

Wyoming Agricultural Experiment Station 2019 SELECTED RESEARCH IMPACTS

WAES—Who We Are

For over 125 years the Wyoming Agricultural Experiment Station has been providing support for fundamental and applied research on agricultural, natural, and community resource issues related to the needs of Wyoming, the region, the nation, and the world. WAES operates four Research and Extension Centers located in Laramie, Powell, Sheridan, and Lingle. As the research branch of the University of Wyoming College of Agriculture and Natural Resources, WAES funds and actively promotes research with emphasis on areas identified through stakeholder input and national priorities. The following impacts represent a small sample of the research we support.



Wyoming First-grains project creates ag product niche

Wyoming First-grains is a research and economic development project designed to create an agricultural sector niche. The project brings humanity's first-domesticated, Old World cereal crops such as einkorn, heritage varieties of barley, emmer wheat, and spelt, to Wyoming. The project builds processing infrastructure, fosters markets, and develops brand presence through trademarked Neolithic™ brand products. Target markets for products include regional craft brewpubs and premium bakeries. The Wyoming First-grains project will become a stand-alone business and spin off to the private sector in approximately five years.

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Study examines energy infrastructure and pronghorn mortality

Pronghorn are found only in North America and Wyoming has historically provided habitat to more than half the population. Pronghorn populations have declined about 30 percent over the past two decades. Female pronghorn are particularly vulnerable to death during summer when energy demands for reproduction are high. Our project investigated the effects of energy infrastructure and environmental factors on mortality risk for female pronghorn. Summer mortality did not appear affected by distance to, or density of, roads, oil and gas wells, or fences for the 114 GPS-collared pronghorns in our two-year study; however, greater summer mortality was related to pronghorn entering the previous winter in poor body condition and for those animals experiencing winters with deep and fluctuating snow depths.

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Research informs Thunder Basin landscape management

The Thunder Basin is a patchwork of state, federal, and privately owned lands that include the Thunder Basin National Grassland managed mostly by the U.S. Forest Service. The region is unique from an economic and conservation perspective because it produces significant numbers of cattle and sheep, has active energy production including oil, gas, and coal mines, and is home to many grassland and shrubland species such as sage-grouse, mountain plovers, black-tailed prairie dogs, pronghorn, and mule deer. Scientists are leveraging existing relationships with local, state, and federal government, ranchers, agencies, and industry to inform research-based management of this complex landscape.

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Wyoming could cultivate bacterial cellulose as textile fiber

Bacterial cellulose may be an ideal fiber source to grow in Wyoming because less land and water is required than for high-fiber crops and no pesticides. This alternative source of cellulosic material has practically no impurities and requires less processing than traditional cellulose fiber sources. Bacterial cellulose can be altered to fit a variety of end uses, from a leather alternative, to parchment, to apparel. Consumer perception of product prototypes is ongoing and will ultimately determine the viability of bacterial cellulose as a fiber for textile materials.

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Evaluating indigenous plants and foods of Wyoming

The American Indian diet has significantly shifted from one comprised of localized plants to a “Westernized” diet composed of processed and energy-dense foods, which has contributed to a pattern of greater fat and saturated fat intake and lesser fruit and vegetable intake. Needs specifically addressed through the project include: building understanding of the use and value of indigenous plants and foods, identifying nutrient composition of indigenous plants and foods and contribution to dietary patterns, and promoting knowledge and understanding of indigenous plants and foods among tribal members (especially youth).

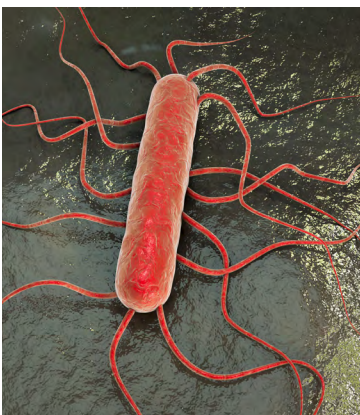
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Best methods determined for post-wildfire forest recovery

A better understanding of how forests recover following wildfire is necessary to maintain healthy forest ecosystems. A post-wildfire restoration study began one year after the Arapaho fire burned the Rogers Research Site near Fletcher Park. The study looked at pine introduction, removal methods of burned trees, and erosion control methods. Preliminary results show pine seedling density was greatest when seedlings were planted compared to natural regeneration or hand-seeding. Cutting of standing snags and removal of slash also produced the highest seedling density. Native grass seeding slightly reduced invasive species abundance, and increased invasive species cover was associated with decreased seedlings. Initial results indicate which post-wildfire treatments may be most beneficial to restore forests following wildfire.

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Probe detects bacteria-produced biofilm, promotes food safety

Listeria monocytogenes is a pathogen associated with the deadliest foodborne outbreaks in recent U.S. history. Based on the socio-economic impact, listerial infections are the third to fourth costliest infections caused by microbial and viral foodborne pathogens. A probe has been developed to detect the bacteria-produced biofilms in produce storage and processing facilities. Listerial biofilm detection will greatly assist with developing targeted disinfection protocols to eliminate listerial contamination in a variety of foods.

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WYOMING AGRICULTURAL EXPERIMENT STATION

To view past impact summaries and the WAES research database, visit www.uwyo.edu/uwexpstn/research-results-impacts.

Contact (307) 766-3667 or aes@uwyo.edu to learn more about these research projects and other WAES programs.

