impact

University of Idaho Extension programs that are making a difference in Idaho.

Finding the ideal cow for Idaho rangelands

AT A GLANCE

Cattle can be identified that not only have less yearly maintenance costs (10 to 15%), but also utilize rugged rangeland pastures more sustainably during hot summer days.

The Situation

U.S. beef producers have been pursuing increased calf weaning weights over the last three decades. Consequently, both individual cow size and individual calf weaning weights have increased, but overall cowherd profitability has declined. While cow size has increased approximately 200 lbs. during this time period, so has appetite. Early attempts to select more efficient cows that eat less began in 1963; then languished for two decades before being revived in the 1980's. Since that time, specialized equipment (e.g., GrowSafe) has been used to collect individual daily feed intakes for cattle in a feedlot setting on a real-time basis. Consequently, herd sires ranked as more efficient (eat less at a common weight) have more value in the marketplace.

Yet, in spite of all this research, little attention has been given to how these "efficient" cows function in a rangeland environment. In 2015, Idaho producers in beef production focus group meetings held throughout Idaho stated, "Recognition that increasing cow size has corresponding feed needs but the amount of available grazing and pastureland is constant. University of Idaho was encouraged to look at ways that cattle can become more feed efficient."

Carmen Willmore, Extension educator, watches U of I experimental cows graze a slope at Rinker Rock Creek Ranch.

Our Response

Rocket Science on the Range — We are investigating whether "efficient" cattle perform competitively to their "inefficient" contemporaries in a rangeland environment with respect to forage intake, livestock production and grazing behavior (24 efficient and inefficient cows evaluated from 2016 to 2017). Our research in this area has been some of the first research of its kind in the world. To evaluate grazing behavior, specialized space age equipment is being used (Figure 1). In addition to monitoring grazing locations (every five minutes) with GPS technology, we are also utilizing accelerometers to measure daily activity (grazing, resting or walking). Accelerometers are used on rockets to measure velocity in three different directions and can

University of Idaho Extension

UI Nancy M. Cummings Research, Extension & Education Center
208-756-2749 • 208-756-2794 (fax)
16 Hot Springs Ranch Road, Carmen, ID 83462

be used to monitor cow head movements to distinguish activity 24 hours a day at five second intervals. With battery backup, we can obtain a history of each cow's daily activity for at least 30 days. We call this "rocket science on the range."

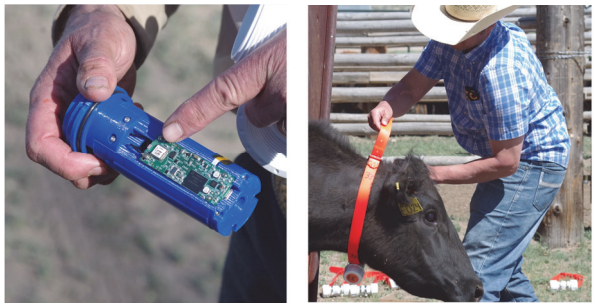

Figure 1: Photos from *Life on the Range* Facebook, photo credits Steve Stuebner. The cow collar contains both a GPS (pointed to on left) and accelerometer logger.

Program Outcomes

Over the last five years, our research has demonstrated that cattle can be selected that not only are more efficient (eat less in a feedlot setting) but also:

- Graze rugged rangeland pastures more sustainably (less time at lower elevations near shade and water) than do their inefficient counterparts (Figure 2) when temperatures get hot (≥79 to 80 degrees Fahrenheit) in summer.
- Efficient cattle, presumably with less maintenance requirements, maintained similar production outputs to their inefficient herd mates (weaning weights, cow weights, cow body condition, reproductive efficiency and milk production).
- On late season rangeland with decreasing forage quality and no supplementation, young (almost 3 years old) efficient cattle lose less weight than do inefficient cattle (Figure 3).
- Efficient cattle appear to engage in less search grazing and thus harvest forage more efficiently.
- Early indications suggest that efficient cattle can be identified with genetic markers, possibly revolutionizing the selection of herd replacements that can more effectively graze pastures with endangered species concerns.

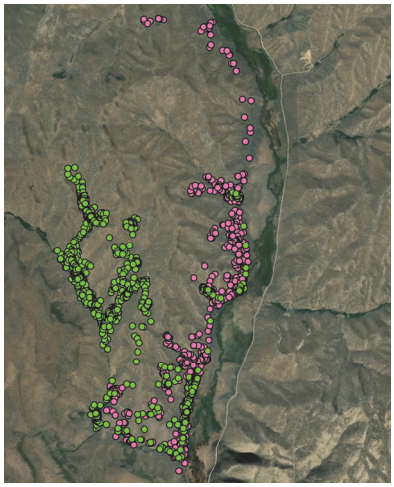

Figure 2. Efficient vs inefficient cow grazing locations during hot days in August 2016. Efficient cow is shown in green and inefficient cow in pink. Pink dots are at lower locations with more shade. These two cows are representative of their groups.

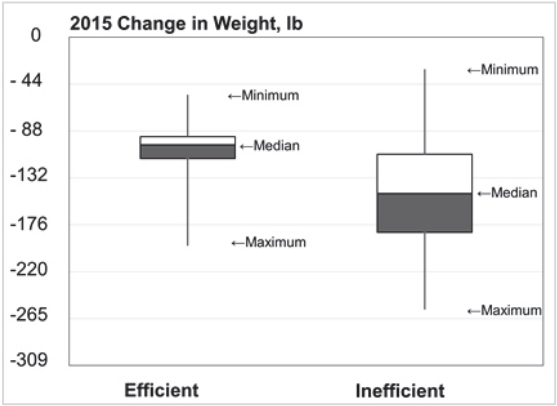

Figure 3. Upper section of box is first 25% of cows and lower section is bottom 25% of cows. Minimum and maximum values shown by whiskers.

Cooperators and Co-Sponsors

Jim Sprinkle, Melinda Ellison, John Hall, Joel Yelich and Carmen Willmore (University of Idaho). Dr. Jameson Brennan (South Dakota State University) and Dr. Doug Tolleson (Texas A & M).

FOR MORE INFORMATION

Jim Sprinkle, Extension Beef Specialist • University of Idaho Nancy M. Cummings Research, Extension & Education Center • 208-756-2749 • sprinkle@uidaho.edu

30-21-jsprinkle-cow-rangeland • 6/21