April 2010

BARNYARDS & BACKYARDS

UW Cooperative Extension Service @ Profitable & Sustainable Agricultural Systems

University of Wyoming

RMA

U.S. Department of Agriculture Risk Management Agency

UW extension team puts resources to work for you

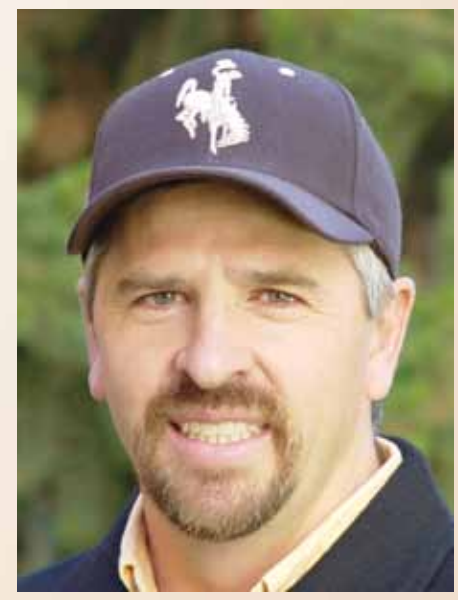
By Bridger Feuz

On behalf of the University of Wyoming Cooperative Extension Service and the Profitable and Sustainable Agricultural Systems (PSAS) Initiative Team, I welcome you to the sixth year of our efforts to provide you, the people of Wyoming, a newspaper insert entitled *Barnyards & Backyards*.

Our goal with this outreach effort is to share educational resources and information on a variety of topics of interest to you, our clientele.

Past *Barnyards & Backyards* inserts, as well as additional information, can be viewed at www.insuringsuccess.org. You can also view our pages titled "Barnyards & Backyards" in the *Wyoming Livestock Roundup* each month. The PSAS team hopes these inserts are beneficial, and we hope you enjoy reading them.

All articles are written by UW personnel and other members of the PSAS Initiative Team, and they address a variety of topics. Take the opportunity to contact any of the authors for additional information, and contact me to suggest future topics. I can be reached at (307) 783-0570 or bmfeuz@uwyo.edu, or contact a local extension educator. Contact information is at http://ces.uwyo.edu/Counties.asp.



Bridger Feuz

Correct identification of weeds a critical step

By Brian Mealor

Have you ever found a plant growing in your field or pasture but was not quite sure what it was and whether you should worry about it?

Correct identification of a weed is a critical first step toward developing a management strategy to fit a situation. A helpful tool to aid in identifying weeds is the University of Wyoming Weed Identification Site found online at http://ces.uwyo.edu/WYOWEED/wyoweed.htm.

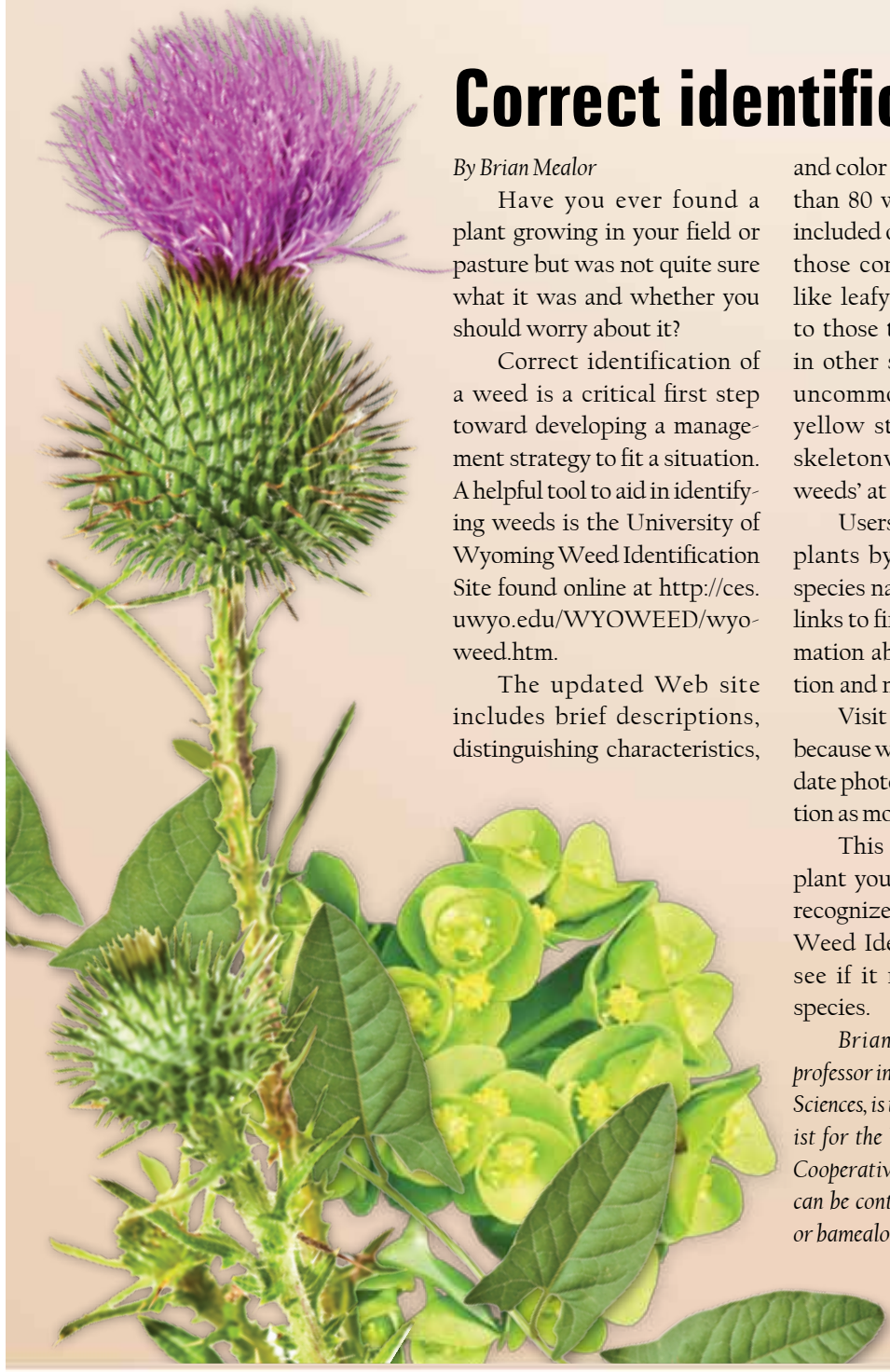
The updated Web site includes brief descriptions, distinguishing characteristics, and color photographs of more than 80 weed species. Weeds included on the site range from those common in Wyoming, like leafy spurge and kochia, to those that are problematic in other states but currently uncommon in our state like yellow star-thistle and rush skeletonweed (see 'Why list weeds' at right).

Users can easily search for plants by flower color or by species name. The site also has links to find other useful information about weed identification and management.

Visit the site periodically because we will continue to update photographs and information as more becomes available.

This spring, if you find a plant you do not immediately recognize, visit the Wyoming Weed Identification Site and see if it matches any of the species.

Brian Mealor, an assistant professor in the Department of Plant Sciences, is the invasive weed specialist for the University of Wyoming Cooperative Extension Service. He can be contacted at (307) 766-3113 or bamealor@uwyo.edu.



Why list weeds not present in Wyoming?

Many states neighboring Wyoming have extensive infestations of weeds that are not a problem here yet. Vigilantly searching for new weed populations allows management actions before the infestations become well-established. The probability of successful management is increased if new populations are controlled early, so familiarize yourself with these weeds and contact your local University of Wyoming Cooperative Extension Service office (county contact information is at http://ces.uwyo.edu/Counties.asp) or weed and pest control district (district contact information at www.wyoweed.org/addresses.html) upon finding a new weed in a place you have not seen it before.

Winter is the best time for pruning trees

By Donna Cuin

The perfect time to give trees and woody ornamentals a haircut is when they don't have leaves on – during their dormancy.

Without leaves, the structure of the branches is more visible. The trees have less sap running in vascular tissue so the pruning wounds are less likely to lose precious moisture.

One more reason to prune this time of year is the inactivity of most pests.

Pruning should create a tree with good structure and strong branch attachments, which limits liabilities related to branches breaking and falling on property or people later in the tree's life.

One of the most important aspects of good tree structure is a single central leader or main trunk for the tree. Having multiple leaders in a tree creates a weak attachment point where a split occurs, and this is a place where future stresses can cause breaks or splits in the trunk. If a secondary leader or co-dominant leader can be removed when small, the injury will produce callous tissue that will eventually cover the injury and enclose it inside new woody growth.

Pole pruners top right and top left, along with hand pruners (left center), loppers (center), and pruning saw (right center). Pole pruners and pole saws are handy for taller trees. Some will have telescoping poles, making it easier to reach up into the plant canopy.

This one pruning technique could have been used many times to prevent split and damaged trees during so many windstorms or heavy snowstorms over the years. The technique can be used not only on boulevard trees in our towns but also in trees planted around farms and ranches.

Remove Dead, Damaged Branches

The next focus for pruning is removal of any dead, damaged, or diseased branches in the canopy. If disease has not yet started in a dead or damaged branch, it has the perfect opportunity and environment to spread if such a branch is not removed. Pruning is intended to prevent a branch from later breaking and possibly causing property damage or injury.

Opening the tree canopy through pruning allows more light and better air circulation throughout the branches and leaves. This allows for more photosynthesis to occur and prevents the environment for diseases to infect leaves.

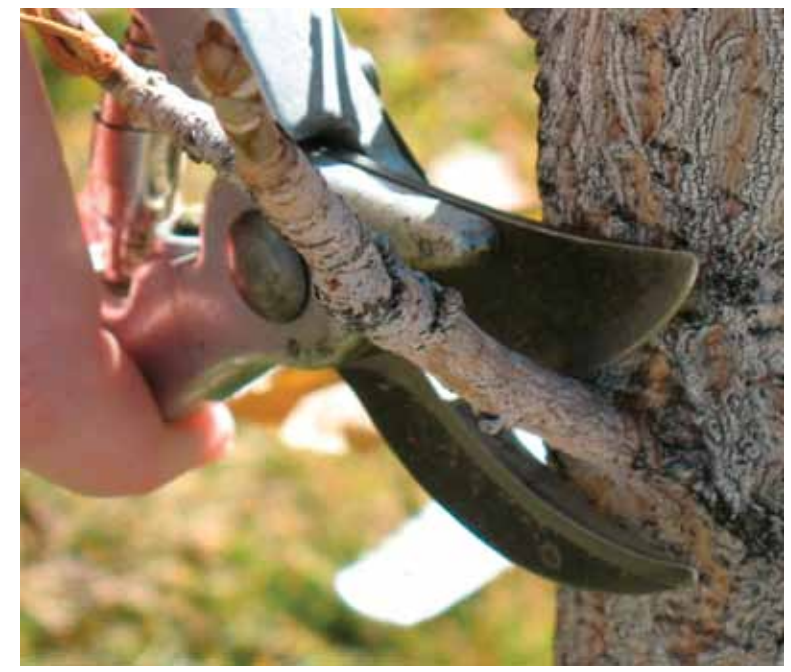
Within the canopy, the main branches, called scaffold branches, should be evenly spaced around the trunk and vertically up the central trunk of the tree. That way, the weight of the branches is spread around the circle of the trunk as well as from bottom to the top. If branches touch or rub when they sway in the wind, the weaker of the two branches should be removed to prevent future damage and disease.

Any branches that grow downward should be removed, especially in the lower branches. Removing these downward growing branches gives room for someone to work under the tree without running into branches. After these branches are removed, there may be more detailed pruning to open the tree canopy for further air circulation; however, do not remove too many branches in one year because each branch supports a certain portion of the leaves the tree needs to survive. The general rule of thumb is to remove only 25 percent of the leaves or less. Leaves that remain will be able to photosynthesize enough to support new growth of the tree.

More Information Available

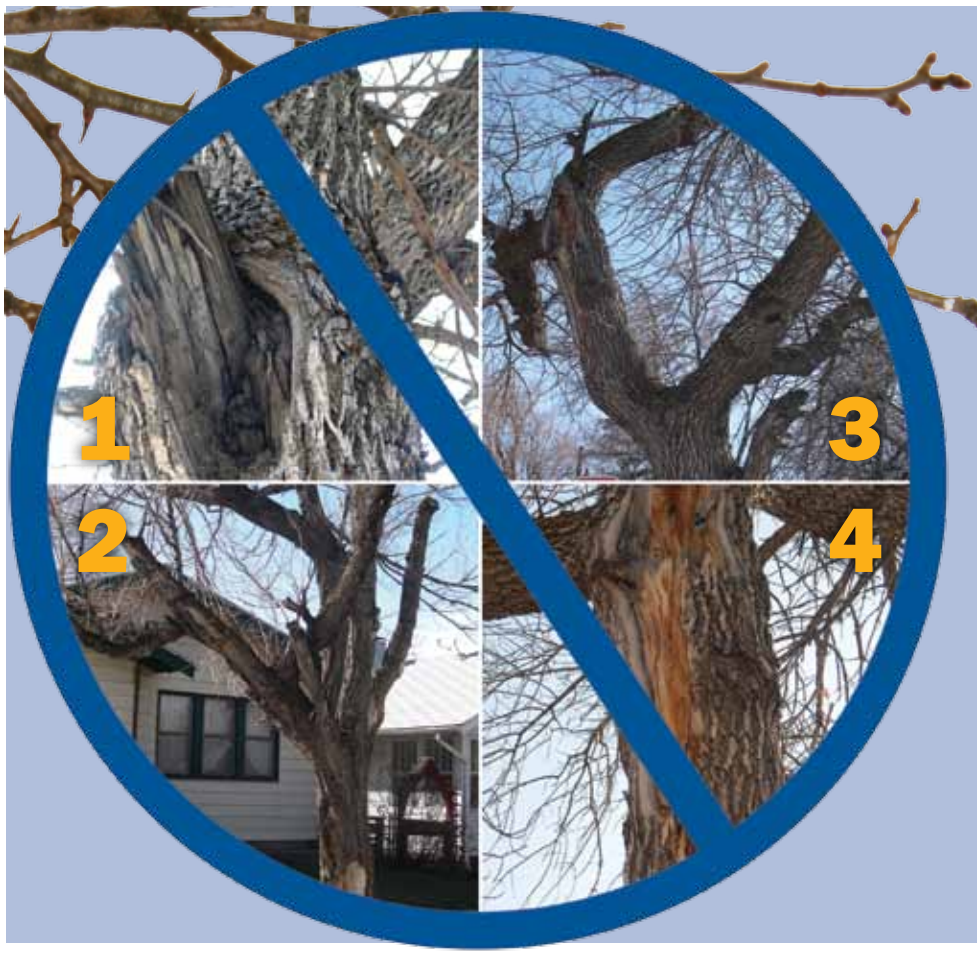
For detailed information about making proper pruning cuts or how to select which branches to remove within a tree canopy, please contact your local University of Wyoming Cooperative Extension Service office for handouts or more detailed directions (county contact information is at http://ces.uwyo.edu/Counties.asp).

Other helpful tree information, including "Correct pruning can revitalize landscapes," is available by going to barnyardsandbackyards.com, click on Resources, then Landscaping and look under Trees and Shrubs.



For small branches less than ½-inch thick, a good pair of by-pass hand pruners will work.

For larger branches up to 2 inches thick, loppers will do the trick.



Poor pruning problems

Failure to correctly prune trees can lead to decay and, with time, potential property liability problems from falling branches and limbs.

1. The jagged, dead wood will harbor bacteria and fungus that can lead to internal decay of the trunk. Callous tissue will probably never cover the wound.
2. This tree has multiple pruning issues. The top cuts encouraged new growth with weak attachments at the right and center of photo. Broken branches caused by either snow or wind loads have left wounds making the tree susceptible to decay. A vehicle struck the base of the trunk causing the bark to fall away and opening the supporting structure to decay.
3. A large wound remains from a branch that broke in the upper left. The missing branch removed a large portion of tree and leaves that provided food for growth.
4. The same tree in photo 3, bark has still not covered this wound caused by a branch breaking at a weak point and ripping bark from the trunk. Bacterial or fungal infections can infiltrate and further weaken the tree.

Donna Cuin is a horticulture program associate for the Natrona County University of Wyoming Cooperative Extension Service office. She can be reached at (307) 235-9400 or dcuin@natronacounty-wy.gov.

Wyoming residents grow grapes for wines, jellies

By Sandra Frost

Bucking horses, coal mines, gas wells, and high, cold desert are images that come to mind first when asked about Wyoming. Grapes and wine are not near the top of the list.

Grapes are successfully grown in Wyoming, though, at both the homeowner and commercial scales. Grape varieties may be suitable for juice, jams, and jellies, table grapes, or wine production. Grape variety research was done at the University of Wyoming Sheridan Research and Extension Center (SREC) over several years (www.uwyo.edu/uwexpstn/Sheridan.asp). Colorado State University has also conducted grape variety trials under conditions similar to Wyoming and makes variety recommendations (www.coopext.colostate.edu/TRA/PLANTS/fruit.shtml).

Photo courtesy of South Dakota State University

Frontenac, a red wine grape, which is very vigorous and hardy, can be grown in Wyoming.

Site and variety selection are the most important factors for growing grapes in Wyoming. A site on the sunny south side of a house that provides protection on the north and west sides from snow and wind is ideal. Winter hardiness is an important variety characteristic since grape vines may live many years.

Taking soil samples and having them tested for grape production is a good idea. Soil testing information sheets can be obtained at any University of Wyoming Cooperative Extension Service county office in the state or online at http://ces.uwyo.edu/Forms/CES_Subject_Forms.htm. There is a $20 fee for the standard fertility test at the UW Soil Testing Laboratory (http://ces.uwyo.edu/Soil_Main.asp), which includes pH, salts, organic matter, phosphate-phosphorus, nitrate-nitrogen, lime, and texture. Specify that the site will be used for grape production on the questionnaire mailed to the lab with the sample. There is a fee for additional tests. The lab is on the UW campus in Laramie and can be reached at (307) 745-4825 or soiltest@uwyo.edu.

Grape growers and winemakers have formed the Wyoming Grape and Wine Association (www.WyoGrape.com) to promote interest and success in the industry. Growers in Wyoming harvested nearly 45 tons of grapes in 2009. The association has a list of preferred wine grape varieties that do well in Wyoming. Association members also share information on resources, getting started in the industry, and sources of nursery stock.

Winter hardy varieties recommended by the association include:

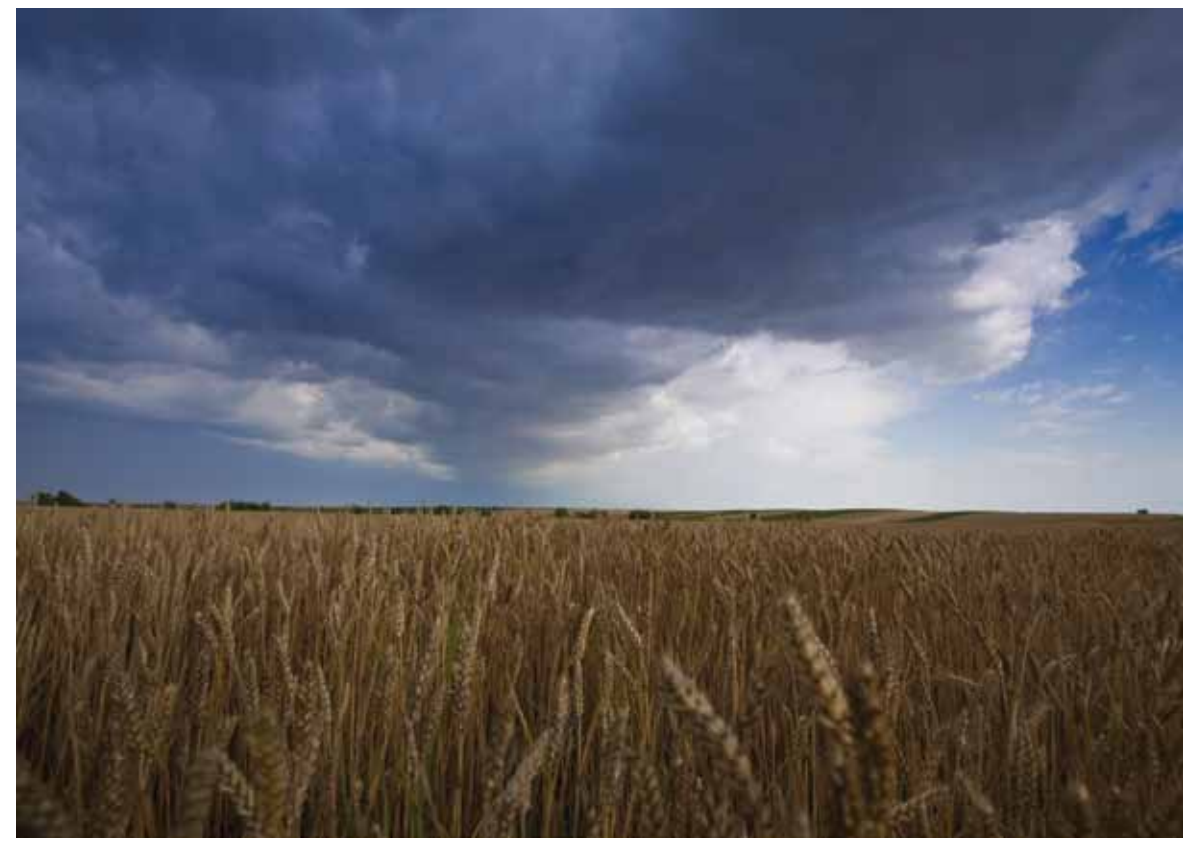
Grapes for wine:

- Frontenac (red)
- Marquette (red)
- Marechal Foch (red)
- LaCrosse (white)
- Elvira (white)
- Frontenac Gris (white)
- LaCrescent (white)

Grapes for dessert and jams and jellies that have grown well at SREC include:

- Beta (blue-black)
- Valiant (red)
- Concord (blue-black)
- Kay Gray (white)
- Worden (blue-black)
- Bluebell

Sandra Frost is a University of Wyoming Cooperative Extension Service educator based in Powell serving northwest Wyoming. She can be contacted at (307) 754-8836 or at sfrost1@uwyo.edu.



Farm bill disaster aid programs available

By James Sedman and John Hewlett

Past federal farm bill legislation dealt with disaster aid on a case-by-case basis requiring special votes and appropriations each time a disaster payment was deemed necessary.

The 2008 Farm Bill makes disaster relief semipermanent by creating the Agriculture Disaster Relief Trust Fund. Several new disaster relief programs have been created as part of this fund. Some are triggered by a disaster declaration while others may be available on a continuing basis to crop and livestock producers. Counties adjacent to those declared a disaster also qualify.

Depending on the details for individual operations, these programs may be a good fit for farm or ranch risk management plans.

Supplemental Revenue Assistance Program

The Supplemental Revenue Assistance Program (SURE) is funded by the Agriculture Disaster Relief Trust Fund to provide crop disaster assistance payments to eligible producers on farms and ranches in counties declared a disaster who have experienced production losses (excluding grazing), crop quality losses, or both, during the crop year.

Crop disaster payments to eligible producers will be made at 60 percent of the difference between the disaster assistance program guarantee and the total farm revenue for the farm. The disaster assistance program guarantee for a crop used to calculate the payments for a farm may not be greater than 90 percent of the sum of the expected revenue for each of the crops for the farm. To qualify for SURE, crop producers must have a minimum of catastrophic coverage (CAT) crop insurance policy for all insurable crops and Non-Insured Disaster Assistance Program (NAP) coverage for all non-insurable crops. A producer's actual production history (APH) is used to help determine the extent of any losses. Crop losses must be judged at least 10 percent due to a natural disaster in a *county declared a disaster* or at least 50 percent due to a natural disaster in an adjacent, non-disaster county.

Livestock Indemnity Program

The Livestock Indemnity Program (LIP) was designed to assist livestock producers who have experienced losses due to adverse weather at higher than normal mortality rates. This program does not require a specific disaster declaration and was intended to cover losses due to extreme weather such as blizzards, tornadoes, and heat waves. Losses are paid based on 75 percent of the fair market value of the livestock.

Livestock Forage Assistance Program

The Livestock Forage Assistance Program (LFP) is designed to assist producers experiencing losses of forage and pasture associated with extreme drought.

A county disaster declaration is not necessary for qualification; however, U.S. Drought Monitor information is used to determine if the area qualifies as extreme drought. Producers in a severe drought will receive one month's payment, extreme drought qualifies for two months, and an exceptional drought merits three months. The payment is 60 percent of the smaller of either the monthly feed cost for the total number of livestock covered or the monthly feed cost calculated by using the normal carrying capacity of the eligible grazing land. This program requires a producer to carry either Pasture, Rangeland and Forage or NAP coverage to be eligible for assistance.

For More Information

Payment limits of $100,000 per person and $500,000 maximum gross income apply to any program payments as part of the new farm bill. Producers should keep in mind that, for the most part, these programs require enrollment in some type of crop insurance policy to qualify.

For more information on this and other risk management topics on the Web, including three recently completed bulletins on disaster assistance programs for Wyoming, visit the Western Risk Management Library online at agecon.uwyo.edu/riskmgt.

For more information on what crop insurance policies will qualify an operation for these programs, consult a crop insurance agent. Agents can help tailor a policy to fit specific risk management needs.

A list of insurance agents may be found at the RMA Web site at www.rma.usda.gov under "Agent/company Locator" in the upper right sidebar.

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.

Crop insurance strategies for Wyoming farms

By James Sedman and John Hewlett

Risk is an inherent factor in production agriculture.

Today's farm operators and managers must not only make good management decisions but also must have an effective plan for dealing with risk in its many forms. Failure to properly plan for and manage risk can often be the determining factor in profitability of a farm.

Adjusting management and production techniques (such as crop rotations, tillage practices, or planting methods) along with sound marketing decisions can be part of a risk management strategy.

Any risk management plan should address production risk, which is the risk of loss of a crop or low yields due to perils such as hail, drought, and market risk, which is the risk of loss due to fluctuating prices and markets.

To better manage risk associated with price fluctuations and production losses, many producers are turning to crop insurance policies backed by the Federal Crop Insurance Corporation. These policies vary widely and can be tailored to fit an individual producer's risk management plan.

Actual Production History (APH) Policies

APH policies are multi-peril and are based upon a producer's production yield history or APH. This history must cover at least four years. These policies can be production or yield-based, in which case they are called multiple peril crop insurance (MPCI). These policies insure against losses in yield only.

MPCI policies can be for different units of production: optional, basic, and enterprise units. Enterprise units are an operator's entire acreage in a particular county, while basic and optional units are more site-specific to individual sections.

Yield-based policies can be individual or group in nature. In the case of group policies, indemnities are determined by yield losses on a group level and not just for an individual producer.

APH policies can also insure against losses in revenue caused by a decline in either prices or yields. One of the most common of these types is Crop Revenue Coverage (CRC). CRC insurance uses a producer's APH yield along with a predetermined base price to insure against losses caused by price fluctuations and yield losses. Group Risk Income Protection plans are also available depending on crop and location. These policies pay indemnities if the expected revenue for a countywide crop drops below a producer's selected trigger yield.

Adjusted Gross Revenue-Lite Insurance (AGR-Lite)

AGR-Lite insurance is a different and relatively new approach to insurance crop producers might consider. AGR-Lite is a whole-farm, revenue-based insurance policy that can protect a producer's total farm revenue level against changes in price and yields. AGR-Lite is unique among crop insurance policies because it can be used as a standalone policy or an umbrella program in conjunction with other crop insurance policies for more complete coverage and lower premiums.

Coverage is based on the lower of either a producer's most recent five-year average gross revenue as reported on the Schedule F tax form or the producer's expected revenue for the current production year computed using the farm's expected yields, planted acreage, and expected prices for all crops and crop products.

For More Information

For a more detailed explanation of the various crop insurance products available to producers, take a look at *Risk Management Options for Wyoming Farms* available at the Western Risk Management Library online at agecon.uwyo.edu/riskmgt. Click on Production and scroll down to view the article. The library also contains a wide assortment of information on this and other risk management topics.

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.

Livestock producers have insurance options to reduce risk

By James Sedman and John Hewlett

Proper risk management is essential to success in the livestock business.

Unstable input prices, weather events, and limited availability or high-priced feed can be hard enough to deal with, but livestock producers must also address the added market risk associated with pricing livestock.

Until a few years ago, livestock operators had limited options for protecting against the risk of loss. Now, a wide array of options is available under the umbrella of the Federal Crop Insurance Corporation. These policy options range from insuring against livestock prices falling, to insuring crops/feed supplies and insuring pasture and forages against losses.

Traditional Crop Insurance Policies

Livestock producers who utilize crops in their operation have the option of using different types of crop insurance policies. Actual production history (APH)-based policies are the most common. These policies are based on a producer's four-10 year yield history and include traditional yield-based programs such as multi-peril (MPCI) and revenue-based programs such as crop-revenue coverage (CRC).

MPCI policies insure against losses in yield whereas revenue-based programs like CRC insure against losses in revenue due to declining prices as well as yield. These policies may also be available as group policies and pay indemnities based on county yield data and losses.

Pasture, Range and Forage Insurance (PRF)

PRF insurance was designed to combine the best aspects of the former pasture group risk plan with a site specific system to determine losses. PRF-Vegetative Index utilizes imagery from the U.S. Geological Survey to determine vegetative greenness and thus the insurance coverage for a specific 4.8 x 4.8-mile grid area. Producers can insure both pasture and hay land. Losses are determined by comparing actual greenness against the indexed greenness for a three-month interval. This policy will recognize forage losses in a much smaller area compared to the county production values used to determine losses with traditional group plans.

Livestock Risk Protection (LRP) and Livestock Gross Margin (LGM) Insurance

LRP policies are designed to prevent losses associated with declining market prices and are available for beef and dairy cattle (feeder and fed cattle), swine, and lambs. Prices for coverage are determined by Chicago Mercantile Exchange prices, and indemnities occur if the actual value (determined by the current price) drops below the insured value determined by the expected weight and insured price. LGM policies are designed to protect the gross margins on feeder and fed cattle. They take the protection offered by LRP one step further by protecting against negative feeding margins as well as the value of the cattle.

Adjusted Gross Revenue-Lite (AGR-Lite)

Since 2007, livestock producers in Wyoming have had the option of using a whole-farm revenue insurance option called AGR-Lite. This product provides indemnities to producers when a ranch's adjusted gross income from multiple crop or livestock enterprises is either low relative to historical levels or low relative to an expected revenue level. All of the above discussed insurance options can be used in conjunction with AGR-Lite to provide more complete coverage.

For More Information

For more detailed information on the livestock insurance options discussed in this article and how they would apply in different scenarios on example Wyoming operations, read *Risk Management Options for Wyoming Ranchers*. This article is available online in the Western Risk Management library at agecon.uwyo.edu/riskmgt. To view the article, click the Production link and scroll down. The Western Risk Management Library online also contains a wide variety of articles, presentations, and software addressing many other risk management topics.

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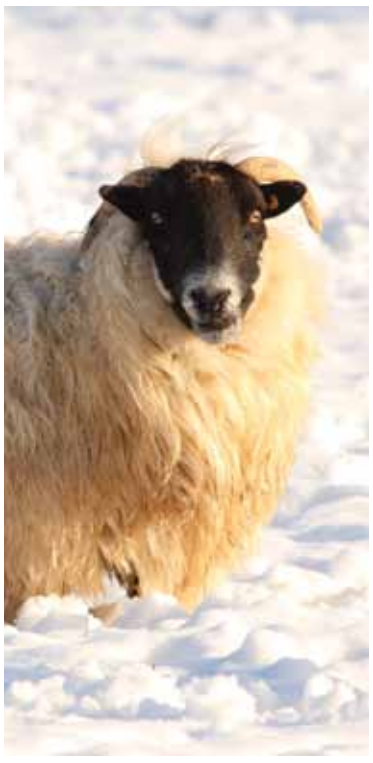
Strategies for livestock producers utilizing disaster aid programs with crop insurance

By James Sedman and John Hewlett

Crop and livestock producers have a variety of risk management options at their disposal. Several new programs are meant to provide disaster relief passed as part of the 2008 Farm Bill.

Most of these programs require some level of crop insurance for Farm Service Agency (FSA) verification of loss. Enrolling in these programs is a logical first step to ensure the operation is qualified to receive any disaster assistance payments should they become available.

Producers who choose to utilize these programs may also be able to adjust insurance coverage levels and perhaps lower overall premium costs while raising the level of protection against catastrophic losses. These disaster programs can, with planning, be used to fill gaps in coverage of crop and livestock insurance policies. The strategy selected will depend on individual risk preferences.



Strategies to Manage Risk with Insurance Coupled with Disaster Programs

Livestock producers seeking to manage their risk through crop insurance policies have several options. The Supplemental Revenue Assistance Program (SURE) assists crop and livestock producers who suffer a greater than 50-percent loss in production in a county-declared disaster. This program requires enrollment in either appropriate crop insurance or the Non-Insured Disaster Assistance Program (NAP) for each commodity, although forage crops intended for grazing do not require coverage. The SURE program covers 60 percent of the difference of a farm's total revenue and the disaster revenue guarantee. Thus, for a minimum premium payment ($250 per commodity for NAP coverage or low per-acre cost

Strategies for Indifference or High Risk Tolerance

Livestock producers with a high-risk tolerance or who are comfortable with higher levels of risk may choose to self-insure using options such as increased stored forage or grass inventories as well as setting aside cash reserves to cover any disasters or emergencies. Producers who choose this strategy are eligible for the Livestock Indemnity Program (LIP). This program covers losses of livestock due to extreme weather at 75 percent of market value. A producer using Livestock Risk Protection Insurance (LRP) is not covered for any event resulting in loss of cattle – only against a decrease in price. Producers should apply within 30 days of any loss and document those losses through veterinarian records, rendering truck receipts, or other FSA-approved documentation methods to qualify.

for a Pasture, Rangeland and Forage [PRF] policy), operators will have an increased level of catastrophic coverage with no additional direct costs.

For instance, a ranch with an income guarantee under a PRF policy at $100,000 that sustains a loss resulting in actual revenue of $60,000 could receive a SURE payment of approximately $24,000. (Note, this is a rough estimate and does not account for other revenue taken into consideration for payment calculations.)

The Livestock Forage Disaster Program (LFP) was designed to provide assistance to producers during times of drought and should be considered for use along with appropriate crop insurance policies. Qualification under this program is determined by the U.S. Drought Monitor Index – areas of severe, extreme, or exceptional drought qualify. This program also requires enrollment for either NAP or PRF coverage. Any indemnities paid will be 60 percent of the monthly feed cost for the number of cattle covered. This payment would not be directly tied to the insured value (PRF or NAP) but rather to the carrying capacity of the insured land.

Under these new disaster-aid provisions, Adjusted Gross Revenue-Lite (AGR-Lite) is approved as a qualifying crop insurance policy. Utilizing this whole-farm income insurance may be a good fit for certain operations to ensure they would qualify for any disaster assistance. Disaster payments received may affect indemnities paid by the AGR-Lite policy and will also depend on the level of coverage selected.

For More Information

In these challenging times, it is a good idea to carry some minimum level of crop insurance to be eligible for any disaster payments in the event a natural disaster occurs. Most of the new federal disaster programs require this, and it puts an operation in a better position to manage risk.

For more information on how crop insurance policies qualify an operation for disaster payments, contact a crop insurance agent. For more information on this and other risk management topics on the Web, including three recently completed bulletins on disaster assistance programs for Wyoming, visit the Western Risk Management Library online at agecon.uwyo.edu/riskmgt.

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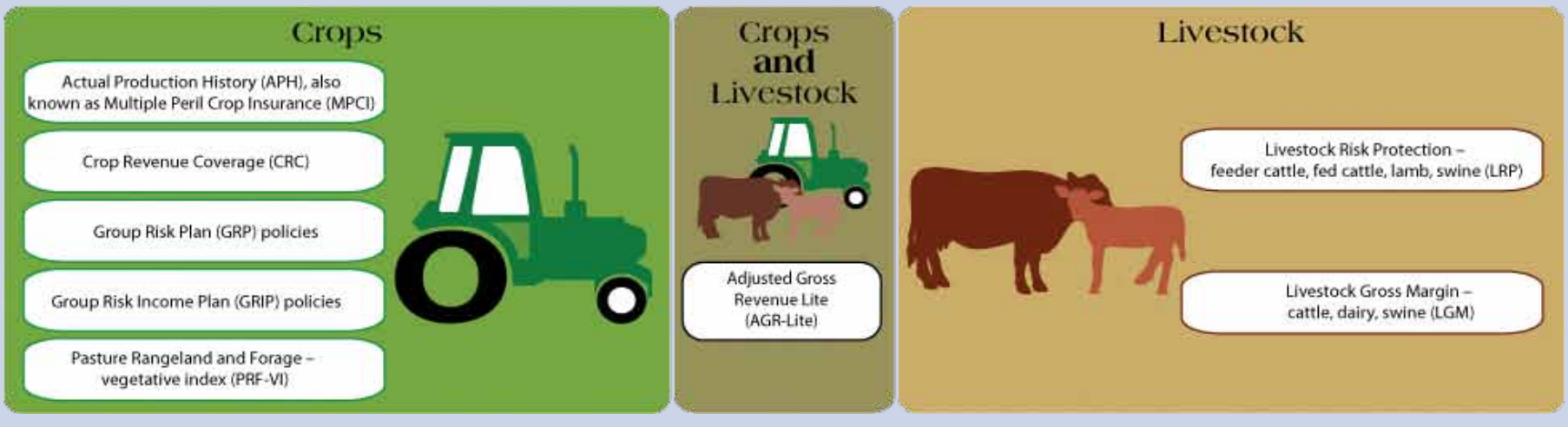
Meeting insurance needs

Some insurance options cover crops or livestock only, while some are available to both.



Following basic principles increases forage establishment success

By Anowar Islam

Good forage stand establishment relates to several important facts; for example, returning to forage production, increasing forage yield and desirable species, and improving sustainability and profitability.

Establishment success involves an understanding of the needs of forage and of several proven seeding methods. The basis for several years' production is determined within two to three weeks after planting. Forage seeding is costly, especially perennial forage seedings, which are more expensive than other crops. The failure rate of forage seedings is higher than any other traditional crop seedings; therefore, the risk and cost of forage establishment are substantial.

Thin and poorly established stands encourage weeds to invade, reduce forage yields, and, in the long run, shorten life of the stands. Considering all these negative consequences along with the risk and cost associated with poor forage stand establishment, it is essential to maximize the chances of success.

There are a few key factors that need to be considered for successful forage stand establishment.

Good Planning

Remember, "*Half the job is planning.*" Good, thoughtful pre-planning is the number one key for successful stand establishment. A number of activities that need to be completed well in advance before establishing a new forage stand include site selection, weed management, adjusting soil pH, fertilization, and species and variety selection. Once the forage is seeded, there is very limited option for controlling weeds. Soil pH adjustment is also very important. Many forage species can grow at a pH below 6.0; however, they will grow best and yield most at near neutral soil (pH closer to 7.0).

Matching forage species or varieties to the characteristics of the soil is very important. Type of soil, soil texture, soil pH (e.g., acidic, alkaline, sodic), soil fertility, water holding capacity, drainage, and cold tolerance all have effects on the selected forage species or varieties.

Care should be taken in selecting forage species or varieties without any biases. Unbiased, research-based information can be obtained by contacting neighbors who had success or extension personnel (e.g., UW Cooperative Extension Service educators or specialists). Species and varieties are often selected based on personal or industry preferences without considering site characteristics and soil properties. Mistakes made in the early planning and management phase cannot be corrected later. So, always remember the 7 *Ps* – pre-, prior planning prevents pasture poor performance.

Seeding Rate

Recommendations of forage seeding rates vary considerably depending on soil and environmental conditions. The larger the seed, the more pounds per acre needed. As a general rule, these rates of seeding will result in about 20-50 seeds per square foot (20 for the larger and 50 for the smaller seeds).

For example, 10 pounds of alfalfa seeds per acre will result in 50 seedlings per square foot – 50 seeds per foot of row with 12-inch row spacing; 25 seeds per foot of row with 6-inch row spacing (seed every ½ inch). If half of the viable seeds produce seedlings, a good stand is expected. If more than half establish, they will generally self-thin over the first three months or so to about 25 plants per square foot.

Less than ideal soil conditions (such as uneven stony field, poorly prepared seedbed, etc.) might justify planting the higher end of the recommended range. Mortality will be greater with smaller-seeded forages than with larger seeds because of the initial weak growth vigor in smaller-seeded seedlings.

Reducing seeding rates below recommended levels does not significantly cut the establishment cost of forage. Economic analysis suggests that less than 4 percent of the total costs associated with forage production is the seed cost. The major costs are associated with operation (e.g., labor, tillage, drilling, etc.) and maintenance (e.g., labor, herbicide, irrigation) which will be further accelerated by a stand failure. Calibrating the seeder, so it plants the right amount of seeds, may be a better option for saving money. Recommended settings on the seeder is a guide to follow but may not be appropriate for a given condition. Following the guideline, calibration can be adjusted by simply test planting on a measured area before final planting. Remember, this may initially cost a few extra labor dollars but will save real money by avoiding a costly failure.

Planting Depth

Planting too deep is the most common reason for forage seeding failure. The rule-of-thumb in agronomy is not to plant a seed deeper than five times its diameter. This means most forage seeds should not be planted deeper than 3/8 inch. Greater than 3/8 inch will greatly increase the risks of poor emergence and thin stands.

A firm seedbed is critical to assure accurate seeding depths. Fluffy seedbeds interrupt the function of the depth band wheels of a seeder, and, as a result, seeds are frequently placed too deep.

Planting too deep is usually the result of a loose seedbed – it is sometimes hard to sufficiently firm a seedbed. Cultipacking or roller-harrowing will help in leveling and firming soils. Planting too deep is probably not the most common reason for failure on no-till seedings (i.e., directly planting without seedbed preparation); however, not nearly as many acres are seeded with the no-till method. Sandy soils (such as in many areas in Wyoming) dry out faster; therefore, it is better to use the deeper (3/4- to 1-inch) depth, particularly for grasses. Much research shows that the number of seedlings established sharply diminishes as depth of seeding increases from the optimum.

Seed-to-Soil Contact

Forage seeds require ample amounts of water (about 100 percent of their own weight) to initiate germination process. This water must move from soil to the seed. So, it is crucial the seed is in close contact with soil as much as possible. Good seed-to-soil contact will result in good and uniform germination and increase the number of productive forage plants in the seeded stand. A well-prepared seedbed without clods will ensure good seed-to-soil contact.

To determine whether the soil is firm enough to plant, the following measures can be used: a footprint of an adult should not be deeper than ¼ inch on a well-prepared seedbed; about 10 percent of the planted seeds should be on the surface of the soil after planting. No seeds visible on the surface indicate the planting was too deep.

Planting Time

It is better to plant forage seeds at the time when odds are best based on rainfall patterns and temperatures. For proper germination, 40°F or higher temperatures are needed. Temperatures too high are detrimental because the soil surface will not be kept moist. Rainfall patterns east of the Rocky Mountains peak in May and June and then taper off until the end of the year.

The most common month for forage planting in Wyoming is May. There are usually several weeks of good growing conditions by then; however, it can get hot by the end of May in some areas, and poorly rooted seedlings desiccate resulting in poor stands. An alternative to May seeding is generally late summer (August) if water is available. This is a good time for forage seeding as weeds are less troublesome.

Dormant planting (a time in which conditions are such that seeds do not germinate) usually is November to March. This is common with perennial grasses in which seeds remain dormant in soil during the cooler months and get ready to germinate and grow as soon as conditions are favorable in the spring.

Early spring planting refers to March or April rather than May. This planting generally helps seedlings be better rooted before hot weather appears; however, slight frost injury, as with alfalfa, may occur due to hard frost after germination. Overall, there is less risk in early spring seeding than seeding in May (moisture stress) because of adequate rainfall and optimum temperature.

Seeding Method

There are many methods for forage seeding including broadcast, drill, and no-till. There has been a long debate over which seeding method is best. It is really not a concern as long as each method is properly done. This includes the right seeding rate, appropriate seeding depth, and, most importantly, good seed-to-soil contact.

Basic principles of forage establishment seem obvious but many unnecessary establishment failures occur every year. This is because one or more of the basic principles outlined above were not properly followed.

For additional reading or relevant information, please read/visit: Forages – An Introduction to Grassland Agriculture, Volume I, 6th Edition (2003) by Barnes et al. (ed.); http://hayandforage.com/ or http://www.progressiveforage.com/. More information or answers to specific questions can be obtained by contacting Anowar Islam.

Seedbed preparation usually starts with plowing to destroy previous vegetation, loosen soil, and mix fertilizer into soil

Cultipacking or roller-harrowing helps level soil, break up clods, push rocks into soil surface, and, finally, firm soil for good seed-to-soil contact.

Depth bands (front) and packer wheels (back) help keep the drill from placing seed too deep and help ensure good seed-to-soil contact.

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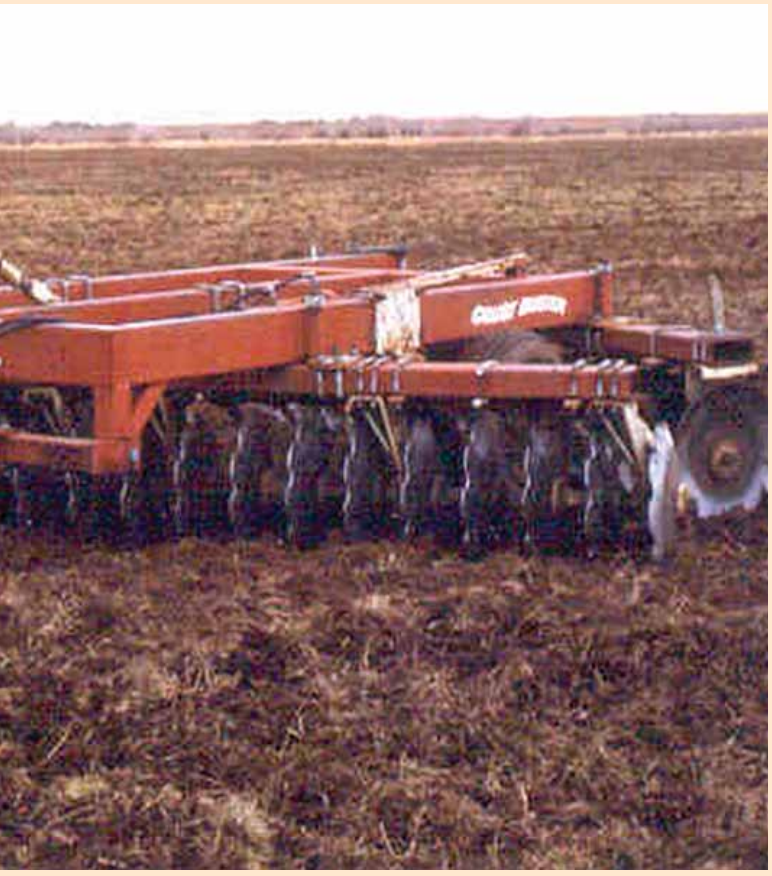


Adjusting stocking rates to forage production can add profits

By John Ritten

Annual precipitation in Wyoming is quite variable, which can have a large impact on the state's livestock producers.

Adjusting stocking rates by utilizing expectations of weather and knowledge of existing range conditions can affect profitability. As much of the state's rangelands consist of cool-season grasses, annual forage production can be closely estimated early in the spring.

Yearly forage production is heavily affected by both early growing season precipitation and the state of the range from previous grazing decisions. Adapting herd requirements to forage expectations in a given year can improve overall ranch profitability.

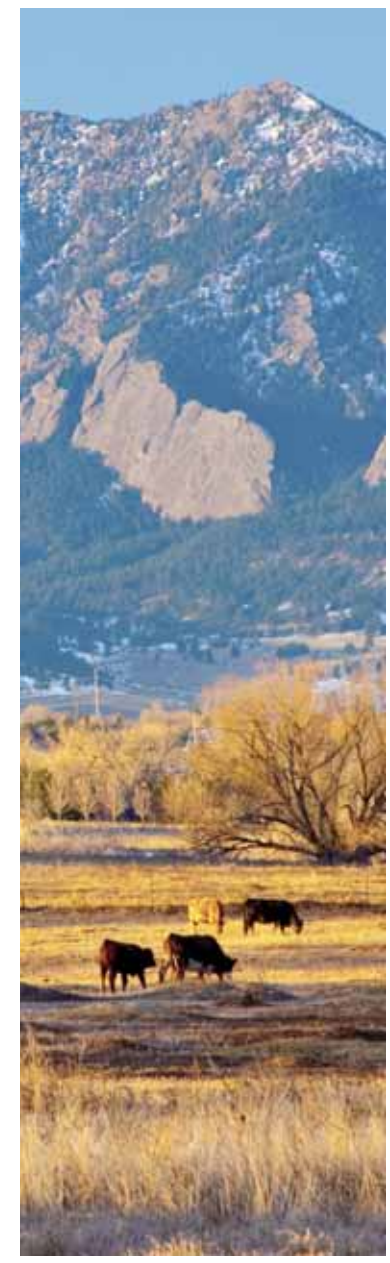
Producers who utilize a variable stocking rate across years are more likely to be able to take advantage of forage in all years but especially wet years due to the flexibility of their operations. The ability to take advantage of forage production can allow producers to increase average profitability and potentially decrease variation of net returns across years.

Fremont County Forage Production Model

For example, researchers at UW studied a forage production model based in Fremont County. Results show producers who utilize a variable stocking operation as compared to a fixed stocking rate set at moderate levels can increase average profitability by 42 percent while decreasing variability across years by 6 percent over a 100-year planning horizon.

The results of this study show the optimal forage utilization rate, economically speaking, is fairly close to the traditional range management rule of thumb of "take half, leave half." It is economically optimal to be slightly more conservative than this rule and take 45 percent while leaving 55 percent. While desirable to leave this amount, variable precipitation often affects forage production, affecting a producer's ability to obtain this level.

When variable precipitation was modeled in the forage response model, producers who practiced variable stocking, aiming to utilize 45 percent of forage production, ended up utilizing 48 percent of production on average. Producers who stocked at a fixed rate equivalent to a moderate stocking level for the study area were only able to utilize 40 percent of forage on average, with 50 percent more variability in forage utilization as compared to adaptive stocking rates.



Cow/Calf Producer Insights

While this study looked exclusively at comparison of operations consisting only of stocker cattle, there are some insights for cow/calf (C/C) producers as well. For example, some research has been done that compared alternative operational strategies for C/C producers given drought in Wyoming. This research suggests producers who utilize a Cow/Calf/Yearling (C/C/Y) operation can be more profitable as compared to a C/C operation. The main difference in the operations studied is that C/C/Y operators carry less breeding stock while keeping similar Animal Unit numbers over the year (AUYs) by carrying over all steers until the following year.

In the C/C/Y scenario, if forage production looks to be scarce by the end of spring, the producer has the option to sell yearlings to get herd requirements in-line with expected forage production. While not optimal to sell any short yearlings under normal conditions, it was more profitable to sell them early rather than purchase additional feed during dry years to cover forage shortages.

The C/C/Y option improved overall profitability by nearly 50 percent. While variability in returns slightly increased, it was skewed upward during wet years. Variability was decreased in dry years, but the option to take advantage of wet years resulted in higher variability in these years as profits were increased over average profits. C/C producers were unable to take advantage of these wetter years as there is a lag required in the restocking of breeding stock.

Match Herd Needs to Forage Availability

Regardless of strategy, matching herd needs to forage availability is important. Cattle producers can think of themselves as marketing grass in the form of beef. Forage production, which is dependent on precipitation and range condition, may very well be their most important input. While tempting to take advantage of years with higher cattle prices by stocking at higher rates, our research shows stocking decisions should be based on expected forage production and not cattle prices.

In the long run, it is better to keep forage in good condition to ensure future productivity rather than risk range degradation by chasing high prices.

Here are some useful links when analyzing your grazing system:

A useful discussion regarding how to estimate yearly forage production can be found in "Recognizing and Responding to Drought on Rangelands," available at http://ces.uwyo.edu/PUBS/MP111_09.pdf.

"Monitoring: A Tool for Effective Rangeland Management" can help producers get a better feeling for actual range utilization on their ranches, available at http://ces.uwyo.edu/PUBS/MP111_02.pdf.

Some options to improve utilization through better livestock distribution can be found in "Livestock Grazing Distribution," available at http://ces.uwyo.edu/PUBS/MP111_05.pdf.

And, some ideas for flexible strategies that allow producers to take advantage of wet years while still planning for dry years can be found in "Flexible Grazing Livestock Management Systems for Good and Bad Times," available at http://ces.uwyo.edu/PUBS/MP111_03.pdf.

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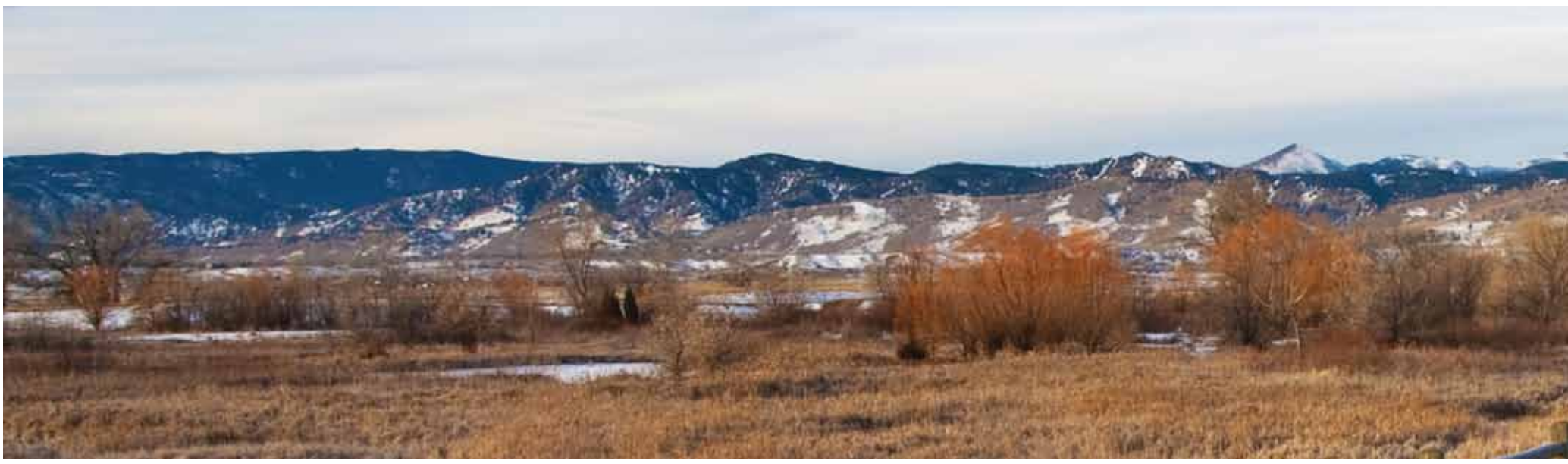


Researchers develop project to determine if animal

By Kellie Chichester and Stephanie Styvar

With the increase of urban sprawl and absence of rendering companies in many areas, small packers, feedlot operators, ranchers, and farmers are in need of a way to dispose of dead larger livestock that will speed the decaying process, minimize odor, and reduce the amount of bacteria and pathogens in the soil and water near the disposal area.

Burial, incineration, and rendering, as well as composting, are viable options, although each differs in difficulty, risk, cost, and availability. Environmental quality regulations are making the burial method more difficult.

Burial, mortality or "bone piles," and incineration can be very risky from an environmental standpoint; these methods make possible a very broad range of disease transmission throughout the operation because residual pathogens may not be eliminated. There is also a concern for the potential of the carcasses to contaminate groundwater with pathogens.

In colder climates, frozen ground may make burial impossible during certain times of the year. Vehicles used to transport animal mortalities from the farm to the incineration or burial location can introduce diseases from other farms or ranches, feeding operations, or packing plants.

The use of rendering facilities to convert carcasses into industrial fats and fertilizers is another way to dispose of animal mortalities. The use of rendering facilities for disposal causes concerns of unreliable pickup due to geographic location and weather challenges. Rendering facilities have many regulations they must follow.

In some areas, animal mortalities are accepted by local landfills and solid waste districts, although this may not be an option due to cost limitations, and acceptance of animals may vary by landfill or solid waste district. Many landfills that do accept animal mortalities are also looking for alternatives to the more conventional disposal methods noted earlier due to the limited amount of space available for expansion.

Animal Composting Project

Despite the positive aspects of composting, there are a number of unanswered questions about animal mortality composting. A project was designed to test the applicability and practicality of composting large animal mortalities with little intervention.

The project is designed to mimic a compost facility for the average farmer, rancher, feedlot/dairy manager, meat plant owner, or municipal landfill manager to use in the cold, arid climate of Wyoming.

The project conducted by UW Department of Animal Science master's candidate Stephanie Styvar began November 14, 2007, at the Sand Draw Landfill 12 miles south of Riverton. This site is a high, flat area with very little vegetation.

The ground was cleared and smoothed and rocks and plant material removed that would puncture the plastic liner. A 100 feet by 40 feet plastic liner was placed on the ground running lengthwise north to south.

The prevailing winds in the area are generally out of the west-southwest; therefore, by placing the backside of the temporary bins on the west side of the plastic liner, the bales served as a windbreak to prevent erosion of the compost material. A temporary single bin system was used for the composting project. Twenty large square straw bales were used to construct the temporary bins.

The three mortalities died on the same day and were approximately 900 pounds each. Mortalities were deceased one week before the composting process began. No carcass preparation took place.

Photo by Stephanie Styvar

Large animal mortalities placed on 1 foot of co-compost mixtures.

Photo by Stephanie Styvar

Compost piles after covering large animal mortalities with 1 to 1.5 feet of co-compost material.

Co-compost Material Selected

After receiving the preliminary lab analysis showing carbon/nitrogen (C/N) ratios, mixtures chosen as co-compost material were soiled bedding/manure, grass mulch/manure, and small wood chips/manure. Co-composting materials for each compost pile were mixed prior to being used in the composting process. Approximately 1 foot of co-compost mixture was laid in each bin prior to placing the mortality in the pile. The mortalities were then placed on top of the material. Offal, including paunch materials, heads, and hooves from six cattle slaughtered the day the project began, were added equally to each of the three piles directly on top of the animal mortality. Offal was added to the compost mixture to provide additional moisture to the compost, as well as the addition of microorganisms. The mortalities were then covered with the designated co-compost material approximately 1.5 feet above the mortality. Approximately 24 cubic feet of compost material was used in each pile during the nine-month process.

The first heating cycle caused by decomposition began with the start of the process November 14. The piles were turned the first time on February 20, 2008, the second time on May 30, 2008, and the project was completed August 22, 2008.

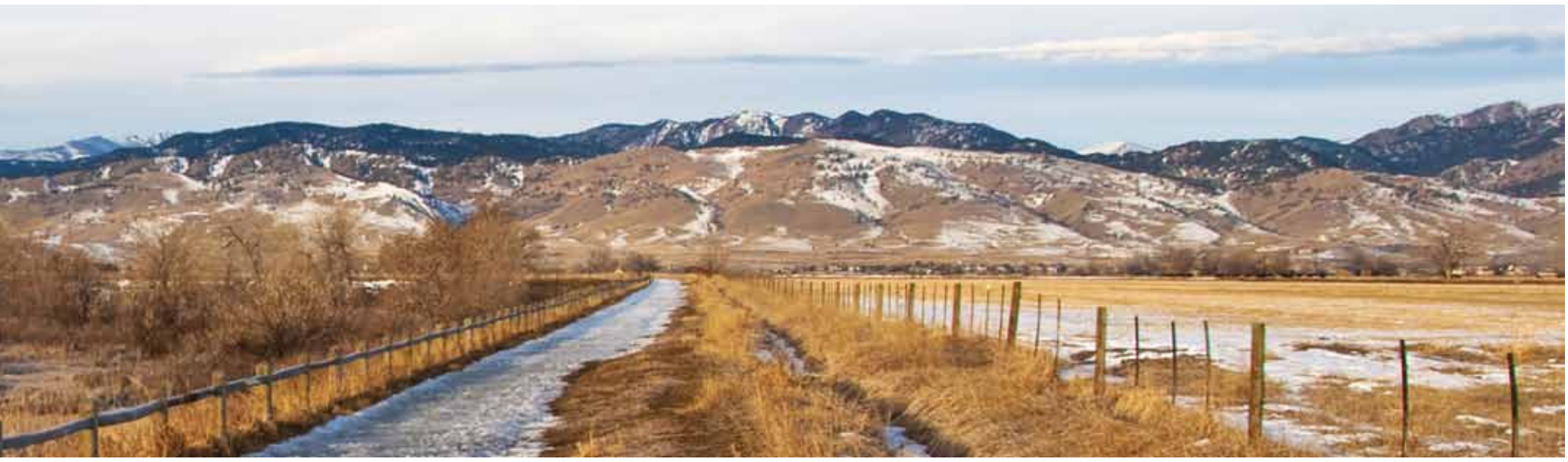
Using a moisture probe, initial moisture readings of the three compost piles were taken at the start of the project. From there, moisture was tested at least twice weekly. Each time the compost piles were turned and at the completion of the project, estimated moisture content was recorded. Water was added to each compost pile using a 15-gallon weed sprayer when precipitation had not occurred.

Temperatures Taken

A calibrated compost thermometer (using the ice point method can calibrate a thermometer to within 0.1F to ensure accuracy) was used to take all temperature measurements. Initial temperatures of the compost pile were taken at the approximate core of the pile. Later temperatures were also taken at the approximate core of the pile at least twice weekly during the first three-month heating cycle.

The compost piles were left essentially undisturbed for the first three-month heating cycle. After completion of the first three-month heating cycle, the compost piles were turned using a front end loader fork. The piles were evaluated for tissue degradation, bone degradation, carbon source degradation, and odor and moisture content. The remaining portions of the carcasses were then covered with an additional foot of co-compost mixture cover.

Temperatures were recorded weekly for the final three-month



composting applicable in cold, arid Wyoming

heating cycle. After approximately nine months of composting, the compost was spread using a bucket on a front end loader. A final visual evaluation estimated tissue degradation, bone degradation, carbon source degradation, as well as odor and moisture content.

Upon completion of the project, one sample each of the three compost materials was taken and evaluated for C/N ratios and moisture content. One sample of each of the three compost materials was tested for fertilizer use – analyzed for nitrogen, phosphorous, and potassium carbonate (potash). Three samples each of the three compost materials were taken to be tested for residual pathogens (E. coli 0157:H7, generic E. coli, and salmonella). All samples were obtained randomly throughout the compost material.

90-percent Decomposition

All large animal mortalities were at least 90-percent decomposed within nine months of composting, suggesting that composting is a viable option for carcass disposal even in the cold, arid climate of Wyoming. This process was completed requiring limited intervention making it practical for the average farmer, rancher, agribusiness person, meat plant owner, or landfill operator.

The soiled bedding/manure co-compost mixture yielded the highest average temperature readings throughout the process resulting in the highest amount of decomposition. The mulch/manure mixture resulted in slightly lower average temperature readings throughout the nine-month period but also yielded a high amount of decomposition. The mortality in the wood chip/manure mixture was not fully decomposed and would require more time to complete the process. This could be due to the constantly lower core temperatures when compared to the other two co-composting materials.

Pathogen testing revealed E. coli 0157:H7 and salmonella were not present in the finished compost. This may suggest the temperatures reached during composting killed some of the pathogens present. Testing revealed that varying amounts of generic E. coli were present, stressing the need of testing before use.

Pathogen testing results suggest the compost may potentially be used for food cropland application; however, more intensive testing would be needed to determine if animal mortality compost could be used for this purpose.

Stephanie Styvar is an inspection specialist with the Consumer Health Services division of Wyoming Department of Agriculture Consumer Health Services. She can be contacted at (307) 856-4780 or sstyva@state.wy.us. Kellie Chichester is a University of Wyoming Cooperative Extension Service educator serving Albany, Carbon, Goshen, Laramie, and Platte counties. She can be contacted at (307) 721-2571 or kelliec@uwyo.edu.

Photo by Stephanie Styvar

Skull and rib bone present in the soiled bedding-manure mixture.

Compost core temperatures (˚F)

Temperature ˚F	Soiled bedding/Manure	Mulch/Manure	Wood chips/Manure
High	144	144	133
Low	62	60	54
Average	108.89	106.25	101.58

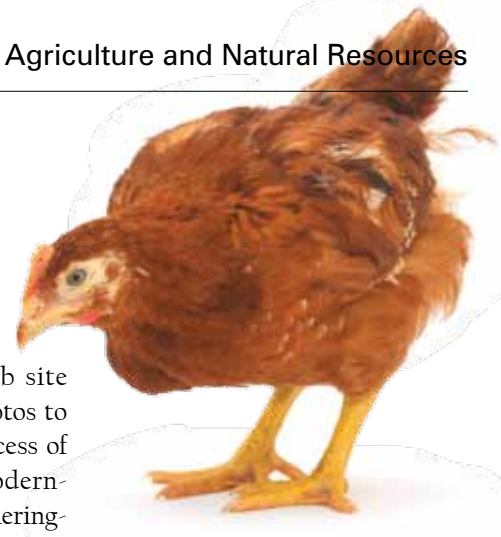
Visual observations

Observations – Soiled Bedding/Manure	First Heating Cycle	Second Heating Cycle	Third Heating Cycle
Date	*2/20/08*	*5/30/08*	*8/22/08*
Estimated Moisture – Core	40-60%	40-60%	40-60%
Estimated Moisture – Crust	15-20%	15-20%	15-20%
Odor	Moderate	Moderate	Moderate
Estimated Tissue Degradation	80%	90%	100%
Estimated Bone Degradation	0%	60%	95%
Estimated Carbon Degradation	20%	65%	95%

Observations – Mulch/Manure	First Heating Cycle	Second Heating Cycle	Third Heating Cycle
Date	*2/20/08*	*5/30/08*	*8/22/08*
Estimated Moisture – Core	40-60%	40-60%	40-60%
Estimated Moisture – Crust	15-20%	15-20%	15-20%
Odor	Moderate	Moderate	Moderate
Estimated Tissue Degradation	80%	90%	100%
Estimated Bone Degradation	0%	60%	95%
Estimated Carbon Degradation	20%	75%	95%

Observations – Wood Chips/Manure	First Heating Cycle	Second Heating Cycle	Third Heating Cycle
Date	*2/20/08*	*5/30/08*	*8/22/08*
Estimated Moisture – Core	40-60%	40-60%	40-60%
Estimated Moisture – Crust	15-20%	15-20%	15-20%
Odor	Moderate	Moderate	Strong
Estimated Tissue Degradation	50%	90%	100%
Estimated Bone Degradation	0%	50%	90%
Estimated Carbon Degradation	10%	40%	75%

How to process your own chickens



By Hudson Hill

Raising chickens in your backyard can be a rewarding and educational experience.

Chickens are easy to raise, relatively inexpensive, and, with adequate feed, will take less than three months to have birds ready for consumption.

The challenge for most backyard enthusiasts is how to take a live chicken and process it for freezing. Many resources provide information on caring for chicks, proper feeding, and building facilities. This article has six steps for backyard processing that, when followed, will ensure a quality product to enjoy throughout the year.

Step One - Harvesting

The traditional images of backyard harvesting usually include an ax and a chopping block; **however, do not chop the head off of your chickens**! The hardest part of making a high-quality product is to make sure the chicken is plucked correctly; nobody wants pin feathers left in Sunday dinner. Chopping the head off the way grandpa did or breaking the spinal cord has the effect of "setting" the feathers and makes the plucking process harder. The proper way to harvest the bird with less stress is to place the bird upside down in a chicken cone or using sturdy rope or twine and cut the neck artery with a very sharp knife. Birds are left in the cone for a few minutes for this process to finish. Making sure the bird is properly secured and cut brings the least amount of stress and puts the highest quality meat into your freezer.

Step Two - Dipping

Prior to being plucked, chickens need to be put into a hot bath. This is called scalding. When done correctly, it makes the job of plucking a breeze. If you have plucked a chicken without scalding, you will be pleasantly amazed how easy birds pluck after a hot bath. The water temperature needs to be between 130 to 170 degrees Fahrenheit. For best results, use a thermometer to monitor the water temperature. Chickens will need to be scalded between 30 seconds to two minutes. You can check feather readiness by pulling wing feathers; when they come out easily, you are ready to pluck. Remember that quality of product is what you are shooting for, so, if the skin is tearing on the chicken, the bath temperature is too hot or the birds are being scalded for too long. If feathers are not coming out easily, the water is not hot enough or the birds are not being scalded long enough. Usually, after a few test birds, getting the feel for when a bird is ready for the plucker is easy.

Step Three - Plucking

The difference between a bird that looks great on the dinner table and one that does not is a bird that has been properly plucked. If birds have been harvested properly and scalded at the right temperature for the right amount of time, removing feathers is not that hard.

There are three options for the backyard enthusiast: hand plucking, using a tabletop plucker, or a tub-style plucker.

The easiest way to hand pluck is to have the bird hanging upside down and start on the drumsticks and work your way down. If the bird has been harvested and scalded correctly, the feathers on the breast and legs will basically just wipe off.

A tabletop plucker makes removing feathers quicker and easier than hand plucking and only costs around $200. If using the tabletop plucker, feathers are removed by holding the bird's legs and rolling it across the plucking fingers. Though it takes some practice to perfect this operation, after a few birds you will develop a technique, and birds will be plucked in about a minute.

The deluxe method of plucking for the backyard enthusiast would be a tub-style plucker. These machines are more expensive starting at around $1,500 and up, but many people would say they are worth it. In most tubs, two or three birds can be put in at a time or even a turkey, and they will be plucked clean in less than a minute.

Step Four - Cleaning

Finding someone with experience to demonstrate the proper method of processing chickens is recommended. At a minimum, you may want to utilize some Internet sources that show the steps. The following Web site has very clear, detailed photos to guide you through the process of evisceration: www.themodernhomestead.us/article/Butchering-Evisceration-2.html.

This is a very important step for quality. Go slow at first and work on the quality that goes into your freezer and, even more importantly, what you take out. Use sharp knives and a sturdy cutting board at your work station. You may also want to consider purchasing specialized equipment like shears and lung pullers that work well and make the job a little easier.

Understanding a little poultry anatomy will help in this step, and there are several things to make sure you remove: the crop, which is the pouch at the top of the chest where the neck and the breast meet, lungs, kidneys, and the gland on the tail. As you finish cleaning birds, use a hand sprayer attached to a hose to clean the bird inside and out and prepare it for the cold water bath.

Step Five - Cooling

The cooling process is a simple and easy way to ensure quality of product with the goal being to cool the meat as quickly as possible. One easy and successful method is to fill a clean plastic barrel or other large container with cold water, and leave the water running slowly while you add processed birds. The birds need to reach a temperature of 40 degrees within two hours. As you begin the bagging step, do some quick quality assurance. After birds have been in cold water, stubborn pinfeathers come out easily.

Step Six - Freezing

Protecting the meat from freezer burn is essential for quality; there are many ways to protect meat within the freezer. All meat loses quality in the freezer, so try to consume the meat within one year.

When putting the birds into the freezer, do not stack them any closer together or deeper than necessary. It may take several days to fully freeze them.

Although most consumers enjoy whole baking chickens, you may want to consider piecing some of your birds for uses other than baking like frying or barbecuing. If putting legs, thighs, and breasts together, vacuum sealing works great. If freezer space is an issue, whole birds take up more space than do pieced and sorted birds.

After following these six steps, you will have a quality product you raised and are able to enjoy throughout the year.

This is what I use: electric auto plucker, two hoses with source and splitter, hand sprayer, string or cones, propane cooker to heat water bath, scalding pot, work table with a cutting board, cold water barrel, knives, lung extractor, scissors, and freezing supplies.

Hudson Hill is a University of Wyoming Cooperative Extension Service educator based in Afton and serves Lincoln, Sublette, Sweetwater, Teton, and Uinta counties. He can be reached at (307) 885-3132 or hrhill@uwyo.edu.

ARE YOU FARM AND RANCH READY?

Be prepared to meet and defeat disaster

By Ron Cunningham

Even with all of the modern advantages we have today, many of us may still be at much higher risk from disasters.

Farmers and ranchers live 5, 10, or 20 or more miles from emergency responders who can help, hence putting them and their families at a much higher risk to disasters than city dwellers.

What happens if a winter blizzard hits?

What happens in the event of wild fires, forest fires, structure fires, floods, or losing electricity for days?

Are you ready for the next disaster?

Better yet, are you ***prepared*** for the next disaster?

Put together emergency kits for homes and vehicles: non-perishable food, bottled water or juice, jerky, nuts, and candy bars can be life-saving staples. Have a flashlight and extra batteries and extra warm, dry clothing in all kits for every family member. Extra coats, gloves, insulated coveralls, insulated winter boots and caps could save lives.

Have and keep a good supply of medications to treat a broad range of injuries and for normal prescribed needs (see sidebar page 11 for suggested first aid kit contents). Your medications are extremely important for you and your family's health.

Have a home evacuation plan in case of fire and practice evacuation. Decide in advance where you will meet after an evacuation. Firewise Wyoming has a one-page planning sheet at www.firewisewyoming.com/EP_Chklst.pdf.

Cell phones are popular methods of keeping in touch and doing business. More importantly, a cell phone can help others find you if stranded or lost. Most new cell phones are GPS tracked, so use them! Call before you leave on a trip or to take care of ranch work to let someone know you are going so they will know when to expect your arrival. Develop a farm or ranch emergency plan. Decide who is in charge. If something happens to that person, who is the next person to make decisions?

Keep vehicles well-maintained and in good repair. Good tires and chains can be extremely valuable. Don't forget good wipers pay dividends. Keep vehicles, tractors, and equipment full of gas and ready to use. Even owning a snowmobile or a 4-wheeler could save a life in a blizzard or flood when other vehicles cannot get to you.

Being prepared pays dividends during disasters. Collect your dividends by being prepared.

Ron Cunningham is a University of Wyoming Cooperative Extension Service educator based in Lander and serving Big Horn, Fremont, Hot Springs, Park, and Washakie counties and the Wind River Reservation. He can be contacted at (307) 332-1044 or at ronc@uwyo.edu.

Is photovoltaic technology the answer to high energy costs?

By Sandra Frost

Photovoltaic (PV) units are a high-tech method for capturing energy from the sun. Units can be panels or thin film.

Two worldwide forces are operating to reduce the installed cost of PV units. First, costs of crystalline cells used in panels are decreasing due to increasing world supplies of industrial silicon. Secondly, the thin-film PV industry is competing strongly against the crystalline cell panel industry. This is good news for consumers.

Comparison of conventional utility cost per kilowatt hour (kWh) and installed cost of PV units per kWh will provide financial information criteria for your decision.

Careful consideration of your present energy situation, energy goals, advantages, disadvantages, PV efficiency, your geographic site, and local building codes provide additional information upon which to decide whether PV units are appropriate for a home or business.

Many owners of PV systems have also chosen PV based on philosophic belief that renewable energy sources are more sustainable in the long-term than fossil fuel consumption.

Begin by gathering data to describe your present energy situation

Measure and record the amount (kWh), types (AC/DC), time of year (monthly), and time (day/night) of energy consumption. List appliances and their energy requirements and any new energy consumption being planned. The information provides what months the most power is needed. Climate conditions during those months will be important. Cloud cover will decrease the amount of PV energy available. Time of day is important because only a "day use" system without storage may be required, or a set of batteries may be needed to store power for night use. Appliances are important because those with low energy requirements will reduce the load on the PV system.

Define future energy goals

Do you want to use renewable energy to save money or help the environment, or both? Presently, the payback period on installed costs of PV may be 30 years. Do you want day-use systems for part of your energy generation? Do you want to save energy in batteries for use during cloudy weather or nights? Do you want a hybrid system of PV plus wind power or a diesel generator to meet high load demand? Do you want to be totally off the electrical grid? Do you want to be connected to the electrical grid? Find out if your utility company will purchase any excess energy the system generates.

Those who install a PV system before December 2016 are eligible for a 30-percent federal income tax credit. Wyoming offers a Wyoming State Energy Office Residential Photovoltaic Grant Program that will cover half the installation costs up to $2,000. Contact the Wyoming Business Council at (307) 777-2841 to learn more.

There are advantages, disadvantages, and limitations to PV systems. Advantages include reliability. Modules typically have a 25-year working life. PV systems are durable, low maintenance, and have no fuel costs. Owners can be on or off the electric grid.

The initial cost of a PV system compared to conventional power may be a disadvantage. Expensive batteries are required to store energy. Replacing old, inefficient appliances with energy efficient appliances such as those listed at www.energystar.gov may be necessary. Geographic variation in solar radiation due to latitude may result in lower energy efficiency during some months.

A PV system has efficiency limits

A typical PV panel efficiency rating is around 16 percent. That means the PV panel captures only 16 percent of the sun's energy striking the panel. There is a maximum amount of sunlight power of around 1kW per square meter; thus, a 1-square meter panel puts out 0.16kW. This efficiency level is a result of limitations of the semiconductor materials, shade caused by the metal grid that connects cells, and the relatively narrow spectral range of semiconductor response. The National Renewable Energy Laboratory reported a PV thin-film product had an efficiency rating of 13.2 percent. This rating is higher than earlier versions of thin-film units.

Weather exposure affects PV performance and system maintenance. Solar input varies with locations on earth. The number of hours

of sunlight, the quality, and the angle at which sun strikes the PV panels all affect energy output. Cloud cover and smog will also reduce output.

Local building codes and covenants may regulate PV systems. Check roof engineering and load limits if appropriate.

If you want to hire a designer/contractor, get more than one bid. Ask for references. Get referrals from satisfied solar customers. Ask contractors what their training has been.

Finally, be prepared for regular, periodic maintenance after installation. Prevent new plant growth from shading panels, and regularly check the storage battery charge.

For more information:

Lawrence Berkeley National Laboratory
http://www.lbl.gov/

"The installed cost of photovoltaics in the U.S. from 1998-2008, " Eyan Wiser, et al.
http://newscenter.lbl.gov/news-releases/2009/10/21/new-berkeley-lab-report-shows-that-the-installed-cost-of-solar-photovoltaic-systems-in-the-us-fell-in-2008/

Energy Star
U.S. Department of Energy
Environmental Protection Agency
www.energystar.gov

Alternative energy information
www.uwyo.edu/barnbackyard/info.asp?p=10820

Tax incentive information
http://energytaxincentives.orgbusiness/renewables.php

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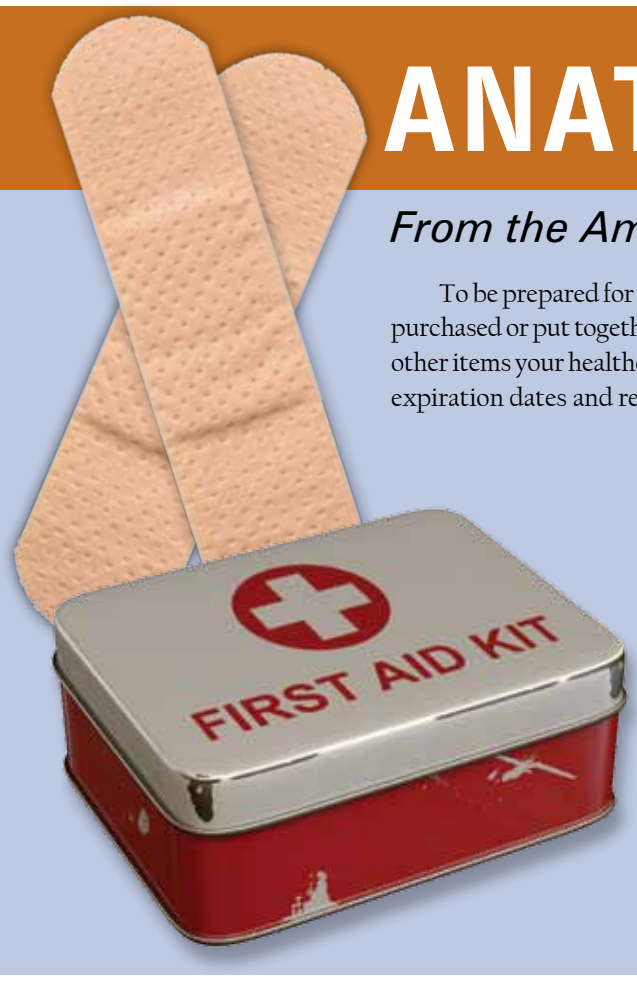
ANATOMY OF A FIRST AID KIT



From the American Red Cross (www.redcross.org/services/hss/lifeline/fakit.html)

To be prepared for emergencies, keep a first aid kit in your home and car and carry a first aid kit with you or know where you can find one. Whether purchased or put together, make sure it has all the items you may need. Include any personal items such as medications and emergency phone numbers or other items your healthcare provider may suggest. Check the kit regularly. Make sure the flashlight batteries work or add a battery-less flashlight. Check expiration dates and replace any used or out-of-date contents. The Red Cross recommends all first aid kits for a family of four include the following:

- 2 absorbent compress dressings (5 x 9 inches)
- 25 adhesive bandages (assorted sizes)
- 1 adhesive cloth tape (10 yards x 1 inch)
- 5 antibiotic ointment packets (approximately 1 gram)
- 5 antiseptic wipe packets
- 2 packets of aspirin (81 mg each)
- 1 blanket (space blanket)
- 1 breathing barrier (with one-way valve)
- 1 instant cold compress
- 2 pair of nonlatex gloves (size: large)
- 2 hydrocortisone ointment packets (approximately 1 gram each)
- Scissors
- 1 roller bandage (3 inches wide)
- 1 roller bandage (4 inches wide)
- 5 sterile gauze pads (3 x 3 inches)
- 5 sterile gauze pads (4 x 4 inches)
- Oral thermometer (non-mercury/nonglass)
- 2 triangular bandages
- Tweezers

Grasshoppers and RAATs? They're a great combination

By Scott Schell

Did grasshoppers strip your pastures and yards bare last summer?

Maybe you can use RAATs to manage them this year. I didn't misspell and mean the beady-eyed rodents. I am referring to Reduced Agent and Area Treatments, an integrated pest management (IPM) strategy developed at the University of Wyoming to provide a low cost, effective means of reducing grasshopper infestations to non-damaging levels on rangeland and around farmsteads.

Insecticides Reduced

RAATs is a simple concept, in which the rate of insecticide is reduced from label levels suitable for adult grasshoppers to lower rates that work well on the little nymphs. The amount of insecticide is also reduced as treated swaths are alternated with untreated swaths to take advantage of the grasshopper's mobility.

For more information, please visit:

www.uwyo.edu/grasshopper/
www.uwyo.edu/grasshopper support/Html_pages/raats.htm

RAATs work through *chemical control*, meaning grasshoppers are killed in treated swaths and as they move out of untreated swaths, and *conservation biological control*, which allows insect predators and parasites preserved in untreated swaths to continue to prey on grasshoppers.

This integrated pest management (IPM) approach can reduce the cost of control and the amount of insecticide as compared to traditional blanket treatments by more than 50 percent. Eradication of grasshoppers is not the goal of RAATs as leaving some grasshoppers after treatment as a food source for other animals keeps the environment healthier and more in balance in the long-term. Less insecticide in the environment lowers the risk to non-target species like fish, wildlife, and humans.

The untreated swaths provide a refuge for organisms with lower mobility than grasshoppers, and even those insects that move into

the treated swaths will be largely unaffected unless they feed on treated foliage.

Treat the Nymphs

The key to success with RAATs is determining when pest grasshoppers start to hatch in the spring and then treating them while the nymphs are still less than ½-inch long. RAATs can be done by air, ground, and with sprays and bait. Of the current products registered for grasshopper control, Dimilin 2L has ideal properties for successful RAATs programs and reducing impacts on non-target animals. It only kills immature insects that eat the treated foliage by interfering with the production of chitin. Chitin is only found in insects and other arthropod exoskeletons.

Dimilin 2L is the least toxic of currently registered compounds and is applied at the lowest dose to take advantage of grasshopper nymphs' gluttony.

Early planning, organization, and survey is critical to preventing the devastating late-summer damage grasshoppers can inflict.

Joining with neighbors and visiting with local University of Wyoming Cooperative Extension Service (UW CES) educators, county weed and pest control district officials, and licensed applicators about planning and applying RAATs IPM strategies will be the best way to prevent grasshopper problems from happening.

UW CES county contact information is at http://ces.uwyo.edu/Counties.asp.

Wyoming weed and pest control district contact information is at www.wyoweed.org/addresses.html.

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Correct identification of insect order important for pest control

By Sandra Frost

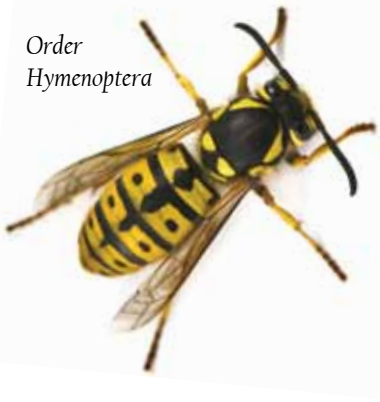
About 1 million insect species have been described by scientists.

More than 90,000 of them are in North America, and between 10,000 and 15,000 are in Wyoming.

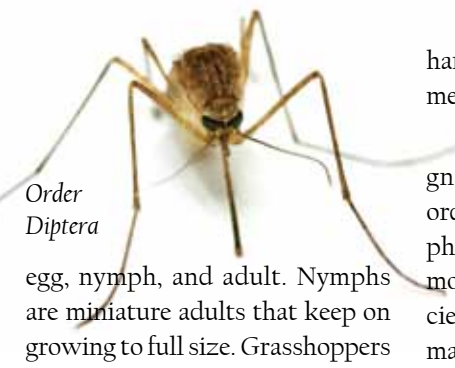
Less than 1 percent of all insect species are serious pests that affect humans, their animals, crops, structures, or fiber.

Scientists distinguish among living organisms based on kingdom, phyla, class, order, family, genus, and species. The insect class is in the animal kingdom, Arthropoda phylum. The class of insects is divided into orders based upon broad characteristics such as mouth parts or life cycle. A successful pest control strategy is based upon correct identification at the order level because pest control strategies commonly target an insect that eats in a particular way or a particular, vulnerable stage of growth.

An insect may have either a simple or complete metamorphosis life cycle. A simple life cycle is



Order Hymenoptera



Order Diptera

egg, nymph, and adult. Nymphs are miniature adults that keep on growing to full size. Grasshoppers are examples of simple metamorphosis. Complete metamorphosis includes four stages: egg, larvae, pupae, and adult. Butterflies (Lepidoptera) are an example of complete metamorphosis.

A short description of orders that include the most common crop and garden insects will help with identification. Life cycle, mouth parts, and wings are useful characteristics for identification.

Coleoptera (beetles, weevils) – These insects undergo complete metamorphosis. Larvae are worm-like. Adults have chewing mouthparts and two pairs of wings. The outer pair of wings is hardened. Pest species include blister beetles, Mexican bean beetle, wireworms, flea beetles, and western corn rootworm.

Dermaptera (earwigs) – These insects undergo simple metamorphosis. Mouthparts are the chewing type. They have short, hardened outer wings and folded, membranous inner wings.

Diptera (flies, mosquitoes, gnats, midges) – Species in this order undergo complete metamorphosis. Larvae may have chewing mouthparts or mouth hooks. Species with mouth hooks are called maggots. Adults have one pair of wings. They have either sponging or piercing mouthparts. Members of this order may be pests (such as mosquitoes or sugar beet root maggot) or beneficial insects (such as parasitic flies that control pests).

Hemiptera (stinkbugs, plant bugs, squash bugs, boxelder bugs) – Metamorphosis is simple in this order. Adults have piercing-sucking mouthparts and two pairs of wings. Adults and nymphs are both damaging in pest species (lygus bug in seed alfalfa). Some species (such as damsel bugs), however, are predators of harmful insect pests (such asaphids).

Homoptera (scale, mealybugs, whiteflies, aphids, leafhoppers) – These insects undergo simple metamorphosis. There can be winged and unwinged adults within the same species. Adults have sucking mouthparts. Many members of this order are carriers of plant pathogens. Homoptera that damage crops include leafhoppers, spotted alfalfa aphid, and Russian wheat aphid.

Hymenoptera (bees, ants, wasps, sawflies, horntails) – These insects undergo complete metamorphosis. Adults have two pairs of membranous wings and generally have chewing mouthparts. Many Hymenoptera are beneficial insects that help control pest species. Two species necessary to crop production are the honey bee and the leaf-cutter bee.

Lepidoptera (butterflies, moths) – Members of this order undergo complete metamorphosis. Larvae are worm-like caterpillars with chewing mouthparts that feed voraciously. Adults have two pairs of membranous wings covered with small scales. The mouthpart is a coiled sucking tube. Adults feed on nectar. Crop pests in the larvae stage include the alfalfa looper, corn earworm, army cutworm, and true armyworm.

Orthoptera (grasshoppers, crickets) – These insects undergo simple metamorphosis. Nymphs resemble small adults and molt four to five times as they grow into adults. Adults have two pairs of wings. Mouthparts are the cutting and chewing type. Grasshopper populations can reach high numbers and damage crops over a wide region.

Order Hymenoptera

Identification of an insect at the order level allows producers to plan integrated pest management strategies based on life cycle and mouthparts. Take an insect sample to a University of Wyoming Cooperative Extension Service educator in your county for complete identification.

Additional resources:

http://ces.uwyo.edu/Entomology.asp

The Wyoming School IPM site www.uwyo.edu/wyschool_ipm/

Reduced Agent and Area Treatments www.uwyo.edu/grasshoppersupport/Html_pages/ghwywfrm.htm

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