1. Pollinator food plots demonstration

**Investigators:** Jeff Edwards, Catherine Wissner, and Tina Russell

**Issue:** Interest in pollinator health is steadily increasing due, in part, to media reports concerning colony collapse disorder (CCD). Many factors have been implicated in CCD including loss of diverse flowering plant habitat.

**Goal:** Educate the public about pollinators and the ability to improve pollinator habitat by planting and maintaining pollinator food plots.

**Objectives:** Establish pollinator food plots in a variety of irrigated and dryland plots around the state and determine which pollinators are utilizing the sites.

**Impact:** Results should increase pollinator awareness statewide and assist individuals in selecting flowering seed mixes that will benefit pollinators. This demonstration will be established in 2015 at the James C. Hageman Sustainable Agriculture Research and Extension Center, at Powell R&E Center, and in the Evanston, Fort Washakie, Laramie, and Cheyenne areas.

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**Keywords:** pollinator health, flowers

**PARP:** not applicable

2. Management of sugarbeet cyst nematode with a combination of seed treatments and in-furrow nematicides

**Investigators:** William Stump, Wendy Cecil, and Matthew Wallhead

**Issue:** Sugarbeet cyst nematode can affect sugarbeet production in Wyoming and is difficult to manage. Newer nematicides are becoming available to manage the sugarbeet cyst nematode, but require field testing to determine efficacy and safety of use over a wide range of agricultural environments.

**Goal:** Determine the efficacy of these newer nematicides applied in-furrow for sugarbeet cyst nematode management.

**Objectives:** Specific objectives will be to compare the efficacy of a new nematicide applied in-furrow and in combination with a foliar nematicide for both sugarbeet cyst nematode management and their effects on the sugarbeet crop.

**Impact:** Results should provide efficacy data for federal pesticide labeling efforts and could provide growers potential new products for sugarbeet cyst nematode management.

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

**Keywords:** sugarbeet cyst nematode, nematicide efficacy

**PARP:** not applicable
3. Management of soil-borne disease in dry bean with in-furrow fungicide applications at planting

**Investigators:** William Stump, Wendy Cecil, and Matthew Wallhead  

**Issue:** Several soil-borne fungal organisms can affect dry bean production in Wyoming. Newer fungicides that are applied in-furrow are becoming available to manage various soil-borne diseases.  

**Goal:** Determine the efficacy of fungicides applied in-furrow for soil-borne disease management.  

**Objectives:** Specific objectives will be to compare the efficacy of a new fungicide that combines conventional chemistry and a biological product with other conventional in-furrow fungicide treatments for management of diseases caused by Fusarium and Rhizoctonia.  

**Impact:** Results should increase grower awareness of the use of in-furrow fungicides for soil-borne disease management in dry bean and provide efficacy data for federal pesticide labeling efforts.  

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**Keywords:** dry bean, soil-borne bean disease, fungicide efficacy  

**PARP:** not applicable

4. Management of potato early blight with foliar fungicide programs in potato

**Investigators:** William Stump, Wendy Cecil, and Matthew Wallhead  

**Issue:** Early blight is a common foliar disease of potato that can cause potentially high losses, but can be controlled with foliar fungicide applications. New chemistries and formulations are continually being developed, but require field testing with other fungicides to determine compatibility with other pesticides.  

**Goal:** Determine the efficacy of newer fungicide formulations and fungicide rotations for season-long early blight management.  

**Objectives:** Specific objectives will be to evaluate the efficacy of new fungicide formulations and overall efficacy of various fungicide rotations for early blight disease management.  

**Impact:** Results should provide efficacy data for federal pesticide labeling efforts and provide effective fungicide rotation programs to reduce fungicide resistance development.  

**Contact:** William Stump at wstamp@uwyo.edu or 307-766-2062.  

**Keywords:** early blight, fungicide efficacy  

**PARP:** not applicable
5. Management of diseases caused by Rhizoctonia in sugarbeet with in-furrow fungicide applications at planting

**Investigators:** William Stump, Wendy Cecil, and Matthew Wallhead

**Issue:** In-furrow fungicides at planting can provide longer term management of Rhizoctonia in sugarbeet compared to seed treatments. Newer fungicides that are applied in-furrow are becoming available to manage various soil-borne diseases, but they require field testing to determine if they’re effective over a wide range of soils.

**Goal:** Determine the efficacy of fungicides applied in-furrow for soil-borne Rhizoctonia disease management.

**Objectives:** Specific objectives will be to compare the efficacy of a new fungicide that combines conventional chemistry and a biological product with other conventional in-furrow fungicide treatments for management of diseases caused by Rhizoctonia.

**Impact:** Results should increase awareness for growers of the use of in-furrow fungicides for soil-borne disease management in sugarbeet and provide efficacy data for federal pesticide labeling efforts.

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**Keywords:** sugarbeet, Rhizoctonia disease, fungicide efficacy

**PARP:** not applicable

6. Compost carryover and cover crop effects on soil quality, profitability, and cultivar selection in organic dryland wheat

**Investigators:** Jay Norton, Urszula Norton, Axel Garcia y Garcia, and collaborators from Utah State, Oregon State, and Washington State universities

**Issue:** Southeast Wyoming dryland crop producers face challenges in maintaining soil productivity because large-scale production and low profit margins prevent extensive use of soil amendments. More than 20 percent of Wyoming wheat producers are certified organic, which makes maintaining soil productivity even more challenging because of intensive tillage used for weed control.

**Goal:** Study the feasibility and effectiveness of one-time compost application together with appropriate wheat varieties and use of cover crops in fallow periods.

**Objectives:** Evaluate effects of different rates of compost applied one time—along with interactions with different cultivars and cover crops—on soil quality and profitability in dryland winter wheat cropping systems in three on-farm trials near Slater and Albin and one on-station trial at the James C. Hageman Sustainable Agriculture Research and Extension Center.

**Impact:** Results should allow both conventional and organic wheat farmers to evaluate the option of a one-time, high-rate compost application; this could increase soil water-holding capacity and support use of cover crops, which could result in healthier, more productive soil. Wheat cultivar trials will provide information on which varieties perform best under the alternative practices.

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**Keywords:** winter wheat, compost, cover crop

**PARP:** I, II, VII, IX, X
7. Weather monitoring in winter wheat variety trials

**Investigators:** Keith Kennedy, Jerry Nachtman, Axel Garcia y Garcia, and Caleb Carter

**Issue:** Hard winter wheat variety trials have been conducted by the University of Wyoming Agricultural Experiment Station in partnership with the Wyoming Wheat Marketing Commission/Crop Research Foundation of Wyoming since 1992. The scarcity of weather data correlating to these trials, however, impedes the ability of farmers to select hard winter wheat (HWW) varieties suited to their location, which also complicates the selection of experimental lines for public release.

**Goal:** Establish mobile weather stations at five HWW variety trial locations across southeast Wyoming, including dryland and irrigated trials.

**Objectives:** Correlate weather events, including frost dates, low temperatures, and factors affecting breaking of spring dormancy, among them day length and air/soil temperatures.

**Impact:** Data obtained should aid dryland and irrigated wheat farmers throughout southeast Wyoming in varietal selection and the timing and type of cultural practices. Selecting varieties for release will be eased, and plant breeders should be better equipped to develop traits to mitigate stresses occurring in Wyoming’s climate.

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**Keywords:** winter wheat, variety trial, weather

**PARP:** VIII, X

8. Evaluating variable-rate irrigation system at SAREC

**Investigators:** Brian Lee, Robert Baumgartner, and Milton Geiger

**Issue:** Variable-rate irrigation (VRI) systems allow farmers to irrigate more efficiently based on an electrical conductivity map overlay for the pivot to determine different watering zones. Such systems, however, take time to pay off.

**Goal:** Conduct an economic evaluation of the VRI system that has been installed on a 61.48-acre pivot at the James C. Hageman Sustainable Agriculture Research and Extension Center (SAREC), including a determination of the payback period and energy savings.

**Objectives:** Evaluate the VRI system for increased irrigation efficiency and energy savings, which will help determine how long it takes to pay the machine off and begin realizing greater profits.

**Impact:** Results should assist area farmers make more informed decisions whether VRI is something that would benefit their operations and whether the purchase of a VRI system for their pivot irrigation operations makes economic sense.

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**Keywords:** variable-rate irrigation, economic evaluation, energy efficiency

**PARP:** IV:4, VII:4,7