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**College of Agricultural, Consumer  
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Agricultural Experiment Station

**CORONA RANGE AND  
LIVESTOCK RESEARCH CENTER**

**2023  
ANNUAL  
REPORT**

THE NMSU AGRICULTURAL EXPERIMENT  
STATION SUPPORTS RESEARCH THAT  
ADDRESSES REAL-WORLD PROBLEMS.  
RESEARCH IS AT THE CORE OF NMSU'S  
MISSION TO IMPROVE THE LIVES OF  
PEOPLE GLOBALLY.

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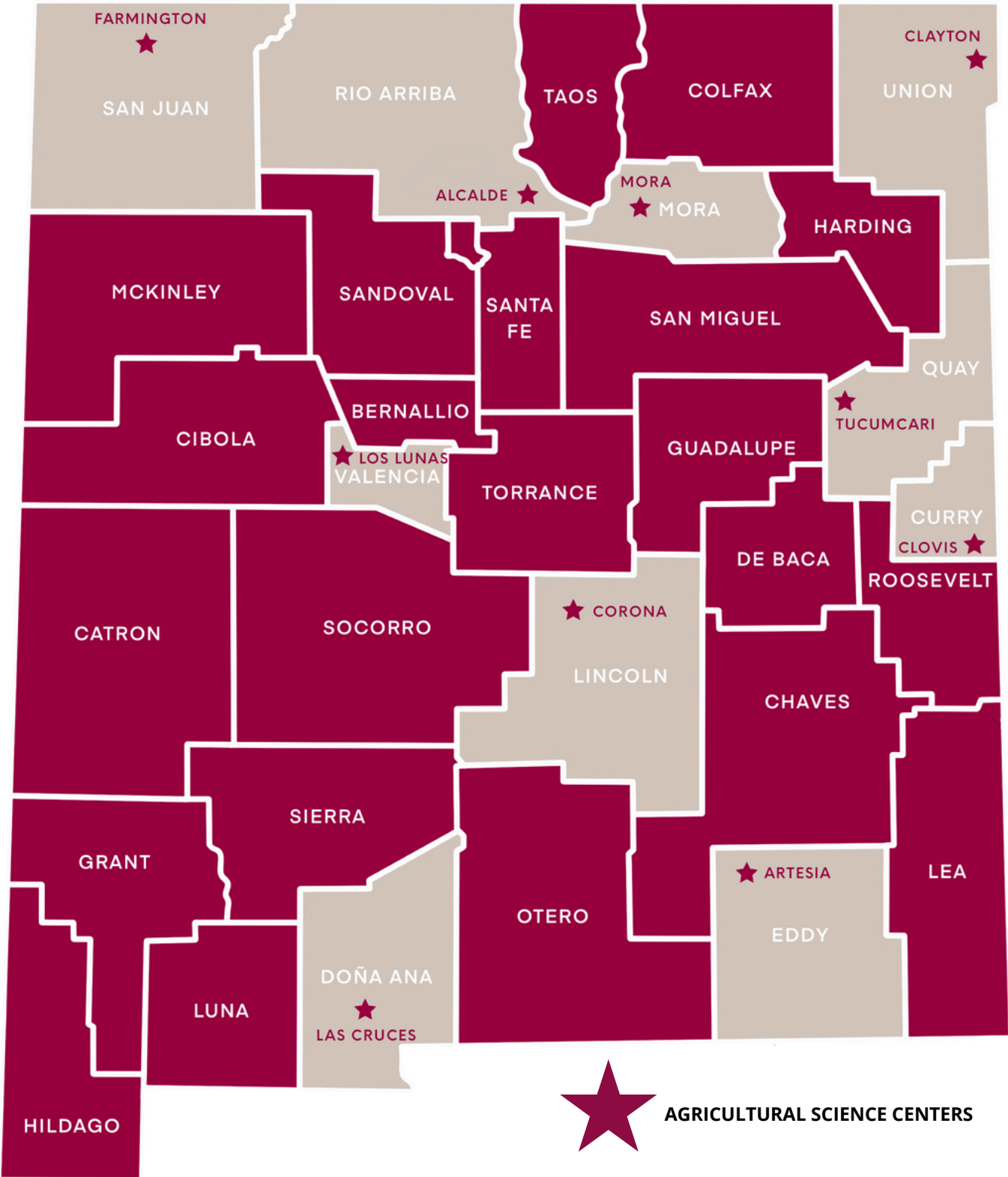
# NOTICE TO USERS OF THIS REPORT

These are not formal Agricultural Experiment Station research results. Readers are cautioned against drawing conclusions or making recommendations as a result of the summaries in this report. In many instances, data represents only one of several years' results that will ultimately constitute the final formal report for a project.

None of the data are authorized for release or publication without the written prior approval of the New Mexico Agricultural Experiment Station.

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# AGRICULTURAL SCIENCE CENTER LOCATIONS MAP



# EXECUTIVE SUMMARY

Throughout the past year, the Corona Range and Livestock Research Center substantially increased its active role in grant proposal development. Particularly in the area of greenhouse gas and carbon management. These are new areas of work for the center that show promise for future research opportunities. Likewise, the center continues to support a strong nutrition, reproduction, and health research program but this year it has expanded its research portfolio with wildlife and range monitoring research. It is exciting to have a wide variety of faculty and students utilize the vast natural resources of the CRLRC. The center was involved in targeted outreach events to producers looking to advance their use of technology for management and reproduction. The CRLRC was highly involved in the development of the public/private partnership developed between NMSU/ACES and ReproLogix. The success of this partnership, in the first and second years, was due to the outreach work conducted by the CRLRC and associated faculty and their connections with producers interested in advanced reproductive technologies.



# RESEARCH HIGHLIGHTS



# INFLUENCE OF WIND ENERGY DEVELOPMENT ON MEDIUM AND LARGE MAMMALS

Investigators: Iona Rohan (irohan@nmsu.edu), Jennifer Frey, and Theresa Laverty

## PROJECT OVERVIEW

The goal of this project is to investigate the potential impacts of wind energy developments on the habitat selection of medium and large terrestrial mammals. The project is centered around the recently constructed Red Cloud Wind Farm, located on the Corona Range and Livestock Research Center. Researchers are using remotely activated wildlife cameras within the wind farm, as well as at various distances from the wind farm, to study wildlife habitat use. Combined with field-collected and remotely-sensed habitat data, the detections of terrestrial mammals on the cameras will be used to quantify differences in the habitat selection of terrestrial mammals and how these are affected by the distance to and density of wind turbines around surveyed sites.

## MEETING THE NEEDS OF NEW MEXICO

This project will benefit the citizens of New Mexico by providing a source of information regarding the current impacts of wind energy development to terrestrial mammals. Pronghorn and mule deer—ungulates with important economic and ecological roles in New Mexico—are the focal species for this project. Managing healthy ungulate populations for recreational hunting and as prey species to native predators is a top priority for land managers, state agencies, and is a pursuit that many New Mexico citizens strongly support. Although the project is focused on wildlife, data on multi-species communities will be collected and allow for the investigation of potential impacts of wind energy development projects on cattle, a critical source of economy for many New Mexico landowners.

## IMPACT

This project is important because although there have been substantial studies focused on the impacts of wind energy development on birds and bats, little information exists regarding the potential impacts of wind energy development to terrestrial mammals. The research that does exist is primarily focused on studies in the northern United States where ungulate populations are migratory and wind farms do not exert constant pressure on populations throughout the year. In central New Mexico, ungulates are an important non-migratory game species with home ranges impacted by wind energy developments year-round. Central New Mexico is also experiencing a rapid increase in the scope of wind energy development projects throughout the ranges of native ungulates and other mid-sized terrestrial mammals. This project will serve as a critical information source to land managers, state agencies, and private landowners when pivotal decisions are made regarding the installation of wind farms within the home ranges of native ungulates.

## FUNDING ACKNOWLEDGMENT:

Upper Hondo Soil and Water Conservation District



# THE INFLUENCE OF SYNOVEX-C GROWTH IMPLANTS AT WEANING WITH DIFFERENT SUPPLEMENTATION LEVELS ON GROWTH PERFORMANCE AND OVARIAN PARAMETERS IN DEVELOPING BEEF HEIFERS

Investigators: Adam Summers (asummers@nmsu.edu), Dr. Eric Scholljegerdes (ejs@nmsu.edu), and Taylor Andrew (Doctoral Student)

## PROJECT OVERVIEW

Dormant forage lacks the protein requirements of heifers, therefore hindering heifers reaching 50% of their mature body weight. Heifers need to reach approximately 50% of their mature body weight to attain puberty. The utilization of growth implants could enhance growth in heifers grazing native rangelands, thus assisting puberty attainment. These projects evaluated the utilization of growth implants and protein supplementation on growth and ovarian parameters in heifers on native rangelands. These studies indicate that growth implants do not influence ovarian development and supplementing additional protein to heifers given a growth implant at 8 months of age did not enhance growth.

## MEETING THE NEEDS OF NEW MEXICO

Heifers are commonly developed on native rangelands in New Mexico and producers may face difficulties with their heifers achieving puberty. This series of research provides information regarding heifer development programs for Southwestern U.S. beef producers and provides evidence that growth implants do not hinder ovarian development.

## IMPACT

This series of research will help producers begin to utilize growth implants in their heifer development programs. Mild growth implants will enhance growth without hindering ovarian development in beef heifers grazing native rangelands.

### FUNDING ACKNOWLEDGMENT:

Agricultural Experiment Station, Hatch funds; USDA NIFA Predoctoral Grant





# EFFECTS OF STRESS ON REPRODUCTIVE SUCESS IN GOATS AND THE USEFULNESS OF A NOVEL PREGNANCY DIAGNOSIS TEST

Investigators: Joyce Anne Cooper (cooperj0@nmsu.edu), Dr. Eric Scholljegerdes, Dr. Adam Summers, Dr. Jennifer Hernandez Gifford, Shad Cox, Richard Dunlap, Clayton Bedke, Kristie Gallacher, Katy Jo Richardson, Taylor Andrews

## PROJECT OVERVIEW

Producers transport livestock to use assisted reproductive technologies which can be stressful and contribute to economic loss. Cortisol concentrations can be important in determining the best time to perform procedures. The purpose of this study is to determine if the transportation of goats for reproductive procedures affects pregnancy rates. It is then important to confirm pregnancies. The use of the IDEXX Visual Pregnancy Test gives results within 20 minutes and may detect pregnancies as early as day 28 in goats. This will provide further insight into determining early pregnancies in the goat industry and help producers decrease economic loss.

## MEETING THE NEEDS OF NEW MEXICO

This project is related to New Mexico agriculture and benefits New Mexico producers by aiming to save time and money. Many NM citizens raise livestock and if this research can help producers have increased pregnancy rates by reducing stress, economic loss could be decreased.

## IMPACT

Reproductive inefficiencies in the goat industry contribute to economic loss for the producer. Transporting livestock for reproductive procedures can be stressful and may lead to decreased pregnancy rates. By looking at cortisol concentrations in goats transported the day before or the day of laparoscopic artificial insemination, researchers may determine the best time to transport goats for the best pregnancy rates. This can help producers save money by maximizing pregnancy rates.



# INFLUENCE OF SUPPLEMENTING RUMINALLY PROTECTED ARGININE ON PRIMIPAROUS COW HISTOTROPH

Investigators: Iona Rohan (irohan@nmsu.edu), Dr. Eric Scholljegerdes, Dr. Omar Holguin, Dr. Craig Gifford, Dr. Adam Summers, and Dr. Ray Ashley

## PROJECT OVERVIEW

A young, two to three-year-old cow is the most challenging female to manage in a cattle operation. This is due to the fact that they are young and still growing and have the added metabolic pressure of lactation. Little work has been done to investigate the impact of nutritional manipulation of the uterine histotroph, which is the mixture of molecules and nutrients found in the uterus, during the first 17 days of the estrous cycle. Provision of specific nutrients to the dam shortly before the breeding season may alter the uterine histotroph so that conception is enhanced. 30 two and three-year-old cows were individually fed a control supplement (3 lbs. of dried distillers grains) or control plus ruminally protected arginine for 30 days prior to the start of estrus synchronization. All cows grazed a common pasture at the Corona Range and Livestock Research Center. On day 12 or 17, cows were subjected to uterine flush so that an analysis of the histotroph could be conducted. This work will provide information on our ability as nutritionists to manipulate the histotroph with specific nutrients that may enhance fertility.

## MEETING THE NEEDS OF NEW MEXICO

This work will benefit the citizens of New Mexico through the development of strategic supplementation programs that target reproductive success. This is particularly true considering the rugged rangelands that most beef cows reside. The forage base can be poor during the breeding season further exacerbating the nutritional challenges that these young cows face leading up to the breeding season. Enhancing the fertility of the animal through nutrition, will improve pregnancy rates and ultimately reduce the financial loss of non-pregnant animals.

## IMPACT

If successful, this work will improve the financial viability of the cowherds not only in New Mexico but elsewhere due to the fact it will reduce reproductive losses.

### FUNDING ACKNOWLEDGMENT:

USDA-NIFA Hatch Funds



# BY THE NUMBERS



## RESEARCH PUBLICATIONS

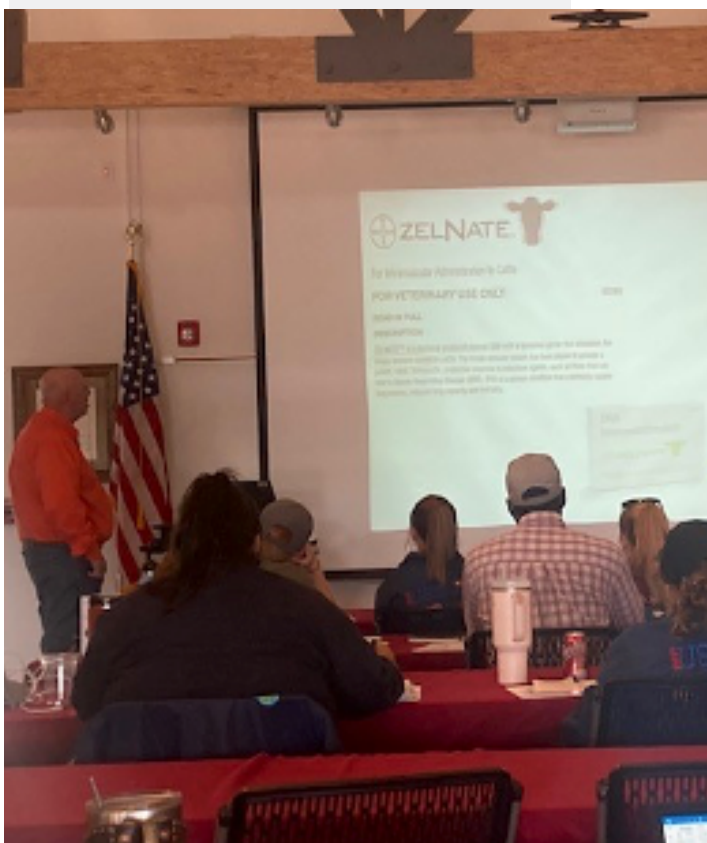
- Andrews, T.N., R.A. Cushman, A.P. Snider, G.A. Perry, S.H. Cox, R.L. Dunlap, C. Anderson, M.K. Chavez, K.L. Gallacher, E.A. Melchior-Tiffany, A.B. Selman, E.J. Scholljegerdes, and A.F. Summers. 2023. The influence of Synovex-C growth implants at weaning with different supplementation levels on ovarian parameters in developing beef heifers. *J. Anim. Sci.* 100(3):405-406.
- Ropp, K., E. A. Melchior-Tiffany, and E. J. Scholljegerdes. 2023 The effects of vaccination program and grazing season on beef cattle milk fatty acid composition when grazing native rangeland in New Mexico. *J. Anim. Sci.* *J. Anim. Sci.* 100: 406-407.

## GRANTS AND CONTRACTS

- \$248,609 budget for the project from the Upper Hondo Soil and Water Conservation District. January 2023 - December 2025.

# OUTREACH ACTIVITIES

- Staff at the CRLRC raise and market show goats for state and regional youth. These purpose-bred animals are raised solely for youth stock showers to provide them with an affordable quality animals to start their show career.
- Personnel from CRLRC sponsored and manned a booth at the National Cattlemen's Beef Association annual meeting and NM Joint Stockman's.
- The United States Beef Academy Program is sponsored by NMSU Department of Animal and Range Sciences, NMSU Cooperative Extension, Zoetis, Purina, Zinpro, IMI Global, Texas A&M, and the University of Tennessee. Directed by Drs. John Wenzel, Eric Scholljegerdes, Adam Summers, Craig Gifford, Marcy Ward, and Shad Cox. The project was held at the Corona Range and Livestock Research Center with 25 attendees. June 18 through 24, 2023.
- Staff at the CRLRC hosted the American Society of Animal Science Academic Quadrathlon, with four schools from around the United States competing in a livestock practicum. Schools were from Penn State, Texas A&M, the University of Missouri, and the University of Wyoming
- Staff at the CRLRC hosted the W-3012 Regional Research Committee's annual meeting. The group consisted of 12 scientists from throughout the Western United States, including, Oregon State University, University of Nebraska, Montana State University, New Mexico State University, and the University of Idaho.



# PEOPLE



# COOPERATORS AND COLLABORATORS

- Dr. Eric Scholljegerdes, NMSU, ANRS
- Dr. Adam Summers, NMSU, ANRS
- Dr. Craig Gifford, NMSU, EASNR
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- Kevin Millner, Zoetis
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- Dina Chacon-Rietzel, NMBC
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- Danica Cooke, Wildlife Biologist BLM

# ADVISORY COMMITTEE

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- Dr. James Miller
- Scott Shaefer
- Tom Perkins
- Tony Johnson
- Kyle Traylor
- Kendall Wilson

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- Taylor Andrews - Reproductive Physiology
- Clayton Bedke – Ruminant Nutrition
- Kristie Gallacher – Reproductive Physiology
- Katy Jo Richardson - Ruminant Nutrition



# ASC PERSONNEL



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Superintendent



**RICHARD DUNLAP**

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**ERIC SCHOLLJGERDES**

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