


BARNYARDS & BACKYARDS



UW Cooperative Extension Service  Profitable & Sustainable Agricultural Systems



UNIVERSITY OF WYOMING
College of Agriculture



United States
Department of Agriculture
Risk Management Agency

Articles address variety of topics of interest to Wyoming residents

By Ron Cunningham and Wayne Tatman

On behalf of the University of Wyoming Cooperative Extension Service (UW CES) and the Profitable and Sustainable Agricultural Systems (PSAS) Initiative Team, we welcome you to the third year of our efforts to provide the people of Wyoming with the newspaper insert *Barnyards & Backyards*.

This is an outreach effort to share educational resources and information on a variety of topics of interest to you, our clientele. The two newspaper inserts we publish each year are distributed through several newspapers in the state.

An insert similar to this in February covered topics on livestock production, risk management in agriculture, meat quality assurance, animal identification, and Wyoming AgrAbility, which is working to ensure success in agriculture for people with disabilities and their families.



Ron Cunningham

Persons interested in receiving a copy of the February insert can contact the UW CES office in Goshen County at (307) 532-2436, or e-mail Wayne Tatman at watman@uwyo.edu. The copies are free.

The PSAS team each month also publishes a special page in the *Wyoming Livestock Roundup* that addresses livestock and crop issues.

The team hopes both of these inserts are beneficial, and we hope you enjoy reading them. Most of the articles are written by per-



Wayne Tatman

sonnel with UW CES and the UW College of Agriculture.

In addition to these media efforts, the PSAS team continues to offer educational opportunities to Wyoming residents, addressing needs of farmers, ranchers, small-acreage owners, homeowners, and others.

Examples of these efforts include the Wyoming Ag Profitability Conference in cooperation with the Wyoming Stock Growers Association and Wyoming Wool Growers Association, pesticide applicator training schools, Farm and Ranch

Days around the state, the Wyoming Beef Symposium, UW CES Master Gardener programs, and many other meetings, tours, and workshops open to the public.

We hope you take the opportunity to contact any of the authors for additional information, and suggest future topics for stories to Ron Cunningham or Wayne Tatman.

Tatman can be contacted at (307) 532-2436 or watman@uwyo.edu. Cunningham can be reached at (307) 332-1044 or ronc@uwyo.edu. Ideas can also be shared with local CES offices across the state. A list of county educators is available at <http://ces.uwyo.edu/Counties.asp>.

Wayne Tatman is a UW CES educator for Goshen, Laramie, and Platte counties. Ron Cunningham is a UW CES educator for Fremont County and the Wind River Indian Reservation.





AGR-Lite: A new crop insurance option

By James Sedman
and John Hewlett

Wyoming producers have a wide array of risk-management options available under Federal Crop Insurance Corporation programs.

These programs cover losses in yield or revenue for both crop and livestock commodities. Many producers may not be able to receive coverage under these programs for reasons such as size of operation, having low or no actual production history (APH) yield records, or not having enough coverage to cover small losses.

For these and other reasons, there is a new type of crop insurance available: Adjusted Gross Revenue (AGR)-Lite. This product was designed for operators unable to receive coverage under traditional crop insurance programs (such as organic products or exotic animals) and producers who need more complete total revenue coverage than available under more traditional products.

What is AGR-Lite?

AGR-Lite is a whole-farm, enterprise-based insurance program designed to protect a producer's total revenue against changes in price and yields. This policy can be used in addition to other crop insurance policies or by itself. While other types of crop insurance focus on individual crops and livestock and determine indemnities accordingly, AGR-Lite pays indemnities when whole-farm revenue declines below a target level. The coverage period for the product is an entire fiscal year and not a single crop production period.

Who is eligible?

AGR-Lite is available to producers actively engaged in farming or ranching and having at least 10-percent ownership interest in the business. To be eligible, a producer must have five consecutive years of Internal Revenue Service Form 1040 (Schedule F) or other tax returns and a total



John Hewlett

adjusted annual gross income less than \$2,051,282.

An eligible producer's total income from ag commodities purchased for resale must be less than 50 percent. Most crop and livestock enterprises are eligible for coverage under AGR-Lite, including greenhouse or nursery crops and organic production. Crops and livestock not available include timber production and animals for show or pets.

How Does AGR-Lite Work?

The producer first calculates a five-year average gross farm revenue from his or her tax information. Then the producer calculates an expected gross farm income from farming enterprises for the upcoming production year. This information is used to calculate adjusted gross revenue.

The producer then selects a coverage level up to 80 percent of adjusted gross revenue, which determines the trigger revenue. An indemnity payment is paid the following year if the actual revenue falls below the trigger level.

For example, a Wyoming producer who sells grass hay, custom feeds cattle, and sells millet hay has adjusted gross revenue of \$250,000. The producer selects an 80-percent coverage level and 90-percent payment rate, which give a trigger level of \$200,000. Assume a widespread drought reduces hay sales and millet sales but custom feeding rev-

enue remains the same for total gross revenue of \$180,000. The indemnity is calculated by taking the revenue shortfall of \$20,000 times 90 percent, yielding an indemnity payment of \$18,000.

For More Information:

Contact a local crop insurance agent for more information on AGR-Lite coverage. The agent will be able to assist in risk management planning to determine the best coverage level for an operation.

For more information on this and other risk management topics, visit the Western Risk Management Library at agecon.uwyo.edu/riskmgt or the U.S. Department of Agriculture's Risk Management Agency at www.rma.usda.gov.

James Sedman is a consultant to the University of Wyoming Department of Agricultural and Applied Economics, and John Hewlett is a farm and ranch management specialist in the department.

Prevent injury or death while moving large hay bales

By Randy R. Weigel

Large, round bales provide an efficient and economical way to harvest hay; however, they also pose safety problems.

The bales can weigh 1,500 to 2,000 pounds—the weight of a small car. Large, round bales are bulky and heavy. The bales are designed to repel rain and prevent spoilage; their shape allows them to easily roll down inclines or off raised loaders.

The National Institute for Occupational Safety and Health (NIOSH) estimates that approximately 75 agriculturalists were killed from 1992 through 1998 while harvesting, handling, or working near large round bales and bale-handling equipment. Forty-two of these workers were killed while preparing bales for transport or while moving them. Tractors were involved in 34 of these 42 in-

cidents. In a number of these deaths, rollover protective structures (ROPS) on tractors and handling equipment were not used, and parked tractors were not secured to prevent them from rolling.

Case in Point

Farmers and ranchers are at-risk of being struck by bales that fall from equipment during transport:

A 70-year-old farmer died from injuries received when a large, round bale fell out of the bucket of a tractor-mounted front-end loader. The bale pinned him against the tractor seat. The loader did not have a grapple or spear for holding bales in place. Instead, the farmer had tied the bale with a 5/8-inch diameter rope. The rope broke, and the bale tumbled down the loader lift arms, striking and killing the farmer. (Minnesota Department of Health)

Preventing Injury or Death

To reduce the risk of injuries and deaths, NIOSH recommends the following:

- Rig tractors with ROPS and a seat belt. Use the seat belt even when driving tractors with ROPS.
- Make sure equipment is in good repair, weighted properly, and able to carry the load safely and securely.
- Before beginning work, plan the safest travel path. Whenever possible, use paths that are flat, firm, free of obstructions, and a safe distance from holes, ditches, and ruts.
- When stacking, loading, or moving bales with a front-end loader, use attachments designed to handle large bales, such as grapples and front-end bale spears.
- Do not raise or lower loaders while the tractor is moving.
- When moving bales but not stacking or loading them onto trailers, use tractors having a rear-end bale spear attachment if possible.
- Use tractors with headlights, taillights, and warning flashers and turn them on when moving bales. Be

sure the lights are not obstructed when bales are moved with attachments in the safe, lowered position. Moving bales during daylight hours is preferred.

- When moving up or down sloping land, keep the bale on the upslope end of the tractor with the attachment in the lowest possible position. For example, if using a front-end loader, the operator should drive uphill or back downhill. If a rear-end spear attachment is used, drive downhill or back uphill.
- If the operator must leave the tractor, lower the attachments, stop the engine, remove the key, and secure the tractor to prevent it from rolling.
- Make sure tractor front-end loaders are counterbalanced. Check that axles and tires are strong enough to cope with the maximum loads imposed on them. Don't exceed the rated capacity of lifting machinery.

Transporting and stacking large hay bales have resulted in numerous injuries and deaths. Many of these incidents could have been prevented had equipment



Randy Weigel

more suited to the job been used and more care taken by the operators when using the equipment. **Assess the risks before starting.**

For more information about safe handling, transporting, and stacking large hay bales, preventing other types of secondary injuries, or how Wyoming AgrAbility can help you or someone you know who is experiencing a limitation or impairment, contact Wyoming AgrAbility toll-free at (866) 395-4986, agrability@uwyo.edu, or www.uwyo.edu/agrability.

Randy Weigel is a University of Wyoming College of Agriculture professor and extension specialist and is the Wyoming AgrAbility project director.





The federal crop insurance program: Risk management for Wyoming producers

By James Sedman
and John Hewlett

Crop production in Wyoming is a risky business, no matter what the crop. Ongoing droughts, weather events, volatile crop and input markets, and other factors necessitate a solid risk-management plan that may also include some form of crop insurance.

A wide array of options are available to crop producers under the Federal Crop Insurance Corporation, including several new and updated programs designed to provide coverage to producers who previously did not qualify or whose previous coverage did not fit their operations. While not all insurance options are available in all areas, chances are good there is at least one option available.

By knowing which type of insurance policy fits an operation, producers can better plan for the production year. Crop policies available fall into three general categories: yield or actual production history (APH)-based policies, revenue-based policies, and whole-farm-based policies.

Yield/APH Crop Insurance

APH-based crop insurance policies depend upon a producer's yield history – the APH – for a particular crop. If no yield history is available, a transition yield is provided by the U.S. Department of Agriculture's Risk Management Agency (RMA).

Multiple-peril crop insurance (MPCI) policies are the most common crop insurance policies and have the longest history of use in the United States. MPCI insures against yield loss either on a whole-farm or specific-unit (farm or acreage) basis. Unit availability can vary by area and producer, so producers should check with a crop insurance agent for details.

To establish an MPCI policy, a producer selects a yield election for the acres insured, usually 50 to 95 percent of the APH yield depending on the policy and area. A trigger yield and a price election are then established, which determine the yield and price level at which indemnities are paid.

If a producer suffers a yield loss, then an indemnity is calculated by first determining the actual yield and subtracting that from the trigger

yield. This is multiplied by the price election, which gives the per-acre indemnity. It is important to note MPCI policies do not pay indemnities if prices change – only if a yield loss occurs. MPCI policies are generally available for most program crops as well as alfalfa and other forages.

Revenue Insurance Policies

Crop insurance policies that insure a certain level of revenue came about through the needs of producers to insure a certain level of revenue regardless of price or yield changes. Whereas MPCI policies protect producers against specific yield losses, revenue insurance policies insure against changes in price and yield fluctuations.

Crop revenue coverage (CRC) and revenue assurance (RA) policies are two such policies and tend to start much the same way as MPCI policies. They utilize a producer's individual APH and may be available for whole-farm or more specific-acreage units. Yield elections tend to be from 65 to 85 percent of APH yields.

Producers set a minimum revenue guarantee by establishing a price election.

Indemnities are paid if either yield or price causes total revenue to drop below the minimum revenue guarantee. RA and CRC policies are similar, as each may allow for increases in price at harvest over the established price in the policy. This feature is optional under RA policies and standard under CRC contracts.

Whole-Farm and Income Protection Insurance

Income protection (IP) policies are similar to other revenue insurance products but tend to be less specific in their coverage. The APH yield is still used but as a part of the total revenue guarantee. IP contracts are only available for a whole-farm unit. In other words, a producer must insure all of the acres of a crop in a county under one contract. This means a more localized yield loss, such as a hailstorm on limited acres, may not result in an indemnity payment. Income protection insurance is a way for producers to insure a level of income for their crops but at a lower price than under more extensive coverage policies.

A new type of crop insurance policy available this year

is called AGR-Lite, short for Adjusted Gross Revenue-Lite. This policy is a whole-farm revenue insurance product designed to provide coverage to producers who may not qualify for other crop insurance or may not have a large enough operation to make other crop insurance worthwhile. See the companion article on page 2 about AGR-Lite for details.

Knowing what crop insurance options are available is more important now than ever. With increasingly volatile commodity prices, the new farm bill crop support payment system may be more oriented toward crop insurance than the current direct-payments system. Consult with a local crop insurance agent to form a risk-management plan that works for your situation.

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

James Sedman is a consultant to the University of Wyoming Department of Agricultural and Applied Economics, and John Hewlett is a farm and ranch management specialist in the department.



Recognizing and responding to drought on rangelands



Michael Smith

By Michael Smith

Recognizing drought is a matter of perspective. To a resident of Iowa, Wyoming is always in a drought. Laramie, for example, receives 12 inches of precipitation in a good year, and it's especially good if 25 percent comes in spring – the best time.

There has been a tendency to confuse water-supply drought with forage-production drought. Irrigators and municipalities are concerned about low winter snow amounts in mountain watersheds that supply reservoirs and streams for direct flow withdrawals; however, the plains rancher is affected much more by low spring rainfall or snowfall.

Spring precipitation is the primary influence on forage production. Recurring years of low snowfall shriveling springs and streams that provide drinking water is also a concern for ranchers and wildlife managers.

The need for more reliable sources of water becomes more evident in drought.

Better Years Remembered as Normal

Relatively small departures from “normal” might be noticed in an area that usually receives low precipitation. Unfortunately, the better years are often remembered as normal. The reality is half or more years are below average.

Using Saratoga, Thermopolis, and Worland to represent a cross section of precipitation zones, 63 percent, 52 percent, and 48 percent of the years, respectively, since about 1948 were below normal. Normal – what we expect to see in most years – is likely to be below average.

Drought in Wyoming may always seem severe but, compared to areas where the precipitation is driven by isolated convective storms,

the state seldom fails to receive some precipitation in a particular location. Regional storms provide the most effective precipitation with relatively widespread moisture compared to isolated rainfall from thunderstorms.

For Saratoga, Thermopolis, and Worland, the respective departures from average annual precipitation characterizing the worst drought years are 53, 59, and 49 percent. Seasonal departures from average may be more severe. As little as 15 percent of average April precipitation was recorded at Saratoga in 2002. Similar departures from average spring precipitation were noted in 2006. These severe departures from average seldom occurred over the last several decades, and the frequency of multi-year droughts is relatively low.

The three locations have had, respectively, five, two, and three periods of below-average precipitation lasting three years over the last 40 years. The lowest forage yield year in the last 19 at Saratoga still had about 50 percent of average forage production.

Probability predictions of above- or below-average precipitation are available at <http://www.cpc.ncep.noaa.gov/products/predictions/30day/>. Local information is usually available to allow

growing season predictions. The Natural Resources Conservation Service, in conjunction with the Bureau of Reclamation, provides snowpack levels and expected availability of irrigation water. Go to www.wy.nrcs.usda.gov/snow/.

Spring Moisture Effects

Spring moisture has the greatest affect on rangeland forage. Fall and winter precipitation has little relationship with the growing season's forage production.

Successfully predicting the effects varies with elevation and plant community

invisible until stimulated into growth). They also do not grow well when temperatures rise. The amount above or below average indicates whether a producer should plan on maintaining, decreasing, or increasing stocking levels. For most of Wyoming, if precipitation has not occurred in the mid-March to May window, expect that forage production will be low and grazing plans should be accordingly adjusted. Similarly, if above average precipitation occurs in that time period, there may be opportunities to take advantage of additional forage.

Using low-stress livestock handling techniques while herding can be effective in getting animals beyond their normal daily travel range – but this is an every-day job. Hauling water can help ensure cattle are at a desired location to get the forage resource – and no additional herding is required.

On summer pastures, surface pipelines can effectively provide drinking water and can help move animals by controlling access to water.

Modifying a ranch management system is effective in reducing the risk of the next drought. No rancher wants to



types. At the research site near Saratoga – slightly more than 7,000 feet in elevation and with a plant community comprised heavily of cool-season grasses – mid- to late-April precipitation provides a high-prediction capability for peak summer forage.

The forage prediction window opens early- to mid-March for lower elevations and extends to late May-early June. Data from these sites were also less precise in predicting forage yields. Forage prediction differences between higher and lower elevation locations in predicting forage yields are due to earlier thawing of soil, earlier greening of vegetation, and more warm- season grasses at lower elevations.

Generally, the proportion of precipitation peaks in May and drops for each succeeding month. The probability of receiving sufficient precipitation in May or later to overcome low precipitation in early spring is relatively low, suggesting that deciding what summer forage/cattle management strategy to implement should be made by the end of April. Precipitation after May has little impact on forage yields. Cool-season plants mature and form seeds as the soil dries and temperatures warm. After that, they have to renew growth from adventitious buds (latent or dormant buds on a stem or root often

Management Practices

A number of management practices may help lessen the effects of drought on a livestock producer and forage resource. Rangeland plants in Wyoming show little long-term effects of periodic drought. Managing use levels or residual forage amounts in a pasture during the critical growing period of cool-season grasses (early boot to soft dough stage, as the seed stalk elongates) and subsequent deferment the same time next year can maintain long-term plant health.

Pastures grazed outside the critical period need to have residual forage to provide adequate amounts for grazing animals and soil surface protection. Simple, rotational-deferred grazing systems or short-duration grazing systems that do not graze the same pasture at the same time every year will help maintain a healthy forage base.

Deferring grazing solely for drought recovery is not warranted if a grazing program provides periodic deferment during the critical growing period.

Providing an adequate amount of well-distributed water for livestock is a major concern, drought or not. Often, adequate forage is available in dry years if additional water can be provided to livestock to ensure stock can get to the forage and not over-use areas closer to remaining water sources.

sell breeding stock. Having a portion of the ranch herd, such as retained yearlings that can be sold earlier than normal and in response to impending forage shortage, can be an advantage. Herd management practices such as later calving shift the cow's nutrient needs so grazing in winter is more feasible and reduces reliance on irrigated harvested forage. Early weaning and selling or backgrounding calves can reduce forage needs.

Cattle most likely to be culled can be identified before drought is expected. Sale should be early before prices decline and additional forage is used.

Drought unquestionably reduces the harvestable production on a ranch, but drought can be anticipated. Water facilities, a flexible management system, and planning timely actions will minimize drought's impact and provide opportunities to take advantage of better times. Specific information on drought in Wyoming is available at www.wrds.uwyo.edu/wrds/wsc/dtf/drought.html.

Mike Smith is a University of Wyoming Cooperative Extension Service range management specialist and a professor in the UW Department of Renewable Resources. He can be reached at (307) 766-2337 or pearl@uwyo.edu.





Sustainable agriculture farmer/rancher grants available

By Jennifer Jones

Have you been mulling over a great idea for improving farm or ranch production, but you just don't have the money to give it a whirl? There is a grant program that is looking for you!

The Western Region Sustainable Agriculture Research and Education (WSARE) is a competitive grants program of the U.S. Department of Agriculture that supports economically viable, environmentally sound, and socially responsible agricultural systems.

Several types of competitive grants are available.

One is the Farmer/Rancher Grant, which allows recipients to conduct research and/or on-farm demonstrations and educational outreach in areas of sustainable agriculture.

WSARE is particularly interested in projects that help meet its program goals, which are to:

1. Promote good stewardship of the nation's natu-

ral resources by providing site-specific, regional, and profitable and sustainable farming and ranching methods that strengthen agricultural competitiveness; satisfy human food and fiber needs and maintain and enhance the quality and productivity of soil; conserve soil, water, energy, natural resources, and fish and wildlife habitat; and maintain and improve the quality of surface and ground water.

2. Enhance the quality of life of farmers and ranchers and ensure the viability of rural communities, for example, by increasing income and employment, especially profitable self-employment and innovative marketing opportunities in agricultural and rural communities.
3. Protect the health and safety of those involved in food and farm systems by reducing, where feasible and practical, the use of toxic materials in agricultural production and optimizing on-farm resources and integrating, where appropriate, biological cycles and controls.
4. Promote crop, livestock, and enterprise diversification.
5. Examine regional, economic, social, and environmental implications of adopting sustainable agriculture practices and systems.

The amount that can be requested for a Farmer/Rancher Grant is \$15,000 for one producer or a total of \$30,000

for a project involving three or more producers.

What should a producer consider when contemplating applying for a Farmer/Rancher Grant?

- The WSARE Web site (<http://wsare.usu.edu/grants/>) offers general information about its programs and applying for grants. Take a look at the information provided for Farmer/Rancher Grants. Determine if your idea is one WSARE might fund and if you are willing to take on all the responsibilities and time commitments such grants require. Make sure you can meet any requirements outlined. Information for the upcoming application period (2008) should be on the WSARE Web page by mid-April. Deadline for applications is December 7.



- Next, write down the goals of the proposed project and how you would go about carrying them out. What are the resources needed in the areas of time, equipment, personnel, supplies, etc., to pull the project off?

- After those have been outlined, find an agricultural or natural resource professional who might be interested in collaborating in this project, since these grants require such a professional to serve as a technical adviser. Bounce the idea off these professionals to see if they'd like to join the proposed project in this capacity; they might have some additional ideas that could refine the project and/or the proposal. (often times these folks are local Cooperative Extension Service educators or Natural Resources Conservation Service employees)
- Set aside a block of time to write the proposal and have it ready to be submitted before the December deadline. (Read it ahead of time to prepare, and then sit down and fill out the application – it's only a couple pages long.)

What do reviewers look for when reading a proposal?

- Did the applicant follow directions in the Request For Applications (RFA)? (Basically did you give them the information they requested in the format they requested it in? If not, the application may be thrown out without further review.)
- Did the applicant think the project out thoroughly and create a clear plan of action, and was it all clearly communicated to the reviewers? Don't assume reviewers will understand or know things they aren't told.



Jennifer Jones

- Does the project address WSARE's goals?
- Is the idea creative, and could it, if successful, be used by other farmers and ranchers?
- Does it seem feasible? (Can it be pulled off with the resources requested?)
- Does the applicant have a plan to communicate results of the project to others?

Grant programs such as this one provide great opportunities for possibly once-in-a-lifetime opportunities to test ideas; however, they also require good planning and commitment of substantial amounts of time and effort.

Read the RFA very carefully, give it intensive consideration, and then decide whether to give it a whirl. For more information, visit the WSARE Web page, call the WSARE office at Utah State University at (435)797-2257, or e-mail wsare@ext.usu.edu.

Jennifer Jones is the grant coordinator for the University of Wyoming Cooperative Extension Service. She can be reached at (307) 766-3549 or jsjones@uwyo.edu.

Land management conference in Riverton August 27-29

A land-management conference combining tours, concurrent sessions, and speakers is August 27-29 at the Riverton Holiday Inn Convention Center.

Topics for "The Building Blocks of Success: Living and Working on the Land" conference include starting a new enterprise, xeriscaping, estate planning, controlling weeds, farm recreation, small-farm strategies, monitoring the land's health, windbreaks, and more.

This conference combines tours, concurrent sessions and nationally-known speakers such as author and farmer Joel Salatin. Salatin is a farmer in Virginia and an author of books on agriculture and food production.

Contact University of Wyoming Cooperative Extension Service Specialist Cole Ehmke at (307) 766-3782 for more information. A newspaper insert with the program schedule and other information will be published in July.





Proper well maintenance helps ensure good water supply

By Adam Sigler,
Suzanna Carrithers,
and James Bauder

Being a private well owner carries a number of responsibilities. Unlike those using public water systems, private well owners cannot depend upon the government to monitor the quality of their drinking water.

Private well owners should conduct their own water sampling and understand what can be done to help protect their water source.

Protect the Wellhead

The wellhead is part of the well where it meets the ground surface and is capped. Well owners should be familiar with the wellhead location and should monitor the condition of the wellhead and its surroundings.

Soil removes many contaminants as water moves into the ground. This filtering function is why ground water typically has good quality; however, as a well

is drilled, it cuts through the filtering layers and provides a quick path for contaminants to travel to ground water if the well is not properly constructed and maintained.

Easy steps to protect the wellhead:

- Ensure the well has a "sanitary well cap" with a rubber gasket and a screen over the vent to help keep insects and rodents out of the well. If the well is not equipped with a sanitary well cap, contact a certified well driller about installing one.
- Ensure the casing (outer wall of the well) extends at least a foot above the ground. If not, check with a certified well driller or plumber about adding a short extension.
- Ensure the ground surface is sloped so water flows away from the top of the well and does not pond near the well.
- Install backflow prevention valves on outdoor faucets. These simple, one-way valves can be found at hardware stores and help prevent



Private wells should be tested annually for nitrates and bacteria through a certified drinking water testing laboratory.

water from siphoning back and carrying contaminants into the water system when the faucet is turned off.

Keep a "Well File" and "Septic File"

Keeping a "Well File" and a "Septic File" with all information related to a water system is an important part of protecting water resources. Good records make scheduling water system maintenance easier and can help with isolating potential causes if a change in water quality occurs.

Well files should include:

- Construction information including the name of the driller and drilling company, total depth, depth to water, and other information available such as gallons per minute the well produces and the geology the well is drilled through.
- Maintenance records including what was done, when, and who did the work. Include any information about required maintenance for water treatment systems and septic pumping.
- Water quality test results including laboratory reports, information provided for result interpretation, and date and cost of testing.

Well Water Quality Testing

Regular sampling of well water is essential to monitor the quality of a water supply and detect any changes. Test for nitrates and bacteria every year. It is also a good idea to do a thorough test initially and consider repeating this more comprehensive test every five years. Check with a local health department or county extension educator for a list of certified drinking water testing laboratories. Most laboratories will mail out sampling bottles and instructions for water sampling. Wyoming information sources include the Wyoming Department of Agriculture Analytical Services Laboratory (<http://wyagric.state.wy.us/aslab/aslab.htm>), which can conduct all testing of water samples. The department can be reached at (307) 742-2984. A complete list of available laboratories that test water samples can be obtained from the Wyoming Department of Health's public health laboratory <http://wdhfs.state.wy.us/lab/index.asp> or (307) 777-7812. Information about groundwater and drinking water is available at the Wyoming Department of Environmental Quality - Water Quality Division <http://www.epa.gov/safewater/> or (307) 777-7343. The Wyoming Department of Environmental Quality's Groundwater Pollution Control Web page is at <http://deq.state.wy.us/wqd/groundwater/index.asp>.

WATER QUALITY PARAMETERS

For Human and Livestock Consumption

No one is responsible for testing your private water well except you!

The following three components are not regulated, but the U.S. Environmental Protection Agency (EPA) does provide guidelines for maximum levels, above which taste, odor, or clarity may be affected. These guidelines are called National Secondary Drinking Water Standards.

Total Dissolved Solid (TDS) – 1,500 parts per million (ppm) or less

The EPA has recommended that domestic public water supplies not contain more than 500 ppm TDS.

Sulfate – 750 ppm or less

The EPA recommends 250 ppm or less for public water supplies.

Sodium –

The EPA recommends a maximum sodium level of 20 ppm for people on low sodium diets or who have high blood pressure or heart trouble. Quality drinking water may contain up to 115 ppm sodium.

The following two components are regulated by EPA maximum contaminant levels (MCLs) through National Primary Drinking Water Standards because of potential health hazards.

Nitrate – 10 ppm or less

Total coliform bacteria (includes fecal coliform and E. coli)

Total coliform bacteria (TCB) is an indicator of potentially harmful bacteria, and EPA has an MCL goal of 0 detections. The actual MCL is more complicated and is based on maintaining very few detections over a large sample group. TCB should not be detected in drinking water.

Typical water use amounts

- 1 acre of hay = 3.3 acre feet
- 1 acre of corn = 2.7 acre feet
- 1 acre of barley = 2.0 acre feet
- 1 acre of sugar beets = 2.7 acre feet
- 1 average person = 158 gallons/day
- 1 200-pound pig = 4 gallons/day
- 1 1,000-pound beef cow = 10 gallons/day
- 1 laying hen = 0.5 gallon/day
- 1 200-pound ewe = 2 gallons/day

Suitability for livestock use

- TDS – 1,000 ppm or less
- Sulfate – 500 ppm or less
- Nitrate – 10 ppm or less
- Sodium – 500 ppm or less

REFERENCE: <http://www.epa.gov/safewater/mcl.html>



Potential Contaminant Storage

A drawing of a property depicting a well and surroundings is helpful. Include the septic tank and drainfield, home, slope of the ground surface and other information such as garage, animal pens, streams, and ditches.

Draw rings around a well at 50, 100, and 250 feet. These rings represent zones where different potential contaminants should not be located or stored. Consider what is upslope from a well and what could run off with rains or snow melts.

Less than 50 feet – Any sewer line should be outside this zone.

Less than 100 feet – Septic tanks, leach fields, livestock yards, fuel tanks, pesticides, and fertilizer storage should be outside this zone.

Less than 250 feet – Manure storage piles should be outside this zone.

These separation distances are minimums; ask your county planning department about septic system regulations.

Septic System Maintenance

Septic systems are designed to break down and discharge household wastewater so it does not impact surface or ground water. Neglecting to have a septic system pumped on the recommended schedule, excessive household chemical use, or sending excessive

water to a septic tank at one time can shorten the life of a septic leach field.

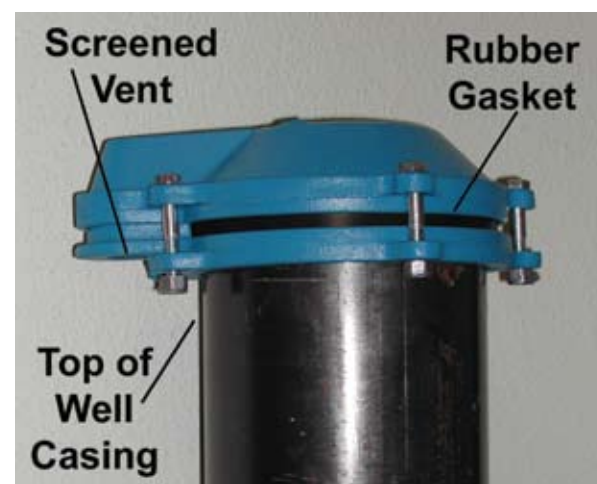
A failed leach field will lead to the expense of new leach field construction and potential contamination of ground water and/or surface water, and it can also cause a mess! For more information on septic system function and maintenance, see <http://waterquality.montana.edu/>.

Sealing Old Wells

Improperly sealed, abandoned wells pose a large threat to water quality. Property with a long history of inhabitation is more likely to have abandoned wells. Looking in small structures and sheds, inquiring with neighbors, or checking with the county planning department are ways to search out possible abandoned wells. Such wells should be sealed by a professional well driller to ensure they will not allow contamination of the ground water.

Fifteen percent of all Americans and more people in rural Western states depend upon private wells, which are typically safe and reliable water sources if constructed and maintained properly. Private well owners play an important role in ensuring the continued integrity of the valuable ground water resources.

(This article first appeared in the magazine *Barnyards & Backyards* [barnyardsandbackyards.com])



A sanitary well cap is a critical component of a properly maintained well system.

published by the University of Wyoming Cooperative Extension Service.)

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Everyday assistive technology for the farmer/rancher

By Amanda O'Brien

What exactly is assistive technology (AT)? AT can be anything, bought or made, that helps to increase the functional capabilities and independence of people who face limitations in a given area of their lives.

Some AT devices can be very high-tech (such as computer-assisted communication devices or motorized wheelchairs), but some can be as simple as a piece of duct tape. Duct tape is not assistive technology until it is used to improve an individual's independence or quality of life. An example would be wrapping tape around a fork to create a larger surface area for an individual who may otherwise have difficulty grasping the fork to feed themselves.

The use of AT does not stay limited to individuals with disabilities. It can also be used to help prevent slips and falls (adhesive tapes, canes) or to increase vision (glasses, contact lenses). AT does not need to be expensive. Something can be crafted at home, specifically for an individual with a disability, using items commonly found around the house or ranch.

The following examples are given for those who may have a disability or other challenge or even those who don't.

Some examples of easy-to-find or make AT are:

- **Adhesive and reflective tapes** – These can be used on steps to a building, vehicle running boards, tractor steps, etc., to increase traction; reflective tape can also be used to indicate inclines or steps that may not be entirely visible. While tapes with a grit on them may reduce slick conditions when wet, continue to use caution in icy or wet conditions.
- **Rubber bands** – Can be used to add grip to otherwise slick door knobs, bottles, etc.
- **Wooden dowels and coat hooks** – By screwing a coat hook into one end of a piece of dowel cut to the appropriate length for an individual, an easy modification is made to allow for easier dressing (pulling pants on by the belt loops, for example) and decreased need for bending.
- **Non-slip cup-board lining** – Can be cut into various shapes and sizes to provide additional grip for opening jars, bottles, etc.
- **Velcro or similar fabric fasteners** – Can be attached to a saddle seat and each leg of a pair of jeans to increase balance and stability when

riding horseback. Fabric fasteners can also be wrapped around a hand with the contrasting piece attached to silverware, glasses, hand tools, shovels, etc., to assist with gripping these objects.

Other low-cost, do-it-yourself modifications may include:

- **Adding an additional tractor step and/or additional handles** – Decreases the distance between the standard step and the ground, which reduces the impact when exiting a tractor. Additional handholds provide additional stability when mounting or dismounting equipment.



- **Ice cleats** – Are available for shoes, canes, and crutches. Simply strap them onto shoes, or screw them onto the shaft of a cane or crutch. They allow for additional traction in wintery conditions.
- **Stirrup extensions** – Can be added to saddle stirrups to decrease the stretch required to mount a horse and eliminate the need to jump from fences, bales of hay, etc. This makes mounting a horse more safe.
- **Magnets** – Can be used to pick up small objects to reduce bending or crawling. Combining strong magnets and Velcro or similar fabric fasteners wrapped around the hand can create a "hardware holder" to keep track of small screws and nails.
- **Carts or wheelbarrows** – Using a cart or wheelbarrow to carry feed or other heavy objects reduces strain on the back and the chance for back pain and/or injury.
- **D-grip handles** – These easily screw onto a shovel, hoe, or broom handle, providing for a more comfortable grip and reducing back strain by minimizing the need to bend the back.
- **Raised flowerbeds** – These reduce the need for prolonged bending,



Amanda O'Brien

kneeling, and crawling. When raised to an appropriate height, individuals who use wheelchairs are also able to park next to a table to "work" their plants.

The options are endless with a little imagination. If you have an idea to share, or for more information on Wyoming AgrAbility, call toll-free (866) 395-4986, e-mail agrability@uwyo.edu, or visit www.uwyo.edu/agrability.

Amanda O'Brien is project coordinator of Wyoming AgrAbility, which is part of a national program administered through the U.S. Department of Agriculture. The program's goal is to promote success in agriculture for people with disabilities and their families. O'Brien can be reached at the above telephone number and e-mail address.



Good-Bye, Flies!!!

God in his wisdom made the fly
And then forgot to tell us why
— Ogden Nash



By Scott Schell and Alex Latchininsky

Nobody but a frog likes house and stable flies; nevertheless, every spring these nasty pests show up and make life miserable for people and animals.

These two species of flies can be especially nasty in suburban situations where dogs, horses, and other livestock can be found in abundance.

What can people do to keep these pest flies from tormenting them and their animals all summer? There is no single strategy that will eliminate all flies from a property, once and for all. Houseflies have shown the ability to become resistant to any single control approach, even the good-old fly swatter. The best approach is to attack the pest flies on many fronts and to start early. The coordination of these attacks for the most benefit is the heart of integrated pest management (IPM).

The first step in IPM is to learn about the pest's life cycle and its vulnerabilities.

Let's first look at the stable fly (*Stomoxys calcitrans*). Physically, it resembles a housefly, except it has a bayonet-shaped mouthpart sticking out the front of its head. The fly uses it for piercing the skin of its victims and to suck blood. Both the males and females feed on blood. A single stable fly will often bite animals, including humans, many times while feeding. Stable flies can vector many diseases and reduce the weight of livestock just by the irritation and agitation caused by their feeding.

The preferred habitat for them to lay their eggs is straw, hay, or grass soaked with urine or rain. After the eggs hatch, the larvae (maggots) complete their development in 11 to 30 days. They pupate for six to 20 days and emerge as winged adults hungry for a blood meal. There can be many generations per summer. The flies feed in the daylight but will gather inside barns and shaded areas to

feed on animals sheltering there. Stable flies over-winter as pupae in the decomposing plant material. They are strong fliers and can travel miles in search of animals to feed on and suitable habitat to lay their eggs.

Houseflies (*Musca domestica*) do not feed on blood but will readily feed on secretions around wounds and irritated eyes. They also feed on animal feces and just about any other kind of nutrient-rich organic matter. Housefly mouthparts are called "sponging" in that after regurgitating digestive juices on perspective food items, they sponge them



Scott Schell

back up. This allows feeding on even solid foods.

The filthy habits of houseflies make them effective at transmitting many diseases. Just about any moist organic matter like manure (dog and horse excrements are preferred), spilled animal feed, over-ripe vegetables, lawn clippings, and garbage is suitable for houseflies' eggs and maggots. Depending on temperature, houseflies can complete a generation every 14 to 21 days. One female can produce up to 200 eggs every three to four days. The houseflies can over-winter as pupae under manure in Wyoming. In warmer regions, adults are found year-round. Houseflies are mobile pests and can travel several miles following decomposition odors in search of feeding and breeding sites.

In the winter, when occupied with shoveling snow and keeping your animals' water trough thawed, planning next

summer's fly control is not usually on your mind, but it should be. Plan early to start an IPM plan for fly control around your home. Convincing neighbors to also start a fly control early will greatly decrease fly problems in the neighborhood this summer.

Start with sanitation. Eliminating potential larval habitats is the key to pest fly management. Now that you know what flies need to live and reproduce on, take a walk around your premises. Note places that collect water and spilled straw, feed, and manure. All of the organic matter around barns, feed bunks, animal pens, kennels, and coops should be cleaned up.

Composting will help decompose the organic matter to a point where it becomes unsuitable to flies, and the heat of rapid decomposition should kill the maggots. Maintaining rapid decomposition in a compost pile can be difficult in Wyoming's dry climate. For tips on composting, see the University of Wyoming Cooperative Extension Service (UW CES) bulletin *Backyard Composting: Simple, small-scale methods* at <http://ces.uwyo.edu/PUBS/b974R.pdf>. The bulletin is also available at UW CES offices across the state.

Garbage containers should have tight and always-closed lids.

To break the pest fly's life cycle, animal pens should be cleaned every seven days through the spring and summer, and the organic matter gathered should be completely composted or spread thinly on fields to dry.

Fly traps placed in and around barns and areas such as animal pens, garbage cans, and trash bins starting in the early spring will payoff big. Remember for every female fly killed in April and May, thousands of her descendents are prevented from buzzing around in August. Fly baits and traps enhanced with attractants can be more effective than plain traps. The traps do need to be tended and replaced as they fill.



Alex Latchininsky

Plans for effective traps and housefly bait developed by the U.S. Department of Agriculture Agricultural Research Service are available at the UW Extension Entomology Hot Topics Web page at <http://uwadmnweb.uwyo.edu/CESINSECTS/>.

Effective fly repellents that will keep stable flies from blood feeding are available for livestock. If the adult stable flies are starving, they can't reproduce. "Feed-through" insecticide products are available for cattle and horses that make their manure toxic to the fly maggots but are harmless to the livestock.

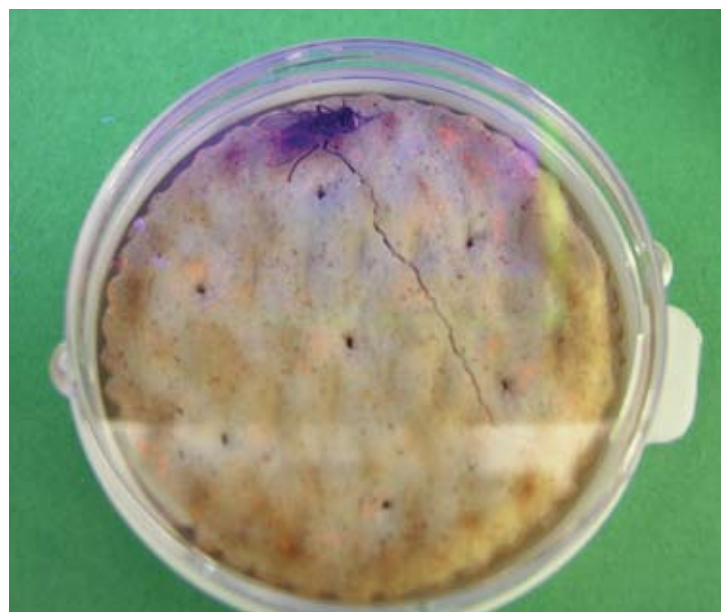
Building nesting shelves for barn swallows will encourage these fly-eating birds to make a home in a barn. It also gives these beneficial birds an alternative to nesting above barn doors and electrical lights. Biological control can be tried with fly parasitoid insects sold commercially to supplement the naturally occurring ones.

These tiny, non-stinging wasps ferret out the pupa of the pest flies and lay an egg in it. The wasp larva hatches from the egg, eats the developing fly in the pupae stage, and emerges as an adult wasp from the fly's pupal case.

Insecticide sprays can sometimes be effective in the short-term, but eventually flies will develop resistance to the products used repeatedly. If using insecticide sprays, make sure to follow label directions. Keep in mind insecticides can interfere with the parasitoids if the areas they prowl looking for fly pupae are sprayed.

In summary, there is no one "magic bullet" that will eliminate pest flies. A multi-pronged, IPM approach to fly control will work best. Start early, and a fly-control program will be more successful by the end of the summer. More information on fly repellents, biological control, and insecticides can be found at: <http://uwadmnweb.uwyo.edu/CESINSECTS/>. Click on the Hot Topics link.

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A housefly feeds on a cracker.