March 2016

BARNYARDS & BACKYARDS

UNIVERSITY of WYOMING EXTENSION | AG & HORT

USDA

Meet the Risk Busters

UW Extension Sustainable Ag & Hort Team delivers news and tools you can use at home, in the garden, field, pasture or calving barn

Want to leave your farm or ranch to your kids? The Risk Busters can help. Want to sell preserves? Prune a tree, insure a crop, feed a herd, save a bee? Check, check, check, check, check.

Meet the Sustainable Ag & Hort Team

The Sustainable Agriculture & Horticulture Team shares the latest research and brings new ways to improve Wyoming livestock and crop enterprises. They work with you on your lawn and garden and rural living needs. They equip you to manage risks, large and small. They succeed when you succeed.

Ag & Hort educators offer intensive training programs such as Wyoming Master Cattleman, Master Hay Grower, and Master Gardener programs. They develop online learning programs to equip you to make decisions about agricultural risk, enterprise feasibility and strategic planning.

Members of the Ag & Hort team contribute to the quarterly magazine *Barnyards & Backyards: Rural Living in Wyoming*. Every issue contains an array of articles for small-acreage landowners similar to those you'll find here, plus recipes and readers' questions. An annual subscription is $10.

They are UW Extension

The University of Wyoming Extension provides research-based, lifelong learning for the people of Wyoming. UW Extension is grounded in the belief that people have the ability and power to enlarge their lives and plan for their future. Extension education is both research-based – an extension of the University of Wyoming – and results-oriented.

Find Them Close-by

Educators on the Ag & Hort team are in your county or town – or at least in Wyoming. Since 1914, University of Wyoming Extension educators have lived and worked here, providing locally relevant knowledge and programs to Wyoming citizens.

Besides the Ag & Hort team, extension educators can help with nutrition and food safety, sustainable range management, community development education and 4-H and youth development. UW educators and specialists serve every county in the state and the Wind River Reservation.

Contact Them

They are courteous and always willing to help.

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Counties, agriculture producers can help residents during a disaster

Scott Cotton calls for teamwork

Rural disasters often mobilize two self-described groups: "the red light team" from the ranks of fire, emergency medicine and law enforcement systems and "the Carhartt and cowboy hat army," including agriculture producers and their children, friends, and relatives serving officially and unofficially as emergency responders. Both groups bring critical knowledge and skills; working together, they are achieving faster and better response to emergencies and disasters beyond the pavement.

Contributing to the effort is the Extension Disaster Education Network (EDEN). Its Strengthening Community Agro-Security Preparedness (SCAP) curriculum, introduced in 2002 by land-grant university extension programs, USDA National Institute of Food and Agriculture and the Federal Emergency Management Agency (FEMA), has led to enhanced communication, coordination and training.

Emergency managers and ag producers working with SCAP facilitators have drafted or updated agriculture disaster and other plans in 311 counties nationwide.

University of Wyoming Extension programming connects Wyoming counties with EDEN efforts and disaster experts across the United States.

Why grow the role of the Carhartts?

County emergency managers operate within the framework of the Incident Command System (ICS) and the National Incident Management System (NIMS) to face the challenges of preparing for and responding to emergencies and disasters, as well as training and maintaining readiness for all types of events. By law, emergency and disaster response managers prioritize human safety. When large-scale incidents occur, they direct resources to human safety before property losses and damage.

When emergencies, hazards, outbreaks or other incidents affect crops, livestock and infrastructure, agriculture producers take action, often applying emergency management principles, to protect their livelihood.

> What if Wyoming counties could reduce initial response time to agriculture and livestock events to 47 minutes?

Food supplies and local economies may be at risk. In Wyoming, agriculture is a top-three industry. Community emergency response teams for agriculture throughout the country have helped mitigate disaster impacts to keep the business of agriculture going.

Several counties in Nebraska reduced their livestock response times from an average of nine hours to 47 minutes after county officials and agriculture producers developed a strong system. The result has been an estimated 5,000 head of cattle – worth around $12 million – saved.

Emergency managers who have implemented agriculture branches within their operations find they have resources who bring personal knowledge, alternative routes and the expertise and manpower to operate equipment, evacuate livestock and animals, deliver supplies and deal with everything from

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ownership questions to disease awareness…all without reducing or redirecting the fire, medical and law enforcement resources needed for human safety.

Is it Time to Stack Hay?

Coordinating the strengths of emergency managers and agriculture producers is like stacking hay – you have to do it because there is a need.

The first step is for emergency managers, authorities and producers to work together to identify risks, resources and community capabilities. From this they can identify vulnerabilities. Disaster and emergency vulnerabilities are the risks that have not been addressed or reduced. For example, in the path of a wildfire, large propane tanks for powering irrigation pumps could present a serious vulnerability.

The second step is to develop a collaborative effort to mitigate or resolve identified vulnerabilities. Under the authority and guidance of the emergency manager, agriculture producers can typically participate as a Community Emergency Response Team (CERT) or Agriculture Citizens Emergency Response Team (AgCERT). This framework for authority, communication, insurance and training supports the effective integration of these new emergency response teams.

The third step is to train, equip and maintain the new resource teams. Enhancing rural disaster response requires maintaining the readiness and fitness level of AgCERTs so they operate safely and efficiently. Volunteers and the jurisdiction must commit to train regularly, and volunteer AgCERT leaders must step forward.

Historically, many agriculture producers were rural emergency responders, as evidenced by the number of fire trucks retired in farm and ranch fields.

Put Your Expertise to Work

After Extension personnel assisted one Colorado county through the EDEN agro-security preparedness program, the emergency manager quipped, "I wished I'd known sooner that these folks have so much expertise, resources and ability. Now I know if I don't have them cooperating, I'm liable to have them rolling right around me!"

Agriculture producers can tap into their communities to recruit motivated "Carhartt and cowboy hat" reinforcements and galvanize advocates for expanded disaster funding. The process takes commitment, but rural residents tend to commit strongly to efforts they help develop. Another benefit? The gratification of forging new working relationships.

If you want to address your county's agriculture readiness, visit with your county emergency manager, then contact your local extension office.

RESPECT FOR ONE ANOTHER'S CALLINGS

Contributing to a coordinated effort are emergency responders from backgrounds in emergency services and those who learned to pitch in with other farmers and ranchers. Rural deputy sheriffs, volunteer firefighters and other responders frequently belong to both groups. Here is what they bring:

EMERGENCY RESPONSE MANAGERS

- **Authority over incident responses**
- **Coordinated system**
- **Human safety first**
- **Resources and training available**

AGRICULTURE PRODUCERS

- **Relationships with neighbors**
- **Familiarity with locations**
- **Equipment and expertise on hand**
- **Understanding of rural functions and vulnerabilities.**

Scott Cotton is the UW Extension area educator serving Converse, Natrona and Niobrara counties. His specialties include range management, livestock production, rural acreage management and agriculture and disaster resilience. He is the Wyoming delegate for the Extension Disaster Education Network. Contact him at (307) 235-9400 or scotton1@uwyo.edu.

Earn a "degree in bees" at Wyoming Bee College

Catherine Wissner invites you to enroll now

Registration is open for University of Wyoming Extension's 2016 Wyoming Bee College Saturday and Sunday, March 19-20 at Laramie County Community College in Cheyenne.

Participants learn about pollinator insects as keystone species, their roles in crop production and pest species management and the importance of pollinator habitat construction and conservation. Beekeepers learn best management practices, and new or aspiring beekeepers get hands-on demonstrations of the basics.

Speakers and workshop leaders bring current research on pollinators, long-time beekeeping experience and expertise on conservation and habitat development. They address concerns related to both European honeybees and native pollinators.

Issues surrounding the decline of the European honeybee and Wyoming native pollinators are complex, but they come down to two big problems.

- Loss of habitat, whether caused by in-town all-lawns or corner-to-corner farm tillage.
- Pollen and nectar of low nutritional value caused by lack of biodiversity in the landscape.

New research shows that foraging pollinators seek pollen from the most nutritious sources. When those sources aren't available, pollinators' ability to withstand environmental stress from pesticides and disease is lowered. This affects both individual and colony health.

Wyoming Bee College brings Dr. Jamie Strange, USDA Agricultural Research Service entomologist and contributing author of the Federal Pollinator Action Plan, for an update on national efforts to help all pollinators, including the monarch butterfly. Hank Udon of the Wyoming Department of Agriculture presents an update on the Wyoming Pollinator Protection Plan.

Bee College helps citizens recognize the importance of pollinators native to the Rocky Mountain region. They are critical to the cycle of life, and many prey on crop pest species.

Bee College offers bee identification and a native plant program. Gardeners can learn about native plantings and rain gardens to help conserve water and land.

For small- and large-acreage land owners, developing plant diversity is important to support pollinators from spring to fall. Bee College offers techniques for habitat development and land conservation and maintenance, including why and what seed mixes or plants to use to help bird and insect species go from surviving to thriving.

For agriculture producers, Bee College addresses agriculture's interaction with pollinators and native bees.

Beekeepers already know beekeeping is more than adding bees to hives. Bee College offers advanced beekeeping topics on bee health, honeybee nutrition and bee behavior. A marketing component is designed for those seeking to add value to their honey-related products. Beekeeping 101 helps set up new beekeepers for success.

The $75 conference fee includes all conference meals, drinks and snacks. There is no charge for Bee Buddy children under 14 accompanied by an adult.

For more information on the March 19-20 Wyoming Bee College Conference and the schedule go to *www.wyomingbeecollege.org*.

Catherine Wissner is a horticulturist in Laramie County and coordinator of the county's Master Gardener program. She also serves as the "dean" of Wyoming Bee College, which attracts participants from throughout the region and the nation. Contact her at (307) 633-4383.

Lives of Wyoming's native bees might surprise you

Jennifer Thompson delivers "the buzz"

I am working with a team to develop a pollinator guide for Wyoming. As an author and editor, I've been searching out scientific papers and other publications on pollinators – especially native bees. After reading about 100, I have learned a lot about this sometimes confusing, occasionally controversial, subject. Here is some of what I have discovered.

There's a lot we don't know! Especially about native bees in Wyoming. With increased interest and funding, however, we are gaining knowledge at light speed (perhaps not about native bees in Wyoming, but bees in general). In our region, there are folks at the University of Wyoming looking into various bee topics, and there is a very active bee research group with the U.S. Department of Agriculture Agricultural Research Service (USDA-ARS) in Logan, Utah. As is the nature of science, it will take a while for a clear picture to emerge on a variety of issues involving bees.

Who's Out There?

The Wyoming Natural Diversity Database reports there are probably around 700 to 800 bee species in Wyoming (4,000 or more in North America). One recent study from southern Wyoming identified 34 genera of bees. Another reported collecting more than 30 bee species from the flowers of one penstemon species (a wildflower) near Ten Sleep over 3 days from late May to mid June. That's a lot of bees!

How do Bees Live and What are They Doing?

Our native bees tend to be classified by how they nest. Some nest in cavities. You can imagine honeybees (which are not native to North America) gone wild, nesting in tree trunks while other bees nest in hollowed plant stems with pithy centers, such as sumac. Probably the majority of Wyoming's native bees nest underground. Bumble bees sometimes nest above-ground but more typically create nests in abandoned rodent holes.

Most of our native bees are "solitary" ground nesters. Alkali bees are an often-noted example of solitary nesters. Because of their preference for hard-packed bare soil for nest sites, many females may crowd into a small area of ideal habitat. Each, however, builds her own nest. A single female bee emerges, mates, then digs an underground tunnel with "cells" (little oval rooms).

She forages on flowers and places a ball of pollen mixed with nectar or other substances in each cell and lays one egg on it. She then seals off the cell. After she finishes the cells in her tunnel, mother time is over!

The eggs of solitary ground-nesting bees are left on their own to hatch, grow into grub-like larvae and feed on the pollen ball. When they are done growing, they pupate into adults that will emerge the next year. If you keep your eyes open and look closely at areas of bare soil, you may find the entrances to these tunnels – holes surrounded by small piles of excavated dirt.

The adults we see flying around don't live long. It seems most of these bees have an adult lifespan of only a month or two above ground before they perish. Most of their lives are spent underground.

Again, these bees are solitary, unlike honeybees, which are highly social with a queen and thousands of bee workers of various types living in a hive, and bumble bees, which have a queen and 50 to maybe a couple hundred workers that perish at the end of the season. (Only new queen bumble bees survive the winter to create new nests the following year.)

Taking a "bee's-eye" view helps us better understand the world of native solitary ground-nesting bees. They tend to be smallish – around the same size or smaller than honeybees. (Native bees in the U.S. generally range from less than 1/4-inch long to more than 1 inch.) These smaller bees don't appear to travel far when searching for nectar and pollen; average distances range from 50 feet to half a mile. They live in a micro-world compared with humans.

Our human values for ideas such as the "nativeness" or "non-nativeness" of a plant may not be of as much concern to them as pollen and nectar volume and quality. We're still finding out!

Indian Paintbrush

Pollinators are Fascinating

Go out when flowers are in bloom and take a look. (I find that snapping a pic with a camera or phone allows me to get an up-close view of who's out there.) The solitary ground-nesters are often hard to identify as to species, even by entomologists, so don't get bummed if you can't tell exactly who's who when you are looking around – the looking is darned fun anyway!

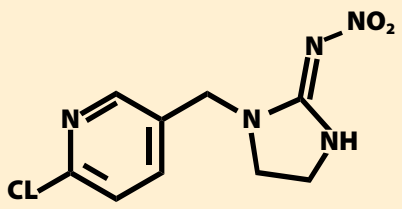
And please look for our upcoming Wyoming pollinator guide for more great information on these amazing creatures.

Jennifer Thompson is the small acreage outreach coordinator with the University of Wyoming Extension Barnyards and Backyards program. Contact her at (307) 745-3698 or jsjones@uwyo.edu.

How to minimize pesticide risk to pollinators

Jeff Edwards says READ the label

If a pesticide is considered organic, can it kill bees and other beneficial insects? This might be an eye-opener for some, but organic production does not mean pesticide-free. And neonicitinoids, which are used to kill insects, have caused bee kills and been blamed for poor bee health.



This is the chemical structure of an imidacloprid (made to mimic nicotine), one of the neonicitinoids. The chemical structure is that of nicotine, with several elements added to change the chemical structure. Other neonicitinoids on the market are structurally similar.

The name neonicotinoid literally means "new-nicotine." This class of products is derived from nicotine, and nicotine by itself is considered an organic pesticide. How can an organic substance be a pesticide? By definition, any product – organic or not – used to kill or control a pest is a pesticide.

Beekeeper and biologist Randy Oliver noted, "There is a growing public demand for more environmentally-friendly pesticides, which must be balanced against the real-world needs of agriculture for effective pest control products in order to feed a hungry world." A discussion on the use and need for neonicitinoids is at his website (*bit.ly/scientificbeekeeping*).

Pesticides are useful for the management of a variety of pests across many industries and for homeowner use. The agricultural chemical industry reviews its products and pulls them from the market if the environmental risks outweigh the benefits to society.

Products to control insects are labeled with instructions for using the product responsibly to minimize the risk to beneficial insects. Problems occur when individuals use pesticides without fully reading and complying with the instructions on the label.

Pesticides are readily available at most big box stores, and anyone can purchase and use them. In 2013, the EPA requested that labels on products that can be harmful to bees and other pollinators be changed to include the "bee box." The bee box on the label is meant to draw attention to the application requirements so pollinators are not exposed or killed.

Pesticides protect our food, fiber, and health. Beekeepers use them to keep their hives free of pests that can affect bee health and reduce honey production. Wyoming has been fortunate not to have had any reported bee kills since 2012. Neonicotinoid insecticides have been used by agriculture since 1994 and expanded for use by homeowners in the mid-2000s.

The new bee icon helps signal the pesticide's potential hazard to bees.

You don't need to be afraid of pesticides, but you do need to have respect for them. If you use any pesticide, read and follow the directions on the label.

Jeff Edwards is a University of Wyoming educator in Lingle. He specializes in rural living and horticulture and conducts the statewide pesticide safety education program. Contact him at (307) 837-2956 or jedward4@uwyo.edu.

Bad pruning puts trees, people, animals at risk for injury or death

Donna Hoffman tells a tale of 8 trees

Over the past 12 years, I have watched the aftermath of tree pruning by unskilled saw operators in our neighborhood. All eight trees in a nice boulevard were beautiful, strong, well-structured specimens – until five were pruned using a topping cut. Concerned citizens stopped the crew before they began working on the sixth.

A topping cut encourages dense new growth at the cut ends of large branches. This new growth is lush and full and looks attractive; however, a trained eye recognizes the growth is not structurally sound. The five pruned trees have since developed the classic weak structure caused from topping cuts.

As these large trees sent out sprouts at the end of each cut branch, they produced massive amounts of leaf tissue to photosynthesize and produce the sugars necessary to sustain growth. The new leaves were supported by new branch growth, which was also massive.

Newly formed branches are not anchored deeply in the woody structure of the trees and lack support from year after year of wood growth around their base. Instead, they are attached only in the cambium layer, just under the bark near the stub cut end of the original scaffold branches. The weight of the new branches increases as they grow larger, making them more likely to succumb to the forces of nature.

These trees still provide wind protection for a parking lot during winter and much-needed shade during summer, but after two major weather incidents and a few smaller intense storms, these trees show extreme breakage and are susceptible to still more.

The force of wind causes weakly attached branches to break or tear away from the original branch, causing more damage to the tree bark and structure of the tree. The danger of branches falling on someone or something below also increases.

Consider hiring a trained professional to prune your trees. Arborists certified by the International Society of Arboriculture receive a high level of training and must pass a rigorous test to ensure they have the knowledge to properly prune trees. Certified arborists take an oath of ethics and are duty-bound to educate clientele about proper pruning practices rather than perform lower-quality work, even at the customer's request.

Their main concern is leaving strong and healthy trees after pruning.

If you plan to do pruning work yourself, check with your local UW Extension office for basic information on pruning practices. But most important, make sure no one ever makes topping cuts on trees in your care.

Proper pruning enhances the growth and stability of tree structure and helps trees endure harsh conditions, including strong winds, prolonged drought, extremely cold temperatures and heavy snowfall.

Improper pruning sets a tree up to fail, leaving the property owner with potential hazards to human and animal life and possible property damage and liability issues.

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

Add these blues to cure landscaping blahs

Blue is my favorite color, but the selection in landscaping plants is somewhat limited. Here are some recommendations.

Fall-planted Bulbs for Spring Color

Bulbs can be added to almost any landscape. They can be planted under trees, since they do not have deep roots. They grow in full sun to partial shade and can be massed or clumped to provide specific bold color or mixed with other annuals or perennials to add color early in the year, giving way to the other colors later.

Striped squill

The grape hyacinth (*Muscari armeniacum*) may come to mind first. This small, grape-colored flower is one of the first to bloom in the spring and is very adaptable. It can be used in many types of plantings and can be mixed with other plants or used in a mass planting like a blue meandering stream to give that special "wow!" effect.

And of course, do not forget the crocus. This bulb is deer- and squirrel-resistant. The short, 2- to 3-inch bluish-lavender flowers can add a nice buffer or border to a flower bed.

Another small bulb to consider is the Siberian squill (*Scilla siberica*). This short, blue flower is cold-hardy, deer-resistant and fairly drought-tolerant. It is a fairly long-lived perennial. To get the most from its color, plant this small-flowered bulb densely.

The striped squill (*Puschkinia scilloides*) has a bluish color from a distance. It is 4 to 6 inches tall with fragrant, single, nodding, star-like flowers. This self-seeding bulb, like most of these, naturalizes well.

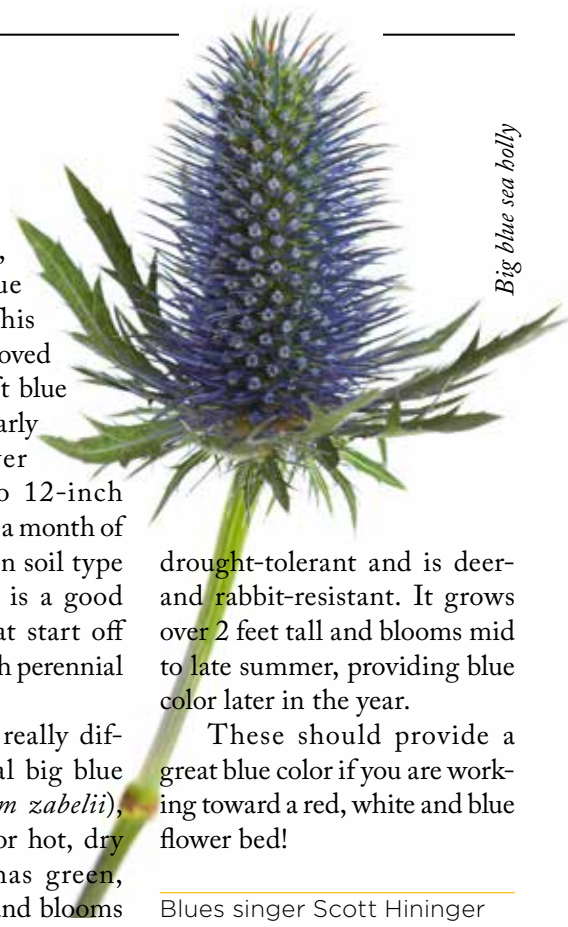
Glory of the snow (*Chionodoxa luciliae*) is another of the first bulbs to come out in the spring. This small bulb has three to six pale-blue, star-like flowers with white centers. With its 6-inch height and green foliage, glory of the snow does not need to be planted as densely as Siberian squill.

For a taller bulb, look at azure allium (*Allium caeruleum*), which is prized for its deep, clear-blue flower heads. Azure allium is one of the few true-blue flowers in the plant kingdom. This plant blooms late spring to early summer and grows up to 2 feet high and makes great cut flowers. Azure allium is easy to grow and deer-resistant. Between the round blue seed head and the green glass-like foliage, this plant can really add to a flower bed.

A Blue Annual and Perennial

For an annual, look into baby blue eyes (*Nemophila*). This quick-bloomer is beloved for its gorgeous, soft blue blooms that bring early color to the flower garden. The 4- to 12-inch plants provide about a month of bloom, depending on soil type and moisture. This is a good choice for areas that start off bare and later fill with perennial plants.

For something really different, try perennial big blue sea holly (*Eryngium zabelii*), which is fabulous for hot, dry spots. 'Big Blue' has green, thistle-like foliage and blooms with huge 4-inch diameter bracts that surround the flower's blue center cone. Big blue sea holly is an excellent cut flower, fresh or dried, and a rugged plant for the xeric garden. This flower is drought-resistant and drought-tolerant and is deer- and rabbit-resistant. It grows over 2 feet tall and blooms mid to late summer, providing blue color later in the year.



Big blue sea holly

These should provide a great blue color if you are working toward a red, white and blue flower bed!

Blues singer Scott Hininger is a University of Wyoming Extension educator based in Sheridan County, serving northeast Wyoming. Contact him at (307) 674-2980 or hininger@uwyo.edu.

RightRisk.org

Because there's plenty of uncertainty out there. . .

Risk Management Options for Wyoming Producers

Dealing with risk and uncertainty in production agriculture is a constant, and the 2015 crop year was no exception, with falling crop prices, sharply lower cattle prices, relatively high input and other costs and drastic weather.

It is more important than ever for producers to manage as many of their risks as possible.

While no business is risk-free, there are ways to provide at least some revenue certainty for crop and livestock operations. Risk management options under the Federal Crop Insurance program have increased greatly over the last 10 to 15 years, and chances are there is a program or policy to fit your operation.

The 2014 Farm Bill legislation replaced the Direct and Counter-Cyclical payment system with crop insurance-based programs that provide additional risk management options.

Crop Insurance

Crop insurance policies are available for most program crops. Many of these policies utilize a producer's APH (actual production history) and fall under two main categories: YP (yield protection) or RP (revenue protection).

YP policies provide coverage against losses in yield. A producer selects a level of coverage based on APH level and policy price and is paid an indemnity payment if the actual yield drops below the guarantee level.

RP policies take this a step further with an overall revenue guarantee that protects against reduced yield levels and falling commodity price – using the greater of the projected price or the actual harvest price. RP policies can also provide a harvest price exclusion (HPE), meaning that the revenue guarantee is determined solely by the projected price when the policy is written.

A catastrophic coverage option (CAT) is available for both types of policies for a flat fee of $300 per producer. This option covers 50 percent of a producer's APH yield at 55 percent of the price. Depending on the crop, additional buy-up options for CAT may be available.

Certain crops in Wyoming may be covered by APH-based policies. Policies for crops such as sugar beets and potatoes are similar to YP policies in that they allow producers to insure up to a certain percentage of their yield history at a certain price election. Check with a local crop insurance agent for policy availability in your area.

The new Farm Bill programs have shifted from direct payments for program crops to a more insurance-based approach. Producers are able to choose between Agricultural Risk Coverage (ARC) and Price Loss Coverage (PLC). Sign-up for the programs has passed, but producers who selected PLC have the option of Supplemental Coverage (SCO), providing coverage for some or all of their crop insurance deductible based on county average yields and prices.

Hay, Forage and Pasture Insurance

Livestock producers looking to manage production risk associated with forage and pasture production have numerous options under the crop insurance program umbrella.

The most widely used in Wyoming is Pasture Range and Forage-Rainfall Index (or RI-PRF). RI-PRF is available for land used for haying or grazing. RI-PRF policies allow a producer to insure land in an individual grid area (approximately 17 miles x 17 miles) at a percentage of the determined county base value for the forage insured. NOAA weather data is used to determine rainfall for the selected grid area. RI-PRF policies use a two-month index interval; producers can choose to insure a portion or all of their acreage on the basis of the most important interval period for their operation. It is important to remember the data does not measure rainfall at an individual location; instead, it is an index for the entire grid area. Producers can select a productivity factor between 60 and 150 percent of the county base value for the forages they insure. Indemnities are paid when the rainfall index value

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> "We are used to facing the fact that agriculture is risky (weather, etc.). Insuring against those losses is something we know little about. It was good. Opened my eyes."
>
> *—Wyoming producer*

WHAT IS RIGHTRISK?

RightRisk products and courses are online and FREE. They're designed to help farmers and ranchers understand and explore risk management decisions and evaluate the effects of those decisions. (In other words, enter their data and view the results; change variables, and view the new results.) Research-based tools are available for managing financial, insurance, tax, and other critical decisions.

WHERE DOES IT COME FROM?

RightRisk farm and ranch management tools and courses are developed by the RightRisk education team. Members offer educational programs, collaborate to develop new risk management tools and materials, and conduct research on decision making under risk.

In Wyoming, John Hewlett is a farm and ranch management specialist at the University of Wyoming and member of the regional RightRisk and Risk Navigator teams.

Right Risk
www.rightrisk.org

Along with the University of Wyoming, participating institutions are Colorado State University, University of Arizona, University of Idaho, Montana State University, University of Nebraska, Oregon State University and Utah State University.

RightRisk is developed with the support of the Western Center for Risk Management Education and the U.S. Department of Agriculture Cooperative State Research, Education and Extension Service (CSREES) and the USDA Risk Management Agency.

ABCs OF AGRICULTURAL RISK MANAGEMENT

APH — Actual production history

ARC — Agricultural risk coverage

CAT — Catastrophic coverage

cwt — Hundredweight, equal to 100 pounds

ELAP — Emergency Assistance for Livestock, Honeybees and Farm-raised Fish Program

FSA — Farm Service Agency

HPE — Harvest price exclusion

LFP — Livestock Forage Program

LGM — Livestock gross margin

LIP — Livestock Indemnity Program

LRP — Livestock Risk Protection

MPP-D — Dairy Margin Protection Program

NAP — Non-Insured Crop Disaster Assistance Program

NOAA — National Oceanic and Atmospheric Administration

PLC — Price loss coverage

RI-PRF — Pasture range and forage rainfall index

RP — Revenue protection

SCO — Supplemental coverage option

VI-PRF — Pasture range and forage vegetation index

WFRP — Whole farm revenue protection

YP — Yield protection

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drops below the value of the policy guarantee.

Forage insurance is available for alfalfa and alfalfa-grass producers. This policy is similar to an APH-based policy, with price determined yearly and set when the policy is purchased. Stand populations must meet minimum requirements, and coverage is available from 50 to 75 percent of established yield at the determined price based on the existing stand. Coverage begins on May 22 for spring-planted forage and October 16 for fall plantings. CAT coverage is available for this policy as well.

Non-Insured Crop Disaster Assistance

The Non-Insured Crop Disaster Assistance Program (NAP) available through the Farm Service Agency (FSA) provides insurance to producers not covered by other crop insurance policies. Producers who sign up for NAP can insure their crops at 50 percent coverage levels and 55 percent of market price. Pasture or crops planted or maintained for grazing can be insured under NAP. Beginning in 2016, producers may be required to choose between NAP and RI-PRF benefits.

A buy-up option authorized by the 2014 Farm Bill is also available under NAP that allows producers to increase coverage to 50-65 percent for eligible crops at 100 percent of the market price determined by FSA. Premiums equal 5.25 percent of the total coverage liability (or the total value of the crop times the coverage level times 5.25). Premiums are capped at $750 per producer and $250 per crop. This option can provide producers with an economical risk management solution, especially if no other insurance is available, adding significantly more coverage at 100 percent of the FSA market price.

Livestock Price Insurance

Livestock producers can protect against declines in livestock prices through two main programs: Livestock Risk Protection (LRP) and Livestock Gross Margin (LGM) insurance.

LRP policies are available for feeder and fed cattle, lamb, and swine in Wyoming. A producer selects the coverage period and a coverage level of 70 to 100 percent of the price. Prices are determined from Chicago Mercantile Exchange (CME) indexes for the period selected. If the actual price drops below the contract price at the end of the period, an indemnity is paid on the difference. It is important to note that indemnity payments under LRP are completely separate from the cash price livestock actually sell for.

LGM insurance for beef, dairy, and swine in Wyoming takes price insurance one step further by allowing producers to insure against declines in revenue on feeding margins as well as declines in price. LGM policies use a complex formula to determine actual revenue levels at the end of the insured period.

The 2014 Farm Bill created an insurance option for dairy producers that covers declines in milk prices and losses due to increases in feed prices. The Dairy Margin Protection Program (MPP-D) administered by FSA provides coverage against declines in the margin between milk price and the average calculated feed price. Producers must first establish a production history using their highest annual milk production year from 2011 to 2013. Dairies without at least 12 consecutive months of milk marketing are considered new operations. They can establish their production history by estimating their yearly milk production using either their first full month's production or herd size.

Once a production history has been established, coverage from 25 to 90 percent of the history can be purchased for $4.50 to $8.00 per hundredweight (available in $0.50 increments). Margin levels of $8.00/cwt or less generate payments based on the level of coverage purchased. Producers can purchase catastrophic coverage for a $100 sign-up fee, which pays 90 percent of a producer's production history at the $4.00/cwt margin level. Premiums increase as coverage goes up and range from $0.006 to $1.36/cwt (depending on production level).

FSA calculates the margin between milk and feed prices using National Agricultural Statistics Service and Agricultural Marketing Service prices for alfalfa hay, corn, and soybean meal. Payments are made when the actual production margin is less than the coverage level for two consecutive months.

Whole Farm Revenue Protection Insurance

Whole Farm Revenue Protection (WFRP) insurance was designed as a risk management option for producers of vegetables, specialty crops and livestock, direct farm marketers, and those with other farm operations that might not be covered under other crop insurance policies.

WFRP is different from other crop insurance in that it insures against declines in a farm's gross revenue. Up to $8.5 million is insurable at different levels, with losses determined after the end of the farm's fiscal year. WFRP provides coverage for all commodities produced except timber products, livestock for show or sport and pets.

Farms to be insured at the 80 or 85 percent coverage levels must meet the diversity requirement of at least three different commodities grown or raised. To be a counted, production revenue from a commodity must be at least 8.3 percent of the farm total revenue insured. The insured revenue is determined from the farm's five-year production history and Schedule F tax returns. Indemnities are paid when actual gross revenue declines below the guarantee level.

Disaster Assistance Options Beyond Insurance Coverage

The Livestock Indemnity Program (LIP) protects producers against livestock deaths in excess of normal rates due to extreme weather events or predator attack. The program pays for 75 percent of the approved market value set the day before the animal is lost. Notice of the loss must be given within 30 days of the occurrence, and producers must be able to prove ownership and provide verifiable documentation of the loss.

The Livestock Forage Program (LFP) provides protection against loss of grazing on native or improved pastures. To be eligible, a producer must be in a D2 or higher designated drought county or have a fire/natural disaster designation. Payments for grazing losses due to drought or fire are based on rates determined by FSA and can be for losses up to 180 grazing days. Payments are based on the severity of the drought and are adjusted accordingly. Eligible livestock must have been owned at some point during the 60 days prior to a qualifying drought or fire.

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2016 SIGN-UP PERIODS AND DEADLINES

- **Crop insurance for most spring-planted crops: March 15 (Final planting dates are crop-specific.)**
- **Whole Farm Revenue Protection (WFRP): February 28**
- **Dairy Margin Protection Program (MPP-D) for 2017 crop year: July 15–September 30**
- **Non-Insured Crop Disaster Assistance Program (NAP) for spring-planted crops (not honey): April 1**

FORAGE INSURANCE

- **Sales closing: September 30**
- **Acreage reporting: November 15**
- **Pasture Range and Forage-Rainfall Index (RI-PRF) for 2017 crop year: November 15**

What's your farm or ranch without you?

Ease changes in ownership and ensure a lasting legacy

Why is it so hard to transition management of a farm or ranch or pass it on as an inheritance? The RightRisk education team, made up of University of Wyoming Extension and extension professionals from other western universities, studied the difficulties and successes to create Ag Legacy, a series of free online courses to help rural families envision and secure their future.

The Lasting Legacy and Management Transition courses guide farmers and ranchers – agriculture producers and other rural business owners – through changes in ownership and management in rural businesses.

A Lasting Legacy helps families transfer business ownership to the next generation, and the Management Transition course helps them transfer management responsibilities. Both provide workbooks and additional resources to help them think through what they want and make plans and decisions.

Statistics suggest only a third of family businesses successfully transition to the next generation. The Management Succession courses are designed to improve the odds.

A Lasting Legacy helps people define their legacy. A legacy is the summation of a lifetime of achievement and the context in which that lifetime will be remembered. A legacy is not just land or money, but a reputation, accomplishments and the difference people have made. More important, a legacy continues to be passed along years after a person leaves this world – it is their mark on the universe.

AG Legacy
www.aglegacy.org

How to buffer against another 2012

Caleb Carter talks irrigation

Nobody wants to think about having another drought year like 2012. But with an increasing number of high-temperature days and precipitation becoming more variable, determining if your irrigation system is ready to meet your crop's needs during peak water use could be critical to your operation. You may not be able to fully compensate for Mother Nature's deficiency, but there are steps you can take to make the most of your water.

First, you can't control what you don't measure. You need to know the flow rate of your system to calculate its capacity and determine if it will meet peak crop evapotranspiration (ET), or crop water use, rates. You can calculate your gross system capacity with the equation.

$$\textit{gross system capacity (GPM/acre)} = \frac{\textit{system flow rate (GPM)}}{\textit{field area (acres)}}$$

Compare this number to the table to determine the inches/day or inches/week your system can put out. A system with a lower capacity will take longer to apply a given amount of water and will have a harder time meeting peak crop ET rates.

Remember, this number does not reflect the efficiency of your irrigation system, which could range from 70 to 85 percent for a center pivot or 60 to 75 percent for a wheel- or hand-move. The efficiency of your system is dependent on design, management, age, regular maintenance and other factors. To estimate your efficiency, talk to your dealer, or you can perform an efficiency test.

To compensate for the efficiency of your irrigation system, multiply the system capacity by the efficiency rating as a decimal. For example, if system output for your pivot is 750 GPM and your field area is 125 acres, then 750 GPM/125 acres = a system output of 6 GPM/acre. If your estimated system efficiency is 85 percent, your true system capacity is 6 x 0.85 = 5.1 GPM/acre.

For reference, peak ET rates for alfalfa can reach 0.4 inches per day, while corn can reach peak ET rates of 0.35 to 0.4 inches per day. If your system cannot meet the needs of your crop during extended high ET events, then another strategy must be developed for times of water shortage.

This might include limited irrigation, or stretching water supplies by irrigating at regular intervals throughout the growing season without regard to plant growth stage, or deficit irrigation, withholding water at crop growth stages less sensitive to water stress.

Critical growth stages generally occur during the transition from vegetative to reproductive growth and from flowering to fruit set. The most critical growth stages for alfalfa, for example, are at establishment and following cutting; if for seed production, it is at the start of flowering.

Other limited water management strategies include reducing irrigated acreage, the remaining acres left in fallow or planted to a low water-use or dryland or crop.

Taking time to calculate your system capacity can help you develop a better irrigation scheduling plan for years when water is short, thus helping you better meet the water requirements of your crop and reduce or minimize yield loss to water stress.

Caleb Carter is the University of Wyoming Extension educator serving southeast Wyoming. His specialty is crop systems. Contact him at (307) 532-2436 or ccarte13@uwyo.edu.

Have you seen rings in your field or areas of decreased yield? These may be caused by a loss of irrigation uniformity. Have you checked the uniformity of your nozzle output? You could be losing efficiency and, thus, yield.

RELATING IRRIGATION SYSTEM CAPACITY TO DEPTH OF APPLICATION

(Gallons per minute per acre to inches per day or inches per week)

GPM/Acre	Inches/Day	Inches/Week
1	0.053	0.37
2	0.11	0.74
3	0.16	1.11
4	0.21	1.48
5	0.27	1.86
6	0.32	2.23
7	0.37	2.6
8	0.42	2.97
9	0.48	3.34
10	0.53	3.71

Note: these values do not take into account irrigation efficiency.

From Porter, D. O. and T. H. Marek, 2009. Center pivot sprinkler application depth and soil water holding capacity. Proceedings of the 21st Annual Central Plains Irrigation Conference, Kolby, Kansas, Feb. 24–25.

Software helps balance beef rations during drought, feed shortages

Livestock owners and producers who face periodic feed shortages may find themselves seeking alternative sources to meet nutritional demands. Shortages of forage, hay and other feedstuffs can be caused by drought and low irrigation supplies, high market prices, an increase in animals or demand for forages in other regions.

Feeding and grazing trials conducted by the University of Wyoming, University of Nebraska-Lincoln, Colorado State University, Iowa State University and USDA agricultural research stations confirm that cows "breed up" better and produce more live calves if their nutritional needs are met, and their calves will utilize feed better and grow healthier if during the last trimester of gestation they are on a gaining trend.

Pregnant Angus and a Shortage – What's a Producer to Do?

Rations vary by age, size and characteristics of beef. Here's an example of a Black Angus breeding cow of medium age (5 years) weighing 1,200 pounds on January 1 expected to calve March 1 (third trimester of gestation) and expected to produce about 20 pounds per day of milk at a peak. She needs to consume at least 30 pounds of dry matter each day (2.5 percent of body weight) and is characteristically losing a little body condition score (BCS) during the winter.

In our hypothetical case, the owner is feeding the cow 22 pounds of alfalfa hay (15.9 percent crude protein (CP), 57 total digestible nutrients (TDN), 0.56 mg net energy for gain), 8 pounds of range pasture grass consumed (6.0 percent crude protein, 50 TDN, 0.25 mg net energy for gain) and 2 pounds of lick tub supplement (20 percent CP, 95 TDN, 0.7 mg net energy for gain).

Compiled research and software developed using the National Academy of Science Nutrient Requirements for Cattle (NRC) indicate this ration meets 93 percent of energy requirements and 117 percent of protein needs. But the hay fields did not produce well during a drought, limiting available feed to 40 percent of normal. The range grass also was less viable, and the price of supplement tubs has increased 45 percent. Now the producer is evaluating using what he can get, including 23 pounds of wheat straw per day, 6 pounds of prairie grass grazed per day, and the lick tubs.

Unfortunately, this ration will meet only 90 percent of energy needs and 69 percent of protein needs. The cow's condition will decline, increasing the potential for issues such as calving difficulties and weak calf syndrome.

So, how does the producer evaluate and balance alternatives to meet needs?

"We Have an App for That"

Years ago, producers often used Pearson's Square formula, which helped balance protein, energy and dry matter. More recently, beef specialists have developed software that incorporates the Nutrient Requirements for Cattle with details of a cow's characteristics.

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Livestock must be part of a commercial operation, not for recreational uses such as roping, and they cannot be normally in a feedlot when the drought event occurs.

The Emergency Assistance for Livestock, Honeybees, and Farm-raised Fish program (ELAP) provides additional coverage to producers for losses due to natural disasters not associated with drought or fire that are not covered by either LFP or LIP. Livestock losses, feed shortages and losses associated with hauling water are covered. Losses must be caused by an approved event and may be covered up to 75 percent of the approved market value.

Learn More

It is important to make risk management planning a priority in times of low prices and uncertainty. Visit RightRisk.org for a variety of resources to assist in risk management planning. The website includes online courses, decision tools and important information about crop insurance and risk management programs and how they might work in your operation.

Visit the Risk Management Agency's website (*rma.usda.gov*) for further information about crop insurance policies as well as online decision tools. For further information about NAP or disaster assistance programs, visit your local FSA office or their website (*fsa.usda.gov*).

John Hewlett is a farm and ranch management specialist in the Department of Agricultural and Applied Economics at the University of Wyoming College of Agriculture and Natural Resources. Contact him at (307) 766-2166 or hewlett@uwyo.edu.

Risk Management Agency
www.rma.usda.gov

Farm Service Agency
www.fsa.usda.gov

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Some of these programs include the Nutritional Balancer (NUTBAL) from Texas A&M and the Beef Ration and Nutrition Decision System (BRANDS) from Iowa State and the University of Nebraska. I have found many producers prefer the BRANDS program, since it lets producers easily detail their feeds, livestock and calving systems and then allows shifts in feedstuffs.

An Approach for Evaluating Alternative Feeds

The obvious first step is to know what you need for a ration, what you have and what you can get. Producers should get feed analysis data on alternative feeds before buying them, if possible. The value of a feedstuff can vary greatly after a producer sees lab results.

Next, producers should use a ration software program to compare feed mixtures against nutritional needs. Many producers purchase the software and become adept at analyzing opportunities. A number of extension educators and specialists offer individual coaching and sometimes teach group classes on using specific software.

Evaluate several different mixtures of available and affordable feeds to determine the best drought or shortage ration plan. Many software packages, such as BRANDS, estimate costs and changes in a cow's body condition over time. They also allow you to input the lab analysis of specific feed options so results will be more accurate.

Last but not least, if conditions or feed availability change, recalculate the ration according to the real-time ration.

"Software Paid for Itself in Savings"

During the 2010-2011 drought across the West, a number of producers from eastern Wyoming and northwestern Nebraska attended classes demonstrating the value of these software programs, which may cost $100 to $600. A local extension office offered a Ration Club, which would calculate two rations a year for $15 per year. Within five weeks, three of the producers were back, asking for the software brochures. They said in just 30 days they had saved enough on feed to pay for the software. Your cost–benefit will be based on your operation and needs.

Final Thoughts

Livestock owners who face feed shortages have to get creative, invest in more resources or downsize. Being able to accurately evaluate the use of alternative feeds may help avoid alternatives that can take years to recover from. National statistics indicate drought conditions exist in some part of the West about 5.7 years of every decade.

Remember that ration software does not replace other management practices, such as visual evaluation of body condition score throughout the year and herd health efforts.

If you are interested in learning more about ration analysis software, contact your local UW Extension office, which can put you in touch with an extension educator or specialist who works with beef nutrition.

Scott Cotton is the UW Extension area educator serving Converse, Natrona and Niobrara counties. His specialties include range management, livestock production, rural acreage management and agriculture and disaster resilience. Contact him at (307) 235-9400 or scotton1@uwyo.edu.

Do you know how new EPA Worker Protection Standard affects you?

Jeremiah Vardiman notes a few changes

The purpose of the EPA's Worker Protection Standard is to protect pesticide handlers and agriculture workers from exposure to applied pesticides. The 2016 updates include many changes that apply to agriculture operators and employers. Keep in mind these apply specifically to paid workers on your agriculture operation who are not (unpaid) immediate family members. The revisions keep the exemption for farm owners and their immediate families but expand the definition of immediate family.

Training Requirements Expanded

All handlers and workers must now receive annual training from a certified trainer who has completed an EPA-approved train-the-trainer course. A certified trainer is anyone with a valid pesticide applicator's license. There is no longer a training grace period for workers and handlers; all must complete training prior to applying pesticides. Also, the employer must keep records of the training for all workers and handlers for two years and be able to provide a copy when requested by employees.

Posting Signs is Mandatory

To effectively communicate the use of pesticides to workers and handlers, the employer must display application information (pesticide sprayed, application rate, re-entry interval, field sprayed, crop sprayed, etc.) and display safety data sheets at a central location within 24 hours of the pesticide application and prior to workers entering the treated area. This information must be displayed for 30 days after the re-entry period has expired. The employer must also display information on pesticide safety, including the seven concepts of preventing pesticides from entering the body, encourage employees to seek medical attention as soon as possible if poisoned, injured or made ill by pesticides and list nearby medical facilities. Signs communicating the pesticide hazard must also be posted at entry points into the fields if the re-entry period is greater than 48 hours or re-entry period is greater than four hours for enclosed spaces (grain silos, greenhouses, etc.). Warning signs are required to display a red circle containing a stern face with upraised left hand; the top must read DANGER PESTICIDES and the bottom KEEP OUT. The employer must also prohibit entry to the application exclusion zone, which is 100 feet around the application equipment during pesticide application.

Decontamination Water, Eye Wash Required

The pesticide handler must apply pesticides so as not to contact other persons. For the purpose of pesticide decontamination, the employer must provide one gallon of water for each worker and three gallons for each handler and each early-entry worker in the area of the employee's activity. The employer must also provide an eye wash station for handlers using products that require eye protection. If a product requires eye protection or is used in a pressurized closed system, there must be an eye wash system at the mix/load site capable of delivering .4 gallons per minute of water for 15 minutes or 6 gallons of water that flows gently for about 15 minutes. One pint of water in a portable container must be provided for field use.

Pesticide Training Season is Now

Plan to attend your local private pesticide applicators training to gain certification and learn more about the new changes to the worker protection standard. Extension will also offer more in-depth worker protection standard training across the state in the next 12 months. For more information on the worker protection standard or training opportunities, contact your county extension office.

Jeremiah Vardiman is an agriculture and horticulture educator in Powell. Contact him at (307) 754-8836 or jvardima@uwyo.edu.

How to build herd health and get better vaccination response

As natural and organic marketing opportunities continue to grow, beef producers are challenged to maintain herd health while minimizing the use of antibiotics. Maximizing the herd's immune response to vaccination programs is critical to improving the herd's immune threshold to disease challenge, potentially reducing the need for antibiotics and increasing the number of weaned calves that meet natural program guidelines.

As the calving barn begins to fill, now is a good time to develop or refine the current herd health program. For potential replacement females in the herd, the overall herd health program begins prior to birth and continues throughout their productive life in the herd. The health program not only helps maintain healthy animals, it also serves as an insurance policy, helping eliminate chances of outbreaks that could be financially devastating to the operation.

Develop a Good Veterinary-Client-Patient Relationship

One of the most important aspects of establishing a health program is working with your veterinarian. Veterinarians can help recommend products and vaccination schedules that best fit the environment and livestock operation. They can also offer tips that will help maximize the herd's response to vaccination and improve the overall protection. Developing a comprehensive herd health program for the entire year is important to guarantee adequate immunity is maintained throughout the year.

Herd health programs are a coordinated effort between your veterinarian, manager and processing crew. In addition to working with your local veterinarian, follow the "top ten" guidelines to help guarantee a proper vaccine response and improved protection for the herd.

Consider Pre-calving Nutrition

In addition to the obvious connection between herd nutrition and calf health from birth to weaning, a considerable amount of research emphasizes the importance of pre-calving nutrition on subsequent calf health. A classic study by Larry Corah in 1975 illustrated the direct link between pre-calving nutrition of the dam and the considerable impact on the overall health of the subsequent calf crop. Pre-calving nutrition not only directly affects the weight, energy reserves and health of the calf born but also the amount of colostrum produced and mothering ability of the dam.

Recent research at the University of Wyoming and North Dakota State University emphasizes the importance of nutrition during early gestation, when major organs and endocrine systems are formed, and on subsequent calf health and performance.

Provide Minerals

Primary and secondary mineral deficiencies can also affect the animal's ability to mount an immune response, both to a vaccination and to disease exposure. Mineral issues in the intermountain West typically involve copper and its antagonists, including iron, sulfur and molybdenum. Selenium can also be an issue on some operations. In many cases, if nutrition and vaccination management have been addressed and there is still an overall herd health problem, mineral analyses of hay, pasture and water samples may be needed to adequately evaluate the herd situation.

Communicate with the Team

Veterinarians, neighbors, extension educators and state specialists are valuable resources when evaluating and modifying the operation's overall heard health program. All can provide information to help decision making. As mentioned, targeting some of the natural programs has created an emphasis on preventative herd health and raising the overall herd resistance to minimize antibiotic use. Vaccination programs, herd nutrition, mineral management and coordination with your team are all important components to herd performance – and that's something to think about while waiting for the next midnight calving check.

Steve Paisley is the UW Extension beef specialist and an associate professor in the Department of Animal Science. His specialties are beef cattle nutrition and management. Contact him at (307) 837-2000 or spaisley@uwyo.edu.

PAISLEY'S TOP TEN FOR AN EFFECTIVE PROGRAM

1. **Read and follow label directions for all vaccines, antibiotics and parasite control products.**
2. **Follow proper Beef Quality Assurance guidelines and place all shots in front of the shoulder.**
3. **Use hot water (180 degrees) to sterilize equipment. Do not use disinfectants when administering modified live vaccines.**
4. **Keep all vaccines out of direct sunlight to prevent UV damage and store in a cool place — even when the product is loaded in the syringe.**
5. **Color-code or mark syringes to avoid mixing or giving the incorrect dose.**
6. **Do not administer more than 10cc of product per injection site.**
7. **Mix only enough vaccine to be used in one hour or less to maintain maximum effectiveness.**
8. **Choose the correct needle for the job and replace needles often.**
9. **Observe the proper withdrawal times for all antibiotics.**
10. **Keep records of vaccinations, medications and feed additives used.**

Beef cow herd shows signs of growth, mixed outlook for 2016

Bridger Feuz looks at supply, demand and emotion

Three major factors affect the market dynamics of the beef industry: the supply of beef, the demand for beef and the status of beef trade. Looking at each of these factors provides a better understanding of long-term market trends.

Major Factor 1: Beef Supply

Starting in 2006, the January 1 cow inventory declined year over year through 2013. The turn-around year was 2014, and a moderate increase of 2.1 percent was realized in 2015. The January 1, 2016, beef cow inventory shows a more significant increase of 3.5 percent from 2015 to 30.3 million head. The number of heifers held as beef cow replacements gives us an indication of the trend for 2017.

The January 1, 2015, number, 4.1 percent, showed the biggest increase in several years, while this year's number came in at a 3.3 percent increase. As can be expected by these numbers, the U.S. calf crop is also expected to see growth again this year.

Major Factor 2: Beef Demand

The beef demand index, an index that adjusts for inflation and uses 1990 as the base year for comparison with a value of 100, bottomed out in 1997 at 77, a 33 percent decline from 1980 levels, but showed consistent growth through 2004, managing a 14 percentage-point increase. Much of this growth can be attributed to a positive image of beef quality and to consumer diets that encourage protein

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Use this spring calving checklist to ensure success

For most spring calving herds, February is prep time for the upcoming calving season. Checking facilities, prepping corrals and stocking up on supplies are all important considerations. Here is a "to-do" list to consider.

1. Inventory winter feed supplies and take time to sample and analyze forages. Balanced rations based on actual feed analyses and strategic use of medium- and high-quality forages will often reduce the need for supplements, lowering winter feed costs.
2. Keep cows in good condition. Besides decreasing calving problems and improving rebreeding rates, this will help reduce feed costs. Research indicates that thin cows require about 6 percent more energy to maintain their weight during cold weather, which translates to roughly one pound of additional hay each day.
3. Consider the herd's nutrient requirements in late fall and early winter. Nutrient requirements and, therefore, the amount and quality of feed offered should be based on the females' stage of production and body condition. Spring-calving cows entering the last third of gestation and early lactation have greater nutritional needs than cows in mid gestation. For example, once a beef cow calves and lactation begins, her nutritional requirements increase by about 25 percent.
4. Continue to monitor performance and body condition as the weather gets colder. Adjust feed, recognizing cold weather can dramatically increase energy requirements. For every 1 degree drop in wind chill temperature below 20 degrees, feed requirements increase by approximately 1 percent. For example, during a minus 10-degree wind chill, a cow's maintenance requirement increases by 30 percent. Windbreaks can reduce wind chill and help reduce your energy (and feed) bill.
5. Separate thin cows from the herd and feed separately, if possible. These thin cows are often 2- and 3-year-olds. A higher plane of nutrition for these thin cows allows feed to be utilized more efficiently and helps reduce their postpartum interval to first estrus. Consider feeding the higher-quality forages to replacement females as well as to younger cows that may lack body condition and be more nutritionally stressed.
6. Supplement minerals that are deficient in your area. Phosphorus is generally deficient in harvested Western forages. When evaluating your mineral program, consider all feeds and sources of minerals. Purchased supplements are often formulated to provide adequate trace minerals when fed at the recommended rate. High-protein supplements also contribute phosphorous to the total ration and should be considered when evaluating winter mineral programs. Micromineral deficiencies are often area-specific, so consult your local veterinarian about identified deficiencies.
7. Consider providing vitamin A in your winter mineral or feed supplement, especially if cows are consuming a low-quality forage. A cow's liver can store vitamin A for 100-120 days after the consumption of green grass. Remember, alfalfa also can be a good source of vitamin A.
8. Consult your veterinarian about pre- and postpartum vaccination schedules. Subcutaneous (sub-Q) vaccine administration is preferred if label-approved. If intramuscular (IM) injection is required, administer in the neck muscle.

Steve Paisley is the UW Extension beef specialist and an associate professor in the Department of Animal Science at the University of Wyoming. Contact him at (307) 837-2000 or spaisley@uwyo.edu.

Feed-efficient cattle may produce fewer calves

Feed inputs represent the greatest annual cost for cow-calf producers, yet evidence suggests heavy genetic selection for feed efficiency may have consequences for reproductive success in cattle.

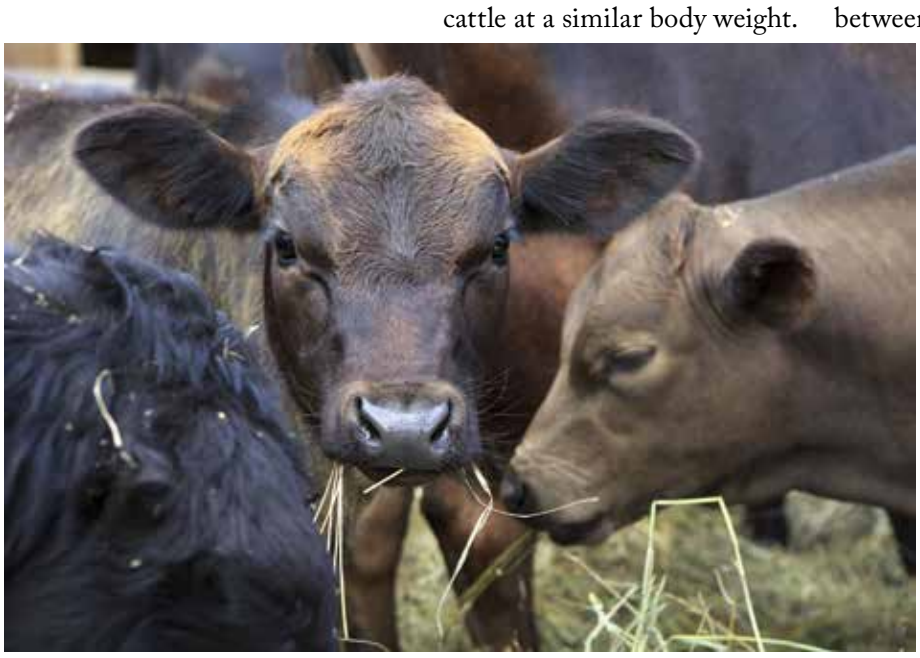
Between 40 and 70 percent of annual production costs come directly from feed and supplement inputs. Producers may assume that to be competitive, they must reduce feed input costs while still meeting animal requirements. Either the cost of feed utilized must be reduced or cattle must be maintained on less feed. Many cattle producers have begun to apply heavier genetic selection emphasis on feed efficiency traits.

How Feed Efficiency is Measured

Traditional measurements of feed efficiency include gain-to-feed ratio (G:F) and feed conversion ratio (FCR). These measurements provide a gross feed efficiency measurement and indicate how efficiently an animal utilizes feed inputs. Be careful, though, basing breeding decisions on these measurements of efficiency. It has been reported that gross efficiency is usually correlated with average daily gain (ADG), and high ADG characteristics are highly correlated with increased growth characteristics.

As a rule of thumb, larger-framed cattle will have lower FCR than small-framed cattle at a similar body weight. According to the National Research Council (NRC, 2000), a 100-lb increase in body weight increases dry matter intake by 500 to 551 pounds per year. Therefore, selection for improved G:F and FCR may indirectly result in increased mature body size, leading to increased energy requirements and ultimately, higher feed costs.

Residual feed intake (RFI) is a moderately heritable feed efficiency characteristic that doesn't correspond to growth and increased body size. Because RFI is independent of body size and level of production, it is becoming a more commonly selected trait. Traditionally, RFI is defined as the difference between actual feed intake and the expected intake.



Animals that consume less than expected and have a negative RFI are more efficient than animals that consumed more than expected and have a positive RFI. Expected feed intake is predicted using requirements related to body weight and production outputs such as ADG for growing cattle.

Leaner Heifers Calve Later

Pregnancy rates are dependent on the number of heifers displaying estrous during or before the established breeding season. It is crucial heifers reach puberty early in life so they have a greater probability of being successfully bred early in their first breeding season, likely resulting in greater lifetime calf production. Replacement heifers are commonly fed to meet or exceed a target weight of 60-65 percent by the beginning of their first breeding season, which increases the number of heifers cycling so they can conceive.

The onset of puberty is largely determined by the available fat stores of a heifer. Low-RFI (feed efficient) heifers have been reported to have 2-5 percent less body fat than high-RFI (non-feed efficient) heifers. Less body fat means more days to puberty and later calving.

Conversely, one study suggests a heifers reaches puberty 7.5 days sooner for every unit increase in RFI. It has been speculated that the less efficient (high-RFI) heifers are storing excess consumed energy as fat, speeding the onset of puberty, while the more efficient (low-RFI) heifers lack the additional energy demands associated with sexual development and are instead still partitioning available energy toward growth instead of reproduction.

By selecting low-RFI replacement heifers, we may also be selecting for leaner and later-maturing heifers that calve later in their first and subsequent calving seasons and are thus less likely to have a calf every year. If this is the case, the cost of late sexual maturity may outweigh the savings from reducing feed inputs.

Feed Efficiency and Reproductive Success

Reducing feed inputs to remain profitable is important and attainable through genetic selection; however, too much emphasis on feed efficiency could reduce reproductive success. Cattle producers should avoid single-trait selection, and cow-calf producers should consider how their nutrition decisions may effect reproduction.

Chance Marshall is the University of Wyoming Extension educator in Fremont county. His specialties include profitable livestock systems and ruminant nutrition/education. Contact him at (307) 332-2363 or cmarsha1@uwyo.edu.

Some plants are good, some are bad and some are downright deadly for livestock

Plants with deadly traits can be native or non-native and grow in wet, dry, deep or shallow soils. These toxic foes affect livestock in a variety of ways. The toxins may affect specific organs or body systems, depending on the livestock species.

Below are ways Wyoming livestock producers and others can avoid and reduce risks from poisonous plants this grazing season.

Consider Range Quality

High-quality range pastures are desired in any livestock production system. Rangelands in great condition offer a wide variety of desired plant species, adequate forage and few undesirable plants for grazing livestock.

The potential for poisoning is reduced if livestock have lots of good plant choices. When animals do consume a poisonous plant, the chance of poisoning is reduced if they have also eaten plenty of other plants. In general, acute poisoning occurs when a grazing animal consumes a poisonous plant as a certain percentage of its body weight.

Use Patience

Time is not of the essence when moving animals to new pastures or through areas containing toxic plants. Give them time to move, causing as little stress and resistance as possible.

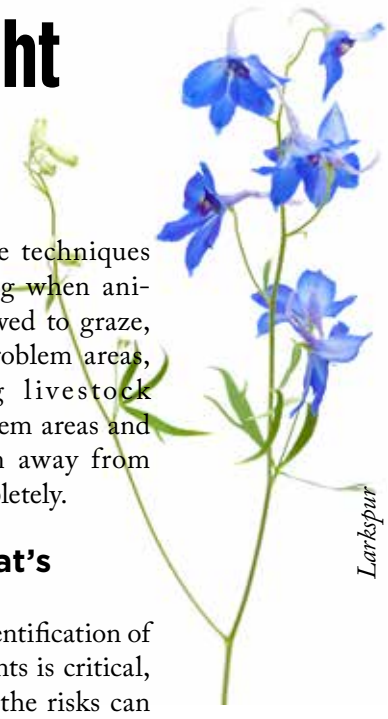
Moving animals quickly may result in poisonings simply because livestock are looking for a snack on the go and do not take time to select non-poisonous plants. Do not rush livestock to new pastures that have poisonous plants; hungry animals under stress and turned out to a new pasture are more likely to consume toxic plants instead of selecting non-poisonous plants.

Avoid 'em

Avoidance might seem like the obvious answer, right? But there are many factors at play, and dealing with poisonous plants often falls into that gray area of livestock management.

Certain plants are poisonous to particular livestock species; for example, cattle, sheep, horses, goats and swine. Plants also grow at different times of year and at different ecological range sites. Matching the livestock species to the range or pasture they will be grazing is critical.

Avoidance techniques include timing when animals are allowed to graze, fencing off problem areas, not moving livestock through problem areas and moving them away from pastures completely.



Larkspur

Know What's Out There

Proper identification of poisonous plants is critical, and knowing the risks can save a lot of headache and money. Improper identification may lead to grazing the wrong livestock with the wrong (deadly) plant. Identification is also a must for selecting the proper herbicide or plant removal treatment.

Provide Water and Minerals

Proper allocation of minerals lowers the risk of poisoning. Providing adequate salt and other minerals, such as phosphorus, is important for maintaining animal health. The availability of minerals also helps decrease the likelihood of livestock eating new or unknown plants to find minerals in which they are deficient. Finally, the availability of good water decreases the likelihood of animals eating increased forage to compensate for water deprivation.

Plan Ahead and Call Us!

There are many economic, genetic, biologic, and feasibility factors to consider when making decisions about poisonous plants. Proper planning prior to the growing season is critical to avoiding poisonous plant issues. Your local University of Wyoming Extension office is a good place to start if you have questions about poisonous plant management.

Brian Sebade is the University of Wyoming Extension educator and Master Gardener coordinator based in Albany County and serving southeast Wyoming. Contact him at (307) 721-2571 or bsebade@uwyo.edu.

Gardeners, avoid damage to vegetables from these residual herbicides

"Dr. Caitlin" offers a simple test

If you are a gardener, you know adding manure and compost to the soil helps plants thrive, but how do you know if it contains harmful herbicides?

Most herbicides break down within days or weeks when exposed to sun, heat and soil microbes. The compost process, with its fluctuating temperatures and thriving microbial activity, also does a great job of degrading most herbicides, pesticides and other chemicals. There is one class of herbicides, however, that may persist up to several years in soil, livestock manure, mulch and compost. They can damage or kill sensitive plants, such as peas and beans, carrots, tomatoes, peppers, spinach and strawberries.

Herbicides that contain the active ingredients of aminopyralid, clopyralid, picloram and aminocyclopyrachlor have the potential to accumulate in manure, compost or soil. There are many products available that contain one or more of these active ingredients, so be sure to read the product label thoroughly!

These herbicides act as growth regulators and effectively kill broad-leaf plants (not grasses). For this reason, they are commonly used on lawns, pastures and hay fields. What makes these herbicides unusual is their persistence in livestock manure.

When an animal consumes the hay or grass from an area where these herbicides have been used, the active ingredients (clopyralid, etc.) do not break down in the gut and are excreted with the manure. They persist in the soil, stockpiled manure or compost.

Accidental damage to non-target plants can occur when these herbicides are used on lawns and the grass clippings are used for mulch or composting. Straw bales can also cause problems if they come from a field sprayed with one of these herbicides.

There are a few things you can do to reduce the risk of residual herbicides. First, do not use products containing the above-listed active ingredients on your lawn if you plan to compost the grass clippings or use them as mulch.

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and discourage carbohydrates; however, in 2005 the demand index again started to decline and dropped to a low of 75 in 2010.

This recent decline underscores the need to meet the changing needs and requirements of consumers, especially as consumers see a tightening in disposable income. The beef demand index has rebounded again over the last three years and now sits at 86. It is impressive over the last couple of years the index has continued to rebound, even with consumers facing record-high retail beef prices.

Major Factor 3: Beef Trade

The U.S. dollar began to strengthen in 2013 and continued through 2015. As a result, export markets were down slightly in 2014 and down more significantly in 2015. The annual net value of our exports (sales of exports less cost of imports) is still a positive number and points to the value of trade for the beef industry. The annual net export value now stands right at $1 billion for 2015. The U.S. dollar remains on an upward trend against most foreign currencies. This continued strength will impact beef trade through 2016.

A dramatic drop in calf prices marked 2015. As late as June, prices for 500-600-pound steer calves were averaging $280 per cwt. At the close of 2015, those same 500-600-pound steers were averaging only $180 per cwt. That is a change of $500 per calf in 5 to 6 months. Several factors, including decreasing exports, increasing herd size and heavy weight cattle in the feedlots, contributed to the dramatic drop in prices. It is my opinion emotion played a part as well and helped drive the price down even further.

What Will 2016 Look Like?

We still are faced with an increasing supply of cattle as well as a down export market, but much of the emotion has worked itself out of the market. My sense is that prices for 500-600-pound steer calves will be at or slightly below $180 per cwt, where we finished 2015. It wouldn't surprise me, though, to see prices as low as $150 per cwt.

Bridger Feuz is the University of Wyoming Extension livestock marketing specialist. Contact him at (307) 783-0570 or bmfeuz@uwyo.edu.

Buying and selling local foods just got easier

Hudson Hill reads your rights under the Food Freedom Act

The Wyoming legislature passed the Food Freedom Act in 2015. This bill is unlike any other legislation in the country in that it deregulates aspects of purchasing local food.

The bill has created controversy, but one thing that can be said with certainty is the legislation changes the way producers and consumers of local food interact. The purpose of the bill "is to allow for the sale and consumption of homemade foods and to encourage the expansion of agricultural sales by farmers markets, ranches, farms and home-based producers and accessibility for the same to informed consumers."

The concept is pretty easy to understand. If producers wants to sell products at a farmers market or on a farm or ranch, they can. Buyers must be an "informed consumer," meaning they understand the product they are buying has not been inspected or passed any inspection processes.

Here are the rules of the bill:

- The transaction must be between the producer and the informed end-consumer.
- The transaction can only be for home consumption.
- The transaction can only occur in Wyoming.
- The transaction cannot involve interstate commerce.
- The transaction does not include all meat products.

The bill serves three purposes:

- Allows an informed end-consumer to purchase agricultural products through farmers markets or on a ranch or farm.
- Allows sale and purchase of poultry products consistent with others rules.
- Allows an informed end-consumer to purchase raw milk from a producer for home consumption.

For decades, citizens have been moving away from the farm and becoming disconnected from their food sources. More recently, people have been trending back to a desire for some connection with their food and wanting to understand where and how it is produced.

Wyoming has seen this movement. Many consumers want their food to be as local as possible, and they want to know where their food comes from. Other consumers see health benefits of consuming local food that has not been through a lot of processing, packaging or travel.

There are a couple of things the bill doesn't do:

- Does not change the way state inspectors investigate food-borne illness.
- Does not change laws concerning brand and health inspections for animals.

The bill has supporters and detractors. Supporters want the freedom to produce, purchase and consume the food they choose. Detractors worry about the inherent risks in consuming uninspected food.

The legislature passed this bill to allow freedom. As producers and consumers exercise that freedom, they must understand with freedom comes responsibility. Producers and consumers need to make sure they understand why inspections are and were in place. Producers must produce and process their products in a manner that makes consumption safe.

If products are not produced responsibly and there are health issues for Wyoming residents, the bill could be made more stringent or even repealed.

You can check out the Wyoming Food Freedom Act at *bit.ly/WyFoodFreedom*. If you have questions, the Wyoming Department of Agriculture is a good place to start.

We can hope the bill succeeds in opening a new (old) way for food to be produced and consumed in Wyoming.

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Wyoming Food Freedom Act
bit.ly/WyFoodFreedom

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If you are using livestock manure in your garden (even after composting), find out what herbicides were used on the fields where the animals grazed or where the hay was grown. The same goes for straw bales used in the garden.

If you cannot determine the source of the manure or compost, consider conducting a bioassay to test for the presence of growth regulator herbicides. This simple test requires only a few seeds and a sunny windowsill, but it can help you determine if your compost or manure will cause damage before it is too late and your tomatoes are dead.

More information about residual herbicides in the garden and complete bioassay instructions are available at *bit.ly/ResidualHerbicides*. Or contact your local UW Extension educator for assistance.

As always, carefully read and follow all instructions on the herbicide label. There you will find information about proper application rates.

Caitlin Youngquist is a University of Wyoming Extension educator serving the Big Horn Basin. Her specialties are soil quality, livestock mortality, composting and manure management. Contact her at (307) 347-3431 or cyoungq@uwyo.edu.

Residual Herbicides
bit.ly/ResidualHerbicides