

Clayton Livestock Research Center

2019 Annual Progress Report



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College of Agricultural, Consumer and Environmental Sciences
Agricultural Experiment Station

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Notice to Users of this Report

This report has been prepared as summary of activities at the Clayton Livestock Research Center. We are providing results of various research projects during the past year. This is not a formal Agricultural Experiment Station Report of research results.

In some cases, information in this report represents results from a single study. Readers are cautioned against drawing conclusions or making recommendations because of data have not gone through a peer-review process. It is pointed out that researchers have made every effort to check the accuracy of the data presented.

This report is not as a formal release. Therefore, none of the data or information herein is authorized for release or publication without the written approval of the New Mexico Agricultural Experiment Station.

Permanent Faculty and Staff

Glenn C. Duff, PhD

Professor and Superintendent

Vinicius (Vinnie) Gouvea, PhD

Assistant Professor

Michael Barnes, B.S.

Farm/Ranch Manager

Devon Dillon

Farm/Ranch Supervisor

Consuelo Sowers, M.S.

Farm/Ranch Manager

Two positions are being recruited for the center including an administrative assistant and a laboratory technician.

2019 CLRC Advisory Committee

The Clayton Livestock Research Center held its first advisory committee meeting since approximately 2017. In attendance were Benjamin Coble (USFS representative), Ben Creighton, Larry Bedford, Bruce Davis, Bill Brokman, Curtis Keeling, Red Miller, and Hilman Swagerty. Representing NMSU: Glenn Duff, Steve Loring, Vinicius Gouvea, Boe Lopez, Leigh Ann Marez, Mike Barnes, and CiCi Sowers. Updates on research and introduction of our new faculty member was much of the meeting. The committee needs to select a new chair. The CLRC also updated the committee and selected a date for a Field Day (May 19, 2020) and we also mentioned working with Extension on a hosting an Artificial Insemination (AI; but now have to make sure everyone knows it is not artificial intelligence). Regular meetings will be conducted with the advisory committee.

EXECUTIVE SUMMARY

The focus of the Clayton Livestock Research Center (CLRC) is to conduct research on improving the health and performance of newly received beef cattle and nutrition and management to slaughter. The center also has an irrigated pasture and in the past had access to native grasslands with cooperators. The irrigated pasture has traditionally been planted in wheat; however, there are opportunities to work with other research centers evaluating other forages. We have submitted a proposal with scientist at Tucumcari and Los Lunas on alternative forage species. With cooperators, scientists at the center have evaluated grazing practices to decrease the impact of locoweed-infested pastures.

To remain viable over the next 5 to 10 years, we will need to seek funding for deferred maintenance at the center. In addition, we will need to secure grant funding in the form of industry support. Infrastructure to allow personnel of the center to teach distance education courses was completed in 2019. Fiber optic cable was run to the center which has improved our capability to offer distance education. I taught a course on stocker/feedlot management.

INTRODUCTION

The Clayton Livestock Research Center was established on 320 acres of Kiowa National Grassland, Cibola National Forest, and located 7 miles east of Clayton, NM on Highway 56/64/412. The New Mexico Legislature first appropriated funds in 1972 for construction and operation of the Center. A special use permit was approved by the Cibola National Forest in 1973 for construction and approved by Cibola National Forest in 1975. Construction began shortly thereafter.

The research focus at the Clayton Livestock Research Center has been to improve the health of newly received lightweight calves. These cattle may originate in New Mexico or the Southwestern states and brought to New Mexico for grazing. These cattle then go on to finish in feedyards in the high plains region. Health of New Mexico ranch calves shipped outside the state for placement on grass or into the feedyards has been long standing priority of the research station.

Research pens, with a capacity of approximately 960 head are constructed from pipe, with fence-line concrete bunk. The center recently replaced waters with Richie heated waters. Cattle handling equipment in an enclosed barn includes a working-chute system, scales for weighing individual animals. It was upgraded to a “Bud Box” design for truly low-stress handling conditions. A loading chute and scales for weighing trucks or groups of cattle are near the processing barn. An evaporation pond and a debris basin are located east of the cattle pens in order to contain run-off.

A metal, 40 x 120 foot shed contains a machine-repair shop and feed storage area. The office laboratory building provides office space, a conference room, as well as laboratories for nutrition research.

One of the important factors at the Center is a center pivot irrigation system on 120 acres. The use of irrigated pasture to alleviate stress for newly received cattle and reduce costs of gain will be researched. The pivot has not been used in several years but it is a top priority to get the pivot and research program re-initiated.

Construction of the feedmill was completed in December 1978. It provides storage of feed ingredients, contains a steam-flaker and dry-roller for grains and mixing of experimental diets. The roughage boxes were recently upgraded with the assistance of the College of Agriculture and Environmental Sciences (ACES).

Guidance for research direction and cooperation from New Mexico Cattle Growers has long been the backbone of research conducted at the Clayton Livestock Research Center. Our goal is to improve the profitability of the cattle industry and specifically New Mexico cattle.

Operational Revenues and Expenditures

The Clayton Livestock Research Center receives \$51,748.00 in operational funds. In addition, the center maintains a revolving fund primarily for purchases of cattle and feed.

Expenditures for the revolving fund:

Automobile (Fuel auto parts)	\$ 9,445.32
Electricity	\$ 32,075.96
Job Expenses (misc.)	\$ 78,983.54
Livestock Expenses	\$ 35,909.08
Livestock Purchases	\$ 817,388.35
Livestock Supplies	\$ 424,315.35
Miscellaneous	\$ 314.44
Grand Total	\$ 1,398,432.52

A majority of expenses for the revolving account remains livestock purchases and livestock expenses.

Expenditures for yardage account:

Miscellaneous **\$ 12,685.94**

Expenditures for Clayton Administration

Income (ENMR Plateau dividend)	\$ 284.00
Automobile	\$ 4958.73
Electric and Gas	\$ 15,242.54
Food and household	\$ 1,227.41
Job Expenses	\$ 16,467.97
Livestock Supplies	\$ 207.52
Miscellaneous	\$ 198.31
Office Supplies	\$ 3,807.60
Grand Total	\$ 42,394.08

A significant amount of expenditures goes for Electric and Gas, automobile, and job expenses. It should be noted that these expenditures are for 2019 calendar year and not 2018-2019 fiscal year.

Lists of products donated: Total value = \$78,055

The following items were provided as in-kind donations to the research program. We appreciate the in-kind donations from these companies.

Vista Once: Merck Animal Health

SafeGuard Drench: Merck Animal Health

Covexin 8: Merck Animal Health

Vision 7: Merck Animal Health

Decotmax: Zoetis Animal Health

Excede: Zoetis Animal Health

Ralgro: Merck Animal Health

Resflor Gold: Merck Animal Health

Revalor IS: Merck Animal Health

Revalor S Merck Animal Health

Rumensin: Elanco Animal Health

SweetBran (discounted price): Cargill

RAMP (discounted price): Cargill

Physical Plant

Fiber optic was installed at the center in the spring 2019. However, the gas line was damaged during the installation of the fiber optic. Repairs are being made to the gas line and expected to be completed during the spring 2020. In addition, the irrigation well collapsed during the fall 2019 just after planting the field. We are working with facilities to drill a new well for the irrigated pasture.

Monies were allocated from the legislature in 2019 for replacement of the feed truck. In addition, a new boiler was approved; however, the gas line will need to be installed before the boiler can be purchased and installed.

The Agricultural Experiment Station did receive money for deferred maintenance at the science centers. Priorities for the funds will be asbestos abatement in the office and renovation of the bathroom facilities in the processing barn.

Impact: Scientist at New Mexico State University evaluated the impact of phytomolecules performance and carcass characteristics of finishing beef steers. These compounds have potential to replace the feed additive Rumensin (monensin) in finishing diets. This hypothesis is based on rumen fermentation profiles when the compound is fed. With natural diets, it may provide a feed additive that could be used to enhance performance. We used 860 head of beef steers to test the compound and compared it with no additive, a feed with Rumensin; the compound of interest and a diet with both compounds. Under the conditions of this study, performance was not altered and little effects on carcass characteristics.

ABSTRACT:**Effects of supplemental phytomolecules on performance and carcass characteristics of finishing beef steers**

A study was conducted to evaluate growth performance and carcass characteristics of finishing steers fed diets containing different feed additives: control (CTL; no feed additives); Rumensin (monensin [26 mg/kg dry matter (DM)]; MON; Elanco Animal Health); a blend of cinnamaldehyde-eugenol and capsicum (1 g of commercial product/head/day; XT; Pancosma) or the combination of monensin and the blend of cinnamaldehyde-eugenol and capsicum (26 mg/kg DM and 1 g commercial product/head/day respectively; MON+XT). A total of 860 yearling steers [initial body weight (BW) = 736 ± 50 lb] were fed the basal diet (7% alfalfa hay and 93% concentrate; dry matter basis) containing the treatments during 154 days. Feed additives did not affect final BW, dry matter intake, average daily gain and feed efficiency of finishing steers ($P \geq 0.12$). Dressing percentage was lower for steers fed the combination of MON+XT than MON and XT ($P = 0.01$). Feeding XT tended to increase the percentage of carcass with small marbling score compared to MON ($P = 0.09$). The proportion of carcass grading premium choice tended to be greater for steers fed MON compared to XT ($P = 0.07$). The feed additives evaluated herein did not affect growth performance of finishing beef steers and had little effects on carcass characteristics.

Impact: Scientists at the Clayton Livestock Research Center have evaluated a novel approach to decrease respiratory disease in newly arrived feedlot cattle. Bovine respiratory disease has been estimated to cost the feedlot industry \$50 to 70 billion. In addition, bovine respiratory disease cost the dairy industry \$212 to 257 per animal compared with the heifers that were not treated for respiratory disease. We used 240 beef heifers in a 56-day study to evaluate administering Pluronic F 58 to heifers for 10 minutes in an enclosed trailer on health and performance of newly received beef heifers. No differences were noted in performance or health of the beef heifers with the fogging treatment. Other concentrations or duration of administration may have different results and deserves attention.

ABSTRACT:

Effect of Pluronic-F68 fog solution on performance and morbidity of newly-received heifer calves

Morbidity and mortality from bovine respiratory disease of newly-received feedlot cattle continues to be a problem for the feedlot industry. The objective of this study was to evaluate effects of utilizing a novel breathing treatment containing a non-ionic surfactant (Pluronic-F68) on performance and morbidity of high-risk calves. All procedures were approved by the New Mexico State University Institutional Care and Use Committee. Two hundred and forty Angus/Angus-cross heifer calves (body weight (BW) = 390 ± 2.98 lbs) were transported from Delhi, Louisiana to the Clayton Livestock Research Center in Clayton, New Mexico. Cattle were

received in two loads with 7-d between loads. Following a 21-h rest, cattle were processed and received a subcutaneous IBR-BVD-PI3-BRSV-Mannheimia-Pasturella vaccine (Vista Once SQ, Merck, Madison, NJ), a subcutaneous clostridial vaccine (Covexin 8, Merck, Madison, NJ), an injectable dewormer (Dectomax, Zoetis, Florham Park, NJ) and heifers were given a Synovex H (Zoetis, Florham Park, NJ) implant. Cattle were then sorted into pens by chute (processing) order. Pens were randomized into one of two treatments: a novel breathing solution containing Pluronic-F68, glycerin, and water (FOG; $n = 120$ heifers) and control (CON; $n = 120$ heifers). For fogging, calves were held in an enclosed stock trailer for 10 min during which time FOG pens received a breathing treatment. Control cattle were held in the same trailer for 10 min. The person responsible for identifying signs of morbidity was blinded to treatment assignments. Calves received a commercially available diet (RAMP, Cargill, Minneapolis, MN) at ad libitum consumption throughout the 45-d study. Average daily gain was similar between treatments ($P = 0.91$). No differences were found in dry matter intake ($P = 0.14$) nor in feed efficiency ($P = 0.58$). There were no differences ($P = 0.74$) observed in final body weights. Morbidity was similar ($P = 0.34$) at first antimicrobial administration regardless of treatment. Animals with a temperature $\geq 104^\circ \text{F}$ upon processing, were treated with an antibiotic. However, percentages of animals doctored at processing were similar between the two treatment groups ($P = 0.84$). There was no difference ($P = 0.44$) in mortality between FOG and CON pens. The Pluronic F68 solution did not improve performance or health of newly received heifer calves; however, further research with a different concentration and/or duration of fogging may be warranted.