1. Assessment of alfalfa pest management challenges in Wyoming

**Investigators:** Randa Jabbour and Shiri Noy

**Issue:** Alfalfa hay—the highest-value crop in Wyoming—is susceptible to a suite of insect pests. Considerable economic and environmental costs of chemical pest management highlight a critical need to develop more effective and efficient control strategies.

**Goal:** We will define farmer priorities statewide using a combination of focus groups and surveys. Focus groups will be composed of alfalfa growers from six counties, encompassing both hay and seed producers.

**Objectives:** Specific objectives are to define farmer priorities and decision-making strategies regarding alfalfa pest management and incorporate this information into the University of Wyoming agroecology curriculum and UW Extension materials for statewide distribution.

**Impact:** Results should assist growers in managing insect pests in alfalfa more efficiently and effectively. Incorporation of farmer priorities into the UW agroecology curriculum should better prepare agriculture students for decision-making using a regionally relevant example.

**Contact:** Randa Jabbour, rjabbour@uwyo.edu or 307-766-3439.

**Key Words:** alfalfa pests, decision-making, focus groups

**PARP:** X:2

2. Use of perennial and annual flowers to attract beneficial insects to alfalfa

**Investigator:** Randa Jabbour

**Issue:** Alfalfa weevil and aphids are major pests of alfalfa hay in Wyoming. Beneficial insects that can kill and consume these pests also require alternate resources such as flower nectar to survive. These beneficial insects may increase their pest control activities in response to increased flower resources.

**Goal:** We will test whether planting strips of flowers in alfalfa fields improves biological control of alfalfa insect pests.

**Objectives:** Specific objectives are to compare the effect of annual and perennial flowering strips on biological control of insect pests of alfalfa hay in a study at the James C. Hageman Sustainable Agriculture Research and Extension Center near Lingle.

**Impact:** Results should assist growers in deciding whether there is pest management value in incorporating flowering strips into alfalfa hay operations. The flower species used in the study have already been recommended by the Natural Resources Conservation Service for the purpose of pollinator conservation, so this study will evaluate whether these flowering species are capable of providing multiple functions to growers. More information about pollinator conservation and flowering species is at www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/

**Contact:** Randa Jabbour, rjabbour@uwyo.edu or 307-766-3439.

**Key Words:** alfalfa, biological pest control, flowering strips

**PARP:** I:1–2, X:2
3. Evaluating guar bean production in SE Wyoming for yield and production practices

**Investigator:** Brian Lee

**Issue:** Interest in guar bean production has increased recently due to increases in demand. The crop is not typically produced in southeast Wyoming, but could be of great value to local producers. Guar is a fairly drought tolerant annual legume that works well in crop rotations. Demand is rising, in part, due to the use of guar gum in hydraulic fracturing, a technique used to release oil and gas from certain formations.

**Goal:** The goal is to evaluate guar bean production and to increase interest in this alternative crop through demonstration plots at the James C. Hageman Sustainable Agriculture Research and Extension Center near Lingle.

**Objectives:** Specific objectives include evaluation of production practices for optimal growth and yield and performing a cost-benefit analysis.

**Impact:** Results should 1) assist area farmers in deciding whether to grow guar bean as a viable alternative crop and 2) help farmers achieve optimum growth and yield.

**Contact:** Brian Lee, blee@uwyo.edu or 307-837-2000.

**Key Words:** guar bean, alternative crops, legumes

**PARP:** 1:2, IX:1, X:3

4. SAREC wind turbine update

**Investigators:** Brian Lee and John Ritten

**Issue:** Installing a wind turbine offers “green” benefits, in part, because the energy it produces is renewable. But can small turbines save landowners money?

**Goal:** The goal of this study is to examine the feasibility of installing a small wind generator in areas of Wyoming such as Goshen County.

**Objectives:** Specific objectives are to study the cost-effectiveness of a Skystream 3.7 wind generator over its anticipated lifespan of 20 years.

**Impact:** A Skystream 3.7 was installed in 2010 at the James C. Hageman Sustainable Agriculture Research and Extension Center near Lingle at a total project cost of $12,727. Data produced over 20 years should help landowners make an educated decision about whether to install a small-scale wind turbine on their property. Preliminary results can be found at:

1) www.uwyo.edu/uwexpstn/centers/sarec/
2) www.facebook.com/UWSAREC

**Contact:** Brian Lee at blee@uwyo.edu or 307-837-2000.

**Key Words:** sustainable energy, wind production

**PARP:** XI:1
5. Winter forage crops as a supplement to cornstalk grazing in integrated crop/livestock systems in southeast Wyoming

Investigators: Jenna Meeks, Andrew Kniss, and Brian Mealor

Issue: Winter feed is typically one of the most costly aspects of beef cattle production so producers commonly graze cornstalks, a relatively low-cost, low-quality feed source. Protein and mineral supplementation is typically required to improve animal feed intake and performance.

Goal: Our goal is to increase forage quality and quantity in post-harvest corn fields to reduce the need for supplemental winter feed in integrated crop/livestock farming operations.

Objectives: Objectives are to determine the optimal 1) species of forage (e.g., grasses, legumes, and brassicas) for establishment within a corn crop and 2) seeding time to increase winter forage crop production while minimizing negative effects on corn yield.

Impact: Results should aid producers in decreasing feed costs by reducing the need for traditional feed supplements if high quality forage species could be established in the field prior to grazing cornstalks.

Contact: Jenna Meeks, jmeeks8@uwyo.edu or 307-837-2000.

Key Words: cattle grazing, forage, cornstalk

PARP: I:2,4,6, II:5, VII:2,6

6. Evaluating heifer diet selectivity, performance, and economics of two growing rations

Investigator: Steve Paisley, Beth Burritt, and Larry Howe

Issue: Many ranching operations lack the equipment to grind, mix, and deliver mixed ration diets when developing replacement heifers. Therefore, other low-input ration delivery methods need to be evaluated.

Goal: The goal is to evaluate the feasibility of allowing yearling beef heifers to select their own growing diets by supplying individual component feeds.

Objectives: A specific objective is to compare animal performance, diet selection, feed efficiency, and overall economics of traditional total mixed rations (TMRs) vs. providing individual ration ingredients and allowing heifers to select their own diet.

Impact: Feed costs and overall heifer development costs may be impacted depending on heifer performance, overall health, and feed conversion.

Contact: Steve Paisley, spaisley@uwyo.edu or 307-760-1561.

Key Words: efficiency, diet selection, beef cattle

PARP: I:1, V:1,7
7. Evaluating registered yearling Hereford and Angus bulls for feed efficiency and RFI

Investigators: Steve Paisley, Robert Baumgartner, and Larry Howe

Issue: Because of rising feed and operating costs, there is an increasing industry demand for improved feed efficiency.

Goal: The goal is to better understand genetics and select bulls for improved efficiency.

Objectives: Specific objectives are to evaluate locally produced registered Angus and Hereford yearling bulls for performance, feed intake, feed efficiency, and residual feed intake (RFI) on a predominantly forage-based growing ration.

Impact: Efficiency is a moderate to highly heritable trait. Results from efficiency testing should assist seedstock producers in better understanding efficient bloodlines and improving the overall efficiency of seedstock genetics offered to commercial beef producers in Wyoming and beyond.

Contact: Steve Paisley, spaisley@uwyo.edu or 307-760-1561.

Key Words: efficiency, RFI, beef cattle

PARP: I:1, V:1,7,8

8. Economic impacts of climate change and drought on Wyoming ranchers

Investigators: Tucker Hamilton, John Ritten, Christopher Bastian, Scott Lake, Dallas Mount, Steve Paisley, Dannele Peck, Justin Derner, and Justin Reeves

Issue: Increases in climate variability can have major economic consequences for Wyoming livestock producers. Cow/calf producers especially are vulnerable to any changes in annual forage availability as altering herd size is both costly and time consuming.

Goal: The goal is to help producers understand and prepare for the economic implications associated with increases in climate variability.

Objectives: Specific objectives include evaluation of alternative stocking and risk management strategies to help producers endure increased periods of drought.

Impact: Results should assist producers in understanding the implications of, and preparing for, increased climate variability. An economic analysis of alternative strategies to respond to increased climate variability should help producers better withstand increased periods of drought.

Contact: John Ritten, jritten@uwyo.edu or 307-766-3373.

Key Words: livestock production, climate variability, drought

PARP: V:7, VI:1, VII:2,6, X:1
9. Efficacy of a one-time in-furrow fungicide treatment for season-long Rhizoctonia control as influenced by sugarbeet replant date

**Investigator:** William Stump

**Issue:** Because of unforeseen frost and hail events, growers sometimes are faced with having to replant sugarbeet crops typically into warmer soil temperatures, which are more favorable to Rhizoctonia disease development. Because of shrinking profit margins under this scenario, growers may need to limit pest-management inputs to a single fungicide application.

**Goal:** The goal is to determine if a single in-furrow fungicide application at replant is sufficient to protect the sugarbeet crop until harvest from Rhizoctonia impacts.

**Objectives:** Specific objectives will be to compare the efficacy of various in-furrow fungicide treatments at three different replant dates in terms of Rhizoctonia disease incidence and severity and final yield and sugar content.

**Impact:** Results should assist growers in selecting the most effective fungicide treatments for season-long control.

**Contact:** William Stump, wstump@uwyo.edu or 307-766-2062.

**Key Words:** Rhizoctonia, sugarbeet, fungicide efficacy

**PARP:** None applicable