

UF/IFAS

Range Cattle Research & Education Center NEWS

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IN THIS ISSUE

Hormones and Pharmaceuticals in Groundwater

by Dr. Golmar Golmohammadi, Assistant Professor



Hormones and pharmaceuticals which are widely used for the treatment of humans and livestock, have the potential to enter the environment, including water resources. Hormones (both synthetic and natural) are extremely bioactive at very low concentrations and are known to be excreted from all animals including livestock. Small amounts of these chemicals are excreted in urine and feces. Much concern exists regarding the potential impacts of these chemicals on aquatic invertebrates and fish residing in aquatic systems into which these chemicals are discharged or leached, especially since they are bioactive at very low concentrations. Veterinary pharmaceuticals are also released into the environment through the excretion of drugs and their metabolites in urine and feces of livestock, or the spreading of manure and slurry from treated animals. Because of the risks for aquatic life, attention is being paid to the occurrence of both pharmaceuticals

and hormones in the environment worldwide. Our research program is investigating the impact of livestock grazing on the release of these bioactive molecules into our environment and if they are being transported into aquatic ecosystems as well as groundwater. If pollutant-level contamination is detected, we plan to determine which best management plans would be viable to alleviate environmental concerns.

Case Study, RCREC

Three wells are being installed and will be sampled at Range Cattle Research and Education Center (RCREC), Ona. To evaluate the relationships between groundwater quality and emerging contaminants

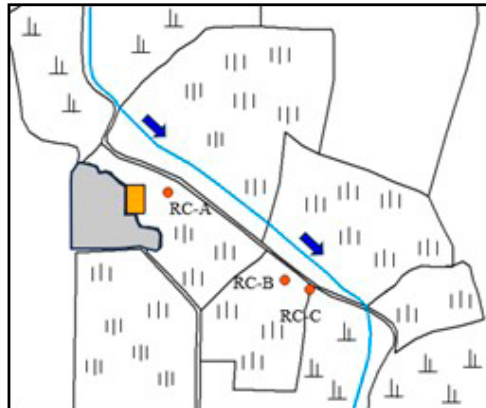


Diagram showing the location of the RCREC cowpens (orange area) in relation to the canal (blue line) that runs through the RCREC. Arrows show the direction of the water flow. The red dots show the location of the monitoring wells. Pastures with III are herd locations.

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and to determine hormone/pharmaceutical transport from the sources to surrounding environments, water samples will be collected along the groundwater flow gradient near the livestock sites, including leachate, groundwater from monitoring wells, and surface stream water. For water sampling, each well will be pumped continuously using a peristaltic pump. The samples will be collected after clearing stagnant water from the wells. Well purging prior to groundwater sampling will be done to remove stagnant water that may not be representative of in-situ groundwater quality. The monitoring wells will be purged approximately three times of water stored in the wells to avoid water quality disturbance by excessive purging. Water samples will be collected by inserting the sampling tube into the pipe then collecting the leachate using the peristaltic pump at a slow pumping rate. Samples will be stored on ice in the field and stored at -18C in the

lab if not extracted immediately. Hormones and pharmaceuticals will be extracted from samples, analytical methods will be developed in the next step of this study.

The transport of hormones/pharmaceuticals may be impacted by two factors, groundwater flow direction and infiltration rate. In this research, the groundwater flow direction will be defined using groundwater elevation maps, groundwater levels



Members of Dr. Golmohammadi's lab installing a groundwater well for monitoring water quality.

in Observation Wells and results of numerical models. However, the infiltration rate will be estimated using Guelph Permeameter. These factors would help to generate the Emerging Contaminant transport path and rate maps.

This study will provide the first indication of the potential contributions of cattle grazing on water quality as it relates to hormone and pharmaceuticals. This information is needed to determine whether best management practices are needed for protection of water quality and surrounding aquatic ecosystems. Results of this study will improve our understanding of the transport of hormones from livestock sites to sub-surface environments and provide insights into the effective management of groundwater resources.

Questions, contact Dr. Golmohammadi at g.golmohammadi@ufl.edu.

Center News

Long-term agroecosystem research (LTAR) Update

Prescribed fire was conducted as part of the USDA, long-term agroecosystem research (LTAR) project. The UF LTAR project is led by Dr. Maria Silveira and one of the objectives is to evaluate the effect of fire frequency and mechanical control of shrub species on production and environmental responses in pine flatwood range-lands.



Graduate Student Group Visits Center

Dr. Maria Silveira hosted the Soil, Water, Ecosystem Graduate Students Association on June 15. Approximately 20 graduate students took part in the visit touring the labs and the field experiments.



14th Annual Youth Field Day - Highlights

The 14th Annual Youth Field Day was held on June 29 with 104 students, parents, and youth leaders, 39 persons with our 21 education expo booths, 9 Extension staff, 36 RCREC faculty, staff, and students, and 4 volunteers joining us, for a total of 192 in attendance!

Traditionally held the last Thursday in June, this event is for students ages 8 to 18 and adults. The goal is to excite students about agriculture and science, reveal future opportunities in those fields, and foster a love of learning which will promote agriculture and good stewardship in this and future generations.

This year a select group chose to take part in our optional early morning birding tour. They returned in time to join everyone at the learning expo. There they engaged in learning activities with 21 educational booths with topics like branding, rumen dissection, ham radio use in disasters, college opportunities and more. After the expo attendees split up into 5 groups to complete 5, 25-minute classes on water, forage quality, pasture weed identification, wild pigs, and horses. At the closing assembly attendees gathered inside the grazinglands education building for the announcement of the t-shirt design winners and for the learning expo prize drawings.

You can view each of the class recordings on YouTube or see them on [our website](#) along with a links to the field day booklet and the photos on our Facebook page.

Video recordings available -

[Event Overview Video](#) (10 min.) - includes a quick peek of the learning expo, lunch, classes, and the closing assembly with the announcement of the 2024 t-shirt design contest winners.

['Wild Weed Hunt'](#) (16 min.) - with

Dr. Brent Sellers and M.S. student Caetano Sales - Learn about weed identification and the negative impacts of invasive weeds on natural habitats and agricultural productivity.

['Amazing Life of Soil'](#) (17 min.) - with Dr. Golmar Golmohammadi and Don Rainey - learn how different soil types affect water and nutrient movement on agricultural lands.

['Forage Quality'](#) (16 min.) - with Dr. Joao Vendramini and J K Yarborough - Learn about pasture grass, it's use on the ranch, and how to know how good it is.

['History and Importance of Horses'](#) (15 min.) - with Sheri Trent - learn about the history of horses in Florida, how they are used today, and more.

['Wild Pigs'](#) (19 min.) - with Dr. Hance Ellington and M.S. student Brier Ryver - learn all about Florida's invasive wild pigs and new techniques for management.

A big THANK YOU to this year's youth field day sponsors and to everyone who worked the event making it a great success!

2023 Sponsors:

- Deseret Cattle and Citrus
- Roman III Ranch
- Sarasota County Farm Bureau
- A & J Lucky 7 Ranch
- Dakin Dairy
- Highlands County Farm Bureau
- Corteva
- Farm Credit of Florida
- Desoto-Charlotte Farm Bureau
- Sarasota Agricultural Recovery Group

Hurricane Ian Flood Recovery

We are still working on storm restorations. It's been ten months and we've come a long way, but there is still work to be done. In July, the damaged roof of our fuel shed was replaced.

We are still waiting on cabinets for our breakroom kitchen, the kitchen in the grazinglands education building, the LTAR and pasture weed science labs, and the built in desks in one of our student office rooms.



Fuel shed the day after Hurricane Ian, Sept. 30, 2022.



Fuel shed in August 2023.



Mandolin Turner was on hand to receive her 1st place prize, a UF Block and Bridle Club cap. Her design will be featured on the Youth Field Day 2024 t-shirt and field day booklet cover.



Horse class



Forage class



Water class



Wild weeds class

Above: UF CALS @ Plant City expo booth and the wild pig class.



Congratulations to this year's t-shirt design contest winners! From left to right, the winners are 3rd place, Fahad Rafiq, 2nd place Ebonie Baxter, and 1st place Mandolin Turner!



Closing assembly held inside the grazinglands education building.

Faculty News

Cattle Market Update

What can cattle producers expect in the future with current inventory levels in the beef cow herd at an all-time low and cattle prices on the rise? Hannah Baker, state specialized extension agent II in beef cattle and forage economics, summarizes the bi-annual cattle inventory reports and what they indicate in terms of expansion and prices in the beef cattle industry.



Access this 4-page update on [Hannah's webpage](#) under 'Helpful Resources.' Questions, contact her at h.baker@ufl.edu.

Multi-state Group Meet in Illinois - Dr. Maria Silveira

The multi-state group W4170 "Beneficial Use of Residuals to Improve Soil Health and Protect Public, and Ecosystem Health" had their annual meeting June 26-28, 2023 at the Metropolitan Water Reclamation District of Greater Chicago. This group consisted of 50+ scientists from 30 states with extensive history on biosolids research. Dr. Maria Silveira currently serves as the chair of the W4170 multi-state group. Topics of discussion included beneficial reuse of biosolids, PFAS contamination, biosolids regulations and legislation.



Dr. Silveira with the W4170 multi-state group touring the metropolitan water reclamation district of greater Chicago.

Grasslands Congress Invited Speaker - Dr. Maria Silveira

Dr. Maria Silveira was an invited speaker in a special symposium at the XXV International Grassland Congress held in Covington, KY, in May 2023. The title of her presentation was "Challenges and Opportunities to Increase Carbon Sequestration in Sub-tropical Grazing lands."

Faculty News continued

Nutrition for Beef Females Program - Dr. Philippe Moriel

The 6th Annual Nutrition for Beef Females program was held in April, on 3 different dates at 3 different locations. A summary is to the right.

Do you have questions? Contact Dr. Moriel at pmoriel@ufl.edu.

International Teaching - Dr. Joao Vendramini

In June Dr. Joao Vendramini taught "Methods of forage evaluation" to an international graduate class in the Amazon region of Brazil. While there, he visited his

research projects with collaborative partners with University of Florida, Federal University of Northern Tocantins and Papalotla Seeds. The research project's objective is to identify superior warm-season perennial grasses to be cultivated in tropical and subtropical regions.

Dr. Vendramini with the students.



Student News

Soon to Graduate Ph.D. student Leandro Vieira-Filho Secures Position with Clemson

Leandro Vieira Filho just completed his PhD program in Soil and Water Sciences under the supervision of Dr. Maria Silveira. He examined the agronomic and environmental impacts of nutrient management practices, with special emphasis on land application of biosolids to perennial pastures. Greenhouse and field studies were conducted to evaluate the fate of phosphorus in the soil-plant-water interface. Leandro will be starting a postdoctoral position at Clemson University in August 2023. We wish him all the best!



6th Annual Nutrition for Beef Females

Summary – 2023

81

producers attended in 2023, representing...

9,720

Beef cows and heifers

42,687

acres of grazing land

Pre- & post-calving nutrition

Which one is more important?

After our programs...

Skills = +23%

on selecting the correct BCS
Pre-training = 44% Post-training = 67%

Knowledge = +79%

on impacts of pre- & post-calving nutrition on cow-calf performance

Aspirations = +64%

will implement at least one supplementation strategy presented by this program

Developed by:
Dr. Philippe Moriel
Range Cattle REC, Ona, FL

UF IFAS Extension
UNIVERSITY OF FLORIDA

In collaboration with:
South Florida Beef Forage Program

Florida Cattlemen's Convention

UF/IFAS Range Cattle Research and Education Center faculty provided project updates at the Florida Cattlemen's Convention in June. Dr. Brent Sellers, Dr. Golmar Golmohammadi, Dr. Joao Vendramini, and Dr. Maria Silveira presented. Below, Dr. Silveira presents.



Student News Continued

ORECG - Student Organization News

Meet the newly elected Ona Research and Education Center Graduate Student Organization officers for 2023 – 2024.

- President (at right):
Vinicius de Souza Izquierdo
- Vice-president (center):
Joao Victor Lazarin Silva
- Treasurer (at left):
Seyed Mostafa Biazar Seighalani

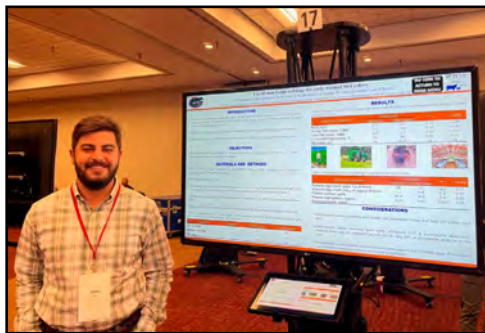


American Society of Animal Science National Meeting Attendees

At the meeting in Albuquerque, NM, left to right: Joao Lazarin, Dr. Joao Vendramini, and Debora Siniscalchi. Debora is an exchange visitor, short-term scholar working with Dr. Vendramini.



Joao Lazarin presented the poster 'Use of Sunn hemp as forage for early-weaned beef calves.' Joao is an MS student under the advisement of Dr. Joao Vendramini. He had received a \$250 travel grant to assist with his expenses in attending the meeting.



Vinicius Izquierdo presented, "Bakery waste supplementation to late gestating *bos indicus*-influenced beef cows successfully impacted offspring postnatal performance." He is a PhD student under the advisement of Dr. Philippe Moriel.



Upcoming Events

View our online calendar for more info on events and links to register:

<http://rcrec-ona.ifas.ufl.edu/calendar-of-events/>

Ona Highlight Featuring the Florida Cattlemen's Association (FCA)

– Aug. 15, 11:00 - 11:45 AM

Guest Presenters Pat Durden, President and Dale Carlton, President Elect will share about Florida Cattlemen's Association history, its structure, and give an activity report on state and federal legislation and other news.

Ona Highlight with guest presenter Dr. Cassio Brauner

– Sept. 12, 11:00 - 11:45 AM

Dr. Brauner will present "Nutritional Research on *Bos Indicus* Cattle."

Ona LTAR Research Highlight

– Oct. 10, 11:00 - 11:45 AM

Join us for an update on Long-Term Agroecosystem Research (LTAR).

Building Sustainable Pastures for Healthy Livestock

– Oct. 19, 9:00 AM - 2:00 PM

Location: UF/IFAS Range Cattle REC, Ona Register by 10/13 to attend. General registration fee is \$25, students are free. Lunch included.

Pictured below is a view of our recently refurbished sign. Isn't she a beauty!



CONNECT WITH US

Ona Highlight Webinar Recordings

Save the date and join us for an upcoming Ona Highlight webinar. These informative presentations are held each month. They begin at 11:00 a.m. and last about 45 minutes. See our online calendar for upcoming webinars, [here](#).

Recordings of recent webinars:

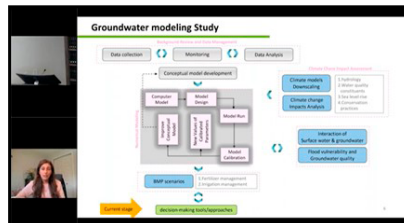
[‘Invasive Species in Florida Rangelands’](#)

with Dr. Hance Ellington, assistant professor, rangeland wildlife
6/13/2023 - Run time:
58.26 minutes



[‘Conservation Practices to Improve Groundwater Quality in Central Florida’](#)

with Dr. Golmar Golmohammadi, professor, Forage Management
7/11/2023 - Run time:
33.52 minutes



Ona Reports - published in the Florida Cattleman & Livestock Journal:

View these on our website at:
<https://rcrec-ona.ifas.ufl.edu/news-and-publications/>

Jun. 2023 - ‘A Special Research Report’ with all faculty contributing.

Jul. 2023 - ‘Evaluating the agronomic and environmental impacts of the new FL-DEP biosolids rule’ by Dr. Maria Silveira, professor - Soil and Water Science



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ABOUT THIS NEWSLETTER

This newsletter is a publication of the UF/IFAS Range Cattle Research and Education Center (RCREC) located in South Central Florida in the heart of Florida's cattle country. Our goal is to keep you up to date on RCREC happenings, publications, research, faculty & student news, upcoming events and bring you beneficial information you can use in your beef cattle or forage operation.

CONTACT INFORMATION

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Dr. Hance Ellington, e.ellington@ufl.edu - Grazinglands Wildlife Specialist

Dr. Golmar Golmohammadi, g.golmohammadi@ufl.edu - Hydrology and Water Quality

Hannah Baker, h.baker@ufl.edu - Beef Cattle and Forage Economics

