.

To learn more about these and future events, give us a call or e-mail us to join our mail list (863-735-1314 or ona@ifas.ufl.edu).

Once in a while we receive a call or e-mail from someone interested in becoming a student at UF. Although we have students here we are not the place to begin the path to UF enrollment, but we can get you going in the right direction. Those interested in UF

educational opportunities can visit <http://admissions.ufl.edu/start.html> to learn how to apply and see all the options for taking classes. There are also helpful links to colleges and schools, majors and minors, graduate programs, and so much more including tuition information and scholarships. If you have specific questions or can't find what you're needing online, contact the admissions office at 352-392-1365 or the welcome center at 352-392-2959.



Brent Sellers speaking at the 2014 Pasture Weed Day held at Brighton.



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UF/IFAS Extension Agents of the South Florida Beef Forage Program Salute the Ona Range Cattle Research & Education Center for 75 Years of Service

by Lindsey Wiggins

The Range Cattle Research & Education Center plays a vital role in the success of extension education. The research efforts of the Center Specialists are always relevant to South Florida issues addressed by County Extension Agents who rely on research based information to disseminate to their clientele. Fortunately, Ona, Range Cattle REC Specialists and County Extension Agents prioritized a working relationship with one another and formed the South Florida Beef Forage Program in 1981. Together, the Extension Agents and Specialists provide information to ranchers through educational seminars, tours, publications, and webinars.

In addition to the Range Cattle REC Specialists, the South

Florida Beef Forage Program (SFBFP) consists of County Extension Agents from: Charlotte, Collier, DeSoto, Glades, Hardee, Hendry, Highlands, Lee, Manatee, Okeechobee, Polk, and the Seminole Tribe. The regional teaching efforts of the group address many issues; including: herd health, pasture management, soil & water quality best management practices, reproductive management, cattle nutrition, wildlife interactions, and equine management. These issues are prioritized by the SFBFP Advisory committee, comprised of ranchers and ranch managers from South Florida.

To learn more about the UF/IFAS South Florida Beef Forage Program, please contact your county Livestock Extension Agent or visit: <http://sfbfp.ifas.ufl.edu/>. We are also on Facebook.



• Charlotte, Collier, Glades, Hendry, & Lee	Lindsey Wiggins (863-674-4092)
• DeSoto	Deanna Thompson (863-993-4846)
• Glades	Tyce Prevatt (863-946-0244)
• Hardee	Jonael Bosquez (863-773-2164)
• Hendry	Sonja Crawford (863-674-4092)
• Highlands	James McWhorter (863-402-6540)
• Manatee	Christa Kirby (941-722-4524)
• Okeechobee	Lauren Butler & Colleen Larson (863-763-6469)
• Polk	Bridget Stice (863-519-1048)
• Seminole Tribe	Aaron Stamm (863-763-5020)



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CONGRATULATIONS AND THANK YOU FOR 75 YEARS OF EXCELLENCE!



[HTTP://SFBFP.IFAS.UFL.EDU](http://SFBFP.IFAS.UFL.EDU)

It is through the efforts of the Range Cattle Research & Education Center that the UF/IFAS South Florida Beef Forage Program can deliver unbiased, research based information to ranchers striving to increase their bottom line.

2017 Programs:

- Herd Health Seminar
- Grazing Management School
- Winter Supplementation Seminar
- Reproductive Management School

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Weather Data Has Been Collected at Ona Since 1942



Florida Automated Weather Network (FAWN) site at Ona.

By Andrea Dunlap

The collection of weather data at Ona began in June 1942 and has been collected daily ever since. Readings were first made through the use of standard weather instruments until 1997 when new weather equipment and computer software were installed so that observations could be collected daily through the use of Weather Watch 2000 (Campbell Scientific, Inc.). Manual readings were continued to ensure accuracy. The method of data collection once again changed in 2006 when the UF/IFAS Range Cattle Research and Education Center (RCREC) began retrieving data from the Ona Florida Automated Weather Network (FAWN) site.

Throughout Florida there are 42 FAWN sites reporting weather readings every 15 minutes which can be viewed: <http://fawn.ifas.ufl.edu>. Sites are solar powered and measurements include: temperature readings: soil, air at 60 cm, air at 2 m, and air at 10 m; relative humidity; rainfall; barometric pressure; solar radiation; wind speed; wind direction; temperature: dew point and wet bulb; and evapotranspiration (ET). The FAWN site at Ona was established on March 10, 1998. Every 8 weeks each site is visited for maintenance and once a year sensors are benchmarked to ensure they are in proper working order. Additional visits are occasionally necessary when there is a problem. Maintenance

and repairs are done by Lee Staudt, who is an IT Specialist and Sr. Field Site Technician with 28 years of experience. He is assisted by Steve Cox. Steve is retired from banking and began working for FAWN 2 years ago.

At 10:15 p.m. on July 27, 2016, the 60 cm temperature probe at the FAWN site in Ona stopped working. It had been showing signs of failing through faulty readings leading up to its final crash (see the blue line in the graph photo). On August 2, FAWN Technicians Lee and Steve replaced the probe and its shield. According to Lee probes usually work 5-10 years, and insects and wild animals occasionally cause damage. While this probe was down the RCREC collected temperature readings from the 2 m probe, which is usually within a half to one degree of the 60 cm reading. Weather data from Ona is reported to the Herald Advocate each week and recorded for publication in the annual UF/IFAS RCREC Climatological Report. Reports for 2000-2015 can

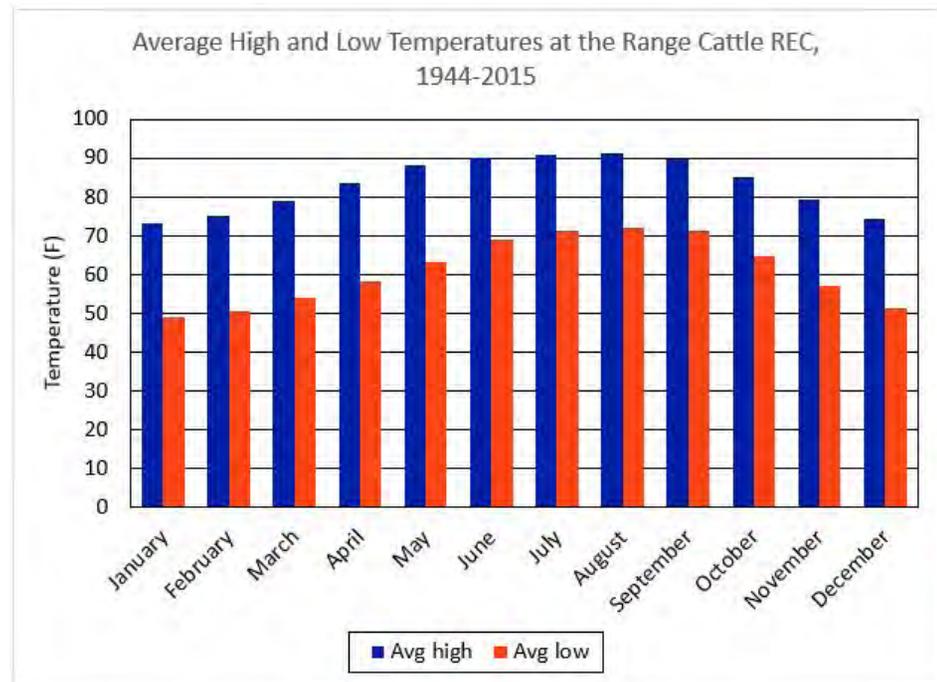
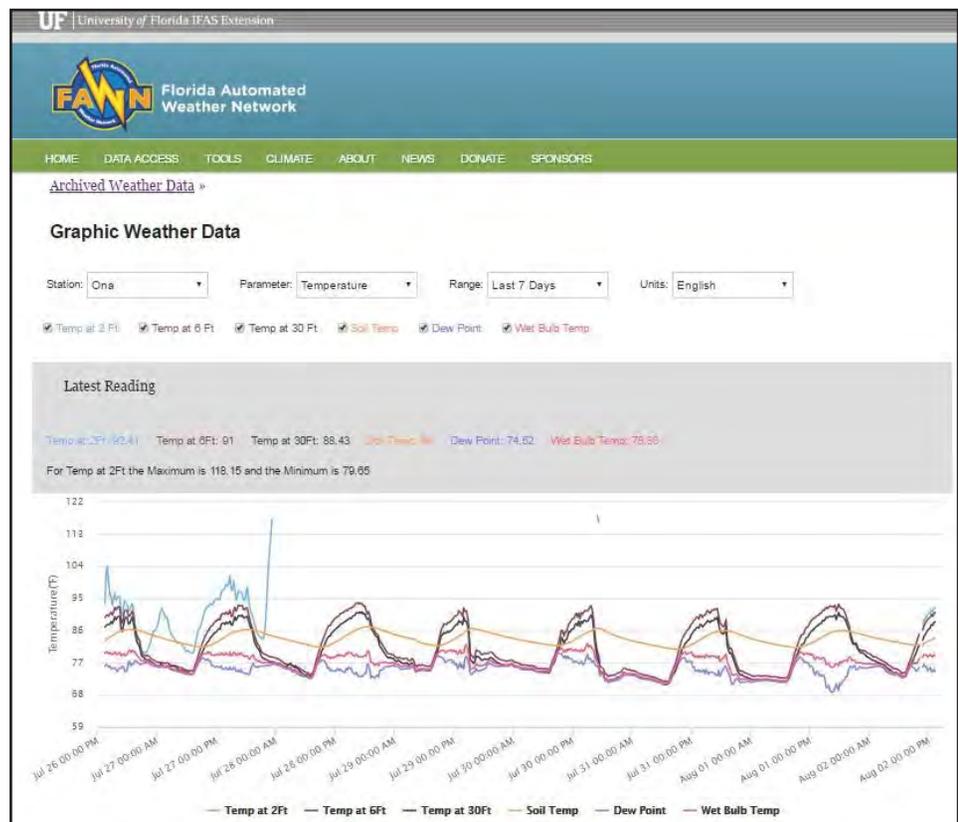


Lee Staudt and Steve Cox, FAWN Technicians.

be viewed and printed from the Range Cattle REC section of the publications page of our website (<http://rrec-ona.ifas.ufl.edu/>). 2015 Weather Data and Historic Records Annual rainfall for 2015 totaled 53.78 inches, which was 0.47 inches greater than the 74-year average of 53.31 inches. The lowest annual total rainfall on

record was observed in 2000 when 32.02 inches were measured, and the greatest annual rainfall total observed was in 1959 when 78.82 inches were recorded. The greatest amount of rain recorded in a 24-hour period is 11.23" on 23 June 1945 (a no name hurricane made landfall just to the south of the big bend area; View track: http://www.nhc.noaa.gov/news/20130619_pa_reanalysis.pdf). The highest temperature observed during 2015 was 97.3 °F on 22 August while the extreme low temperature for 2015 occurred on 20 February when the temperature fell to 28.10 °F. The record extreme high is 103.0 °F which was recorded 31 May and 1 June 1945, while the record extreme low 18.0 °F was recorded in 13 January 1981.

gov/news/20130619_pa_reanalysis.pdf). The highest temperature observed during 2015 was 97.3 °F on 22 August while the extreme low temperature for 2015 occurred on 20 February when the temperature fell to 28.10 °F. The record extreme high is 103.0 °F which was recorded 31 May and 1 June 1945, while the record extreme low 18.0 °F was recorded in 13 January 1981.



Graduate and Exchange Visitor Student Programs

Range Cattle REC Graduate Students - 2016

Wes Anderson



Advisor: Dr. Raoul Boughton
Degree program: Ph.D. Wildlife Ecology and Conservation
Dissertation topic: Impacts of an invasive ecosystem engineer upon Florida rangeland amphibian communities inhabiting seasonal wetlands
Hometown: Denver, Pennsylvania
Previously attended: Davidson College; Texas Tech University

Jose Arce-Cordero



Advisor: Dr. John Arthington
Degree program: Ph.D. Animal Science
Dissertation topic: Understanding the impacts of prepartum zinc nutrition on measures of beef calf health and productivity
Hometown: Alajuela, Alajuela, Costa Rica
Previously attended: Colorado State University; University of Costa Rica

Sam Baraoidan



Advisor: Dr. Raoul Boughton
Degree program: M.S. Wildlife Ecology and Conservation
Thesis topic: Coyote interactions with cattle and feral swine in Florida rangelands
Hometown: Hollywood, Florida
Previously attended: University of Florida

Julie Burford



Advisor: Dr. Raoul Boughton
Degree program: M.S. School of Natural Resources and Environment
Thesis topic: Florida burrowing owl response to disturbance on rangelands in Florida
Hometown: Gainesville, Florida
Previously attended: University of Florida

José Luiz Dias



Advisor: Dr. Brent Sellers
Degree program: Ph.D. Agronomy
Dissertation topic: Implementation of integrated management practices to manage smutgrass (*Sporobolus indicus*) populations in pastures
Hometown: Ribeirão Preto, São Paulo, Brazil
Previously attended: São Paulo State University

Yanyan Lu



Advisor: Dr. Maria Silveira
Degree program: Ph.D. Soil and Water Sciences
Dissertation topic: Agronomic and environmental impacts of land application of biosolids to bahiagrass pastures in Florida
Hometown: Shijiazhuang, Hebei province, China
Previously attended: Shandong Agriculture University

Logan Martin



Advisor: Dr. Brent Sellers
Degree program: M.S. Agronomy
Thesis topic: Tolerance of perennial peanuts (*Arachis pintoi* and *Arachis glabrata*) to pre- and post-emergence herbicides
Hometown: Valley Center, Kansas
Previously attended: Missouri State University

Matheus Piccolo



Advisor: Dr. Philippe Moriel
Degree program: M.S. Animal Science
Thesis topic: Puberty achievement of beef heifers
Hometown: Jundiá, Sao Paulo, Brazil
Previously attended: São Paulo State University

Juliana Ranches



Advisor: Dr. John Arthington
Degree program: Ph.D. Animal Science
Dissertation topic: Genetic differences between copper and selenium metabolism among *Bos taurus* (Angus) and *Bos indicus* (Brahman) cattle
Hometown: Limeira, São Paulo, Brazil
Previously attended: São Paulo State University

Joao Sanchez



Advisor: Dr. Joao Vendramini
Degree program: Ph.D. Agronomy
Dissertation topic: Evaluation of management practices to improve *Arachis* spp. productivity in South Florida
Hometown: Mineiros do Tiete, São Paulo, Brazil
Previously attended: University of São Paulo

Gleise da Silva



Advisor: Dr. Philippe Moriel
Degree program: M.S. Animal Science
Thesis topic: Effects of timing of vaccination and frequency of energy supplementation on growth and immunity of stressed beef calves
Hometown: Recife, PE, Brazil
Previously attended: Federal Rural University of Pernambuco

Elizabeth White



Advisor: Dr. Raoul Boughton
Degree program: Ph.D. School of Natural Resources and Environment
Dissertation topic: Comparative biology of urban and rangeland Florida Burrowing Owls
Hometown: Minneapolis, Minnesota
Previously attended: Skidmore College

JK Yarborough



Advisor: Dr. Joao Vendramini
Degree program: M.S. Agronomy
Thesis topic: Critical levels of potassium tissue concentration in bahiagrass and bermudagrass
Hometown: Geneva, Florida
Previously attended: University of Florida; Abraham Baldwin Agricultural College

Ke Zhang



Advisor: Dr. Raoul Boughton
Degree program: M.S. Wildlife Ecology and Conservation
Thesis topic: Coyote's behavior and ecology on rangeland in central Florida
Hometown: Beijing, China
Previously attended: Beijing Forestry University

Olivia Zugay



Advisor: Dr. Brent Sellers
Degree program: M.S. Agronomy
Thesis topic: Optimizing glyphosate rates for control of weedy grasses in hybrid bermudagrass
Hometown: Fellsmere, Florida
Previously attended: University of Florida; Indian River State College



Graduate Students

Graduate student training is a high priority at the UF/IFAS Range Cattle Research and Education Center (RCREC), which offers outstanding laboratories and field resources for students desiring to pursue careers in livestock and forage production, as well as the enhancement of natural resources that are associated with grazing landscapes. Students complete their course work at the University of Florida's main campus in Gainesville and come to Ona to do necessary research or to write. Often students continue their classes while living at Ona through internet options or by polycom (video conferencing).



Graduate Students who participated in the 2016 Youth Field Day. Left to right, top to bottom, Logan Martin, Sam Baraoidan, Gleise da Silva, Juliana Ranches, JK Yarborough, Yanyan Lu, Jose Luiz Dias, Wes Anderson, Joao Sanchez, and Connor Crank.

Exchange Visitors

Each year, the UF/IFAS Range Cattle Research and Education Center hosts 12-18 exchange visitors. These international students come by invitation and work under the direction of a faculty supervisor for 3-12 months as interns, short-term scholars, or research scholars. Here they are able to advance their research methods, learn about American culture, and improve their English language skills.



Exchange Visitors, 10/2016. Left to right, Nayara Alencar, research scholar; Caio Carnelos, short-term scholar; Umberto Pardelli, intern; Hiran Silva, short-term scholar/post doctorate, and Amanda Baldo, research scholar.

Student Activities

By Andrea Dunlap

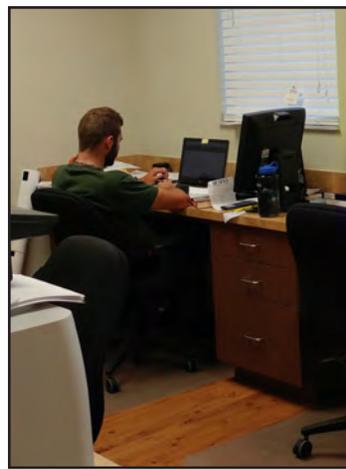
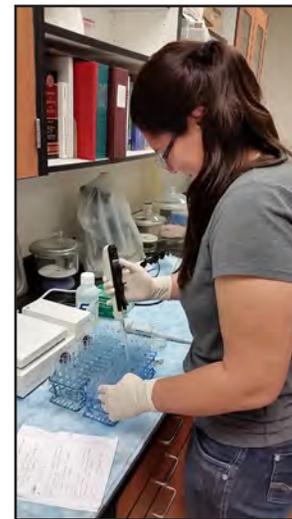
Being a student at Ona, your days are full. Depending on your area of study, there are cattle to feed, forage plots to be harvested, soil and water samples to collect, green house studies to tend, lab and research work to do, forage samples to grind, papers to write, and the list goes on and on. Some studies require evening duties and often weekend work. When free time is possible students squeeze in short trips to sight see. The beach and theme parks are popular destinations. Occasionally

they'll go on an excursion with a RCREC staff or faculty member's family or just have a bar-b-q at the student house.

The Beckleys

A few years back one of our students who was visiting from Brazil as an exchange visitor, expressed an interest in improving his English and was seeking lessons. After a bit of checking around, I spoke to Jan Beckley and she and her husband Jim decided to give it a go - they've been at it ever since. They vol-

unteer their time to meet with our students, usually one evening during the week, to introduce them to American culture, give them reading material, engage in conversation, and help them with whatever their particular needs maybe. Since they became involved in 2013, they have engaged ALL of our students inviting them to their home for supper and for holiday gatherings and to church, community, and athletic events. We are very grateful for their time and all they do to enrich our student's lives.



Congratulations!!
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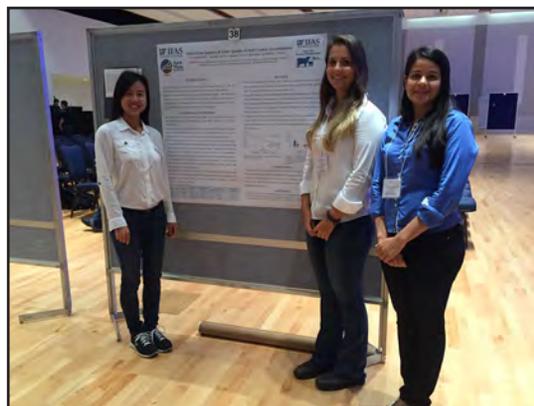
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Campaign for Ona

By Dr. John Arthington

The Campaign for Ona was established in 2008 with the initial aim of constructing a Graduate Residence to support our Center's emerging commitment to graduate student training. Now, eight years later, the campaign has expanded to the construction of the Cattlemen's Conference Room, the Grazinglands Education Building and a commodity storage facility. All of these facility improvements have been made possible by charitable giving from the stakeholders we serve. In addition to these new facilities, the Campaign for Ona has included 5 new Endowments totaling nearly \$700,000 with

the newest emerging from a faculty-driven commitment to endow \$400,000 from the sale of the Ona White Angus herd. Further, an annual gift commitment from a leading allied industry partner is used to fund a graduate student fellowship. These building gifts, endowments, and fellowships will serve the Center's programs long into the future. In fact, charitable giving is exactly that - an investment in our future. There are many ways to become involved in the Campaign for Ona. Please contact us to learn more.

Call at 863-735-1314 or visit: <http://rrec-ona.ifas.ufl.edu/give.shtml>.



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Graduate Student Fellowship
 recipient
Gleise Medeiros da Silva



The Ona White Angus
Endowment

UF/IFAS Range Cattle Research and Education Center ***Established funds and endowments***

Range Cattle REC General Fund



Dr. Herb and Muncy Chapman's
Excellence Endowment Fund



Florida Cattlemen's Endowment,
established by Mr. Don Plagge



Adams Ranch Endowment



Elver M. Hodges
Forage Production and
Management Fund



UF/IFAS Range Cattle REC Buildings Made Possible Through Generous Gifts

Through gifts the UF/IFAS RCREC has improved its facilities, and by them it's outreach.



Graduate Student House completed in 2009

The graduate student house has allowed for growth of the student programs, having space for four male and four female students.

Made possible by a generous gift from the Florida Cattlemen's Foundation.

Grazinglands Education Building completed in 2014

The Grazinglands Education Building provides space for meetings and programs. It seats 80 comfortably, has a complete kitchen, stage area, and bathrooms.



Made possible by generous gifts from The Mosaic Company Foundation and the Florida Cattlemen's Foundation.



Grill made possible by a generous gift from Syfrett Feed.



Commodity Storage Facility completed in 2009

These buildings were made possible through the Campaign for Ona.

Cattlemen's Conference Room completed in 2009



Buildings & Grounds 2016



Aerial view of offices, looking toward the east.



Administrative Office, completed 1969.



Office Outdoor Sitting Area, completed 2016.



Original office building today.



Bathrooms ajoined to the administrative office, completed 2015.



Wildlife and Forage Lab, completed 1964. Soon to be removed for the construction of 2 new labs, offices, and a meeting room.



Soil and Forage Laboratory and Cattlemen's Conference Room, completed 2009.



Faculty Services Building, completed 2009.



Greenhouse, completed 2005.

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Buildings & Grounds 2016



Aerial view of farm, looking toward the south.



Guest House, completed 1942.



Graduate Student House, completed 1942.



Field Research Facility (shop, equipment barn, farm offices, and breakroom), completed 2008.



Feeding facility (a.k.a. Motel 6).



Forage Driers, completed 2016.



Feeding facility (a.k.a. the Hilton)



View of pens at the Hilton.



Cowpens, renovated 2016.



Commodity Feed Building, completed 2009.



Sign at CR 663 and Goosepond Road, completed 2009.

Staff Photos



Ryan Nevling feeding the replacement heifers.



View inside the feed barn. Preparing feed buckets to go out to assigned pastures.



Julie Warren filling buckets with molasses.



Putting out hay.



Dr. Raoul Boughton and Bethany Wight collecting data and fitting a GPS collar on a sedated coyote.



Bethany Wight makes adjustments to the RCREC drone.



Baling grass planting material. Jacob Miller, Brittany Dunlap, Cody Lastinger, and others.



Wyatt Kofke, Cindy Holley, Dr. Maria Silveira, and Ryan Nevling installing lysimeters for the biosolids study.

Staff Photos



Lauria Gause at the RCREC front desk.



Christina Markham in the business office.



UF/IFAS Range Cattle REC Faculty, Staff, and Students at the 2016 Youth Field Day in June.

Joseph Noel working in the greenhouse.



Herdsman, Austin Bateman moving cattle.



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What is FFA?

by the Hardee Sr. FFA Officers

FFA is an extra-curricular student organization for those interested in agriculture and leadership. It is one of the three components of the agriculture education program. FFA stays committed to the students and helps provide a path to achievement in leadership and success. In Hardee County, FFA is a huge part of our community. Here at HHS, our FFA members compete in many Career Development Events, such as livestock judging, citrus judging, tractor driving and more! The livestock judging team of the senior chapter placed 3rd in the state and had a student place 1st in Diversified Crop Production Proficiency. We also had the privilege to attend the Florida FFA State Convention and Expo as well as the National FFA Convention. Being in the Hardee FFA Chapter, many doors are opened in the future of agriculture. Mr. Brett Wheeler, the advisor of the senior chapter, has made a huge impact by helping further the chapter's success. Since his arrival, he has been improving on our agriculture department by bringing our garden back to life, introducing the greenhouse, upgrading the cattle and hog barns, and planting new orange trees. Not only is Mr. Wheeler our advisor, he is also our friend! Along with the senior chapter, we also have a

junior chapter that has recently been taken over by Mrs. Donna Parks. The 8th graders taking the Ag Foundations class taught by Mrs. Melissa Crews, are learning the history of agriculture and technology, memorizing and presenting the FFA creed, and preparing for the competitiveness of Career Development Events. The junior chapter participates in competitions that the senior chapter does not get to experience. For example, tool identification and opening and closing ceremonies. Therefore, being in FFA is a great way to find your calling in life.

Hardee Senior FFA Officers:

President: Larrett Smith

Vice President: Cody Cumbee

Secretary: Shelby Spencer

Reporter: Tara Hines

Treasurer: Alyssa Barber

Sentinel: Leah Vickers

Chaplain: Lane Parks

Parliamentarian: Ray Lazorko

Historian: Carol Allison

Student Advisor: Kaitlyn Powell

Hardee Jr. FFA Officers:

President: Riley Justiss

Vice President: Carson Terrell

Secretary: Morgan Hellein

Reporter: Alexis Crews

Treasurer: Emery Smith

Sentinel: Coy Gough

Chaplain: Seth Durrance

Parliamentarian: Klave Barber

Student Advisor: Cole Wilson



Hardee Sr. FFA team placed 3rd Overall at the 2016 High School Livestock Judging Contest. From left to right: Kole Robertson, Larrett Smith, Alyssa Barber, Hunter Sellers, and Conner Crawford.

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Students at the 2013 Youth Field Day visiting the Jr. Cattlemen booth.

Field Days

Every 18-months the RCREC hosts a field day to share the latest research findings of each of its program areas. This allows researchers to alternate between highlighting warm and cool season forage crops and land and cattle management practices.

Pasture Weed Field Days are held every 2-3 years as new products and techniques are developed.

Here you will see some photos from past events.



Bud Adams, Ben Hill Griffin, and Dr. Findlay Pate.



Dr. John Arthington, Dr. Jack Payne, Edgar Davis, and Dr. Brent Sellers



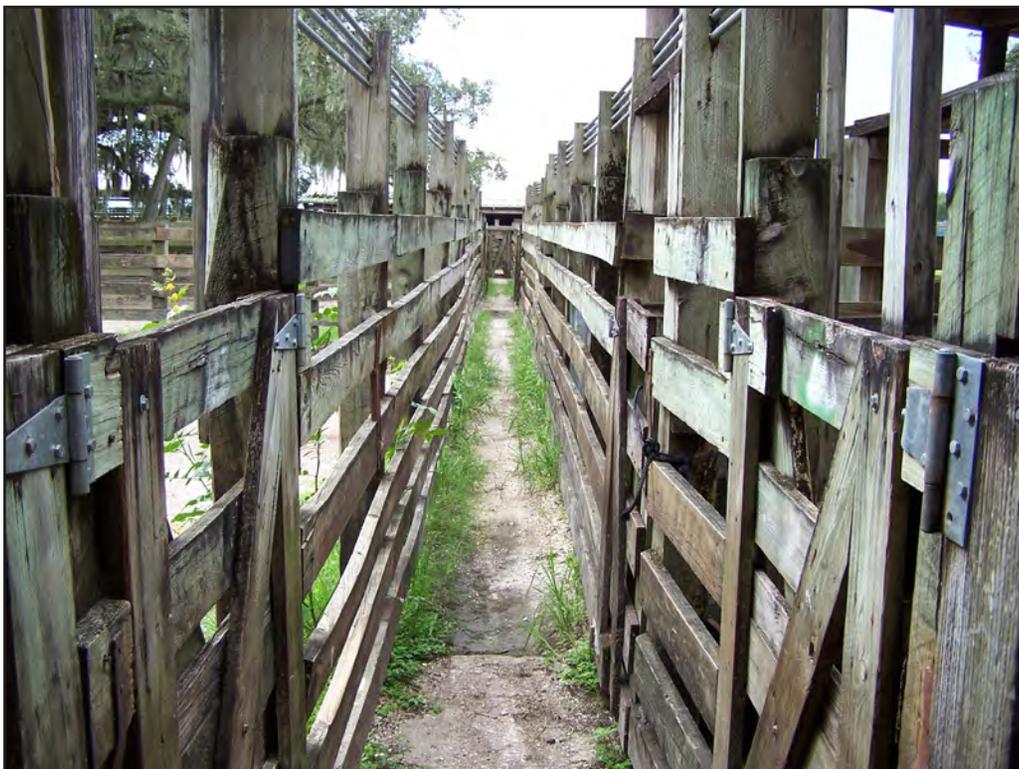
Lunch prepared and served by the Cloverleaf Foundation of Hardee County.



Youth Field Days

The RCREC has hosted 9 Youth Field Days since 2007. These events are specially designed for students to attend with their 4-H or FFA leaders or family members, allowing them to visit our facilities and improve their agricultural science knowledge through short hands-on classes and engagement with college and industry professionals through our learning expo. The next Youth Field Day is tentatively scheduled for June 2018. Here are a few photos from past events.





- Dr. Barbara Carlton Family -

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