March 2011

BARNYARDS & BACKYARDS

UW Cooperative Extension Service | Profitable & Sustainable Agricultural Systems | Risk Management Agency

The Cooperative Extension Service and Wyoming agriculture

By Steve Paisley

We hope information provided in this insert is informative and worth a quick read.

These periodic inserts are coordinated, written, and partially sponsored by the Profitable and Sustainable Ag Systems (PSAS) team of the University of Wyoming Cooperative Extension Service (UW CES). The PSAS team is comprised of extension educators, state extension specialists, and university personnel whose focuses include livestock production and management, crop production, and horticulture interests.

Additional projects coordinated by PSAS team members include the Master Gardener program, "From the Ground Up" television spots, Barnyards and Backyards inserts, and local extension programming efforts such as Fremont County Farm and Ranch Days, WESTI Ag Days, and Master Cattlemen classes. Larger, nation-wide programming in-

Steve Paisley

cludes the Range Beef Cow Symposium, a multi-state effort that attracts more than 800 attendees and 120 ag industry vendors from across the United States.

As UW CES personnel, we continue to work toward developing innovative educational programs and information while staying successfully rooted in our traditional academic framework. The Cooperative Extension Service was created by the Smith-Lever Act in 1914, and, since that time, agricultural practices and production efficiencies have improved dramatically. Agricultural demographics have changed as well, with the number of people making their living in agriculture decreasing from 60 percent of the population in 1914 to less than 2 percent in 2010.

In addition to cultural and demographic shifts, technology advances have changed how we search for and receive information. Smart phones, e-mail, online discussion groups, and Internet search engines have all made information more accessible. Unfortunately, misinformation has become equally accessible. Reliable information based on sound, scientific research is just as important today as it was in 1914. As extension personnel, we hope we continue to be a trustworthy, accessible source of information for today's agricultural producers.

Having grown up on a family farming and ranching operation, I am proud to have been rooted in the "2 percent minority." I have served as UW's state extension beef cattle specialist for the last 10 years, and I am fortunate to also serve as the PSAS team coordinator. While the PSAS name may not be familiar, many educators and specialists who work across the state have been familiar faces to the agricultural community for many years. We hope our clientele continues to rely on us as an important information source.

Thanks to great support from the state, the Cooperative Extension Service continues to be an important part of the College of Agriculture and Natural Resources at the University of Wyoming. For additional information or updates on local programming efforts, contact the state CES office at (307) 766-5124, or contact me at spaisley@uwyo.edu or (307) 760-1561.

Wondrous wares of nourishing wheat

By Sandra Frost

Pasta, cake, bread, crackers, cookies, pastries, noodles

Each product requires flour with different qualities made from different wheat.

Not all wheat varieties are equal. The wheat kernel contains a starchy endosperm that is milled to make flour. The starchy endosperm used as flour is surrounded by gluten-forming proteins that are bound to it. Milling separates the starch from the protein layer.

The separation process may be easy and result in fine-textured flour (soft wheat) or difficult and result in coarse-textured flour, including some broken starch granules (hard wheat). Soft wheat products are low in moisture and denser than bread. Hard wheat flour, bread flour, makes good bread dough because the broken starch granules absorb water and are more easily utilized by yeast. Protein content is an indicator of gluten performance in breads. High-protein content wheat results in high-gluten content flour that produces breads that rise well.

Soft wheat products include flat breads, cakes, pastries, crackers, quick breads, muffins, and snack foods. Hard wheat products include bread, rolls, pasta, bulgur, tortillas, and oriental noodles.

U.S. wheat producers grow and market six classes of wheat worldwide. Geographic regions in the U.S. take advantage of environmental conditions and plant breeding to produce different classes of wheat. Wheat varieties may be planted either in the fall (winter wheat) or in the spring (spring wheat).

Hard red winter wheat is the largest class produced each year. It is raised from Canada to Mexico and from the Mississippi River to the Rocky Mountains. Typically, hard red has a wide range of protein content and has good milling and baking characteristics. Hard red is used to produce bread, rolls, and all-purpose flour.

Hard red spring wheat is excellent bread wheat with high protein content. Hard red spring is grown in Montana, North Dakota, South Dakota, and Minnesota.

Soft red winter wheat is relatively low in protein (gluten). It is used for flat breads, cakes, pastries, and crackers. Soft red winter wheat is grown east of the Mississippi River.

Durum wheat is the hardest of all U.S. wheat. Most durum wheat is grown in North Dakota and used domestically to make semolina flour for pasta production.

(continued on page 2)

Wondrous wares of nourishing wheat *(continued from page 1)*

Hard White wheat is very similar to hard red wheat. It is primarily used in domestic markets in yeast breads, hard rolls, bulgur, tortillas, and oriental noodles.

Soft White wheat, grown mainly in the Pacific Northwest, is used in cakes, crackers, cookies, pastries, quick breads, muffins, and snack foods. Soft white wheat is exported to Far East Asian markets.

The family of wheat, *Triticum*, has developed and changed over time in different geographic locations. Three ancient wheats are grown in limited quantities today. All three are genetic reservoirs for plant breeding:

One sub-species of common wheat, **spelt** (*Triticum aestivum* var. *spelta*) used as an alternative feed grain, has been grown in the Middle East for thousands of years. Spelt does not thresh free of its seed coverings. Ohio farmers produce most of the U.S. spelt.

For more information on the three ancient wheats grown today:

EINKORN WHEAT – www.hort.purdue.edu/newcrop/proceedings1996/v3-156.html

EMMER WHEAT – www.underutilized-species.org/species/brochures/Emmer.pdf

SPELT WHEAT – www.hort.purdue.edu/newcrop/proceedings1996/v3-156.html

Einkorn (*Triticum boeticum*) is another ancient wheat that does not thresh free of its seed coverings. Einkorn has been found by archeologists at sites more than 10,000 years old. Today, einkorn is a genetic resource for modern plant breeding.

Emmer wheat (*Triticum dicoccon*), an awned (bearded) wheat grown on marginal soils in Europe and Asia, is used for human consumption. In Italy, it is called "farro" and is used in soup. Emmer becomes a complete protein when combined with legumes. Durum wheat is a descendent of emmer wheat.

There is a wealth of knowledge, plant breeding, and time behind each slice of bread!

Sandra Frost *is a University of Wyoming Cooperative Extension Service educator based in Park County. She can be reached at (307) 754-8836 or sfrost1@uwyo.edu.*

FOR MORE INFORMATION

Wheat organizations

National Association of Wheat Growers
www.wheatworld.org/

Wyoming Wheat Growers Association
www.wyomingwheat.com/

Relating Wheat Quality to End-Product Quality, Oklahoma Cooperative Extension Service. FAPC-129.
www.fapc.okstate.edu/files/factsheets/fapc129.pdf

Made in Wyoming

Gaukel Grown & Ground – all natural, stone-ground, whole wheat products
www.gaukelwheat.com/

Become fearless planting a tree or shrub in Wyoming!

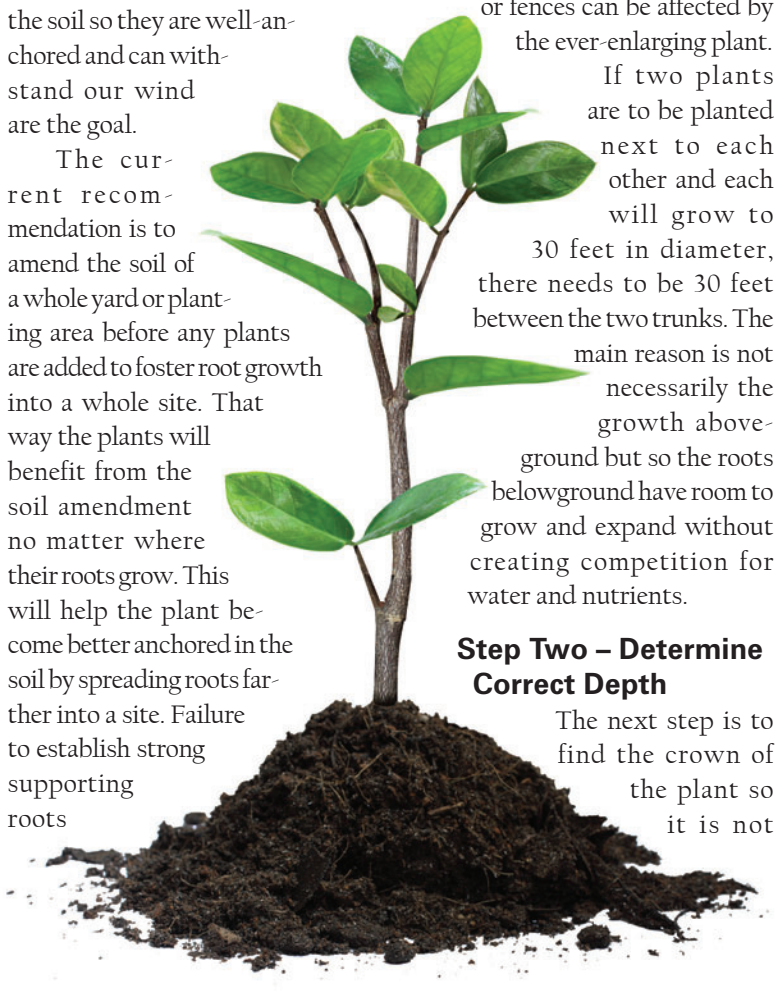
By Donna Cuin

Many property owners will be planting woody ornamental plants in the coming months.

This is the perfect time to share recommendations on how to properly plant trees and shrubs. A common recommendation used to be to amend the soil around roots with organic matter. However, after many tree plantings failed over the years, plants were removed to discover why. Roots had a tendency to stay within the amended soil and not grow into the surrounding native soil creating the same situation as root-bound or pot-bound plants.

Trees that send roots out into the soil so they are well-anchored and can withstand our wind are the goal.

The current recommendation is to amend the soil of a whole yard or planting area before any plants are added to foster root growth into a whole site. That way the plants will benefit from the soil amendment no matter where their roots grow. This will help the plant become better anchored in the soil by spreading roots farther into a site. Failure to establish strong supporting roots will doom a tree to leaning or, worse yet, falling over.



Step One – Determine Spacing

Once the soil has been amended, determining depth and shape of the planting hole for each plant is important. Plant labels will describe how large the tree will grow at maturity. Be sure to give the plant room to reach its mature size. If a tree is 30 feet in diameter at maturity, be sure there is 15 feet on either side of the trunk so it will not touch another plant or structure. Too many trees have been planted too close to houses. As the plant matures, the house, foundation, sidewalks, or fences can be affected by the ever-enlarging plant.

If two plants are to be planted next to each other and each will grow to 30 feet in diameter, there needs to be 30 feet between the two trunks. The main reason is not necessarily the growth aboveground but so the roots belowground have room to grow and expand without creating competition for water and nutrients.

Step Two – Determine Correct Depth

The next step is to find the crown of the plant so it is not planted too deep. The crown is the point where roots attach to the trunk of the tree. If planted too deep, the roots will likely not have enough oxygen around them in the soil and will essentially suffocate. Planting woody ornamentals high in their new site is better than planting them too deep. Once the crown is located on a containerized or balled-and-burlap tree, measure the depth of the rootball of the plant, then dig the hole so the soil under the rootball stays undisturbed and solid. That way, the rootball will not settle or sink after planting and watering starts.

The shape of the planting hole is also important. The hole should be dug in the shape of a shallow bowl or saucer and should not have sides straight up and down. Roots need to expand and eventually grow into and past the sides of the hole. By creating a gentle slope, roots have a better chance to penetrate the soil at the hole's edge and into undisturbed soil. As a plant's roots grow, they fill the soil of the site and stabilize the plant and anchor the tree in the wind.

The hole should be dug only the depth of the rootball and then tapered to the saucer shape – three to five times as wide as the rootball. As hard as the digging may be, it is important to the success of the plant.

Use the same non-amended soil dug out of the hole to backfill the hole. No fertilizer is needed. Root growth needs to be encouraged and not excessive branch and leaf growth. Fertilizing at planting time is counterproductive for the long-term health of the tree.

Donna Cuin

Soil compaction can be deadly to plants. When the backfilled soil is added, don't tamp, stomp, or walk on the backfill. Just water so the soil settles and large air pockets are filled.

Step Three – Mulch!

The last step is to cover the planting hole with a mulch to hold moisture and prevent weeds from germinating. Place up to 4 inches of mulch on top of the soil but don't get overzealous or the mulch will cause problems with the air exchange in the soil. Keep mulch away from the trunk of the tree a few inches. The bark won't get wet as the tree is watered, and rodents won't be as likely to chew on the bark without the cover of mulch.

Staking newly planted trees is not usually necessary. If staking a tree, use as few stakes as possible. What is ideal are two stakes positioned perpendicular to the prevailing wind so the roots can develop anchoring strength as the trunk sways in the wind.

When done, all that is needed is continuing to water the tree summer and winter to maintain even moisture in the soil. This will encourage the roots to expand out of the planting hole and into the undisturbed soil surrounding the planting site.

Donna Cuin *is the University of Wyoming Cooperative Extension Service horticulturist for Natrona County. She can be reached at (307) 235-9400, ext. 31, or at dcuin@natronacounty-wy.gov.*

Resources for planting trees and shrubs

For planting tips, go to this article http://bit.ly/treeplantingtips at *Barnyards & Backyards* magazine, which is published by the University of Wyoming Cooperative Extension Service.

Recommended trees for Wyoming – ces.uwyo.edu/PUBS/B1090.pdf

Recommended shrubs for Wyoming – ces.uwyo.edu/PUBS/B-1108.pdf

Small spaces can grow vegetables, even fruit trees

By Scott Hininger

I often hear, "I would like to garden, but I do not want to take up a large portion of my yard for that."

There are many innovative ways to handle this. One of the least-used ways is to plant vegetables in an existing flowerbed. There are many benefits. Planting early-season vegetables such as carrots, radishes, and lettuce can fill those spaces when some of the perennial flowers may not be up yet or have not reached their full summer size.

Vegetables share space with flowers in this raised bed

Flowerbeds can Balloon Gardening Space

Adding vegetables to a flowerbed or planting area can add diversity to those areas but, if this is carried all the way around the property, the amount of actual usable garden space that can be utilized is amazing. Many are not looking at large gardens but would like to have fresh vegetables or herbs. This would certainly provide that opportunity.

Another advantage is, when out attending flowerbeds, you can also be attending to or harvesting vegetables. There are definite benefits gained by planting vegetables with certain flowers, such as marigolds, as they can help deter or repeal deer, rabbits, and insects.

Using small locations in landscaping around the perimeter of a property can also provide opportunities to contain potentially invasive herbs, such as mint.

One of the biggest design criteria is providing adequate sunlight for vegetables. Many times, either the perennial plants or the location may shade these vegetables. Production may not be as great as it would be in full sun.

Better gardens

For informative gardening articles and videos, go to http://bit.ly/UW-gardenresources

Containers Allow for Plant Variety

Another option is to use different types of containers in landscaping design. Soil in the containers can be amended to accommodate a wider range of plant needs. For example, blueberries require a very low pH. Most Wyoming soils have a very high pH, which can be amended in a pot to provide the necessary low pH. Containers can be moved periodically either during the day or during the growing season. The pots also can be brought inside a house during winter and provide fresh vegetables.

Grow Dwarf Fruit Trees or Use Espalier

What if someone wants to grow fruit trees but doesn't have the space to grow full-sized trees? Dwarf trees can be grown, or a standard fruit tree can be pruned to whatever size that accommodates the space.

Another option is to use walls and fences and prune the fruit trees in what is called espalier - pruning and training the fruit tree to grow in a vertical, flat style - which, in many cases, can be a design. This technique can use a wall or fence thereby freeing landscaping space for other uses. Walls or fences can also be used to grow many vegetables, such as beans, peas, and cucumbers.

So, if looking for new landscaping ideas, work to better utilize small spaces for growing fruits and vegetables. There are many options available. You just have to use your imagination!

Scott Hininger *is a University of Wyoming Cooperative Extension Service educator based in Sheridan County. He can be reached at (307) 674-2980 or at shininger@sheridancounty.com.*

Two insurance options can help protect against cattle price volatility

By James Sedman and John Hewlett

Ask any cattle producer – cow-calf, stocker, yearling, or feedlot operator – what one of their major sources of risk is, and you will probably hear "cattle prices."

Highly volatile prices, along with input price risks associated with feeding those cattle, can seriously reduce profitability if not accounted for.

The Federal Crop Insurance Corporation offers two important insurance options cattle producers can use to manage price risk. Livestock Risk Protection (LRP) policies prevent losses associated with declining market prices and are available for fed- and feeder-cattle (as well as lamb and swine) operations. Livestock Gross Margin (LGM) policies protect the gross margins on feeder- and fed-cattle (as well as swine and dairy) operations. LGM protects against negative feeding margins and the value of the cattle.

Federal Crop Insurance Corporation offers:

Livestock Risk Protection

Livestock Gross Margin Insurance

LRP Insurance

LRP policies help protect cattle producers against losses due to lower market prices. A wide range of producers, from cow-calf to feedlot operations, can use these contracts for both fed and feeder cattle with contract lengths (varying in four-week increments) from 13 to 52 weeks.

A producer applies for coverage then selects a contract length for their production period along with the cattle type, number of head, and expected weight at sale time (up to 900 pounds for feeder cattle and 1,000 to 1,400 pounds for fed cattle). The price used in the insured value is determined by the Chicago Mercantile Exchange (CME) price indexes. Indemnities occur if the revenue determined by CME prices at sale time is below the insured value.

LGM Insurance

LGM insurance addresses the two main areas of fed cattle risk – cattle prices (both for feeder and finished cattle) and feed costs. LGM insures against losses in margins associated with feed costs in addition to fed cattle prices; these contracts are essentially bundled options for feeder cattle and corn input costs with the finished fed cattle price.

Contracts are available for calf finishing and yearling finishing contracts. Calf contracts assume calves enter the feedlot at 550 pounds and exit at 1,150 pounds and consume 52 bushels of corn for up to 11 months.

Yearling contracts assume yearlings enter at 750 pounds and exit at 1,250 pounds while consuming 50 bushels of corn. Prices used to calculate a producer's LGM guarantee are determined by the end-of-the-month live cattle, feeder cattle, and corn contract prices from the CME. Indemnities occur when the actual gross margin is less than the gross margin guarantee.

Important Points

Remember, LRP and LGM are insurance against specific perils – cattle price risk and feed price risk in the case of LGM. They do not insure against changes in basis, death loss, or other types of losses associated with the cattle business. LGM coverage is not available for cattle marketing in the first month after sign-up. In both LRP and LGM contracts, actual prices per head received by the producer do not determine indemnity payments. Caps apply on total number of head under each program.

For more information on these cattle insurance programs, visit a local crop insurance agent or the Risk Management Agency website at www.rma.usda.gov. To view information on the Web on this and other risk management topics, visit the Western Risk Management library online at agecon.uwyo.edu/riskmgt.

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.*

Evaluate bulls prior to breeding season for reproductive ability, physical soundness

By Kellie Chichester

It is often said a bull contributes half of the production in a calf crop.

This may be true for an average bull but probably exaggerates contributions from a poor-quality bull and dramatically underestimates those from a quality bull. A good bull offers both high fertility and high genetic breeding value for one or more economically important characteristics such as growth, calving ease, maternal value, and carcass quality.

Bulls should be evaluated prior to the breeding season to determine their reproductive ability and physical soundness. An unsatisfactory bull in a herd will cost producers money.

Missed Breeding Cycle Costs

If a bull services a cow and she does not settle, she will miss one cycle. This will reduce the weight of her calf about 35 pounds at weaning time. If a poor breeding bull were to breed 35 cows in the first 21 days of the breeding season and those cows did not settle, the loss in weight would be equal to 2.5 calves. If this loss continues through the rest of the breeding season, it could result in a combined loss equal to five calves during a 60-day (three-cycle) breeding season.

Typically, a bull-to-cow ratio of 1:25 is recommended. This ratio is normally adequate, but research shows it can be wasteful, particularly for highly fertile bulls and in situations where bulls do not have to travel long distances to find cows.

A little management of bulls now will result in better performance in the breeding season. Bulls should be given a breeding soundness exam. Bulls proving unsatisfactory should be replaced. A semen test on all of your bulls is an inexpensive investment.

Exam, Test One to Two Months Prior

Bulls should also be given a physical to check eyes, body condition, and feet and legs. This exam and the semen test should be done 30 to 60 days before the start of the breeding season so questionable or unsatisfactory bulls can be replaced. New bulls should be purchased early and allowed 45 to 60 days to become acclimated to ranch conditions.

A prebreeding program should also include an insect and parasite control program. Check with your veterinarian about booster vaccinations that should be given prior to the breeding season.

Your bulls are an important part of your overall herd health program. Buy bulls only from herds in which adequate disease-prevention measures are practiced, and administer booster vaccinations upon arrival at their destination. A one-month quarantine before placing with the remainder of the herd is advisable.

Physically Fit Bulls Will Breed More Cows

Proper exercise for bulls is important prior to the breeding season. If given ample area, bulls will usually exercise themselves. Physically fit bulls will breed more cows because they will retain a high degree of libido and stay sound longer. Exercise prior to breeding season also reduces injuries from fighting that normally occurs during this time.

Bulls should be fit but not fat when turned out. Most bulls will lose weight during the breeding season, so they must be fed to maintain growth and body condition. Yearlings and bulls under 2 years of age need a higher level of nutrition than older, more mature bulls. It is much less expensive to carry mature bulls through the winter in moderate condition than to attempt to add weight before turning out for breeding.

Good bulls are an investment and essential to the success of a breeding program. Appropriate management techniques are recommended to ensure bulls are given the best opportunity to contribute to their fullest production potential and to reduce chances of low fertility.

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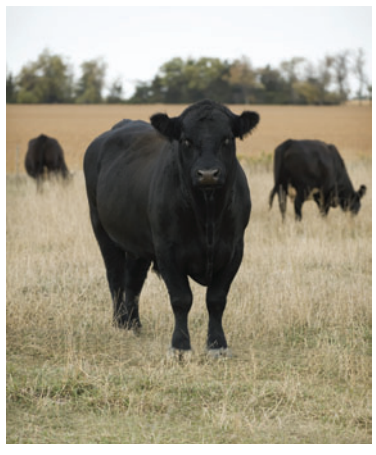

Goats can be raised for meat or for milk production. Some goats are companion animals.

Goats not a staple of Wyoming agriculture but offer opportunities

By Hudson Hill

Goats are a mainstay of agriculture around the world. Goat meat makes up around 60 percent of the world's red meat consumption.

Although they have not played a large part in American agriculture – so far – they are a growing sector.

Goats have unique characteristics that might make them a fit in many agricultural settings in Wyoming. Milking goats produce milk in situations where cows might not be feasible, and the goat also has the ability to use rough forage making them valuable in certain pasture situations and weedy areas.

Since these are smaller animals with big personalities, many people find them to be a companion animal to have around simply for company.

Milk Production

Raising and utilizing milking goats is certainly not for everyone; however, many in Wyoming may have the property and desire to have goats for milk consumption. Few goat farms around the country have been able to raise goats and sell milk for profit, but many are finding that having goats for their own milk is an addictive habit and/or enjoyable hobby. Milking goats and using goat's milk, however, is a personal choice and not usually profit-driven.

Most female does can be purchased for $75-$300 so the start-up for a milking goat venture can be rather small if a person has a place to keep the animals.

Raising and milking a goat comes with challenges similar to other agricultural livestock enterprises. One of the most challenging, because of a goat's personality and athletic ability, is fencing. I have met more than one goat whose nickname is Houdini.

Managing reproduction, vaccination, nutrition, basic husbandry, hoof care, and parasite control are all things to be considered prior to owning these animals.

Breeds of milking goats could include Nubian, French Alpine, Saanen, LaMancha, Toggenburg, and Oberhasli among others. Each breed has its unique characteristics and will work in different settings.

A mature milking doe will give approximately a gallon of milk a day. There are some families that can utilize that much milk, but many cannot. When not consumed in liquid form, there are multiple ways to use goat's milk: butter, soap, cheeses, sharing milk with other families, or even keeping a hog in the backyard to use unneeded production. Remember, selling milk off-farm comes with restrictions. Speak with a USDA inspector to see how that would apply to you. Along with milk and its other products, marketing the offspring (kids) of milking females is another source of income to consider.

Meat Production

Goat meat, called "chevon" by some or "cabrito" by others, is a mainstay in many groups, including Hispanic, Muslim, Caribbean, and African cultures. U.S. producers only meet about 50 percent of this country's consumer demand, so there is room for growth. Just like the milking goats above, the same things to consider prior to owning goats apply, especially fencing.

One of the best attributes of the meat goat is how it might complement other grazers in pasture and range situations. While most grazers prefer grass, goats will typically select more types of forage, browse, and, in some cases, prefer weeds over grass making them a positive in certain grazing situations. Breeds of meat goat would include African Boer, Kiko, Savanna, Spanish, and Pygmy goats.

Goats as Companions

Many people's only experience with a goat is having had the opportunity to see, and especially smell, a mature billy goat. Probably not a pleasant experience; however, goats are generally playful and friendly by nature and are really cute creatures when one gets to know them.

Goats enjoy socializing – with other animals and humans. They like to climb and, if a person has the right property, might be just the ticket to keep weeds down and add enjoyment. If size is an issue, most people choose the Pygmy goat when choosing a companion breed, but where size is not an issue or where the animal is being used for more than one purpose, any of the goat breeds might do for companion purposes.

Raising goats is certainly not for everyone, but goats are sturdy animals that are going to be in demand with our changing ethnic populations. Whether milking a goat for personal reasons, raising goats for meat, or just having them around to enjoy, there may be opportunities on your property for one of the many different types of goats.

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Changes made in 2011 Federal Crop Insurance Program

By James Sedman and John Hewlett

The 2011 crop year will showcase major changes in Wyoming programs of the Federal Crop Insurance Corporation.

Policies are still divided into categories based on actual production history/yield (APH), revenue, and combinations of the two. However, previous policies will be revised and rolled into new simplified programs: revenue protection, revenue protection with harvest price exclusion, and yield protection.

The new insurance plans should simplify both choices and coverage for most producers by combining aspects of several policies into each, depending upon on the crop. Producers who had policies with year-to-year coverage will be automatically enrolled into these new policies based on their previous coverage.

Crops covered by the new insurance plans for the 2011 crop year include barley, corn, malting barley, and wheat.

Revenue Protection Plan

Crop Revenue Coverage (CRC), Revenue Assurance , Income Protection, and Indexed-Income Protection have all been rolled into the new Revenue Protection Plan (RP). Producers can select from 50 to 75 percent of their APH yield (85 percent in some cases) and 100 percent of the projected price to determine their insurance guarantee level. Producers are paid on the difference between actual production times the harvest price and their insurance guarantee. If the harvest price is higher than the projected price, then this price is used when calculating indemnities. The new RP plan eliminates the price election variable (as was the case previously under some policies such as CRC).

The RP plan is available with and without the Harvest Price Exclusion (HPE). The HPE limits insurance protection to the projected price, not allowing indemnities to increase if the harvest price is higher than the projected price. The premium for either variation of the RP plan is calculated similarly, but the total varies depending on whether or not the HPE provision is selected.

Yield Protection Plan

Yield or APH-based multi-peril policies now fall under the Yield Protection plan insurance. This plan protects against yield losses much the same way that previous Multi-Peril Crop Insurance policies did except it uses a projected price to determine coverage. Producers can still choose a price election of 55 to 100 percent of the projected price when determining coverage. The selected price times the APH yield determines the insurance guarantee. Unlike RP, indemnities are only paid in cases of covered yield loss.

Determining Insurance Plan Prices

Prices under the new insurance policies differ from previous insurance products in that they use regional pricing exchanges to determine crop prices – both projected and harvest – that are used in the individual insurance plans. The commodity price discovery period and settlement prices are based upon daily prices from the commodities futures markets

To Learn More

For more information on what type of crop insurance policy would fit your operation best, visit your local crop insurance agent or the Risk Management Agency website at www.rma.usda.gov. To view information on the Web about subjects in this story and other risk management topics, visit the Western Risk Management library online at agecon.uwyo.edu/riskmgt.

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.*

Research predicts 17- to 22-percent increase in carcass size by 2050

by Bridger Feuz
Contributing authors: Wyatt Feuz, Jemini Leckie, and Caitlyn Jackson

While many industries in the United States have demonstrated their abilities to produce products more efficiently, ranchers may be one of the best examples.

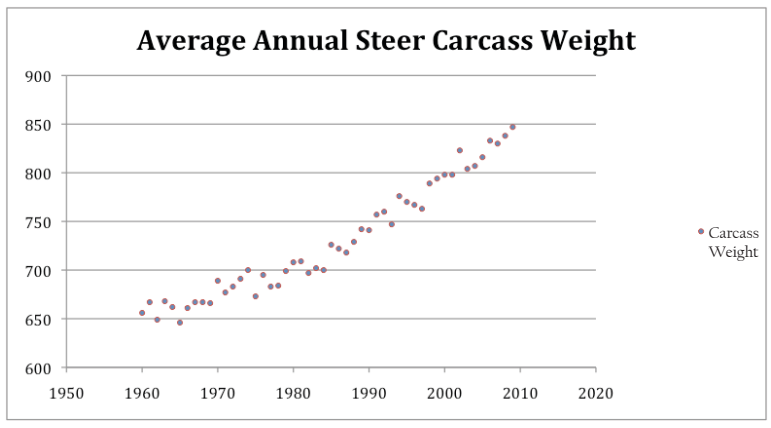
Data supports that the ranching industry has made amazing production gains the last several years.

Will steers weigh an average of more than 1,600 pounds with carcass weights more than 1,000 pounds by 2050? It seems difficult to imagine, but it may be likely. In 1960, steer carcass weights averaged just over 650 pounds. At that time, not many ranchers would believe that, by the year 2010, the average steer carcass weight would be nearly 850 pounds or almost 200 pounds heavier. However, that is the average steer carcass weight now.

Ranchers have become extremely proficient at raising beef due to several factors. The greatest

Bridger Feuz

gains are most likely due to genetic selection. Through the use of sophisticated breeding programs, producers have been able to select for larger-framed, heavier-muscled cattle while maintaining superior quality levels (as measured by USDA meat graders). Other likely factors are nutritional and health management gains.



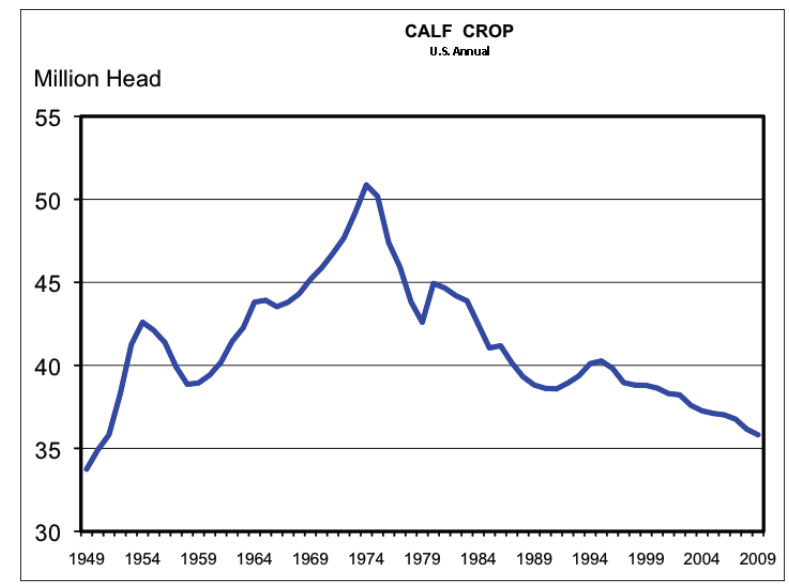
Number of Calves Decline

Meanwhile, as beef production per animal has continued to increase, we are seeing the opposite phenomenon with the number of beef calves born each year. After peaking in the mid-1970s at just more than 50 million head per year, there has been a steady decline of the number of calves born each year. At 35.8 million head in 2010, we are now at the smallest calf crop since the early 1950s. Truly, today's beef industry is an example of doing more with less.

So, where are we headed and just how large will the beef carcass get? Conversely, what will the size of the beef herd be? Changes in consumer demand within the United States and outside of the country, along with changing political views and restrictions on beef exports, make those questions extremely difficult to predict. However, the first question is more straightforward as long as we assume the industry will continue to put as much emphasis on beef production efficiency in the future.

Calculate Possible Carcass Weights

To determine just how large the beef carcass will get, the contributing authors were asked to find equations that best matched data from 1960 to 2010 and then utilize those equations to predict beef carcass weights for 2050. The team determined an exponential



equation that most closely fit the data but also provided a prediction based on a linear equation. The linear equation represented a more conservative approach, while the exponential equation likely provided the best prediction of the future based on the current data. Based on the linear equation, the average steer carcass in 2050 will weigh 986.4 pounds. The exponential equation predicts the average steer carcass in 2050 will weigh 1,035.4 pounds. This would represent a minimum of a 17-percent increase in carcass size and as much as a 22-percent increase.

Will beef cattle really be that big in 2050? Certainly, it could happen based on the gains seen over the last several years. However, there will also be factors producers will have to consider, such as feed requirements and efficiency and cow energy requirements.

Those were also factors over the last several years, but sound genetic selection has helped to mitigate them. With increasingly sophisticated scientific tools for selection becoming available to the beef industry, seeing just how efficient ranchers can get at producing more beef per animal will be interesting.

Bridger Feuz *is a University of Wyoming Cooperative Extension Service educator based in Uinta County. He can be reached at (307) 783-0570 or at brfeuz@uintacounty.com.*

The contributing authors utilized this research project to fulfill the requirements of a pre-calculus math curriculum.

Utilizing pasture, range, and forage insurance with a new course online from RightRisk.org

By James Sedman and John Hewlett

Pasture, Rangeland, and Forage Vegetative Index (PRF-VI) pilot insurance is now available to Wyoming producers.

PRF-VI was introduced in 2007 as a pilot insurance program to give producers an alternative to other common group risk insurance products and Noninsured Crop Disaster Assistance Program (NAP) covering pasture and forages.

PRF-VI is based on a different concept when compared to traditional insurance policies. As a result, a course has been developed by the professionals at RightRisk.org to help producers learn more about PRF-VI policies and if they will be effective in their operations.

How PRF-VI Works

PRF-VI is group risk insurance covering hay, forages, and grazing land and uses Normalized Difference Vegetation Index Data from the U.S. Geological Survey. The satellite data is a measure of vegetation greenness and correlates to forage condition and productive capacity in approximately 4.8 by 4.8-mile (or 23-square mile) grids. Losses occur when the final vegetative index deviates significantly from the expected index for the selected grid area.

Acreages of rangeland and forage used for pasture and haying can be covered. Producers can select some or all of a desired acreage within a grid area and choose one of four, three-month timeframes for coverage. Total coverage provided is determined by the selected coverage level (70 to 90 percent) and the selected protection factor (60 to 150 percent). The protection factor is the percentage of the county

(continued on page 10)

Building a lasting legacy shouldn't be delayed

Free, online course guides how to pass along what matters

By James Sedman and John Hewlett

Agricultural producers tend to think of risk management in production terms.

Weather disasters, disease, unstable markets, and other threats to the bottom line are easily recognized in risk management planning.

Estate planning/family succession is one area of risk management often neglected. Family agribusinesses have much to lose if affairs are not in order when a bad event occurs.

Consider the following:

- Do we have an adequate estate plan in place – either in the form of a will, living trust, or other arrangements?
- Can we continue to provide for the family after one or more of us are gone?
- Does the family know our thoughts and feelings about them; are they familiar with the family history and the legacy we want to pass on?
- Have we communicated to the family all of the ideals, wishes, and values of importance to us?

If you answered "no" to any of these questions, much more planning is necessary. Forming a comprehensive estate plan is something everyone should do – especially those involved in production agriculture. Farming and ranching is a unique way of life and a business. It presents a unique set of challenges when it comes to passing it on to the next generation.

A lifetime of work, toil, achievement, and accumulation can be lost if you and your family are not adequately prepared. From a risk management perspective, estate and succession transfer is a large uncertainty that should be addressed – every bit as important as the strategies used to address production risk or market risk.

Resources are available to help producers address this type of risk. The Lasting Legacy course, developed by the professionals on the RightRisk team, is an excellent way for any individual to work through the many facets of leaving a legacy for the family and/or a business. A Lasting Legacy is a two-part, interactive course designed to take participants through a comprehensive process of establishing and building upon their own legacies.

A lifetime of work, toil, achievement, and accumulation can be lost if you and your family are not adequately prepared.

Lasting Legacy Part One: Intergenerational Relationships

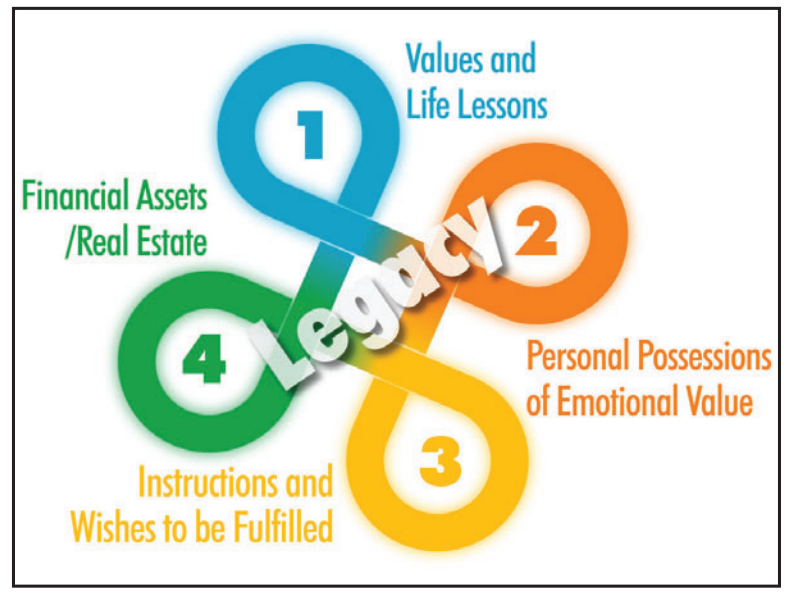
Building a legacy covers much more than answering the simple question of who should get what in the event of a loss. The core of A Lasting Legacy is helping users answer the central question: What is a legacy? A successful legacy plan has four main parts: values and life lessons, personal possessions of emotional value, instructions and wishes to be fulfilled, and financial assets/real estate.

To better demonstrate how the course process works, let's apply it to an example farm family. Bob and Betsy are in their late 40s with a 22-year-old son, Jack, and a 19-year-old daughter, Jean. They have farmed the same place over the past 25 years that Bob purchased from his father. They have always intended to develop some kind of estate plan. However, they never seem to find time to put it down on paper. Bob and Betsy need to start by communicating openly and honestly with their children.

The first module of the course deals with parent/adult-child relationships. Bob and Betsy should first identify any sources of stress in their relationship with their children. These stresses tend to fall into three categories – differences of values, different stages, and different expectations.

In Bob and Betsy's case, their goal has always been to pass a successful farm business on to one or both of the children. The problem is there is too much debt to simply hand it over in the foreseeable future. Jack would like to farm someday; however, he has real reservations about taking on so much debt this early in his life. Jean would like to experience more of the world and work off the farm before she makes a commitment. This is primarily a difference of stages and expectations.

As Bob and Betsy work through the first module, they learn they need to be honest and open in their communication with the children and let go of past disagreements. The main communication obstacle is the distance from their children: both in college. The solution comes in the form of an agreed-upon, once-a-month family forum to discuss their issues and concerns.



Communication failures are typically the main reason for family business failures. Bob and Betsy see that keeping the lines of communication open with their children is the key to success. After some discussion, Bob and Betsy make the decision to include Jack in the quarterly farm business meetings. This is intended to help him learn more about the financial and decision-making processes they go through in management of the farm. The A Lasting Legacy course and workbook provide excellent resources covering how to run a family meeting with emphasis on effective communication.

Conflict Resolution

Bob and Betsy have established a sound foundation to build their legacy upon by opening several lines of communication with their children. Next, they should move to address the conflicts that will certainly arise. For example, a conflict quickly develops regarding the long-term direction of the farm business. Bob wants to maintain their current cropping mix that he views saves money on equipment and has a proven track record. Jack believes they can be more productive and save even more money by switching to a more diversified crop mix and adopting no-till and conservation-till practices.

There are several ways this conflict could be resolved; the simplest is for the family to work it out for themselves. However, this is not always possible, even for the most well-meaning individuals. Many people must learn to attack the problem and not the persons involved. This can take many years of trial and error and often results in individuals becoming very frustrated along the way.

Other, more intensive solutions include using a mediator or someone who serves as an arbitrator (where all parties agree beforehand to abide by the outcome). Another possibility is that an individual decides to separate themselves from the family business, often after exploiting every other possible approach.

In this case, the family agrees that Betsy should serve as the mediator of the issue. After several business meetings, in which Bob and Jake make their cases financially, they reach an agreement. As a compromise, they decide to begin using conservation tillage methods to determine their effectiveness while keeping most of the original crop mix. They also agree to reevaluate the situation at the end of the growing season.

Uncertainty: The Need to Build a Lasting Legacy

Consider the situation of Bob and Betsy. Had an unexpected turn of events claimed one of them before they began to discuss their legacy, so many questions would have gone unanswered. Now that they are beginning to address the uncertainty in this area of their lives, they are better prepared should something unexpected happen.

To access the free A Lasting Legacy course, point your browser to RightRisk.org and under Products select "A Lasting Legacy." Follow the onscreen instructions from there.

For more information on this and other risk management topics on the web, visit the Western Risk Management Library online at www.agecon.uwyo.edu/riskmgt.

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.*

Understanding incentives for energy efficiency and renewable energy projects

By Milton Geiger

Understanding available financial incentives is vital to making projects viable and cost-effective if considering a renewable energy (RE) system or making energy efficiency (EE) improvements to a home or business.

Incentives in Wyoming primarily come from three sources: federal government, state government, and utility companies. Each has different reasons for providing incentives, from fostering the growth of energy independence and environmental responsibility (federal) to reducing individual energy costs and demand (state and utility). All believe RE and EE merit financial support.

Incentives are typically targeted at certain sectors, so different incentives exist for residences, businesses, and agricultural producers. The tables at right detail the most important incentives for Wyoming homes and businesses.

The tables may seem daunting but taking the time to understand the incentives is certainly worthwhile. Examining a few incentives in detail is useful, particularly the Residential Renewable Energy Tax Credit, Business Investment Tax Credit, USDA Rural Development's Rural Energy for America Program, and examples of utility incentive programs.

Table 1. Residential Incentives for Small-scale Renewable Energy Projects

Name	Description	Eligible Technologies	Expiration Date
Residential Renewable Energy Tax Credit	30% tax credit (no limit)	Solar (electric and thermal), small wind, geothermal heat pumps	12/31/2016
Wyoming Renewable Energy Sales Tax Exemption	Full sales tax exemption	All renewable energy technologies that generate electricity, with a 25-kW maximum for wind energy	6/30/2012
Wyoming Net Metering	Allows many renewable energy systems to receive full retail rate for production up to total consumption and pays avoided cost for excess production	All renewable energy technologies that generate electricity	N/A
Utility Programs	Rebates, generally for geothermal heat pumps, and a small loan program offered by PRECorp	Varies, but often a strong focus on geothermal heat pumps	Varies

Table 2. Residential Incentives for Energy Efficiency Improvements

Name	Description	Eligible Technologies	Expiration Date
Residential Energy Efficiency Tax Credit	30% tax credit ($500 limit)	Approved insulation, windows, doors, air conditioners, furnaces, etc.	12/31/2011
Residential Energy Conservation Subsidy Exclusion (Personal)	Makes subsidies paid by public utilities for energy efficiency improvements tax exempt (no limit)	Most EE improvements	N/A
Utility Programs	Varying rebates	Many EE improvements	Varies

Table 3. Business Incentives for Small-scale Renewable Energy Projects

Name	Description	Eligible Technologies	Expiration Date
Business Investment Tax Credit	30% or 10% tax credit (no limit)	Solar (electric and thermal), small wind – 30% combined heat and power and geothermal heat pumps (10%)	12/31/2016
Modified Accelerated Cost-Recovery System (MACRS)	Five-year depreciation schedule w/ bonus depreciation	Solar (thermal and electric), geothermal heat pumps, and wind	12/31/2012
USDA - Rural Energy for America Program (REAP) Grants	25% grant ($500,000 maximum grant) available only to small rural businesses (currently all areas except Cheyenne); loan guarantees also available	All renewable energy sources	N/A – Program funding is variable
Wyoming Renewable Energy Sales Tax Exemption	Full sales tax exemption	All renewable energy technologies that generate electricity, with a 25-kW maximum for wind energy	6/30/2012

Table 4. Business Incentives for Energy Efficiency Improvements

Name	Description	Eligible Technologies	Expiration Date
USDA - Rural Energy for America Program (REAP) Grants	25% grant ($250,000 maximum grant) available only to small rural businesses (currently, all areas except Cheyenne); loan guarantees also available	EE improvements to existing buildings	N/A – Program funding is variable
Energy-Efficient Commercial Buildings Tax Deduction	$0.30-$1.80 per square foot for renovations and new construction	Many EE enhancements, such as insulation, doors/windows, HVAC, lighting, etc.	12/31/2013
Utility Programs	Varying rebates	Many EE improvements	Varies

Residential Renewable Energy Tax Credit

This significant (30 percent) tax credit covers the equipment and installation of solar (electric and thermal), wind, and geothermal heat pumps for both primary and secondary residences. If the tax credit cannot be fully utilized in the year of installation, the credit may be carried forward until 2016. Remember, tax credits are different than deductions. Tax credits offset tax liability dollar for dollar!

Business Investment Tax Credit (BITC)

Similar to the residential renewable energy tax credit, the BITC provides a significant tax credit for businesses. The tax credit is 30 percent for solar and wind energy, but it is only 10 percent for geothermal heat pumps. The credit can also be used for biomass combined heat and power. Through 2011, projects may opt to receive a Treasury grant in lieu of the tax credit.

USDA Rural Development's Rural Energy for America Program

This grant and loan program is targeted at small rural businesses (based upon Small Business Administration standards) and agricultural producers. The program provides a 25-percent grant and the option for up to an additional 50-percent loan guarantee. Grants are capped at $500,000 (minimum $2,500) for RE and $250,000 (minimum $1,500) for EE projects. The grants can be received in addition to the BITC. The program accepts applications on a continuous basis. To apply for the program, contact Jon Crabtree at (307) 233-6719.

Milt Geiger

Utility Programs

It may initially appear counterintuitive utilities will pay people to use less energy, but the reduction in demand reduces the need for expensive new generation and transmission. Each investor-owned utility, such as Rocky Mountain Power or Source Gas, rural electric cooperative, such as Carbon Light and Power or Powder River Energy Corporation, and some municipal utilities, such as the City of Gillette, offer different incentives. Not all utilities offer incentives. You will need to contact your local utility for specific information.

A brief example emphasizes the importance of fully accounting for incentives. A rancher wants to install a $40,000 solar electric system on her barn. She receives a USDA grant, utilizes the Business Investment Tax Credit, and takes the Modified Accelerated Cost Recovery System. In addition, the system qualifies for a sales tax exemption and net metering. The total cost of the project would be reduced to $8,000-$16,000 depending upon tax structure!

If you want to learn more about the confusing world of renewable energy and energy efficiency incentives, please visit www.uwyo/renew-energy or call me at (307) 766-3002.

Note: As with any financial matter, you are encouraged to consult your tax accountant to ensure your eligibility for tax incentives and grants.

Milt Geiger *is the energy coordinator for the University of Wyoming Cooperative Extension Service. He can be reached at (307) 766-3002 or at mgeiger1@uwyo.edu.*

Pesticide safety starts long before application

By Ron Cunningham

Another growing season approaching means it's time for anyone raising crops or gardens to plan a foolproof pesticide safety program.

This will protect yourself, your family, any hired help and assure we have contamination-free crops and a safe food supply.

Know what your pests are before treating, whether a weed, insect, or disease. Contact a local or state extension specialist for help if you don't know what that pest is. Contact information is at http://ces.uwyo.edu/Counties.asp.

Learn how pesticides work on that pest. Learn which pesticide will give the safest and best control during the growing season and how much time must elapse after treatment before safe harvest.

Always read the product information before purchase and before application. Follow the recommended personal protective equipment (PPE). Chemical companies are obligated to tell what is needed to safely use their products. Never cut corners and always follow their recommendations. Safety starts when you purchase that pesticide product and use the recommended PPE.

Ron Cunningham

Transportation Safety

While loading your pesticide into the back of your pickup, secure it against the cab. Never transport pesticides in a car or SUV – you do not want to be in contact with highly concentrated pesticides in case of an accident.

Storage Safety

Store pesticides in a locked location where children cannot gain access. Always store pesticides in the original container with a legible label attached. Never store large quantities of pesticides for long periods of time in case of a fire. If you find a damaged container, transfer the chemical into an identical empty container.

Product Application Safety

Read the pesticide label before opening the container. This is when you want to fully protect yourself, especially while pouring the undiluted product. Contamination is at its highest risk if undiluted pesticide is spilled on skin. Follow label directions on what to wear and to see if breathing masks or protective eyewear are required. Following the company list of PPE is the best line of defense. Never spray when the wind is blowing. Tiny spray particles can drift long distances contaminating other crops, livestock, and unprotected humans.

Cleanup Safety

After the application is completed, remove all personal clothing and launder alone with a strong laundry detergent. Shower and thoroughly scrub any exposed skin that may have become contaminated by drift particles. Triple rinse any empty pesticide containers and puncture them so they cannot be reused.

Ron Cunningham *is a University of Wyoming Cooperative Extension Service educator based in Fremont County. He can be reached at (307) 332-2363 or at ronc@uwyo.edu.*

Free extension pesticide bulletins

For additional information, go to http://ces.uwyo.edu/ and click on the Publications link. Click the Search Bulletins link and type "pesticide" into Publication Title. Pesticide information bulletins include:

- **Safe and secure pesticide storage** - http://www.wyomingextension.org/agpubs/pubs/MP93-15.pdf
- **Laundering pesticide-contaminated clothing** - http://www.wyomingextension.org/agpubs/pubs/MP93-18.pdf
- **Worker protection standard for agricultural pesticides** - http://www.wyomingextension.org/agpubs/pubs/MP93-19.pdf
- **Pesticide labeling** - http://www.wyomingextension.org/agpubs/pubs/MP93-2.pdf
- **Pesticide storage facility, design, and management plan** - http://www.wyomingextension.org/agpubs/pubs/mp93-21.pdf

Protected crop growing environments create need for pest control options

By Jeff Edwards

The protected environment in a high tunnel, low tunnel, or row cover provides great conditions for growing plants – that also means these season-extending structures are prime real estate for potential pests.

If left unchecked or ignored, simple infestations can quickly lead to entire crop failures.

Jeff Edwards

Identification

The main suspects include aphids, whiteflies, thrips, and mites.

What to look for:

Aphids – Small clusters of pear-shaped insects on the underside of leaves. Immature individuals and adults resemble each other. There may also be a clear, shiny gloss (honeydew) to leaves in the crop canopy below the aphid colony. Aphids may also be given away by the presence of ants, which are collecting the honeydew as an energy source.

Whiteflies – Also found on the underside of leaves, the adults have white, delta-shaped wings, are poor fliers, and will flit away from the plant when disturbed. Immatures are difficult to see because they take on the color of the plant and are not highly mobile.

Thrips – Are cigar shaped, poor fliers, and best identified by damage they cause while feeding. Plant tissue damage takes on a mottled or stippled pattern where surface tissue has been scraped off. Individuals are generally found on the underside of the leaves, usually near the plant rib.

Mites (spider mites) – Are about the size of the period at the end of this sentence. Feeding damage looks similar to thrips damage, but spider mites use silk to construct a network to move around the plant.

Control Options

There are many control options available to the producer, but the best strategy is a good defense and quick action when you become aware of an infestation. Integrated pest management is a combination of the following tactics to keep the infestation from reaching an economic threshold level (level of infestation at which control treatment will yield a financial return).

Physical control can consist of simple barriers such as the use of screening or a floating row cover directly over the plant. Physical barriers such as these will prevent pests from settling on crop plants. Heat and cold can also be manipulated; however, control of the infestation using temperature will only be achieved if you plan on shutting down production for the season.

Mechanical control can be as simple as removal of infested plant tissue. This can be accomplished by removal of a leaf or leaves, the stem, or the whole plant. Sticky traps to capture individuals during the flying stages may be used. Squishing the insects or washing them off with water will help as well.

From left to right: Aphids, whitefly, thrip, and mites

Biological control is the use of other arthropods or pathogens to assist in keeping the pest population manageable. Predators such as praying mantids, syrphid flies, lacewing larvae, or lady beetles in addition to parasitic wasps can be purchased from suppliers and are very efficient when managed correctly; however, keeping predators and parasites inside the structure may be difficult. Also, populations of beneficials need to be kept in balance with resources. One may need to augment the predator/parasite numbers over the course of a growing season due to escapes, mortality, or significant increases in pest populations.

Chemical control options do not need to be a last resort and can actually work in concert with the tactics listed above, but one must be aware products will have a pre-harvest interval (the amount of time between application and harvest) to ensure consumer safety. Also, do research and follow all label instructions, including requirements for personal safety, during handling and application. Take note of and follow the amount of time required for the reentry interval – the amount of time required before you can reenter the treated area.

Your best control options include practicing production methods that maintain healthy plants, being diligent in scouting for pest problems (look where the pests usually hide), identifying the problems, and taking evasive action when problems arise.

Supplies and materials referenced in this article can be found by simple searches of the Internet or at greenhouse supply stores in your area. For Internet searches, key words may include screening or floating row cover, sticky traps, predators and parasites, and chemical control resources.

An extensive listing of predators, parasites, and pathogens useful for biological control can be found here:

http://www.entomology.umn.edu/cues/Web/301BioControl.pdf

Can double its population in three days

Aphids are *ovoviviparous* and *parthenogenic* meaning that, during certain periods of the crop season, they are born pregnant, give birth to live offspring, and reproduce without the benefit of males (no eggs and are clones of each other). This is an effective reproductive strategy for them. Under optimal environmental conditions (mid-80s temperatures, 60 percent relative humidity, and an adequate food supply), they will double their entire population every three days. Not good for a producer if left unchecked.

Jeff Edwards *is a University of Wyoming Cooperative Extension Service educator based in Goshen County. He can be reached at (307) 532-2436 or at jedward4@uwyo.edu.*

Twig beetles benefiting from mountain pine beetle infestations can ambush trees

By Scott Schell

The first step for effective pest management is supposed to be the positive identification of the critter causing the problem.

The species of tiny beetles in the genera *Pityophthorus* and *Pityogenes*. that are lumped together in the behavior group called twig beetles are a problem for entomologists **and** trees.

Their small size and similar appearance stump all but the few specialists who study these members of the bark beetle Family Scolytidae. The old saying that goes, "Why give animals names when they will never answer to them!" makes an interesting point. However, species identification is important to many pest problems to ensure the best, most appropriate management.

Pine Tree Kill Creates Perfect Habitat

Fortunately, best management practices for twig beetles don't require species level identification as their behavior and life cycles are so similar. The massive tree mortality across the West caused by other bark beetles, like mountain pine beetle, has created perfect habitat for twig beetles. When the main trunk of a mature pine tree is attacked by mountain pine beetle, the stressed tree can no longer effectively defend itself. Twig beetles can then attack the twigs and branches of the dying trees that are too small, with phloem layers too thin to be larval habitat for the mountain pine beetle.

The epidemic of bark beetle-killed trees has created a population explosion of various twig beetle species. In forests, their activity on already doomed trees is of minor importance. However, in landscape and windbreak tree plantings, twig beetles can successfully attack stressed trees without the assistance of their bigger, tree-killing relatives. Symptoms include dead leaders and upper branches that disfigure a tree for life. Twig beetles will even occasionally attack the main trunk of small pine trees and can kill them outright.

Life Cycle

Twig beetle adults emerge from under the twig bark in the early spring and start searching for suitable trees to attack. They are capable of flight but are not strong fliers and are thought to use the wind to travel long distances. Initial emergence has been noted as early as March in milder climate regions of their habitat.

Mating occurs and a female beetle deposits eggs in a gallery she has formed by chewing under the bark. The eggs hatch and, as the grubs grow, they eat their way away from the gallery in a star-shaped pattern. This destroys the phloem and kills the needles on the branches. The grubs complete growth, pupate, and emerge as adult beetles later in the growing season. Twig beetles can have two to four generations per year. The flight period and potential attack on trees extends from mid-March all the way to early October.

Management

If a tree is not badly infested, pruning infested branches and destroying them before the new beetles emerge is the only practical thing to do. Keep trees as healthy as possible; in Wyoming, this usually means lots of supplemental water. Try to prune healthy trees from November to February when the scents from the fresh sap will not attract bark beetles. Dispose of all slash properly and never pile fresh-cut wood near live trees. Proper disposal of slash would include burning, if it can be safely done and is allowed, chipping and composting, or burial in a landfill, if allowed.

Dave Powell, USDA Forest Service, Bugwood.org

Mountain pine beetle-killed trees provide a buffet for twig beetles.

For more information:

There is not much detailed information on twig beetles, said Schell. He suggests http://wiki.bugwood.org/HPIPM:Twig_Beetles, and UC-Davis's general bark beetle management guidelines are valuable: http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7421.html

Once twig beetles are under the twig's bark, systemic insecticides **may** kill the brood if it is already distributed through the tree's phloem but will not work after the attack has disrupted the tree's ability to transport sap.

Prevention

Keeping trees healthy and unstressed is of utmost importance. For tree plantings on drip irrigation systems, increase emitter flows as the trees grow. Remember, an 8-foot tall tree needs a lot more water to stay healthy than a 2-foot tall tree.

When twig beetle infestations are a possibility, high-value trees will need to be sprayed with insecticides labeled for this use. The longest residual for the commonly used products is 90 days, so, at least two treatments will be required to protect the tree from twig beetles chewing their way through bark into the phloem during their flight period.

Scott Schell *is the assistant entomologist with the University of Wyoming Cooperative Extension Service. He can be reached at (307) 766-2508 or at sschell@uwyo.edu.*

Utilizing AGR-Lite in risk management planning

James Sedman and John Hewlett

Establishing a comprehensive risk management plan is essential to the success of any agricultural producer.

Crop insurance provided by the Federal Crop Insurance Program is one way to manage the many production and price-related risks. Most crop insurance programs are crop-specific; however, there is a program designed to protect against losses in whole farm revenue and not just a specific crop. Adjusted Gross Revenue-Lite (AGR-Lite) insurance was developed as a comprehensive, whole-farm revenue insurance product to help crop and livestock producers maintain a steady revenue stream. AGR-Lite can provide protection to producers who may not find coverage under traditional crop insurance programs feasible or a good fit for a variety of reasons.

AGR-Lite Provisions

Eligibility requirements include that participants:

- must be actively engaged in farming or ranching with at least a 10 percent ownership interest,
- have less than $1 million in liabilities,
- have an adjusted gross income of less than $2,051,282, and
- have filed taxes as the same ownership entity for seven years.

In addition, participants cannot have more than 50 percent of their total revenue derived from commodities purchased for resale, or 83.35 percent of their total revenue derived from potatoes. Five consecutive years of 1040F tax forms are necessary to calculate the adjusted gross revenue guarantee and the allowable average expenses in the total farm report.

How AGR-Lite Works

The main advantage of AGR-Lite over other crop insurance policies is that it can insure revenue coming from multiple crop and livestock enterprises using a revenue and expense baseline as the basis for insurance coverage. Coverage is for the producer's fiscal year, and indemnities are calculated on an annual basis.

For the first step, applicants must complete a calculation worksheet from their previous five years of income and expense information. The farm's or ranch's annual plan is created in subsequent steps. This plan outlines each commodity to be produced along with expected yields, prices, and revenues.

Applicants then determine their coverage level for their revenue guarantee. Coverage levels range from 65 percent, 75 percent, and 80 percent. The 80-percent level is only available to operations with three or more enterprises. Producers can then choose a payment rate of 75 or 90 percent at each coverage level. Premium costs rise with increased coverage levels, as with any crop insurance.

Once expenses and the adjusted gross revenue are calculated, the total revenue guarantee is then determined; indemnities are paid for revenue levels below the guarantee. If expenses for the year fall below 70 percent of the five-year average, indemnity payments will also be adjusted lower.

As an example, suppose the YZ Ranch's adjusted gross revenue guarantee level was $500,000 and actual revenue for the year was $300,000 due mainly to drought and its associated problems. YZ's selected coverage level was 75 percent with a 90-percent payment rate. The loss trigger point is calculated by taking 75 percent of $500,000 resulting in $375,000. YZ's loss was lower than the trigger point, so we subtract $300,000 from $375,000 resulting in a $75,000 loss of revenue. This loss is then multiplied by the payment rate of 90 percent resulting in an indemnity payment of $67,500. While this is an oversimplified example, it shows how the general process for an AGR-Lite indemnity can work.

For More Information

AGR-Lite is a somewhat complex insurance program because of its comprehensive nature. The academic professionals at Rightrisk.org have developed an online training course for agricultural producers interested in learning more about AGR-Lite and how it could apply to their individual operations. The course is available on either insuringsuccess.org or rightrisk.org websites under the title *AGR-Lite Training*.

For more information on this and other risk management topics on the Web, visit the Western Risk Management Library online at agecon.uwyo.edu/riskmgt.

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.*

UW study evaluates fenugreek as new alternative forage legume in Wyoming

By Anowar Islam, Jim Krall, and Jerry Nachtman

Fenugreek (*Trigonella foenum-graecum* L.), a self-pollinating, annual leguminous crop native to Asia and Southeast Europe, is cultivated worldwide. This is a historically valuable medicinal as well as a culinary herb and a spice specialty crop.

Research last year at the Laramie Research and Extension Center and at the James C. Hageman Sustainable Agriculture Research and Extension Center (SAREC) near Lingle is expected to identify well-adapted varieties suitable for Wyoming and neighboring states. This study will be repeated this year to confirm traits observed in 2010.

Fenugreek's yellow-to-amber-colored seed is extensively used in preparing pickles, curry powders, paste, and often in Indian cuisine to impart flavor, color, and aroma. In some countries, seeds are also used as tea after being boiled and sweetened.

Anowar Islam, left, visits with Abdel Mesbah, director of the Powell Research and Extension Center.

The young leaves and sprouts of the plant are used as vegetables while the fresh or dried leaves are used to flavor other dishes. Fenugreek is also widely used in producing lower-cost, artificial maple syrup. Fenugreek is a rich source of polysaccharide galactomannan, which helps in lowering plasma cholesterol and triglyceride levels, thus resulting in reduced cholesterol synthesis in liver and lowered blood sugar.

Jim Krall is director of research at the James C. Hageman Sustainable Agriculture Research and Extension Center near Lingle.

Comparable to Early-Bloom Alfalfa

Studies have reported that fenugreek is a potent stimulator of breast milk production, and its use was associated with an increase in human milk production up to 900 percent. Fenugreek has also been extensively reported in Canada to be grown to feed animals. Studies showed the nutritive value of fenugreek forage is comparable to early-bloom alfalfa regardless of growth stage. It has been shown in a trial in western Canada that steer growth on mature fenugreek and early-bloom alfalfa silage supplemented by barley did not differ.

In Canada, it has also been reported that fenugreek has great potential as a component crop in the rain-fed crop rotation in the Canadian prairies, particularly in Alberta. Unfortunately, there is no information available on whether this important specialty crop will grow to maturity in the central High Plains of Wyoming.

A project funded by the Wyoming Department of Agriculture last year evaluated promising genotypes/accessions of fenugreek in two varying environments for the phenotypic adaptability and stability for growth, seed yield, and quality.

Plots near Lingle, Laramie

Seeds of 13 genotypes/accessions (collected from two Canadian scientists, Manjula Bandara and Surya Acharya) were sown in replicated experiments during late spring of 2010. One irrigated site was at the Laramie R&E Center greenhouse facility. A dryland site and an irrigated site were sown SAREC.

Data Results Promising

Data are still being processed and analyzed; however, initial forage data showed promising results for some lines used in the evaluation. At Lingle, one of the lines (F80) produced the highest forage yield (2,130 pounds/acre) while another line (IT) produced the lowest forage yield (950 pounds/acre) under irrigated conditions. In contrast, one line (IT) produced the highest forage yield (740 pounds/acre) in dryland conditions. In general, irrigated plots produced higher forage yield than dryland plots. Forage yield variations were also observed at the Laramie site under irrigated condition with the highest yield (1,380 pounds/acre) from one line (F96).

To Learn More

For additional reading or for more information, please read "Fenugreek, an Alternative Crop for Semiarid Regions of North America" at https://www.crops.org/publications/cs/articles/48/3/841; "Fenugreek in Saskatchewan" at http://bit.ly/fenugreekcanada. More information or answers to specific questions can be obtained by contacting any of the authors.

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Fenugreek: top - field plots; bottom left –plants showing flower; bottom right – nitrogen fixing nodules in the roots.

Fenugreek benefits

Fenugreek produces high-quality forages in all growth stages, does not create bloat problems in cattle, and contains animal growth promoting substances (e.g., diosgenin) – all of which make it an attractive forage crop for North American cattle industries. It has potential to maintain and build soil health and quality as well because it is a nitrogen-fixing crop.

Utilizing Pasture

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base value per acre. The per-acre premium is determined by these factors and the grid point selected. PRF-VI differs from traditional group pasture and forage policies as it combines the specificity of insuring for local conditions while retaining the cost advantages of a group policy.

PRF-VI Course

The PRF course available at insuringsuccess.org is designed to be a comprehensive experience for producers to learn more about PRF insurance and how it can be applied to a specific operation. To begin the course, simply logon to insuringsuccess.org, select "Online Courses in Risk Management," and click the "PRF Course" link to begin.

The course shows how to use the grid locator as the first step in analyzing PRF insurance. PRF insurance is unique in that producers can go online and, after determining their location, view historical data for each individual grid location. Producers can then compare this data to their own yield and climate data to determine if PRF coverage would adequately cover their risk of loss on pasture and forage. Course users are provided with maps and links to websites to help locate the grid ID for individual properties.

The course covers how the vegetative index data is collected with the satellite imagery and how the data is compiled. It is important to remember the "greenness index" is not a direct measure of either forage production or height on a given property or in a specific grid location.

The course then leads users into how to use the "Decision support tool" on the RMA website. Producers are shown how to enter their information into the database online, including county and grid location, acreage, coverage level, crop share, protection factor, and whether the insured acres are grazing or hayland.

Once this information is entered into the online tool, producers can access premium and potential indemnity payments from past years. In addition, participants are shown how to use the RMA cost estimator to determine potential premium costs for various coverage levels.

For More Information

Visit insuringsuccess.org and select the Pasture, Rangeland, Forage (PRF) Pilot Program: Rainfall and Vegetation Index Plans course from the many listed courses. CD copies are also available upon request. For more information on this and other risk management topics on the Web, visit the Western Risk Management library at agecon.uwyo.edu/riskmgt.

Whether your operation is part-time or full-time: IRS looks at agriculture as a business

By Cole Ehmke

It doesn't matter to the IRS whether you are a full-time or part-time farmer or rancher: you are in business to make money.

As with any business, a farm or ranch has expenses needed to operate. Under the federal tax code, these expenses can be deducted from the income generated by the farm or ranch and they can help reduce your tax bill.

Farm Taxes: The Schedule F

Taxpayers usually file one of the Internal Revenue Service's form 1040 to report their income. Producers then use an additional form called the Form 1040 Schedule F (Profit or Loss from Farming) to report income from farming or ranching.

Farm Income

On Schedule F, the farm or ranch taxpayer reports the income generated from all sources. Examples could include:

- Livestock sold (either from animals you raised or those bought to resell)
- Crops sold
- Gains from selling property
- Interest income you receive

Cole Ehmke

- Rents
- Partnership or cooperative income

The form then asks about expenses associated with operating the farm.

Deductible Expenses

The IRS allows any expense normal in the agriculture industry and necessary to keep the operation running to be deductible against gross profits of the farm or ranch.

Remember, the basic structure of the income tax system begins with summing the items constituting gross income. Gross income is reduced by allowable deductions to calculate the taxable income. Taxable income is then multiplied by the rate for people in your tax bracket to find your tax liability.

Deductible expenses for producers include:

- Car and truck expenses
- Chemicals
- Conservation
- Depreciation
- Employee benefits
- Feed
- Fertilizer
- Freight
- Fuel
- Interest
- Insurance
- Legal and professional fees
- Office supplies
- Rent
- Repairs and maintenance
- Seeds
- Utilities
- Vet bills

One of the deductible expenses is depreciation. Producers can depreciate most types of tangible property – except land – such as buildings, machinery, equipment, vehicles, certain livestock, and furniture. They can also depreciate some intangible property, such as copyrights, patents, and computer software. Depreciation or amortization may be required if an asset has a useful life of more than one year. Amortization allows you to spread the cost of certain things over several years for tax purposes.

Some expenses paid during the tax year may be partly personal and partly business. Examples include gasoline, oil, fuel, water, rent, electricity, telephone, automobile upkeep, repairs, insurance, interest, and taxes. Farmers must allocate these expenses between their business and personal interests. Generally, the personal part of these expenses is not deductible.

Farm Gains and Losses

The net profits shown on Schedule F will flow to a person's 1040 tax return. The profit is taxable along with any other income sources the person may have.

The tax code benefits farmers, ranchers, and others who own their businesses. So, losses can be used to offset other income. Keep in mind losses are deductible if they are attributable to a business. If you operate your farm as a hobby (with no profit aim), then that would be a concern for the IRS, and they may have to make a determination about how you should file, which might reduce your tax benefits.

The Farmers Tax Guide

The *Farmer's Tax Guide* is an excellent resource on understanding and reporting ag income – a working knowledge of the tax code would certainly benefit any farmer or rancher. It is available electronically at http://www.irs.gov/publications/p225/index.html (the pdf is at www.irs.gov/pub/irs-pdf/p225.pdf). You can also order a hard copy from the IRS.

Another resource is Rural Tax Education. It has informational articles, worksheets, and sample completed tax forms. Find it at ruraltax.org.

Note: *This article does not constitute financial or accounting advice.*

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Wyoming's role in the Colorado River Compact

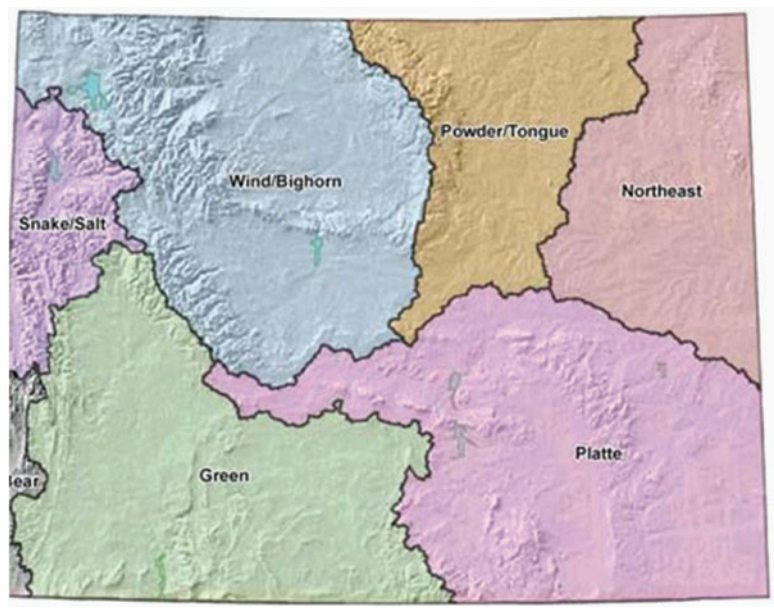
Kristi Hansen

Mark Twain once said whiskey is for drinking; water is for fighting over.

The history of water allocation in the Western United States certainly confirms his statement. Over the years, a number of laws have been established in Wyoming and other Western states to facilitate water allocation and to minimize the fighting.

Western Water Law

Prior appropriation governs water allocation in most states in the West. The governing principle of prior appropriation is "first in time, first in right." The first to claim water on a particular river or other body of water has the most senior right to the water; in dry years, senior rights are satisfied before more junior rights receive any water. Further, if a water right is not used for a number of years (five successive years in Wyoming), the water right is forfeit.



Wyoming's water basins

Map credit: Wyoming Water Development Commission. 2007. Statewide Framework Water Plan.

Although Wyoming's average annual precipitation of approximately 13 inches per year is well below the national average, many states downstream depend on precipitation that falls in Wyoming for their water supplies. The map indicates the major water basins in Wyoming. Approximately 72 percent of Wyoming land drains north and east into the Missouri-Mississippi basins, and 17 percent drains into the Colorado River Basin; the remainder (7 percent) drains into the Snake-Columbia and Great Salt Lake Basins or remains in Wyoming within the Great Divide Basin (4 percent). For more information on Wyoming water law and water resources, see Cooperative Extension Service bulletins B-969 (Wyoming's Water Resources) and B-849 (Wyoming Water Law). Go to http://ces.uwyo.edu and click on the Publications link.

In addition to the law of prior appropriation, most basins in Wyoming have additional rules implemented through interstate compacts or lawsuit settlements, which provide further guidance on how water is allocated. One such basin is the Green River Basin in southwestern Wyoming. Because the Green River is at the headwaters of the Colorado River, the total amount of water available to Wyoming users in the Green River Basin is governed by a complex set of laws collectively referred to as the "Law of the River."

One acre-foot is approximately the amount of water two households of four people each need for one year.

Amount of water that would cover 1 acre to a depth of 1 foot. Approximately 43,560 cubic feet or 325,851 gallons.

Colorado River Basin

The law of prior appropriation gives higher priority to water users with an earlier claim. Thus, upstream states, such as Wyoming, that have been slower to develop beneficial uses of water are at a disadvantage compared to downstream states such as California. The seven basin states (Colorado, New Mexico, Utah, Wyoming, Arizona, California, and Nevada) began to settle this contentious issue of water allocation on the Colorado River in 1928 with the

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An overview of Wyoming water law, rights

A history of water law, water rights and water development in Wyoming. Available online at http://wwdc.state.wy.us/history/Wyoming_Water_Law_History.pdf.

Wyoming and the Colorado River Compact

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Colorado River Compact. This interstate agreement allocated 7.5 million acre-feet per year of water to the Upper Basin states (Colorado, New Mexico, Utah, and Wyoming) and 7.5 million acre-feet per year to the Lower Basin states (Arizona, California, and Nevada).

Additional rules within the Law of the River further indicate how water is allocated between states during a dry period, such as the one experienced in the Southwest during the past 10 years. The Upper Basin states must deliver an average of 7.5 million acre-feet to the Lower Basin states on a 10-year rolling average basis regardless of how much water is available. The Upper Basin states must manage the risk of water supply variability on the Colorado River system to ensure this delivery.

Further, when Lake Mead drops to 1,075 feet, the Upper Basin states can be required to curtail their water use to prevent severe shortages in the Lower Basin states. On November 27, 2010, Lake Mead was just less than 1,082 feet – the lowest level since Hoover Dam was constructed in the late 1930s. It is quite possible the 1,075 feet limit will be reached in the foreseeable future.

The federal government is closely involved in the governing of the Colorado River for two reasons. First, the U.S. Bureau of Reclamation constructed and now operates the complex system of dams that regulate the flow of water all along the Colorado River. Second, the U.S. is obligated by international treaty to deliver 1.5 million acre-feet of Colorado River water annually to Mexico. More details on the history of water allocation on the Colorado River system are available at these Bureau of Reclamation websites: http://www.usbr.gov/history/BRIEFHist.pdf **and** http://www.usbr.gov/uc/rm/crsp/history.html.

The Green River Basin

In 1948, the Upper Basin states divided their allocation of Colorado River water among themselves proportionally; Wyoming's share is 14 percent. Wyoming does not use its entire allocation of Colorado River water. According to the State Framework Water Plan commissioned by the Wyoming Water Development Commission in 2007, Wyoming's remaining share under the Compact is approximately 210,000 acre-feet. However, this number may change because Wyoming's allocation depends upon annual precipitation levels and to some extent on regulatory triggers in the Law of the River.

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SPEAK UP; SPEAK OUT

Tips to speak persuasively and not abrasively on topics that matter

By Tara Kuipers

We've all been there.

You are approached by someone who has a pointed, possibly inflammatory, topic they want to discuss. You have an opinion and this person demands to know what it is.

NOW.

Or, you are at a meeting and are called out on the spot to share your thoughts on a controversial topic. You believe strongly about the subject and so do many others in the room – and many are on the opposite side of the issue.

Or, you attend a public forum and a point you know to be crucial is being ignored. You know it must be addressed before a decision is made or the outcome will be harmful, but no one else in the room is stepping up to share it.

Whether one-on-one or in a group, we should relish these opportunities; they give us the chance to make our ideas known, to share our opinions clearly, and possibly persuade others to our manner of thinking.

Missed Opportunities to Communicate

But, all too often, these opportunities are lost because we don't communicate effectively under pressure. The words don't come, or, if they do, they come out wrong. Or, we avoid it – we pass the opportunity to speak our mind, often to later regret the missed opportunity. Sometimes, our emotions get in the way causing us to appear angry or volatile instead of passionate and engaged.

Why do we choke in these critical times? Several things get in the way of effective communication during these important situations.

First, our bodies are not designed for it. When faced with a controversial subject, our adrenal glands rev up and dump adrenaline into our bloodstream. This might cause a flushed face, sweaty palms, or slightly racing heart – often, things we can manage during a conversation. But, when we stay in that adrenaline-charged state for too long, our fight-or-flight response kicks in. Because we've been designed to either put up our fists or run away when a situation is deemed threatening, our blood flow starts to swarm toward our major muscle groups and is actually diverted **away** from our brains.

Surprise a Factor

Another factor is the element of surprise. Usually, these conversations aren't planned or scheduled. We are caught off-guard and feel ill-prepared to handle the situation. This only adds to our already threatened and frustrated state. Plus, we're simply stumped. We are sorely lacking in good examples – either in real life, in the media, or in the arena of politics and public figures – of controversial topics being handled well.

To sum up: when it matters most, we often do our worst. Our bodies don't cooperate, the right words don't come, our brains are starved for blood and oxygen, and we are drawing from our worst skills and experiences to handle these vital exchanges.

Not a pretty picture, is it?

No wonder our communication often misses the mark on topics that matter.

So, what can we do about it?

Strategies for Better Communication

There are strategies to assure our conversations are productive, our ideas are well-presented, and our opinions are shared in meaningful ways.

First, get a grasp of the physical and mental reactions described above. While not easily changeable, simply knowing our bodies are working to sabotage our efforts is important to understand so we can better navigate those challenges.

There are strategies to assure our conversations are productive, our ideas are well-presented, and our opinions are shared in meaningful ways.

Next, slow down. This will help offset some of the effects of our adrenaline-pumping brains and bodies. If we feel rushed, it will only add to our sense of being threatened and out of control. Slow down, take a breath, pause your racing mind, and notice the small sense of clarity that starts to creep in.

During your pause, roll the question over in your mind. You may have heard the words, but do you know what is truly being asked? This pause helps you collect your thoughts, and it may add some legitimacy to your response – after all, authors and playwrights know that audiences expect something profound after a dramatic pause!

As you respond, make sure your response is organized. You may not have time to write an outline or a list of talking points, but it doesn't mean you can't prepare. Many issues have a built-in framework that will help you deliver your response. Some issues have key ideas or areas of concern that provide a natural framework to follow. For example, you may say, "I have three concerns: financial, legal, and educational ..." and then speak on each of the three topics. Or, some issues have a cause-and-effect relationship, an if-then orientation, or a past, present, and future timeline that will help you organize and deliver your message.

Know When to End

Finally, don't forget to end. This may seem comical but, when forced to think on your feet, your emotions are high, and adrenaline is coursing through your body, it can be hard to stop talking. Rambling doesn't help make your point, and it certainly doesn't help you develop legitimacy among your audience. It's not about quantity but quality. If you find yourself repeating or rambling, simply wrap-up – you can restate your most important points or make a final and sincere request of your listeners, but make it brief and then close.

Speaking skillfully on topics that matter will allow you to deal with strong, controversial, or unpopular topics with honesty and confidence. Managing the pressures will help you be heard, understood, and respected so you can speak up and speak out when it matters most.

Additional resources on "Speaking Up and Speaking Out" on topics that matter

Crucial Conversations: Tools for talking when the stakes are high. Patterson, K., Grenny, J., McMillan, R., and Switzer, A. McGraw-Hill, 2002.

The Leader's Voice: How your communication can inspire action and get results. Clarke, B., and Crossland, R. Select Books, 2002.

Toastmasters International Better Speaking Series: *Impromptu Speaking.* Toastmasters International, 1994.

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