



BARNYARDS & BACKYARDS 2019

UNIVERSITY OF WYOMING EXTENSION | AG & HORT



Wyoming grown first-grains project seeks recipe for niche success

CARRIE EBERLE

First-grains, often called “ancient grains,” are the first domesticated cereal crops.

These include two varieties of wheat, emmer and einkorn, an ancient cousin of wheat called spelt, and barley (ancient varieties). A University of Wyoming research and economic development project is trying to build a niche industry around these crops.

The name Neolithic Brand and the petroglyph sun logo (at right) have been trademarked to build brand loyalty and market share around the products.

The name comes from the Neolithic era, which is the name archeologists use for the time when agriculture was first developed, about 12,000 years ago. The tagline “One step away from wild” refers to these grains being the first domesticated grains.

Premium grains, higher returns?

This project creates an opportunity to serve an untapped area of the market and provides a niche for farmers to grow premium grains with a potentially higher return.

Farmers will be asking, “Where is the market for these crops? How much does it cost to grow them, and how much would I get for selling them?” All good questions and ones this project aims to answer.

Researchers in the College of Agriculture and Natural Resources grew about 25 acres of emmer wheat and spelt on three UW research and extension centers last year. The Wyoming Malting Company in Pine Bluffs will malt the grains, which

will be distributed to craft brewpubs in the state to experiment with and develop their own craft brews around these grains.

Some of the grains will be used by a few bakeries to evaluate their properties for breads and other baked products.

The goal is to spin off a profitable, sustainable company to support what is hoped to be a niche industry for the state’s agricultural sector.

Obstacles to overcome

Emmer, einkorn and spelt are called the “hulled grains” because they do not thresh free of their hulls when harvested. This is good for making malt but bad for milling. A separate de-hulling step is required before milling. The capacity for non-organic de-hulling does not exist in Wyoming.

Then there is the milling. There used to be thousands of flour mills in the United States, but during the 20th century with consolidation and concentration in agriculture, many of these closed and were replaced by large industrial mills that make a limited variety of flours in enormous quantities. Small-scale milling for this project is not currently available in Wyoming.

A de-hulling machine and a small flour mill, large enough to support this niche industry, will be bought. These two pieces of machinery will be the centerpieces around which the future company will develop.

Product prices, marketing process

Information has been collected this year on growing costs, and work will be done with the



partners in malting and baking on pricing for what will be premium products. Demand in urban areas of the country may be higher, but the project will start small in Wyoming for proof-of-concept before tackling the logistics and marketing issues of more distant markets.

Much as the craft beer industry has developed in the last 20 years, introducing terms like IPA and hefeweizen (wheat beer), there is a niche for these (old) new varieties of flour and additional varieties of malted grains.

Learn more about early agriculture and first grains on our website www.neolithbrand.com. Thomas Foulke, senior research scientist in the Department of Agricultural and Applied Economics, is project director for the Wyoming First-grains project.

Carrie Eberle is an assistant professor of agronomy and cropping systems in the Department of Plant Sciences and is based at the James C. Hageman Sustainable Agriculture Research and Extension Center near Lingle. Contact her at 307-837-2000 or carrie.eberle@uwyo.edu.

These fruits can weather Wyoming’s harsh winters and wow summer palates

Two to three mature gooseberry or currant plants are usually enough to keep most families stocked with berries for fresh eating, cooking and preserving.

BY BRIAN SEBADE

Currants and gooseberries are well-suited for Wyoming’s climate. These perennial shrubs are in the Ribes genus and offer a fair number of cultivar options. Currants and gooseberries can be planted in landscapes and do not need special garden beds. They do best in full to partial sun but are adaptable and can survive in shaded areas, too. Consider planting on the north side of buildings in areas of high elevation or low-lying areas to delay the blooming, which helps avoid frost damage to blossoms.

Most currant and gooseberry cultivars are USDA hardiness zones 3 or 4, which makes them ideal for Wyoming. Adding several inches of mulch at the base of plants reduces competition from weeds and grass, helps maintain moisture for plant roots and reduces injury from mowers and weed eaters.



Production

They bloom early in spring and produce fruit during the middle of July to early August. Most currants will produce fruit in a one- to two-week window, while gooseberries produce over a longer three- to four-week period. Well-drained soils that remain cool through the growing season with adequate moisture are best. These plants can survive in slightly acidic and alkaline soils. Currants and gooseberries have moderate nutrient needs, so incorporating organic matter before planting is useful. Also consider adding fertilizer or organic matter around established plants.

Size and Space

Currants and gooseberries will produce fruit after two years and usually take three to five years to reach a mature size. Mature currant plants are

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THE AGRICULTURE AND HORTICULTURE TEAM IS YOUR RELIABLE RESOURCE FOR INFORMATION, AND IT'S FREE

CHANCE MARSHALL

Members of the University of Wyoming Extension Agriculture and Horticulture Team have written the articles in this publication.

Our team is made up of UW Extension personnel who specialize in understanding and addressing the needs of farmers, ranchers, horticulture producers, landscapers, property owners, gardeners and enthusiasts throughout Wyoming. The team is here for you and continues to be a reliable source of information that is free and available in every county of Wyoming!

Whether growing animals, crops, or other plants, Wyoming is unique and has its own challenges. That's why extension educators and specialists show up every day at community centers, community colleges, homes, farms, ranches, gardens and schools to discover needs and present research-based approaches.

We partner with organizations, state agencies, counties and local conservation districts and weed and pest control districts to offer educational opportunities and certification programs.

Our educators meet with Wyoming residents in person and through remote conferences, online trainings, websites and blogs. We contribute articles to local newspapers and the *Wyoming Livestock Roundup*. We also produce the quarterly *Barnyards & Backyards* magazine, which is dedicated to rural living in Wyoming. (See page 11 for subscription information). Our goal is to help our clientele be successful!

The stories in this Barnyards & Backyards insert include contact information for the authors. Every year, readers follow up by email, phone and in person at events and county offices. We invite you to take advantage of University of Wyoming Extension resources.

Besides agriculture and horticulture, UW Extension can help in range management, nutrition, food safety, community development, 4-H youth development and Master Gardeners. Educators and specialists serve every county and the Wind River Reservation.

Go to <http://bit.ly/countyoffices> to find your local extension office or visit the UW Extension website at <http://bit.ly/WyoExtension>. And while you're there, be sure to check out the calendar of events!

Chance Marshall is a University of Wyoming Extension educator based in Fremont County and serving northwest Wyoming. He is the chair of Extension Agriculture and Horticulture Team, which produced this publication. He can be contacted at 307-332-2363 or at cmarsa1@uwyo.edu.



UW Extension restoration ecologist Kristina Hufford discusses her reclamation plots at a 2018 field day in Sheridan.

Wyoming Agricultural Climate Network monitors Mother Nature

Network offers real-time weather data at click of a link

VIVEK SHARMA, CHRIS NICOLSON, TONY BERGANTINO, JEFF COWLEY

The University of Wyoming in collaboration with the Wyoming State Engineer's Office has developed a web-based Wyoming Agricultural Climate Network (WACNet) to enhance communication of climate, agricultural and natural resources topics among researchers, stakeholders and producers.

Understanding potential changes in the magnitude and trend of local climate and water consumption is critical to better understand the impacts on agricultural and natural resources ecosystem productivity.

In many cases, past weather conditions, current conditions, or future conditions and forecasts can affect decisions by producers ranging from irrigation to pest and disease control.

WACNet is a network of 25 weather stations across Wyoming. These stations are mostly in the irrigated regions of the Bighorn, Green and Platte River basins. Visit <http://bit.ly/WACNet> for information and to view station locations.

Some stations were also installed to support the forest and natural resources ecosystem research. For example, the Rogers Research Station in southeast Wyoming near Laramie Peak was recently repaired and added to WACNet in 2017.

All monitoring stations provide real-time data that include air temperature, relative humidity, wind speed, wind direction, solar radiation and precipitation.

Some stations also measure soil moisture, soil temperature, dew-point temperature, atmospheric pressure and vapor pressure deficit. Some stations also have heated precipitation gauges that allow year-round measurement of precipitation.

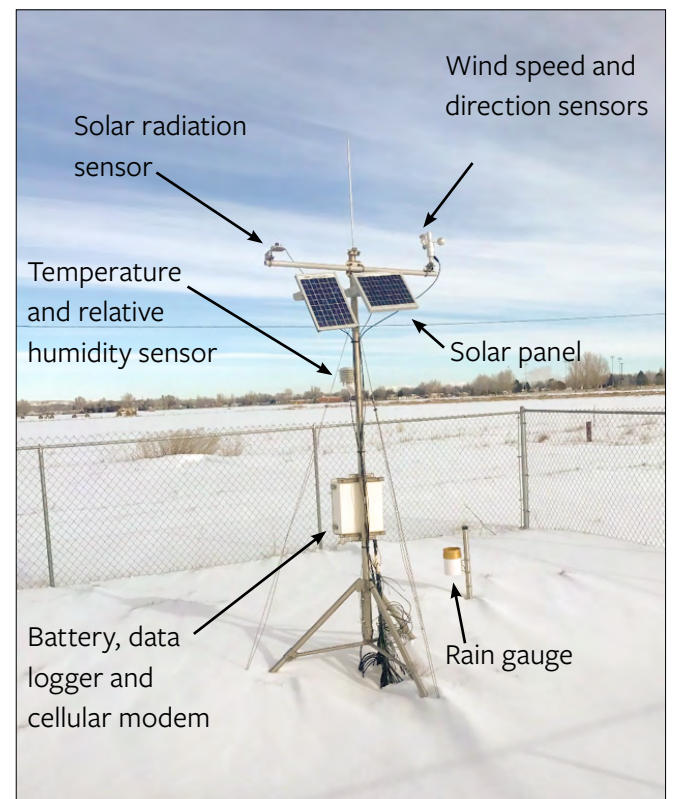
All stations are comprised of Campbell Scientific CR-3000/CR-1000/CR-6 data loggers and sensors from different manufacturers. Solar panels recharge the data logger batteries.

All stations are integrated into a web-based platform hosted at the Wyoming Water Resources Data System (WRDS) at UW. Each weather station gathers then transmits raw data via cellular modem and internet to WRDS. WRDS then processes and assesses the data for quality assurance/quality control and disseminates them via the WACNet website.

Information is recorded hourly and daily for each WACNet station. A few stations are recording at 30- or 15-minute timescales. The information can also be accessed in graphical and table format to summarize the last seven and 30 days' conditions. The user can download the files for long-term climate data on hourly and daily timescales.

Real-time climate data from a specific area can be of great benefit to producers and other stakeholders. Climate data helps quantify the reference evapotranspiration, consumptive water use from an irrigated field, and heat units, which further helps crop producers decide when and how much to irrigate. Other benefits include information on when to plant, when to apply fertilizer and pest management information.

Vivek Sharma is the University of Wyoming Extension irrigation specialist and an assistant professor in the Department of Plant Sciences, Chris Nicolson is director and Tony Bergantino deputy director of the Water Resources Data System, Jeff Cowley is with the interstate streams division of the Wyoming State Engineers Office. Sharma can be reached at 307- 754-2223 or sharma@uwyo.edu; Nicolson can be reached at cnichol5@uwyo.edu; Bergantino at antonius@uwyo.edu; and Cowley at jeff.cowley@wyo.gov.



Wyoming Agricultural Climate Network (WACNet) automated weather station at Worland.

Hoop houses provide snug home for veggies but require an inside touch

CATHERINE WISSNER

A high tunnel (HT) or hoop house extends the growing season.

An HT and a hoop house are non-permanent, unheated greenhouse structures typically covered with plastic. They have a different set of growing rules than growing outside.

Using an HT or hoop house allows growers to start as early as February or March and go as late as December. They can also accelerate the growing season and provide protection from wind and hail.

There are many kits or DIY online instructions for HT. Before getting a HT, consider how big it needs to be, what needs to be grown and if it will get enough sunlight. Water and soil quality, wind and snow loads, covering material and growing methods should also be taken into consideration.

Holistic approach

What works in an outside garden can be very damaging inside a high tunnel. Regardless of growing directly in the soil, raised benches,

GENERAL RULES

- Increase air circulation,
- Decrease humidity,
- Never use overhead watering systems,
- Sanitation is everything,
- Not all fertilizers work in a high tunnel, and
- Never use manures.

or containers, a holistic approach to soil and water management will work best. Develop a fertilizer plan with low nitrogen inputs of around 10 percent nitrogen, and keep records of when fertilizer is added.

The soil in a high tunnel heats up quicker, causing organic matter to decompose faster compared to outside garden soil. Adding organic matter, like grass clippings, leaves, old hay, etc., back to the soil is important at the end of the season. Do not work manures directly into the soil as they may raise the soil salt levels and cause irreversible soil damage.

Temperature, humidity levels important

Keeping temperatures below 95 degrees is important so pollen will not decrease in viability. Pollen may even stick together if the humidity is too high. Pollinators are needed for first blooms. Some of the best pollinators are sweat, mason, and alkali bees, bee flies, bumblebees and honey bees.

Pollinating insects are susceptible to insecticides, including Neem Oil. The best approach is careful use of fertilizers, improved airflow and reduced humidity. Trap crops can be planted to help reduce insect pressures, like mustards, buckwheat and collards.

Watering in a high tunnel should be kept on the ground with soaker hoses or drip tape. Keeping the plants on the dry side and humidity as low as possible is better. Excess humidity breeds insect



Strawberry plants grow inside a hoop house at the student ACRES Farm near the University of Wyoming campus.

and disease problems. A drier greenhouse will result in healthier plants. Best time to water is late morning to early afternoon. This helps prevent tomato cracks and splitting problems.

Catherine Wissner is the University of Wyoming Extension horticulturist in Laramie County. Contact her at 307-633-4383 or cwissner@uwyo.edu.

HANDS-ON LANDOWNER INVOLVEMENT AT ROOT OF HEALTHY TREES

DONNA HOFFMAN

Planting a tree is a great commitment and investment to the next generation.

Doing so provides shade, wind protection, increases air quality, provides wildlife habitat and soil stabilization, helps with flood control and improves water quality.

Trees are a long-term investment. They need continued care. In the arid west specifically they need supplemental water and oftentimes nutrients. But they also need structural and maintenance pruning throughout their lives, which can be up to 150 years for some of Wyoming's native trees.

A homeowner should plan the overall landscape of their site based upon the tree's mature size.

Any homeowner or land manager with basic training can learn to prune young trees for structure and form. For pruning tips and suggestions, visit the National Arbor Day Foundation at <https://www.arborday.org> and click on Trees then Planting and Care, or contact your local extension office for pruning training opportunities and information.

Properly pruned trees provide savings in future care. For example, properly pruned trees

are less likely to sustain massive tree damage from storms.

Let's look at an example. Two neighbors plant the same variety of a tree in similar spots in their yards but only one did the necessary watering and otherwise forgot about that tree. The other neighbor additionally committed to annual pruning to develop a strong central leader in the tree and well-spaced scaffold branches up and around the trunk.

The second homeowner did the tree and themselves a favor. A strong central leader and well-spaced scaffold branches enable the tree to likely withstand strong Wyoming winds as well as the heavy, wet snows in the spring or the fall when the tree still has leaves.

Eventually, the homeowner will age to the point of not wanting to climb the mature height of their tree and will rely on others for tree care. Hopefully, a licensed and certified arborist will perform the tree care rather than the average Joe with a ladder and a chainsaw.

Hiring a tree care professional is not inexpensive but is rather another investment into the tree's longevity.

A well-educated, trained and insured tree care professional, or arborist, can provide a detailed estimate of the work they

The key to keeping maintenance costs lower in the mature tree is to ensure proper pruning for structure and form in the young tree and ensuring the trees receive care after major storms or following any damage that occurs.

recommend and provide proof of insurance. In some towns, they will be able to show they are licensed to work in the community and should be able to show their most seasoned employees have been designated certified arborists by one of the professional associations of arborists. They should be able to explain what equipment will be necessary and what safety equipment they will use. They should also talk to you about you staying safe while the work is performed.

As a general rule a mature tree shorter than 25 feet will cost \$200 to \$750 to prune. Trees 30 to 60 feet tall will range from \$400 to \$1,250. Trees over 60 feet tall will require \$750 to more than \$2,000 to prune.

Tree removal may have additional fees and require additional workers to ensure branches

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PESTS CAN EVENTUALLY ARRIVE, EVEN AT A SNAIL'S PACE — THEY ALREADY HAVE IN MONTANA

SCOTT SCHELL

In dry Wyoming there is not much concern with snails or their close relatives in the animal phylum Mollusca, which includes oysters, clams, octopuses and squids.

Gardeners might have occasional issues with garden snails or their slimy cousins, the slugs. There is a large abundance of snails and many different snail species exist in the Rocky Mountain West. In Wyoming, 54 species of land snails have been recorded. If Wyoming has the same species as Montana, it has around twice that number of aquatic snail species.

A rancher in the summer of 2017 reported to the Converse County Weed and Pest Control District a snail infestation near the North Platte River. There was concern this could be the same invasive white heath snail (*Xerolenta obvia*) that caused problems in a grain-growing region southeast of Great Falls, Montana, in 2012.

The white heath snail is originally from central Europe and was initially documented in Ontario, Canada, in 1975. It was first reported to Montana agricultural authorities in 2012. Based on the extent of the infestation, it is now thought the invasive snail had been present in Montana for over 20 years.

The white heath snail can now be found in suitable habitat over an area approximately 100,000 acres in size in Montana. This is too large of an area to successfully eradicate the invasive snail with available resources. The white heath snail is a plant feeder capable of damaging all of the major crops grown in the region including alfalfa, wheat, barley and even fruit trees.

Wyoming's Plant Protection and Quarantine office of the USDA's Animal and Plant Protection Service was contacted to help investigate the Converse County snails. The agency at the national level has a malacologist (snail) identification specialist. PPQ personnel collected a sample of the snails and sent them off to the specialist. Fortunately, the snails were determined to be a native species whose common name is the suboval ambersnail, a snail known to occasionally become locally abundant in ideal conditions. Because the snail is a native species, many other native animals are adapted to prey on it and make their populations subside naturally over time.

This was a good example of everybody, (the rancher, the Converse County weed and pest, University of Wyoming Extension, and USDA-APHIS-PPQ), working together to react to a potential pest in time so eradication, if needed, could be successful.

If an unusual animal is seen – from slugs to elephants, weedy looking plants, or diseased plants on your land, roadsides, or wildland – note the location as accurately as possible and take some good photographs, plus samples, if possible. Contact your local University of Wyoming Extension office, weed and pest control district office, or me at insectid@uwyo.edu about submitting samples and questions about pest problems. It may turn out to be something harmless, but eradication of a serious pest is only possible if caught early.

Scott Schell is the University of Wyoming Extension entomologist and can be contacted at 307-766-2508 or sschell@uwyo.edu.

Fishers have probably heard of the threat to our rivers and lakes posed by the invasive New Zealand mud snails and zebra mussels. The giant African land snail has also caused trouble in Florida. Ten years effort and over a million dollars was needed to eradicate them after they were released in Miami in 1966.

Giant African snails were introduced again in south Florida in 2011. It was only in July of last year surveys for them, conducted by the Plant Protection and Quarantine office of the USDA's Animal and Plant Protection Service and Florida Department of Agriculture and Consumer Services, turned up negative.

The giant African snail is a crop pest. The 8-inch long snails also damage stucco and plaster exteriors on buildings with their appetite for calcium. They harbor a parasitic nematode that can cause meningitis in humans.

Not much attention is ever paid to snails and slugs because they are wingless, legless, and slimy, and a little boring when compared to adult insects. Some snails require intermediate hosts of some harmful livestock and wildlife parasite species. Many insect species, toads, frogs, salamanders, fish and birds prey on mollusks.



Harlan Ratcliff



Ian Foley, Montana Department of Agriculture, Bugwood.org

⚠️ **The invasive white heath snail (*Xerolenta obvia*), native to Europe, feeds on a wide variety of crop plants. A population of the pest is established in Montana and was documented in 2012. If the snails are massed on the plants being harvested, they contaminate the grain or hay with their bodies.**

⚠️ **The suboval ambersnail (whose scientific name is *Catinella vermata* although possibly described to science first as *Succinea vermata*) is a small land dweller with a shell a little over a ½-inch long and ¼-inch wide. The snail is found over a large part of the central U.S. in river valley habitats. Additional information on this and other snail species can be found at Montana Field Guide site, <http://fieldguide.mt.gov>.**

BLACK GRASS BUG INFESTATIONS CHEW AWAY FORAGE YIELDS

A University of Nebraska study showed a more than 800-pound per acre increase in hay production after successfully treating a severe black grass bug infestation.

BLAKE HAUPTMAN AND SCOTT SCHELL

Labops hesperius or black grass bug (BGB) is a small (less than ¼ inch as an adult) native insect but can cause large production losses in introduced crested and intermediate wheatgrasses plantings.

BGB species feed on many cool-season native grasses but are rarely a problem on most northern mixed-grass prairies.

BGB insert their piercing sucking mouthparts into a grass stem. By injecting saliva, the insect breaks down the plant's cellular contents, which are then sucked out of the blade, reducing forage quality and yield.

The BGB's piercing beak leaves a distinct yellow mark for each feeding on the leaf. A BGB population estimate can be made based on the feeding marks left on green grass leaves to determine if management actions are needed. Determining an economic threshold for BGB damage is difficult as it varies with cost of treatment options and the value of the forage. Thirty percent or higher of grass feeding damage would be an action threshold, and 50 percent damage is economically damaging.

BLACK GRASS BUG (BGB) QUICK FACTS:

- BGB feeding turns green grasses straw-colored in early spring
- BGB don't chew leaves, they suck out the green cell contents
- BGB are small insects and minute when they hatch from eggs in late winter and early spring
- BGB are most active feeding on grasses in late afternoon to early evening
- BGB are native insects that thrive on crested and intermediate wheatgrass
- BGB feeding reduces forage value and yield and in severe cases can kill grass plants

How effective are insecticides in controlling BGB?

Understanding the BGB life cycle and ecology is important to ensure control measures are applied at appropriate times to be most effective. Very high levels of control (more than 95 percent) have been obtained with properly timed insecticide applications and can give several years of relief from BGB damage.

BGB start hatching in late winter to early spring. The insects develop to adulthood over about one month if the weather stays favorable. Adult females deposit their eggs in dry grass stems from last year's growth. The eggs must experience cold temperatures for an extended period and then undergo a period of warming before they hatch the following year. A spring application of insecticide should be after they have all hatched but before they have started putting eggs into the grass stems.

What can be done to prevent BGB-caused grass damage besides insecticides?

1. Burning BGB-infested fields when eggs are inside the dried grass stems provides effective control; however, the cost to ensure a controlled burn doesn't escape containment is expensive, and there is always a risk of wildfire.
2. Heavy grazing pressure on BGB-infested pastures in the late summer to early fall to "force" livestock to eat and trample down the dried-out grass stems that contains BGB eggs can provide some control; however, this can be stressful for livestock and reduce their physical condition.
3. Mowing infested crested and intermediate wheatgrass fields can effectively reduce populations of BGB. Consider your machinery costs when comparing this option to others.

Blake Hauptman is a University of Wyoming Extension educator based in Crook County and serving northeast Wyoming. He can be reached at 307-283-1192 or bhauptma@uwyo.edu. Scott Schell is the extension entomologist and can be contacted at 307-766-2508 or sschell@uwyo.edu.

Black grass bugs start to hatch from eggs laid in old standing grass stems in the early spring when the cool-season grasses break dormancy. The first stage is only about 1/25th of an inch long. They rapidly go through incomplete metamorphosis and become ¼-inch long adults and deposit most of the next generation of eggs by late June.

Whitney Granshaw, Colorado State University, Bugwood.org

Fruits, continued from page 1

3 to 5 feet high. Plants should be spaced 4 to 6 feet apart to allow room to spread and for access to harvest berries.

Gooseberries have more of a spreading growth pattern and should be spaced farther apart if left unpruned.

Prune both species to help with shape and fruit production. Remove older branches to maintain plant vigor instead of pruning off the ends of branches. Aim to maintain 1-, 2- and 3-year-old branches on plants for best production. Plants should be pruned during dormancy (November-March).

Potential disease and insect issues to monitor:

- Powdery mildew
- Anthracnose
- Currant aphid
- Currant fruit fly
- Leaf spot
- White pine blister rust

Variety Selection

Black, red, pink and white are the most common colors. The berry size is

relatively small compared to some fruits such as strawberries, but the quantity produced from mature bushes can be quite large.

Berry flavor also varies between species. Tartness is often the biggest factor when selecting for taste.

Currant stems lack thorns, while gooseberries generally have small thorns. There have been fewer varieties of gooseberries developed due to the thorns.

Harvest berries when full and have proper color. Some types of gooseberries are harvested before they are fully ready to harvest to allow them to slowly ripen and increase flavor. Berries can be left for wildlife as well. Some varieties that do not bear fruit are used for ornamental purposes.

Brian Sebade is the University of Wyoming Extension educator based in Albany County and serving southeast Wyoming. He can be reached at 307-721-2571 or bsebade@uwyo.edu.

CURRENTS

BLACK

- 'Ben Sarek' (highly resistant to blister rust, but susceptible to mildew)
- 'Titania' (highly resistant to mildew and blister rust)
- 'Consort' (highly resistant to blister rust)

WHITE

- 'White Imperial' (very mildew resistant)
- 'Blanca White' (very mildew resistant)
- 'Primus White' (susceptible to mildew)

RED

- 'Red Lake' (mostly resistant to blister rust but susceptible to mildew)
- 'Rovada' (resistant to mildew and leaf spot diseases)
- 'Tatran' (very resistant to mildew)

GOOSEBERRIES

- 'Pixwell' (pink) (mildew resistant)
- 'Invicta' (resistant to mildew but not leaf spot)
- 'Poorman' (very resistant to mildew)



Producers have crop insurance choices for Wyoming

JAMES SEDMAN, JOHN HEWLETT

Few, if any, agricultural businesses can operate with no exposure to production and price risks. Insurance programs have been developed under the Federal Crop Insurance Program umbrella that can help crop and livestock producers manage these types of risk and more.

Forage options

Pasture, Rangeland, Forage - Rainfall Index (RI-PRF) has become a widely used policy across Wyoming. RI-PRF combines the best aspects of an affordable group policy with the ability to insure in a local area (17 by 17 square miles).

The policy insures against productivity loss resulting from reduced rainfall based on National Oceanic and Atmospheric Administration (NOAA) rainfall index data. This rainfall data is applied across selected grid areas and divided into two-month production intervals.

RI-PRF allows for a large degree of flexibility to tailor coverage levels, as well as time periods to protect a desired production period. Coverage ranges between 70 and 90 percent of the county base value with the additional option of setting a productivity factor of between 60 percent and 150 percent.

More than one interval must be selected for coverage (with at least 30 percent and no more than 70 percent in any one interval), and the intervals cannot be consecutive.

Indemnities are paid when the actual value per acre, as determined by the rainfall index, falls below the insured value. Note that actual rainfall received at a specific location in a grid area may not coincide with the rainfall index.

Alfalfa and alfalfa/grass mixes intended for forage are insurable under a **Forage Production** policy. The base price is established on a yearly basis and determines the amount of coverage available. Coverage is available from 50 to 75 percent of established yield. Certain requirements for stand populations and age must be met. Depending on the county and the farm program options selected, managers may be able to increase coverage levels to 86 percent using the **Supplemental Coverage Option (SCO)**.

Crop policies

Numerous options are available to insure major crops in Wyoming against loss of revenue (decline in yield, price, or both), including wheat, corn, sugar beets and dry beans. Options are also available for millet, sunflowers, potatoes and other crops.

Revenue Protection (RP) policies provide an overall revenue guarantee that protects against falling prices and yields; indemnities are paid if actual revenue is below the guarantee due to declines in harvest price, yield or both.

Producers can also select a Harvest Price Exclusion (HPE), in which the revenue guarantee is determined by the commodity price when the policy is written.

Yield Protection (YP) policies protect solely against declines in yield and can provide coverage of up to 80 percent (depending on the crop) of their **Actual Production History (APH)** yield.

Other APH-based policies are available for certain Wyoming crops like sugar beets and dry beans. These policies are similar to YP policies where they utilize APH yields, with a percentage price election that varies by crop. Other policies, such as **Forage Seeding** coverage, use a maximum dollar amount in place of an APH yield. Check with a local crop insurance agent for policy availability in specific areas.

Catastrophic Coverage (CAT) options are available for most policies for a flat fee of \$300 per producer. This option covers 50 percent of the APH yield at 55 percent of the price. Depending on the crop, additional buy-up options for CAT may be available. The SCO option discussed earlier may also be available, depending on location, crop type and farm program option selected.

Livestock policies

Livestock Risk Protection (LRP) policies use prices from Chicago Mercantile Exchange (CME) indexes to establish

coverage based on the type and size of livestock produced. Coverage periods are available in four-week intervals from 13 to 52 weeks, with coverage levels of 70 to 100 percent of the projected price at the end of the contract. Indemnities are paid where the end-of-contract price is lower than the insured price. The actual cash price received for the livestock has no bearing on the coverage prices used; these are determined by the indexes. LRP coverage is available in Wyoming for feeder and fed cattle, as well as lamb and swine.

Livestock Gross Margin (LGM) insurance takes the concept of LRP a step further and protects against revenue losses due to increased feed costs or, in the case of dairy production, reduced milk prices. LGM is available for fed cattle, swine and dairy in Wyoming.

Whole farm and other options

Whole Farm Revenue Protection (WFRP) offers revenue insurance against declines in gross income rather than insuring a specific crop. The program is intended to provide coverage for farm and livestock businesses that may not be well-served using other crop insurance policies.

WFRP provides coverage for all agricultural commodities except timber products, livestock for show or sport and pets. Farms can insure up to \$8.5 million in gross income, provided they can document their previous five-year production history and income average, as reported on an IRS Schedule F. Indemnities are paid when actual gross revenue falls below the guarantee level. At least three different commodities must be included in the revenue history to qualify for 80 and 85 percent coverage.

Non-insured Crop Disaster Assistance Program (NAP) coverage is provided through the Farm Service Agency and may be an option for crop and livestock operations seeking basic coverage for yield losses on otherwise non-insurable crops. Basic NAP coverage is 50 percent of expected production at 55 percent of the market price. For a higher premium (capped at \$6,563) managers also have the option of insuring 50 to 65 percent of yield at 100 percent of the market price.

To learn more about crop insurance coverage available, to locate a local insurance agent or to evaluate various insurance options, see www.rma.usda.gov. For more information on disaster assistance programs, NAP coverage, or to contact a local FSA office, see www.fsa.usda.gov.

James Sedman is a consultant to the Department of Agricultural and Applied Economics in the University of Wyoming College of Agriculture and Natural Resources, and John Hewlett is a farm and ranch management specialist in the department. Hewlett may be reached at 307-766-2166 or hewlett@uwyo.edu.

RI-PRF Resources

Visit RMA's Pasture, Rangeland, Forage Support Tool at <http://bit.ly/prf-support-tool>

- Use the grid locator to determine a grid(s) area.
- Then use the Decision Support Tool to select coverage levels, view historic indices and actuarial information, as well as determine the coverage that fits.

Visit RightRisk.org to:

- View and use tools such as the Risk Scenario Planning tool and others to make RI-PRF decisions.
- View free online courses and examples of how RI-PRF may work.



RightRisk.org offers free Risk Scenario Planning Course

JAMES SEDMAN, JOHN HEWLETT

Production agriculture is a rough business. Profit margins are razor thin for most commodities, input costs continue to climb, markets are unstable and the potential for failure is increasing.

Planning should include partial budgets for alternative strategies. Partial budgeting comes in many forms and is a method often used to evaluate potential changes to an enterprise.

Risk Scenario Planning Course

RightRisk.org has developed a Risk Scenario Planner (RSP) tool and companion RSP course to help identify sources of business risk and uncertainty, as well as learn how to use the RSP tool to manage the risk.

The RSP course has three primary modules, including four case studies highlighting how the RSP tool can be used in the partial budgeting process.

The course begins with an overview of the different types of risk: financial, production, human, institutional and marketing/price risks. The course points out that risk doesn't necessarily imply a negative outcome, but instead an uncertain outcome that could be positive, negative or neutral.

In the Future Expectations module, the course describes three risk preferences (seeking, neutral, averse) and outlines many risk biases that can influence decisions.

The Risk Management Framework module discusses how to implement a risk management culture in a business. Effective risk management should be viewed as a competitive advantage, proactive, a priority and an integral part of an organization.

The course highlights each level of the risk management framework and how to begin following the approach it suggests when making management decisions.

The Future Expectation module explores factors that influence decision-making associated with risk.

The biases and heuristics that affect our decision-making are covered. Emphasis is on how to identify these factors affecting decisions and how to account for them.

The RSP Tool

The third module in the RSP course highlights the RSP tool, designed to offer users a comprehensive view into partial budget analysis.

The analysis section allows users to evaluate the effects of the changes introduced by one or two uncertain variables. The problem with many traditional partial budgets is that many of the variables being considered are imperfect; not accounted for are inherent risks in the assumptions used.

For example, if looking at changing from one crop to another, what price for the new crop production should be used? If this price changes, how will it affect the decision-making process when considering the partial budget results?

The RSP tool assigns a range of probable outcomes associated with a change in one or two variables. In this way, it can help users account for variability as they consider alternative management strategies by considering the effects on the bottom-line and ultimately resulting in better-informed management decisions.

This unique feature allows a range of estimates (minimum, maximum and most likely) for up to two variables under consideration. The tool then generates a probability distribution describing the range of potential outcomes. Users can view a range of possible outcomes from the analysis, providing a much clearer understanding of the scope of potential decisions and associated results than possible when using best-guesses.

Case study examples

The RSP course includes four case-studies offering crop and livestock production examples.

Big Country Farms highlights wheat producers examining marketing plans for their wheat crop. They use the RSP tool

to examine a strategy of forward contracting some of their wheat crop as compared to their historic cash sales approach.

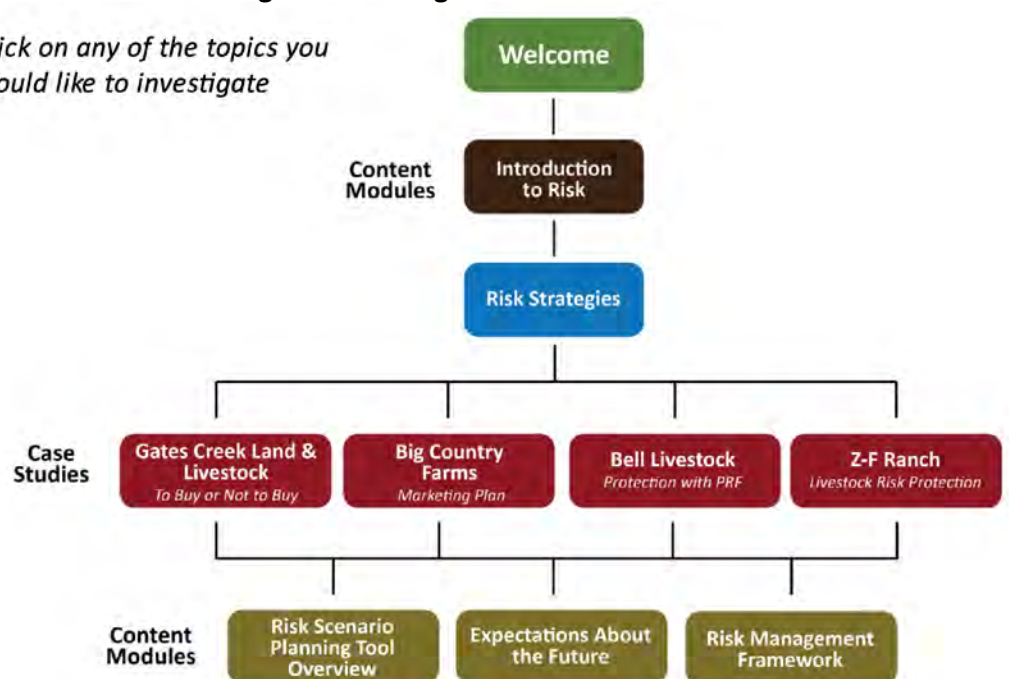
Gates Creek Land and Livestock uses the RSP tool to examine the feasibility of trading-up to a newer windrower and the opportunities that accompany that potential purchase.

Bell Livestock shows how the RSP tool can be used to examine a potential insurance decision: Pasture, Rangeland, Forage-Rainfall Index (RI-PRF) in this case. The example describes how to input historic data from the Risk Management Agency (RMA) online RI-PRF Decision Tool into the RSP and evaluate the likelihood of indemnities at various coverage levels.

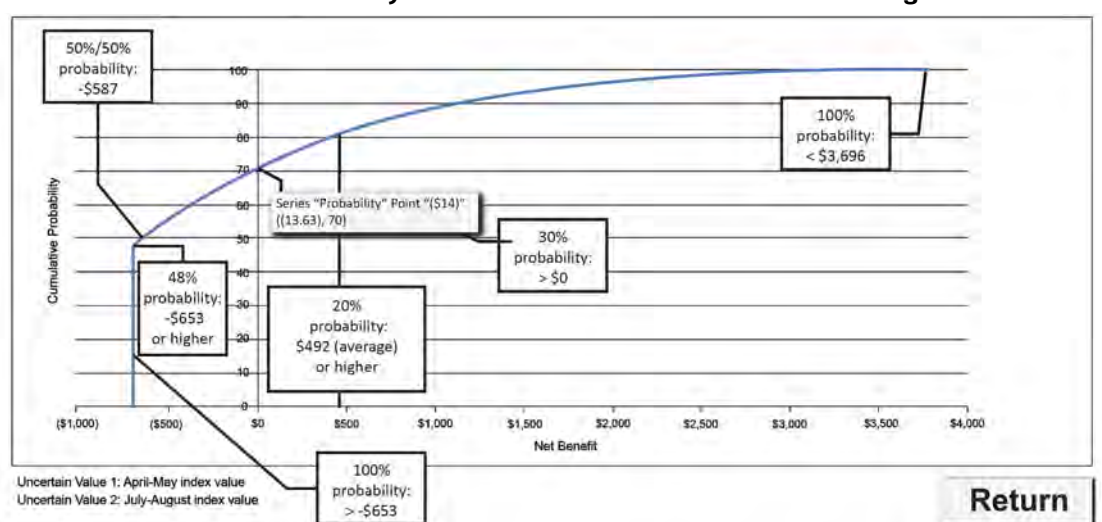
The final case study, Z-F Ranch, offers an example on how the RSP tool can be used to examine a Livestock Risk Protection (LRP) insurance decision.

Chart from the Risk Management Planning Course

Click on any of the topics you would like to investigate



Net Benefit Cumulative Probability Distribution for Bell Livestock RI-PRF Coverage



RIGHTRISK ANALYTICS FROM RIGHTRISK.ORG

The RightRisk Analytics Toolbox contains several spreadsheet-based tools covering a wide range of agricultural risk management areas and issues including budgeting, forage leasing, machinery costs and whole farm budgeting.

To view or download the toolbox, logon to RightRisk.org. Under the Resources Tab, select Risk Management Tools.

FOR MORE INFORMATION

Visit RightRisk.org to access the Risk Scenario Planning course under the Courses tab, or view one of the many resources available, including the Risk Scenario Planner tool, producer profiles, recorded presentations and other materials to gain insights into developing a viable risk management strategy to meet today's challenges.

Prescribed grazing, recognizing tripwire cues can help douse wildfire risks

Expanding the width of firebreaks and reducing fuel loads can be keys to rural fire mitigation.

SCOTT COTTON

Wyoming producers face many climate conditions including drought years and years with extreme grass growth.

Ranchers, farmers and rural landowners need to recognize certain conditions and take actions to reduce risks. For wildfires, this skillset includes rangeland monitoring, weed management, prescribed grazing and knowledge of wildfire dynamics.

What wildfires need

Wildfires require low humidity, fuel such as dried vegetation, oxygen such as summer winds, and an ignition source. Dry lightning storms, intense sunlight shining through debris, discarded smoking materials, overheating equipment or sparking power lines blown together by wind can start wildfires.

The same conditions that foster wildfires can also increase the intensity of flame walls, heat level and the fire's speed.

Make firebreaks to help contain wildfires

The few rural firefighters who can respond in rural areas can make huge progress if they can find suitable fire "breaks" to defend. Expanding

the width of firebreaks and reducing fuel loads are keys to rural fire mitigation. According to 130/190 Basic Wildfire curriculum at Grassland Wildfire Academies, a Type 3 Engine, more commonly known as a "brush truck" with a 500-gallon water tank, can extinguish up to one-half mile of flame front if the wind is less than 15 mph and the flame wall is 8 inches or less. If the flame wall is 20-foot high, the truck can only manage 200-300 yards.

Dried grass is a major fuel for rangeland wildfires. In years with a wet fall and early spring followed by a summer dry out, grass production, especially annual grasses, can establish thick stands. Cheatgrass is one of the major wildfire risks that enhance flame severity, travel and risk, although other weedy annual species can also be problems.

Most annual grasses have nutritional value for livestock if used pre-seed when green. If producers see abundant growth of annual grasses that will probably dry out, there is an opportunity to graze those grasses and gain pounds of production, if done early.

Proper grazing may reduce wildfire losses

Learning to identify normal growth and when to trigger concerns each year is important.



Any activity on the brown side of a fire places you in immediate jeopardy.

Measures can be taken to mitigate fire severity if producers can identify conditions that produce heavy growth and identify roads or natural firebreaks that are on the "dominant" wind sides of their property or intermittently across large landscapes. Using electric fence may enable grazing an area heavily in the early spring to reduce the fuel load for strips as wide as 300 yards. Let local fire departments know about expanded fire breaks so they know where to run to catch a fire when the flame walls are minimized.

Scott Cotton is a UW Extension educator based in Natrona County and serving central Wyoming. He is past national chair of the Extension Disaster Education Network, is a certified professional rangeland manager and worked three decades as a firefighter. Contact him with any questions at 307-235-9400 or scotton1@uwyo.edu.

IRRIGATION PODS, TRAVELING GUNS GAIN POPULARITY FOR SMALL ACREAGE WATERING

Pods can be connected together in a line and customizable to fit an area; traveling guns are large sprinklers mounted on wheels and pulled across field by an engine or water drive.

CALEB CARTER

Small-acreage landowners around Wyoming have expressed interest in two irrigation methods: irrigation pods and traveling gun sprinklers. Both are proven in Wyoming and are becoming very popular among small-acreage landowners.

Irrigation pods

Irrigation pods are large, round, black pods with sprinklers mounted in the middle. Several pods can be connected together by HDPE line to irrigate a field. This allows flexibility in arrangement depending on the field size and layout.

Flow rates typically range from 2 to 4 gallons per minute (gpm), and 35 to 60 pounds per square inch (psi) pressure, depending on the number of pods, components and configuration.

One of the benefits is they can be moved to a new location while still in operation using an ATV or tractor, or other means. Irrigation pods do need a sod base to aid movement and work best after a pasture has been grazed. They are less effective

in irrigating taller crops, such as corn or even alfalfa, as crop height can impede uniform water application, and moving the line of sprinklers can damage the crops.

Are customizable

While 12 pods are typically the maximum number for one line, additional lines can be added to increase coverage.

Cost and maintenance are also relatively low. A 12-pod irrigation system, covering 10 acres, would cost about \$4,500, not including the well or pump. Cost will vary depending on the size of a field and the number of pods and/or lines used.

Traveling guns

Traveling guns are large sprinklers mounted on wheels. Water is supplied through a 1- to 1-1/2-inch hose. The sprinkler is pulled across a field as the hose is pulled in and wound around a reel, powered by an engine or water drive.

The size of the hose, sprinkler and the length of the hose can be customized to a field and water source. The sprinkler will need a travel lane or lanes to provide unimpeded travel. They can operate over a tilled area as long as there is a smooth surface on which to travel.

Pressure requirements vary from 25 to over 150 psi, depending on the size of the hose, sprinkler, etc. Most guns are capable of covering 0.2 to 0.9 acres per run and between 80 and 100 acres per gun. The application rate can be adjusted by changing the speed at which the cart is retrieved.

There is a wide range of options in sprinkler size and hose length, so costs are quite variable.

The cost for a traveling gun that would cover a 60-acre field would be around \$35,000, around \$583 per acre. The higher pressure requirement also means higher operation costs. Cost will vary, depending on the size of the machine and the area to be covered.

Small-acreage irrigation guide

For more information on these and other methods of irrigating a small acreage, as well as strategies for scheduling irrigations and Wyoming water law questions, please refer to the new Wyoming Small Acreage Irrigation Guide at barnyardsandbackyards.com and click on "water."

Caleb Carter is a University of Wyoming Extension educator based in Goshen County and serving southeast Wyoming. He can be reached at 307-532-2436 or at ccarte13@uwyo.edu. Check out his newsletter at www.uwyoextension.org/highplainscropsite.

ATVs take on multiple duties but careless moment can kill

Agricultural production workers age 18-plus accounted for the highest rate of ATV-related deaths compared to any other industry sector

JEREMIAH VARDIMAN

All Terrain Vehicles (ATVs) have become a workhorse on most agricultural operations.

Their versatility allows them to be used for livestock handling, pesticide applications, hauling loads, transportation, mending fences and much more. They are perfect for unpaved terrain because of their short wheelbase and high center of gravity.

Those same characteristics also make them a risk on agricultural operations. The short wheelbase and high center of gravity makes them prone to lose control due to high speeds, pitch, and roll.

Very simple riding practices, such as ATV maintenance, wearing appropriate clothing, developing proper riding skills, and operating ATVs safely, minimize these risks.

ATVs, like other vehicles, require proper tire and wheel maintenance, ensuring controls are in working order, lights and electrical are

functioning, and oil and fluids are good. This will provide a dependable and safer ATV to operate. Read the owner's manual for maintenance recommendations.

Proper clothing adds to protection. Most users already wear these: long pants, long sleeves, boots that provide ankle support and protection, gloves, and eye protection (sunglasses or goggles).

A helmet is one item not regularly worn. Wyoming does not have a helmet law, even for highways; however, a helmet is the best protection against brain trauma and possible death.

What about riding skills? Operation of an ATV is "rider-active." This means a rider is active in the movement and operation of a vehicle. For example, the rider is constantly shifting weight by leaning into turns, standing and leaning forward when climbing hills, balancing themselves as the ATV traverses obstacles, etc. Proper riding form and skill minimizes accidents.

Unfortunately, hopping on and figuring it out is the most common way for gaining skill. This does not always result in proper riding form or technique. There are courses offered by the ATV Safety Institute, <https://atvsafety.org>, that teach proper handling and operation. These courses are

more specific to recreational use, although the skills directly transfer for use in agricultural tasks.

The last riding practice is simple: operate the ATV safely. These are common sense, such as riding appropriate-sized machines, driving appropriate speeds, do not show off, ride within the limits of the machine, do not exceed the load limit of a machine, and only haul or pull loads appropriate in size for the ATV. Information for ATV machine size, age limits, and load limits are on the warning labels on the machine, owner's manual, or by calling the manufacturer. Riding within the ATV's limits, for example not sidehilling on too steep of slope, provides the safest operational environment.

For more information and resources on ATV safety for agricultural use, contact any member of the UW Extension's Wyoming Good Riding Practice (WyGRiP) team: Jeff Edwards at 307-837-2000 or jedward4@uwyo.edu; Hudson Hill, 307-885-3132 or hrhill@uwyo.edu; Brian Sebade, 307-721-2571 or bsebade@uwyo.edu, and me, at 307-754-8836 or jvardema@uwyo.edu.


Jeremiah Vardiman is a University of Wyoming Extension educator based in Park County and serving northern Wyoming.

ATV FACTS

- The steady increase in ATV use increased preventable ATV injuries and deaths
- An estimated 400,000 injuries and 800 deaths occur each year in the U.S.
- Agricultural production workers age 18+ accounted for the highest rate of ATV-related deaths compared to any other industry sector



Haul loads appropriate for an ATV's size.



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Trees, continued from page 3

do not fall on structures, damage surrounding gardens or yard landscaping, and prevent injuries to workers or residents. Removal costs will most likely be greater than pruning.

If the tree is not accessible with equipment, cranes or lift trucks may be needed to access the work area and remove debris. All of this adds to the complexity of the work.

Donna Hoffman is the county horticulturist in the Natrona County office of University of Wyoming Extension. Contact her at 307-235-9400 or dhoffman@natronacounty-wy.gov.

Sheep specialist advises common liver fluke parasite monitoring

Once known as the sheep liver fluke, this flatworm parasite can cause severe symptoms in many plant-eating animals

WHIT STEWART

The common liver fluke, (*Fasciola hepatica*), has been known to be present in Wyoming since the 1950s.

This large (over 1-inch long as an adult) flatworm parasite previously was known as the sheep liver fluke; however, the common liver fluke (CLF) can successfully complete its lifecycle in many common plant-eating mammals, including horses and humans.

CLF has been found in livestock from 26 states. Data from the 2011 National Beef Quality Audit revealed 24 percent of the slaughtered older bulls and cows had CLF. CLF is not present on every ranch in Wyoming with river drainage, but if a ranch has never had a problem with CLF, extra precautions need to be taken to prevent its introduction or establishment.

The CLF can cause severe disease symptoms and death in any age class of sheep and goats. Cattle are less likely to be killed by CLF infection unless they develop Bacillary hemoglobinuria.

Clinical signs of CLF in sheep include:

- Chronic weight loss
- Persistent ill thrift even under ideal dietary conditions
- Diarrhea
- Anemia

How can you prevent establishment of CLF in your animals and on your pastures?

New animals brought onto a ranch should be isolated from wet pasture areas until they have been treated twice 12 weeks apart with a flukicide that kills the adult CLF. Treatments containing clorsulon and albendazole active ingredients are labeled for CLF and many classes of livestock in the U.S.

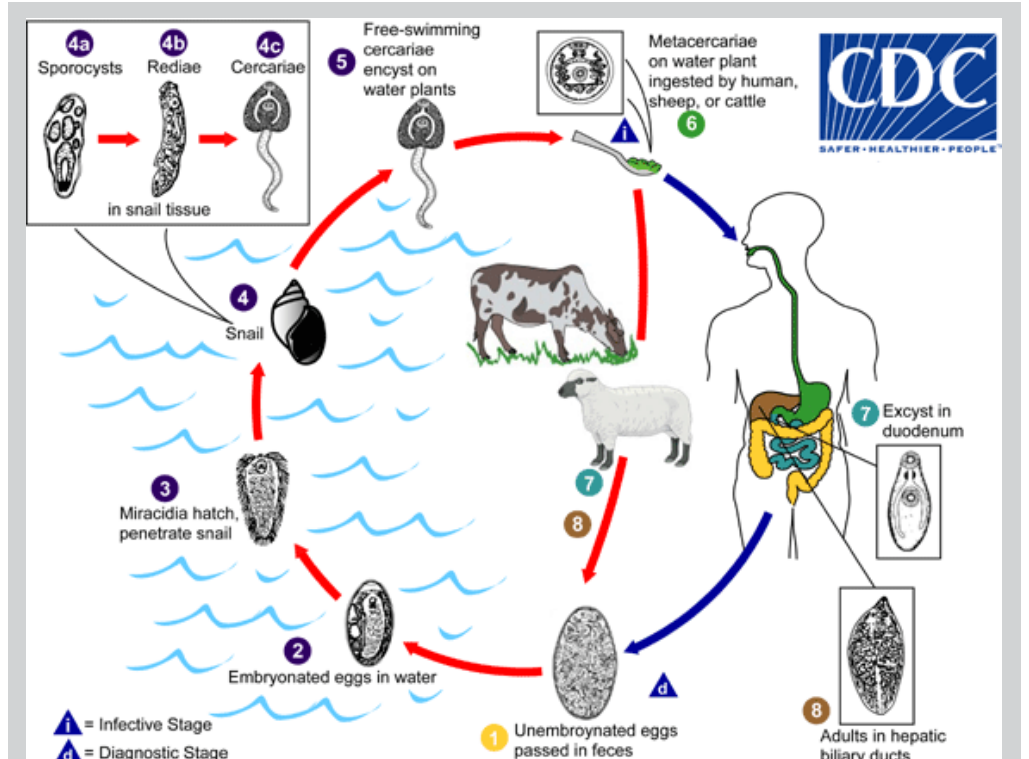
Sheep treated with albendazole (Valbazen) approximately eight weeks after suspected infection achieve greatest results. Consult a veterinarian about the best CLF management options.

Diagnostic testing should be done if CLF might already be present. Egg counts from manure samples of animals exhibiting parasite symptoms can be submitted to the Wyoming State Veterinary Laboratory. Its fees and general policies are at <http://bit.ly/wsvlpolicies>.

Blood biochemical testing can also help detect whether liver damage is occurring; however, testing of fecal samples is more cost-effective initially. Grazing animals that die can also be necropsied to determine the presence of CLF in the liver. The adult flukes are large and do not require a microscope for diagnosis.

If CLF is present on the ranch, the best control strategy is the combined use of effective flukicides and grazing management to minimize spread and reduce the parasite load in livestock.

Whit Stewart is the University of Wyoming Extension sheep specialist and an assistant professor in the Department of Animal Science. He can be reached at 307-766-5374 or whit.stewart@uwyo.edu



A single common liver fluke (CLF) can produce thousands of eggs per day (1). The eggs will not hatch in temperatures below 50 F and need both standing water around the manure and aquatic snails present to survive to the next life stage.

When the eggs mature (2) and hatch, after completing embryonic development, the CLF's swimming miracidium stage (3) has approximately three hours to find a snail intermediate host.

In North America, many common snail species (4) in the family *Lymnaeidae* are suitable intermediate hosts.

A single miracidium in a snail can produce thousands of the "tadpole like" life stage called cercariae (4c) in six to seven weeks. If conditions of temperature and moisture are adequate, the cercariae will exit the snail and swim to emergent plants and wiggle up on the leaf surface (5).

If the snails go dormant due to dryness or cold weather, the parasites will remain in the intermediate snail host until the following spring return of standing water.

On the leaf, the cercariae lose their "tail" and form a cyst called a metacercariae (6). A plant-eating mammal (including humans) gets infected by unknowingly eating a leaf that has a CLF cyst attached.

In moderate temperatures and adequate humidity the cysts can remain viable for months on the vegetation.

In the mammal digestive tract, beyond the stomach, the juvenile fluke leaves the cyst and penetrates the duodenum (7) and migrates to and then into the liver.

In the liver, the CLF (8) feeds on the tissue and grows to over 1 inch in length. It eventually reaches a bile duct in the liver (8). Once there, the adult CLF can start producing eggs sexually or asexually in 10 to 12 weeks after the host mammal swallowed the metacercariae cyst. In lightly infested sheep and goats, the adult flukes can live for years.



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Implant use in pre-weaning and stocker calves increases returns

Beef producers who market weaned calves and stockers should consider using implants in their programs. The practice continues to be a safe and effective way to add value to your product.

CHANCE MARSHALL, SCOTT LAKE

Although most feedlot cattle receive an implant of some sort, this article focuses on using implants in pre-weaned and stocker cattle.

Implants are a powder substance compressed into a pellet and placed into a calf's ear.

An implant contains natural or synthetic anabolic compounds that produce physiological responses similar to those produced by natural hormones. Implant use can dramatically increase production through increased physiological efficiency of gain and economic efficiency.

Implanting calves may still be one of the most economically justifiable practices in the beef industry.

Current application of implants

Implants have been widely accepted and used in the stocker and feedlot phase of beef production since their approval for commercial use in 1957.

Data from the 2008 National Stocker Survey reported that for stocker producers who operated with over 1,000 head of cattle, almost 79 percent implanted their cattle. That number fell to 53 percent for operators with under 200 head of calves.

Data from Oklahoma State University suggests 37 percent of cow/calf producers with herds over 100 head utilize implants prior to weaning. That number falls to 9 percent use by cow/calf producers with less than 100 head.

Types of implants

There are two basic compounds used to mimic naturally occurring hormones: estrogenic compounds (mimicking estrogen) and androgenic compounds (mimicking testosterone).

All implants slowly release the metabolic compounds (either estrogenic, androgenic, or a combination of both) into the bloodstream of an animal. Different implants are strategically formulated to provide different lengths of time for the entire compound to be released. The lifespan of the implant is commonly referred to as the "payout period." Implant payout periods may range from 60 to 200 days.

Implant effects

Nursing calves

Implants are not recommended for calves intended for breeding.

Implants that contain a lower dose of the active ingredient are available for nursing calves weighing less than 400 pounds. These implants



An implant is placed in a calf's ear.

are typically given when the calves are 2 to 4 months of age. Research suggests suckling steer calves will have an increased average daily gain (ADG) by 0.1 pounds per day with slightly lower response in heifers.

The payout for most calf implants range from 100 to 120 days. Implanting steer calves with zeranol or estradiol benzoate/progesterone implants increased gain by 0.12 lbs/day compared with non-implanted controls.

Depending on cattle markets, the increase in weight gain could be worth an additional \$35 to \$50 per head at weaning.

Stocker Calves

Calves weaned and placed on grass for a period of time prior to feedlot are referred to as stocker calves. There are several implants to meet the needs of stocker calves. Research indicates producers can expect a 10-15 percent increase in ADG compared to non-implanted controls over the course of 150 days (average implanted time for stocker cattle). The data are inconsistent with regard to what type of compound is the most effective for stocker cattle.

Sex, weight, genetic potential, forage availability, dietary quality and environment affect implant response. Like most growth promotants, a greater response will be realized when cattle are on a higher plain of nutrition.

Chance Marshall is a University of Wyoming Extension agriculture and horticulture educator based in Fremont County, and Scott Lake is the extension livestock production cattle specialist and based in Laramie. Marshall can be contacted at 307-332-2363 or cmarshal1@uwyo.edu and Lake at 307-766-3892 or scotlake@uwyo.edu.

IMPLANTED BEEF SAFE FOR CONSUMPTION

The FDA has approved implants as a safe growth promotant in cattle, and the World Health Organization and the Food and Agriculture Organization have all concluded implanted beef is safe for consumption. Table 1 reports the estrogenic activity of foods commonly consumed in the U.S. including implanted and non-implanted beef. The difference in estrogen found in implanted beef versus non-implanted beef is extremely miniscule, especially considering the amounts of estrogen contained in other common foods.

Table 1. Estrogenic activity of several common foods

Food	Estrogenic Activity*
Soybean Oil	1,000,000
Eggs	17,500
Cabbage	12,000
Ice Cream	3,000
Wheat germ	2,000
Peas	2,000
Milk	65
Beef from pregnant cow	700
Beef from implanted cattle	11
Beef from nonimplanted cattle	8

*Nanograms of estrogen per 500 grams of food.
Source: Preston (1997)



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TO BALE OR NOT TO BALE

Baling cornstalks excellent option if fits operational goals or sold for added income

BRIAN LEE

Cornstalks offer a reasonable-priced forage option as a supplement to producing a grain crop. Temporarily fencing and grazing cornstalks for a certain amount of time is common, but there may be a better fit. Baling can be an efficient way to store and utilize the existing forage as needed.

Cornstalks offer a useable food source for a period of time, in addition to incorporating manure as a future fertilizer source. This set-up works for many livestock producers who need winter feed for cows or want to rent stalks (but that can also lead to compaction issues in susceptible soils).

What is the value of cornstalks?

For producers with animals in a feedlot, taking the feed source to the animals may be an excellent option. Individual situations drive most reasons for baling cornstalks. What is the value in cornstalk bales compared to alternatives, and also, what is the feed value?

Consider cornstalks a by-product of corn production. The costs of baling the cornstalks will be considered and not the production of grain corn. The grain corn is the main product to which the land is devoted. Another reason for doing this is that by corn harvest, there is no consideration of putting another crop in the ground after the corn.

Raking and baling the cornstalks right off of the field can yield 2.5 tons/acre in a normal year. Local operators pull a regular hay rake through the cornfield, windrowing available forage, and then follow with a regular baler. These operations will cost roughly \$16.30/acre based on average implement total-related costs, including use-related and ownership costs.

Twine for a 2.5-ton yield will be around \$4.50/acre, and loading and moving bales will cost around \$7.35/acre. Grinding the bales to put them into a ration is another cost to consider. All of that considered, baling and moving the bales to a bale yard will cost around \$28.15/acre. This equates to around \$11.26/ton.

Total cost per acre

Many observations indicate baling cornstalks is much harder on equipment, costing extra wear and tear on implements. Taking this into consideration, there could be a 25 percent increase in use-related costs of baling and raking cornstalks. Even with this increase, this would only be a \$3.33/acre increase in use-related costs, bringing the total to \$31.48/acre or \$12.59/ton.

Baled stalks are a relatively inexpensive ration mix for feeders, but does the feed value make it worth it? Some cornstalk bales in the Lingle area were sampled with the following nutritional analysis:

Crude Protein %	5.5%
Acid Detergent Fiber %	45.3%
Total Digestible Nutrients %	50.9%
Net Energy Maint., MCal/cwt.	45.29
Net Energy Gain, MCal/cwt	20.38
Net Energy Lact., MCal/cwt.	52.8
Calcium %Ca.	0.52%
Phosphorus %P.	0.11%

These nutritional results are encouraging, putting cornstalk bales at a similar forage value with wheat straw. Baling cornstalks can be an excellent option if it fits into the operational goals, or to sell baled stalks for additional income.

Temporarily grazing the stalks and then baling is another option. Baling cornstalks on 200-bushel corn only removes about 2/3 of the residue. Removing organic matter from the field is another consideration that could affect future crop yield and soil health.

Brian Lee is the economic research scientist at UW's James C. Hageman Sustainable Agriculture Research and Extension Center near Lingle. He can be reached at 307-837-2000 or at blee@uwyo.edu.

IMPORTANT NUMBERS TO SAVE IN THAT SMALL COMPUTER YOU CARRY AROUND IN YOUR POCKET AND SOMETIMES MAKES PHONE CALLS WITH



SUICIDE

Wyoming has the 4th highest suicide rate in the country. Farm workers have a higher rate of suicide than veterans. This is for the people you care about - your family, neighbors, friends, and colleagues.

National Suicide Hotline: 800-273-8255



POISONS AND PESTICIDES

If you use or store any pesticides you need this number. This is the number doctors and EMTs will call when you need treatment for chemical exposure.

National Poison Control Hotline: 800-222-1222



HUMAN TRAFFICKING

Victims are forced to provide labor or sex against their will. This is slavery. In 2017, there were 13 cases of human trafficking in Wyoming with 44 victims.

National Human Trafficking Hotline: 888-373-7888



TRAINS

Sometimes life feels like a train wreck, but these numbers can help avoid an actual train wreck. Notify the railroad of livestock or vehicles on the tracks.

BNSF Emergency Line: 800-832-5452
Union Pacific Emergency Line: 888-877-7267



DOMESTIC VIOLENCE

Abuse is never the victim's fault. Are you concerned about your neighbor, a family member, or a friend?

Domestic Violence Hotline: 800-799-7233



SUBSTANCE ABUSE AND MENTAL HEALTH

Opioids are hitting rural America hard and access to mental health treatment is limited in many areas.

SAMHSA's National Helpline: 800-662-4357



LOCAL LAW ENFORCEMENT

Don't forget the numbers for the local sheriff's office, game wardens, and brand inspector.



Compiled by Caitlin Youngquist, Washakie County Extension

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Issued in furtherance of extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Bret Hess, Interim Dean, University of Wyoming College of Agriculture and Natural Resources, Laramie, Wyoming 82071.

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