

BARNYARDS & BACKYARDS



UW Extension Profitable & Sustainable Agricultural Systems Risk Management Agency



Scott Hininger



UW Extension and the agricultural interests of Wyoming citizens

The University of Wyoming Extension's Profitable and Sustainable Agricultural Systems Initiative Team works in all areas of agriculture except rangeland, which is left to the range initiative team.

This newspaper insert offers a wide variety of topics we believe are timely.

Our team of diverse educators, including some state specialists, is spread across the state. Our challenge is to address a variety of agricultural and horticultural issues. Typically, we try to address questions we think will be asked this spring and discuss new research projects.

Spring is the time of planting, and we have articles discussing that along with weed control recommendations. There is discussion

on marketing calves, and we have not left out advice and information for gardeners.

The weather in Wyoming has sure been variable the last few years, and that certainly provides for interesting conversations. Between the wildfires and lack of rain last year, we certainly are looking forward to a better year. If you have further questions as you peruse these articles, please do not hesitate to stop by or contact your local UW Extension educator; they have access to lots of information.

Scott Hininger

UW Extension educator

Chair, Profitable and Sustainable Agricultural Systems Initiative Team

Solanaceae family – Friend and foe to agriculture

By Sandra Frost

Solanaceae – a plant family that includes many vegetable crops, tubers, fruits, ornamentals, edible leaves, and medicinal plants – is important globally.

Agricultural producers and consumers worldwide have intense relationships with the Solanaceae plant family – as friend or foe. Solanaceae plants can be found in Europe, in North and South America, and in Africa. Weedy or deadly poisonous plants such as datura, mandrake, angel's trumpet, henbane and deadly nightshade are also in Solanaceae.

Many Evolved in Andes, Amazon

Solanaceae, which includes 42 genera and 3,000 species worldwide, is a major group of magnoliophyta (flowering plants). Many species evolved in the Andean and Amazonian regions of South America. The



Sandra Frost

family and its 42 genera are so important that the National Science Foundation and the University of Utah are focusing on the genus *Solanum* (103 species) as part of the Planetary Biodiversity Inventory mission. Scientists in the International SOL Project are comparing DNA among Solanaceae genera to determine plant diversity and adaptation.

Four genera are commonly used as food: *Coffea* (coffee), *Capsicum* (pepper), *Nicotiana*

L. (tobacco), and *Solanum L.* (nightshade). *Solanum* species include tomato, potato, eggplant and nightshade, among others.

Some plants in Solanaceae contain toxic chemicals harmful or deadly to humans. For example, chili peppers may have capsaicin, which causes a reaction in those with low tolerance. Other toxic chemicals include alkaloids, nicotine, atropine, hyoscyamine, scopolamine and solanine.

Wyoming Problem Weeds

Solanaceae can be a problem in crop production. Wyoming agricultural producers want to eliminate nightshade from seed crop fields for several reasons. Succulent, wet **nightshade** berries crushed during harvest hold moisture in the crop seed and cause fungal growth and rot. Each nightshade berry contains many seeds that will infest the field next year. Wyoming weed

problems are, typically, hairy nightshade, black nightshade, and cutleaf nightshade.

Hairy nightshade (*S. sarachoides* Sendtner) is an annual that grows 12 to 24 inches tall with spreading, hairy foliage. Its flowers resemble the potato with five white petals. The fruit occurs in clusters. Hairy nightshade contains toxic alkaloids, especially in the berries.

Cutleaf nightshade (*S. triflorum* Nutt.) is also an annual that grows 4 to 24 inches tall. It is branched from the base. Leaves are deeply lobed. Again, flowers resemble potato flowers and are white with five petals. Berries are green. Cutleaf nightshade has toxic alkaloids.

Black nightshade (*S. nigrum* L.), an annual that grows 2 feet tall, has hairy stems and alternate simple leaves, is poisonous to livestock and a pest in crops. Its berries become black when mature.

Sandra Frost is a University of Wyoming Extension educator based in Park County and also serves Big Horn, Fremont, Hot Springs and Washakie counties and the Wind River Indian Reservation. Her specialty is crop systems, and she can be reached at 307-754-8836 or at sfrost1@uwyo.edu.



Black nightshade



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Preparing for wildfire, dealing with the aftermath

By Jennifer Thompson

Last year's wildfire season left many landowners looking out on a charred landscape wondering what, if anything, to do next.

Others were thanking their stars their land wasn't burned but still worrying about wildfire seasons to come.

Implement Defensible Space Measures

Nothing will guarantee a property, cabin or home will not be burned by wildfire. The odds can be tipped in your favor by implementing defensible space measures to:

- reduce the burnable fuel load on a property,
- reduce pathways for fire to take to reach important structures, making those structures less easy to ignite, and
- provide features such as wide driveways with turnaround areas and water sources to allow firefighters to safely approach and defend the property.

Often, when wildfires occur (given that they have the resources available to defend any structures), firefighting personnel have to quickly determine which properties/structures have the best chances of survival. These are the ones most likely to spend their limited resources defending. Create a defensible space if you have not already done so.



Jennifer Thompson

Grasslands also Vulnerable

If a property is in a grass/sage landscape rather than a forested one, you may consider all talk of defensible space as being applicable only to forest properties.

Not true.

Last year's fires demonstrated that grass and sage-land fires can burn extremely hot, fast and destroy property just as surely as a forest fire. Although my family lives on grass-dominated bottom land, we were busy revisiting defensible space precautions and evacuation plans as the Squirrel Creek fire (southwest of Laramie) burned on our horizon last summer. In addition to the threat from forest fires, a carelessly discarded cigarette is often all that would be needed to ignite our dry grasslands.

Take These Steps

If not lucky enough to escape last year's fires, you have probably been spending time with your insurance company and with local planning authorities if considering rebuilding a home or cabin. You may also be considering what, if any, steps to take on your land post-fire.

The first and continuing consideration should be safety as you inspect and work on your property. Wildfires create numerous hazards, including burned-out stump holes and burned trees or branches that can fall at any time.

Next, determine the severity of the fire. The rate of recovery post-wildfire is often determined by what vegetation existed before the fire, the land's topography (which affects erosion potential), soil types, susceptibility to weed invasion and severity of the fire. After less-severe fires, only minimal intervention may be needed by humans to speed the land's recovery. After severe fires, more

intervention such as erosion prevention, reseeding, weed control and reforestation may be needed. The choices are also dependent on your financial resources.

Whether considering making a property more defensible when the next wildfire arrives or considering post-fire rehabilitation measures, there are many resources available with practical information. Find many of them at barnyardsandbackyards.com and clicking on "Wildfire." You can also pick up a copy of the new "Living with Wildfire in Wyoming" guide at your local University of Wyoming Extension, conservation district or Wyoming State Forestry Division office. The publication contains information on pre-fire and post-fire subjects.

Jennifer Thompson is the small-acreage outreach coordinator for the University of Wyoming Extension. She can be reached at 307-645-3698 or jsjones@uwyo.edu.

LAST YEAR'S DESTRUCTION

An estimated 1,300 to 1,400 fires burned about 600,000 acres in Wyoming in 2012. The total cost of fighting the fires was an estimated \$108.5 million.

DETERMINING SEVERITY OF FIRE

The following can help determine intensity of a wildfire. To determine hydrophobicity (soil repels water), scrape ash away and place drops of water on the soil surface. Hydrophobic soils will cause water to bead at the surface for several minutes. Carry out this test several times. Determine root damage by digging down and carefully examining the extent of root burning.

Low Fire Severity (Type III)

General statements

- primarily occurs on rangeland
- no sediment delivery
- natural recovery likely

Indicators

- duff and debris are partly burned
- soil is a normal color
- hydrophobicity is low to absent
- standing trees may have some brown needles

Interpretations

- root crowns and surface roots will resprout quickly given moisture
- infiltration and erosion potential are not significantly changed

Medium Fire Severity (Type II)

General statements

- primarily occurs on steep, lightly timbered slopes with grass
- some sediment delivery

Indicators

- duff is consumed
- burned needles are still evident
- ash is generally dark-colored
- hydrophobicity is low to medium on surface soil up to 1-inch deep
- soil is brown to reddish-brown and up to 2 inches of soil is darkened from burning (below ash)
- roots are viable below 1 inch
- shrub stumps and small fuels are charred but present
- standing trees are blackened but not charcoal

Interpretations

- root crowns will usually resprout
- roots and rhizomes below 1 inch will resprout
- most perennial grasses will resprout

- vegetative recovery, depending on conditions, could be one to five years
- soil erosion potential will increase due to the lack of ground cover and moderate hydrophobicity

High Fire Severity (Type I)

General statements

- primarily occurs in unprotected drainages on steep, timbered, north or east slopes with dense forest canopy
- sediment delivery likely
- natural recovery limited

Indicators

- duff consumed
- uniformly gray or white ash (in severe cases ash is thin and white or light)
- no shrub stumps or small fuels remain
- hydrophobicity medium to high – up to 2 inches deep
- 2 to 4 inches of soil is darkened (soil color often reddish orange)

- roots burned 2 to 4 inches
- soil physically affected (crusting, crystallization, agglomeration)
- standing trees charcoal up to 1-inch deep

Interpretations

- soil productivity is significantly reduced
- some roots and rhizomes will resprout but only those deep in soil
- vegetative recovery (non-tree), depending on conditions, could be five to 10 years
- soil erosion potential can be significantly increased

Adapted from: USDA Natural Resources Conservation Service

Understanding Financial Performance: **PART 1**

The newest course available from RightRisk.org



FINANCIAL ANALYSIS: AN INTEGRAL PART OF RISK MANAGEMENT

By James Sedman and John Hewlett

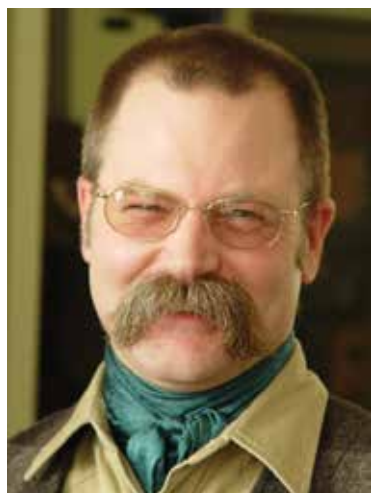
Last year was a difficult production year for most crop and livestock producers in Wyoming due to the ongoing drought.

This year promises much the same if the drought continues. Operations of all types and sizes are taking a hard look at tough financial decisions: should we buy feed or sell cows, what crops can we plant profitably with a limited irrigation water supply, will our niche market continue to be there, or how can we change our risk management strategy to deal with prolonged drought and its effects on our bottom line?

Internal financial analysis is crucial to evaluating any risk management strategy. Businesses that can properly assess their financial situations are much better equipped to make the risk management decisions necessary to protect profitability and survival. Producers who can calculate and assess their business' financial well-being are better able to understand which strategies (such as crop insurance) are working, which are not and how they can improve.

Understanding Financial Performance Course

Competitive producers keep accurate and up-to-date records, create financial statements, and finish the process by analyzing their financial and production data. The academic professionals at RightRisk.org have created a third financial management course entitled *Understanding Financial Performance* to accompany their previous two *Getting on Track* courses that cover financial records and financial statements. To begin



John Hewlett

the course, producers should go to RightRisk.org and click on the "Products" tab, then the Financial Performance course from the list.

Example producers show their progress toward evaluating their financial performance. These producers are in the process of learning the five key areas of financial health: liquidity, profitability, solvency, financial efficiency and repayment capacity.

In each section, participants are instructed how to calculate and interpret various financial ratios and how to use them in analyses of their own situations. Parameters for each ratio (high/low and satisfactory/unsatisfactory) are discussed and help lead producers to areas of strengths and weaknesses in their businesses and how to improve in each of the five areas.

Production Examples

In previous articles, we have described a ranch operated by John and Marcia Smith and their journey through the records and financial statements courses. The Platte County producers own and operate a commercial cowherd of 100 head and an irrigated farming

enterprise of 250 acres. They primarily use the farmland to produce alfalfa on 200 acres and corn silage on the remaining acres for their cattle and for sale. The Smiths' and numerous other profiles can be found at RightRisk.org under the Resources tab, then select "Risk Management Profiles."

The past year was tough on the Smiths with the drought reducing average alfalfa yields from 5 to 3 tons/acre and their corn silage from 25 to 15 tons/acre. The Smiths are short of pasture and supplemented feed to their cattle throughout most of the summer and have continued feeding their cows after selling calves earlier than normal. They have also purchased \$20,000 worth of hay and protein supplement to make up for production shortfalls.

The Smiths are now assessing their situation using financial records and financial statements to determine what they should do this coming year. Analyses of their financial picture through the steps outlined in the *Understanding Financial Performance* course are in order.

Liquidity

Liquidity is the ability of a business to adequately meet current obligations. Three measures

of liquidity are discussed in the course: the current ratio (current assets divided by current liabilities), working capital (a measure of capital available to purchase inventory/inputs after current obligations are met), and working capital divided by gross revenues.

For this example, we will look at the Smiths' current ratio and working capital ratio. After purchasing feed and selling calves earlier than normal, the Smiths' current ratio is 0.9 with \$2,000 available in working capital. These low numbers can be attributed to the reduced feed inventory and feed purchases. To remedy this situation, the Smiths should look to raise more operating revenue (such as culling cows, raising off-farm revenue).

Solvency

Solvency is the long-term measure of a business to meet all obligations and how it can withstand adversity. The three main measures (ratios) of solvency are debt-to-asset, equity-to-asset and debt-to-equity ratio. For this analysis, we will assume the Smiths have a debt-to-asset ratio of 0.4. While in the satisfactory range for most businesses, it shows the Smiths should be careful not to let

it approach levels over 0.6 to 0.7. They could accomplish this by cutting back on capital purchases or paying down term debt.

Profitability

The course defines profitability as the ability of a business to generate profits over time. There are five main measures of profitability, including net farm income, rate of return on assets (ROA), rate of return on equity (ROE), and earnings before interest, taxes, depreciation and amortization.

In the Smiths' case, net farm income was \$15,000 (down from an average of \$40,000). They attribute this to lower production and higher feed costs. Their ROE (net farm income-labor and management divided by total equity) was 0.05. While this number is not in the danger range, it would be detrimental to their long-term success and goals to continue with such a low ROE.

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Smith Ranch Financial Ratio Analysis

Selected Ratios

Ratio/measue	Value	Low	Moderate	High
Current	0.9	>1.5	1.0 - 1.5	<1.0
Working Capital	\$2,000	Level varies with farm size, inventories, and accounts receivable.		
Debt/asset	0.4	<0.3	0.3 - 0.7	>0.7
Net Farm Income	\$15,000	Level varies with farm size, owned vs. leased, operation type, etc.		
Rate of Return on Equity	0.05	>0.1	0.05 - 0.1	<0.05

New growing season offers opportunities for considering spectacular flower varieties

By Scott Hininger

Here is a review of some plants to consider this year. There are many to choose from, and this list is just a start.

Curly leaf sea kale

Curly leaf sea kale (*Crambe maritima*) is a robust, traditional European perennial potherb forming impressive 24-inch tall by 24 to 30 inches wide clumps of gorgeous, wavy, waxy blue foliage all summer. In spring, clusters of dazzling white flowers grace the garden. Tough and permanent once established, this beautiful perennial offers larger-scale, summer-long interest for dry gardens. Prefers full sun and tolerates a wide range of moderate to dry soil conditions. Zone 4.

Scott's sugarbowls

Western native, long-blooming Scott's sugarbowls, Scott's clematis (*Clematis scottii*) makes a mound of blue-green, lacy foliage topped in late spring and early summer by large, nodding blue



Scott Hininger

flowers. Bees and bumblebees frequent the bell-shaped blossoms. Shimmering golden seed heads follow. This perennial grows 8-15 inches tall and 12-15 inches wide and blooms May to July. Requires full sun and tolerates most moderate to dry soils. Zones 4-7.

Sandia coralbells

Sandia coralbells (*Heuchera pulchella*) is a miniature, extra-cute version of the well-known coralbells with a tidy, evergreen tussock

of ruffled, fresh green leaves. Spikes of petite rose-pink bells emerge in late spring attracting hummingbirds and bees. Native to high-elevation sites in New Mexico, this perennial thrives in well-drained soils in full sun to shade with moderate to low water. Foliage stays low (less than 3 inches tall by 6-10 inches wide), while flower spikes grow up to 8 inches tall. Zones 4-7.

Oxslip primrose

Oxslip primrose (*Primula elatior*) is a charming but tough primrose that is more persistent and tolerates more heat and drought than most of its kin. Clusters of soft yellow flowers, often fragrant, rise above pale-green rosettes of foliage in spring. Plants grow 10-15 inches tall by 12-15 inches wide in moderate to dry soils in partial shade. This is the true wild form rarely found in the trade. Zones 4-8.

Echinacea 'Cheyenne Spirit'

Echinacea 'Cheyenne Spirit', the 2013 All-America Selections

(AAS) Flower Award winner, is a stunning first-year flowering Echinacea perennial and captures the spirit of the North American plains by producing a delightful mix of flower colors from rich purple, pink, red and orange tones to lighter yellows, creams and white. This wide range of flower colors on well-branched, durable plants is sure to please the color preferences of any gardener. As an added bonus, 'Cheyenne Spirit' does not require a lot of water and offers a wide range of uses from the perennial border, in a mass landscape planting, in a butterfly garden or as a cut flower. Even during wind and rain, this compact plant does not topple over like many Echinacea. The variety of intense, bright colors adds sparkle to the garden from mid-summer through fall. As an added bonus, this maintenance-free Echinacea doesn't even need deadheading. Zone 4.

Geranium 'Pinto Premium White to Rose'

Geranium 'Pinto Premium White to Rose' F1 is the 2013 AAS Bedding Plant Award Winner. Not only is the flower coloration unique with the gradual blending from white to rose color, the numerous 5-inch blooms are long-lasting in the garden. Petals start white then deepen to rose-pink as flowers mature, giving an attractive bi-color effect. Dense, well-branched plants sport deep-green leaves with darker zones that contrast beautifully with the light-colored flowers. 'Pinto Premium White to Rose' is a great choice for carefree, colorful summer garden beds or patio containers wherever annuals brighten an area. An annual.

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Pat Hayward

Curly leaf sea kale



Kirk Fessler

Sandia coralbells



All-American Selections

Echinacea 'Cheyenne Spirit'



Kirk Fessler

Scott's sugarbowls



Shutterstock

Oxslip primrose



All-American Selections

Geranium 'Pinto Premium White to Rose'

Understanding Financial Performance: **PART 2**

The newest course available from RightRisk.org



PROPER FINANCIAL ANALYSIS: A KEY TO BUSINESS SUCCESS

Any business operator will benefit from practicing proper financial analysis – from the smallest, part-time farming operation to large, diversified farms and livestock businesses.

Large and small producers alike should keep adequate and up-to-date records and use them to develop yearly financial statements. This information provides the basis for analysis.

Think of assessing your business's financial health much like a doctor would assess your personal health. A doctor looks at several areas to determine overall physical health, like temperature or blood pressure, along with specific indicators that may show areas for improvement or immediate attention.

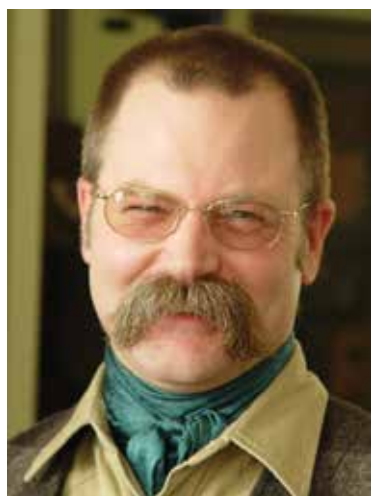
Five key areas should be addressed to determine financial health: liquidity, profitability, solvency, financial efficiency and repayment capacity.

These areas are important for all operators. For instance, a small vegetable operation that services farmers markets might use this information to determine cash flow needs for the coming year, profitability, the effectiveness of the working capital and appropriate risk management strategies. An ag lender will use this information to determine credit worthiness and the credit risk of clients.

Understanding Financial Performance Course

The *Understanding Financial Performance* course from RightRisk.org guides participants through each of the five important areas of financial analysis. Participants work through each module following the example producers as they learn to use their financial information effectively.

In a previous article, we discussed how the Smith family (a southeast Wyoming farm and live-



John Hewlett

stock business) used the course to assess their financial performance in light of current and ongoing drought conditions. We examined their business in the context of the first three areas – liquidity, profitability and solvency analysis.

In the following example, we discuss the small, part-time business of Jack and Joanie, and analysis of the financial efficiency and repayment capacity of their small, cut-flower business.

Over the years, their business has grown to the point Joanie can no longer manage it on her own day-to-day and is looking to either hire their teenage daughters or outside help. Their main questions are if their business can support such a move and how to use their compiled financial information to help make the decision.

Financial Efficiency

Financial efficiency is defined in the course as whether or not a business's physical resources are being used profitably; this is shown through five ratios. These are the asset turnover ratio, operating expense ratio, interest expense ratio, depreciation expense ratio and net farm income from operations ratio. The industry standards for these ratios are in the table at right.

The asset turnover ratio is found by dividing gross farm income by average farm assets. This ratio shows how efficiently a business uses its assets to generate revenue. Remember, asset turnover ratios will vary (sometimes greatly) between operations, depending on whether an operation is heavily leased or owned. The lower the ratio, the more an operation is owned.

Along these same lines, the operating expense ratio (total operating expense minus depreciation and interest divided by gross farm income) shows efficiency of the business converting inputs into net income. Businesses that have unsatisfactory ratio values should consider trying to limit input purchases, better time purchases with cash inflows and reduce family living or other outflows from the business.

The interest expense ratio describes the burden of a business's debt load by showing the amount of gross farm income used to pay for borrowed capital. The higher the number, generally, the higher the debt burden the business is carrying. Operations with interest expense ratios higher than 0.85 should consider making debt reduction a priority and to better time their input purchases with cash inflows.

In the case of Jack and Joanie's enterprise, they have relatively

low operating expense and interest expense ratios, according to industry and their own standards. This would seem to indicate their business is able to incur the additional expense (within reasonable levels) to hire one or both of their daughters. Not all types of farm businesses fit into the ranges of ratios listed below; one farm may be functioning well with an asset turnover ratio that might be considered high on another farm.

Repayment Capacity

The ability to repay farm debt from farm and non-farm income sources is called repayment capacity. Knowing how a lender will measure repayment capacity of a business before applying for a loan can mean the difference between acceptance and rejection. The course discusses five measures of repayment capacity: capital debt repayment capacity, term debt/capital lease coverage ratio, capital debt repayment margin, replacement margin and the replacement margin coverage ratio.

Capital debt repayment capacity is likely the most important of the repayment capacity measures. It is calculated by adding net farm income, net non-farm income, depreciation and interest on term loans and subtracting family living expenses and income taxes. This shows the estimated amount available to cover debt or lease pay-

ments or to make new investments. This number will vary by the size and scope of the business.

Along these lines, the term debt/capital lease coverage ratio uses the same figures as the capital debt repayment capacity and divides them by the scheduled payments on leases or debt. A ratio with a value greater than 1.35 is viewed as low risk, 1.10 to 1.35 moderate risk and lower than 1.10 as high risk.

Businesses with moderate to high ratio values will encounter difficulty securing credit and should consider taking action, such as lowering expenses and paying down existing debt, a priority before taking on any new debt. In the case of our example business owners, Jack and Joanie believe their repayment capacity will allow them to hire their daughters, at least on a part-time basis.

They realize, however, they should monitor their situation carefully because they are taking on new expenses and increasing output while (hopefully) net farm income increases as a result.

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Financial Efficiency Ratios

		Risk level		
		Low	Moderate	High
Asset turnover	$\frac{\text{Gross farm income}}{\text{Average farm assets}}$	Varies		
Operating expense	$\frac{\text{Operating exp (-dep. \& interest)}}{\text{Gross farm income}}$	<0.7	0.7-0.85	>0.85
Interest expense	$\frac{\text{Interest expense}}{\text{Gross farm income}}$	<0.1	0.1-0.2	>0.2

Distance to markets, regional prices figure into best marketing plan for small lots of calves

By Bridger Feuz

Many producers spend much marketing time and energy working on getting truckloads of calves sold each fall. However, there always seems to be 1-20 head of stragglers that need to be marketed each year.

Often, these stragglers are considered a nuisance, and little thought and effort is given to proper marketing, with the closest auction barn being the primary destination. That may be the best strategy, depending upon where you live in Wyoming and how many calves you are marketing; however, producers may be foregoing significant revenue.

Evanston Producer Example

To best illustrate potential differences in revenue, let's take the example of an Evanston producer. The analysis should be applicable to most western Wyoming producers with just a few adjustments for mileage.

Evanston producers typically market calves at one of three auctions: Anderson Livestock Auction in Ogden, Utah, Riverton Livestock Auction, or Torrington Livestock Markets. The closest auction in Ogden is a 150-mile round trip;



Bridger Feuz

round trips are 450 miles and 850 miles to Riverton and Torrington, respectively. If the IRS mileage rate of \$0.55 per mile is used, the cost to each destination is: Anderson – \$82.50, Riverton – \$247.50, and Torrington – \$467.50.

Significant Price Differences

Prices can vary significantly between the three markets. For this analysis, I used USDA – AMS data for October and November of 2011. Table 1 shows the average price for a 500-550 pound steer calf and a 700-750 pound steer for each of the markets.

There are significant price differences. On average, 500-550

pound calves in Riverton brought \$23.70 cwt. more than 500-550 calves at Anderson Livestock, while 700-750 pound calves in Riverton brought \$14.21 cwt. more than at Anderson Livestock. It is interesting that 500-550 calves selling at Torrington were only slightly better than Riverton at \$2.67 cwt.; however, 700-750 pound steers showed a larger margin between the two auctions of \$7.29.

Include Mileage Costs

To determine if price differences warrant a different marketing strategy, we need to include mileage costs. Table 2 shows the net return of 1, 2, 5 and 10 head of steers using the market price for the given auction and accounting for mileage.

If an Evanston producer has one head to go to market, the best option is Anderson Livestock for a 525- or a 725-pound steer calf. If an Evanston producer has 5 or 10 head of calves weighing 525 pounds, Riverton Livestock Auction returns the highest net amount. If an Evanston producer has 5 head of steers weighing 725 pounds, there is a near tie between Riverton and

Table 1: Average Prices Received (cwt) October-November 2011

	Anderson Livestock	Riverton Livestock	Torrington Livestock
500-550 lbs	\$132.21	\$155.91	\$158.58
700-750 lbs	\$119.13	\$133.34	\$140.63

Table 2: Net Returns

Head	Avg. Wt.	Anderson Livestock	Riverton Livestock	Torrington Livestock
1	525	\$611.63	\$571.01	\$365.06
2	525	\$1,305.75	\$1,389.52	\$1,197.63
5	525	\$3,388.13	\$3,845.04	\$3,695.31
10	525	\$6,858.75	\$7,937.58	\$7,858.13
1	725	\$781.16	\$719.21	\$552.08
2	725	\$1,644.81	\$1,685.92	\$1,571.67
5	725	\$4,235.78	\$4,586.05	\$4,630.42
10	725	\$8,554.06	\$9,419.60	\$9,728.34

Torrington. Finally, if an Evanston producer has 10 head of steers weighing 725 pounds, Torrington Livestock would return the highest net amount.

Certainly, producers may incur other differences in costs. Time away from other activities is a cost, and a trip to Torrington may require an overnight stay. If nothing else, more meals would be purchased on a Torrington trip.

Which auction is right for an Evanston producer depends on a number of factors, but significant differences in net returns do exist between markets.

Bridger Feuz is the University of Wyoming Extension livestock marketing specialist and area educator for Lincoln, Sublette, Sweetwater, Teton and Uinta counties. He can be contacted at 307-783-0570 or bmfuz@uwyo.edu.

2012 herbicide choices plus drought conditions may cause issues in 2013 crop rotations

By Jeff Edwards

Under normal environmental conditions – adequate precipitation throughout the year – pesticides breakdown into basic molecular components by several means, including ultraviolet light, hydrolysis and/or microbial degradation.

Without adequate soil moisture, hydrolysis and soil

microorganisms may not completely breakdown products as they would under more normal environmental conditions. There may still be residual herbicidal activity for the 2013 season.

Residual Herbicide Problems

How can a little extra residual cause problems?

Depending upon the crop rotational practices, the herbicides used in 2012 may affect the health and production of the crop planted in 2013. Review your records, take a look at the products used on a field, con-

sider the crop you will be planting, and read the product labels – particularly the sections concerning crop rotational restrictions.

The crop rotational restrictions indicate how long to wait to replant – under normal conditions. Sugar beets and legume crops (alfalfa and dry beans) tend to be more sensitive to herbicide carry-over.

Conduct Soil Bioassay

What to do if a problem is suspected? The first choice is to follow the label and rotate to a less-sensitive crop; the second action is to conduct a soil bioassay – sounds expensive and time consuming right?

Nope.

A soil bioassay can be conducted with items already on hand, and a bioassay doesn't require collection and shipping soil to a lab for expensive testing.

To conduct a soil bioassay: about 45 days prior to planting, collect about 1 quart of soil from the suspect field. Do this in the



Jeff Edwards

should be healthy to plants emerging from the suspect soil.

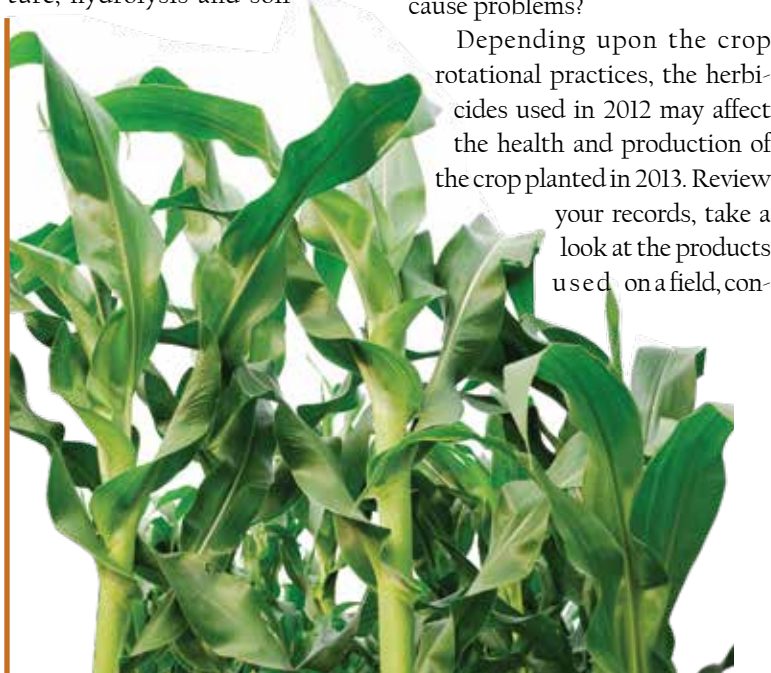
Plant Test

Plant 10 seeds of the crop you plan on rotating to in each container, keep moist and monitor for any issues. Compare how the plants grow in both containers – check emergence and plant color. Watch for anything out of the ordinary. Do the plants growing in the suspect field soil look healthy?

Continue to grow the plants as long as possible to make a best decision for planting. If you suspect anything is wrong, do not plant the crop, follow the product label and rotate to a less-sensitive crop.

Leaving the field fallow may also be an option but may not make economic sense. With luck, 2013 will get us back into a more normal moisture pattern.

Jeff Edwards is the University of Wyoming Extension pesticide coordinator. He can be reached at 307-837-2000 or at jedward4@uwyo.edu.





Quality assurance practices by small-acreage producers help ensure quality products, boost consumer confidence

By Alex Malcolm
(Compiled from Wyoming Youth Quality Assurance Curriculum)

Well-informed livestock producers recognize the importance of following quality assurance guidelines to ensure they provide safe and wholesome food animal products to consumers.

Most small-acreage producers are also interested in the health and well-being of their animals but may lack the experience and knowledge necessary to provide healthy, comfortable environments for the animals under their care. The growing demand by the public for food safety and quality assurance of the animal products they consume, and the emerging threats to animal health by foreign animal diseases, add to the increasing need for education about quality assurance programs.



Alex Malcolm

What is Quality Assurance?

Quality assurance can mean different things to different people. Are the products – milk, eggs, meat – good to eat? Is it safe? Healthy? Does it taste good? Is it tender?

Quality assurance is a pledge or commitment from producers to consumers that the products from your livestock will be the highest possible quality and everything that can be done is being done to make those products safe to eat.

Why should I be Aware of Quality Assurance Practices?

Food animal producers need to implement product quality

assurance practices, maintain accurate records on all animals, follow the law regarding the use of medications in food animals and develop effective biosecurity plans. Wise animal husbandry practices regarding air quality, sanitation, feeding, nutrition, stress reduction and so on are essential aspects of animal health.

Improve Product Quality, Consumer Confidence

Producers are improving the quality of food consumers eat and their confidence in the livestock industry, as well as their own product, by using these practices.

Growers are also improving the care and management practices in their operations. Consumers will have a greater confidence in the products, thus increasing consumption and will be less affected by food safety scares. Quality assurance practices also increase the value of

products by reducing bruising, abscesses and other damage that must be trimmed or discarded from carcasses.

These programs were started because there were problems with drug residues and injection site lesions in animals. Public health concerns affect the ability to sell products. These issues did not just cause issues in market animals but also in dairy and breeding animals. When they are sold, butchered and processed, they also can have residues and injection site lesions. Other issues of broken needles and bruising of the meat were also affecting the public's view of the livestock industry.

Reduced levels of residue found in meat and milk products resulted from educating livestock owners about healthcare and management of their animals about feeding, withdrawal times of medicine, proper injection techniques and proper handling.

Producers are First Line of Defense

An educated producer who sees their animals daily and can report unusual behaviors or problems is the first line of defense. Although many producers are aware of this correlation, many need help with livestock health programs. Extension places a priority on providing up-to-date educational information on animal health issues to producers, land managers, small-acreage owners and citizens.

As a livestock producer, ask, "What am I doing every day to ensure the safety of my animals and a safe and quality product for the consumer?"

Alex Malcolm is the 4-H/youth educator and Master Gardener trainer based in Fremont County. He can be reached at 307-857-3654 or at amalcolm@uwyo.edu

UW EXTENSION QUALITY ASSURANCE CHECKLIST

Are you:

- Feeding good nutrition?
- Checking water?
- Providing appropriate housing or shelter?
- Properly identifying your animals?

Below is a list of recommended actions producers can take to minimize threats to animal health and product wholesomeness.

- Get all prior identification and treatment records from breeder.
- Use a permanent identification system on each animal.
- Practice low-stress methods of animal handling: slow, quiet, no hitting or crowding.
- Minimize use of medications.
- Keep excellent records (feeds, medications, illness, sales, etc.) throughout the animal's life and maintain for five years after sale.
- Abide by all medication use guidelines, including storage, dosages, withholding times and legal extra-label drug use on the advice of your veterinarian.
- Do not hold animals off water or feed.
- Feed animals a balanced diet.
- Provide a clean, safe and healthy environment for animals.
- When possible, obtain carcass data from market animals; study and learn from the results.
- When possible, interview consumers about what they thought about the food products you raised.
- Make sure all family members and farm employees are aware of and perform quality assurance practices.



FOR QUALITY ASSURANCE INFORMATION

- Beef** – <http://www.bqa.org/>
- Pork** – <http://www.nppc.org/issues/animal-health-safety/pork-quality-assurance-plus-pqa-plus/>
- Dairy** – <http://www.dqacenter.org/about.html>
- Poultry** – <http://animalscience.ucdavis.edu/avian/cpmqap.html>

Powell Research and Extension Center reports results from spring wheat, barley trials



Mike Killen

By Mike Killen and Justine Christman

The University of Wyoming's Powell Research and Extension Center conducts variety performance trials as part of an ongoing research program.

Cooperating with UW breeding programs and private seed companies, a wide range of germplasm is evaluated each year.

Twenty varieties of spring wheat were planted in a randomized, replicated study at Powell April 13, 2012. Weeds were controlled and plots were watered via furrow irrigation. Plots were harvested Aug. 16.

Spring wheat results show there is no statistical difference among six commercial varieties with the highest grain yields (Table 1). Protein was in the 12-percent range for all six varieties, and none lodged.

Twenty-eight varieties of malt barley and 20 varieties of feed barley were planted in a randomized, replicated study April 12, 2012. Weeds were controlled and plots were irrigated via furrow irrigation. Plots were harvested on Aug. 14. Statistics were calculated across all 48 varieties.



Justine Christman

Malt barley results show the top five grain-producing varieties were similar in grain yield and test weight (Table 2). One of the five had significantly lower kernel plumpness (2B09-3408). There were lodging differences among the top five varieties.

Feed barley results show the top five grain-producing varieties were similar in grain yield but varied in test weight.

Complete results are at <http://www.uwyo.edu/plantsciences/uw-plant/trials.html>.

Mike Killen is the farm manager at the Powell Research and Extension Center and can be reached at 307-754-2223 or at mkillen@uwyo.edu. Justine Christman is the research associate at the center and can be contacted at the same number or at jchristm@uwyo.edu.

Table 1. Spring wheat performance at Powell, 2012.

Variety	Grain yield	Protein	Test weight	Lodging
	Bu/ac	%	Lb/bu	1-9
Volt	121.7	12.1	62.5	1
WB Gunnison	115.3	12	61.4	1
WB 9879CLP	115.1	12	61.3	1
Choteau	111.1	12	60.9	1
Hank	110.6	12.5	59	1
Kuntz	110.3	11.8	59	1

Table 2. Spring barley performance at Powell, 2012.

Variety	Grain yield	Test weight	Plump 6/64	Plump 5.5/64
	Bu/ac	lb/bu	% above screen	
MALT				
2B09-3408	159.5	46.5	88.8	97.1
01Ab9663	147.8	48.6	97.0	99.2
Voyager(3719)	146.5	49.1	97.7	99.4
2B09-3998	146.3	48.0	96.5	99.2
Harrington	145.7	47.5	96.3	99.1
FEED				
MT070159	157.1	48.3	95.6	98.6
07WA-614.4	146.7	45.8	90.3	97.7
UT04B2041-42	145.8	45.9	88.9	97.0
2004Nz151	145.4	48.3	93.3	98.1
2004NZ163	144.9	49.7	92.1	98.4



GOT A FAILING LAWN? FLOWERBED PEST? NEEDLE DROP? WE GOT THAT

UW Extension offers horticultural plant diagnostic service

By Chris Hilgert

The most common question I am asked is, "What is wrong with this plant?"

The next question is usually, "What do I spray on it?"

Answering the first question correctly is critical before answering the second. Before spraying a pesticide, always diagnose the problem first and then choose an appropriate remedy.

My approach focuses on good growing practices that result in healthy plants. Sometimes, pesticides fit into the equation, but that is often the last resort after all else fails. Proper watering, soil conditions, fertility and growing environments are all factors to consider before turning to a chemical solution.

Drought Stress, Winter Injury

Many of the problems I see with landscape plants in Wyoming result from drought stress and winter injury. This year has been double-trouble for plants because there was no snow cover to protect plants over the winter, and we did not have much rain last spring and summer.

Drought-stressed plants show symptoms of wilting stunted growth, yellowing foliage, early defoliation and even



Chris Hilgert

death. Drought stress can also make a plant more susceptible to attack from insects and diseases. Supplemental irrigation will help landscape and garden plants thrive – or at least survive a drought.

If you have a sick plant, a struggling lawn, or insects eating your garden, University of Wyoming Extension can help with the diagnosis and offer science-based management strategies to deal with insect pests, plant diseases and weeds in landscapes and gardens. There is no fee for this service, and we will not try to sell you anything.

We will try our best to identify the problem and offer a solution (see below). Call your local extension office to schedule a site visit or contact me at 307-766-6870 or at chilgert@uwyo.edu.

Carefully Note Symptoms

Take note of symptoms seen on the plant. Symptoms are the plant's response to stress and include wilting, yellowing, leaf drop, needle drop, spotted leaves, deformed leaves, dead branches or any other abnormal growth. Symptoms can tell a diagnostician if insects, plant diseases or environmental stresses caused the problem.

Often, though, diagnosis is difficult over the phone. Digital pictures can be sent via email, or physical samples may be mailed (see "Mail samples for diagnoses" below) for evaluation. Pictures should include close-up examples of the damage (a spotted leaf or a dead branch) and a picture of the whole plant that shows how much damage is present and how the damage is distributed around the plant.

I like to offer advice on growing healthy plants that may or may not include the use of pesticides. Ultimately, how you deal with a problem is up to you. My hope is to give you all the information needed to make the best decision.

Chris Hilgert is the University of Wyoming Extension Master Gardener coordinator. He can be reached at 307-766-6870 or at chilgert@uwyo.edu.



MAIL SAMPLES FOR DIAGNOSES

Plant samples can be mailed to Chris Hilgert, 1000 E. University Ave., Department 3354, Laramie, WY 82071. Package samples in a plastic or paper bag inside a box. Mail samples early in the week so they arrive in relatively short time. Samples that sit over the weekend may be difficult to diagnose because they may arrive in extremely poor condition.

Only send samples and questions dealing with plant-related problems. I am not qualified to offer identification and control recommendations for human pests such as bed bugs and lice.

Typically, I will be able to diagnose the problem and get back to you within two to three days of receiving a sample.

Cool-season tall fescue has potential for forage and seed yield production

By Anowar Islam

Grass pastures are essential components on cattle ranches of the Intermountain region; however, the yield and quality of many of these grasslands are low and have declined over time.

Soil degradation and improper management practices can accelerate the decline.

The introduction of a highly productive, palatable, nutritious grass that does not cause toxicity problems to animals, is drought tolerant, and winter-hardy, could increase productivity, quality, sustainability and profitability of these pastures.



Anowar Islam

Tall Fescue

Tall fescue is one of the most productive cool-season grasses in the United States and can be grown on a wide range of soils, has drought and winter hardiness, and can be used for pasture, hay, stockpiling, silage, soil conservation and turf grass. Due to its prolific seed production ability, tall fescue is a potential seed-producing crop in northwest Wyoming.

A study by the University of Wyoming showed promising results of the grasses. The study started in early May 2009 at two locations with financial support from the Wyoming Crop Improvement Association, Powell Research and Extension Center (PREC) and the Stroh farm near Powell.

The research examined seed production and forage production. Standard seeding rates were used for both studies (8 pounds PLS [pure live seed]/acre for seed production and 20 pounds PLS/acre for forage production).

In the seed production study, seven cultivars/genotypes of tall fescue were planted as the primary treatment in 22-inch rows with four replications. There were also two additional treatments consisting of three nitrogen (N) levels (0, 100 and 150 pounds N/acre) and three clipping times (none, early and late).

In the forage production study, similar treatments followed on seven cultivars/genotypes except there was no clipping treatment, and the N levels were 0, 50 and 100 pounds N/acre. In 2010, 2011 and 2012, N was applied in two splits: one in the early growth stage and the second in late growth after the first cutting for both studies. For forage yield, plots were mechanically harvested twice in 2010, 2011 and 2012. Plots for seed production in both locations were also harvested in 2010, 2011 and 2012.

Dry Matter

In 2010, for all cultivars/genotypes, the lowest forage dry matter (DM) yield was associated with

the control treatment (no N), while significant DM yield increase (two- to three-fold) was obtained from 50 and 100 pounds N/acre treatment.

In general, PREC plots produced higher forage yield than Stroh farm plots.

Seed Production

A similar trend (addition of N increased seed production) was also observed for the seed production study at both locations; however, clipping timing had significant effects on seed yield for all cultivars/genotypes. Late clipping consistently produced the lowest seed yield compared to no or early clipping, and early clipping produced the greatest seed yield.

Seed yield variations were observed in both locations with the highest yield of 603 pounds/acre from Cowgirl (150 pounds N/acre) followed by 459 pounds/acre from PDF 584 (150 pounds N/acre) at PREC. The lesser forage and seed yields at the Stroh farm may be associated with delayed and less-frequent irrigation practices compared to PREC. As a consequence, an early shattering of seeds was observed at Stroh farm.

Improved Management Improves Yields

Similar trends for both forage and seed yield were observed at both locations in 2011; however, a significant improvement of forage and seed yields, especially at Stroh farm, was achieved because of improved management practices. At Stroh farm, total forage yield ranged 1,248-5,041 pounds DM/acre in 2010, while the range was 1,706-8,576 pounds DM/acre in 2011. For seed yield, the ranges over two years were 31-1,685 pounds/acre and 25-1,800 pounds/acre at PREC and Stroh farm, respectively.

The highest seed yield was 1,800 pounds/acre (cultivar Fawn of no cut and 150 pounds N/acre treatment) while the lowest seed yield was 25 pounds/acre (cultivar Cowgirl of late cut and no fertilizer treatment).

Importantly, there were little to no seed yield differences between no cutting and early cutting treatments. This has significant impacts on overall production systems as additional forage can be obtained from early cutting, if there is no seed yield difference between early and no cut treatments.

More than 1,000 pounds DM/acre (range 1,117-2,232 pounds DM/acre) in 150 N/acre treatment with early cut were obtained in the present study. Similar results were also observed in 2012 with varietal/genotype differences at both locations.

Information, especially on management strategies, from this study will be useful for not only local producers but also for those in neighboring states. More information or answers to specific questions on the topic can be obtained by contacting the author.

Anowar Islam is an assistant professor and the University of Wyoming Extension forage agroecologist in the Department of Plant Sciences in the College of Agriculture and Natural Resources. He can be reached at 307-766-4151 or mislam@uwyo.edu.



Forage production trial at Powell (Photo: Randall Violett)



Seed production trial at Powell (Photo: Randall Violett)

Forage yield in 2010-11

Tall fescue variety/line	N rate lb/acre	PREC						Stroh Farm					
		2010			2011			2010			2011		
		1st cut	2nd cut	Total	1st cut	2nd cut	Total	1st cut	2nd cut	Total	1st cut	2nd cut	Total
DM (lb/acre)													
97TF1	0	1688	1246	2934	881	530	1410	871	798	1669	1075	631	1706
	50	3240	4420	7660	4284	713	4997	1171	1816	2987	3960	1252	5212
	100	3550	5079	8629	5070	1162	6232	1916	2959	4875	6251	1723	7974
Cowgirl	0	1795	1123	2918	1000	486	1486	667	694	1361	1117	663	1781
	50	2566	2978	5544	3174	721	3895	653	1638	2291	4625	1669	6294
	100	3080	4643	7722	3955	1346	5301	1617	3300	4916	6753	1605	8358
Fawn	0	1722	1037	2758	796	478	1274	810	585	1395	1160	770	1930
	50	2784	3651	6435	3866	824	4689	878	1824	2702	4363	1626	5989
	100	3177	4338	7515	4632	978	5610	1520	2726	4246	6774	1637	8411
KY 31	0	1988	1169	3157	557	449	1006	582	666	1248	1315	813	2129
	50	3817	5361	9178	3995	706	4701	1028	1472	2499	4172	1573	5745
	100	3948	6730	10678	4473	1125	5598	2106	2560	4665	6788	1498	8286
Maximize	0	1625	1023	2648	811	544	1355	774	720	1494	1040	738	1778
	50	2478	2910	5389	3214	794	4009	1049	1681	2730	3677	1305	4983
	100	2294	3711	6005	3742	1280	5021	1659	2881	4541	6308	1712	8020
PDF 584	0	1470	1228	2697	741	522	1263	810	724	1534	1139	813	1952
	50	2042	3724	5766	2204	971	3175	1013	1782	2795	4632	1177	5809
	100	2687	4243	6930	2866	1250	4116	2105	2935	5041	6682	1894	8576
Soft	0	1625	1387	3012	707	530	1236	760	798	1558	1139	792	1930
	50	2241	3833	6074	2727	838	3565	1099	2072	3171	4207	1338	5545
	100	2415	5297	7713	3090	1015	4104	1738	2758	4495	6569	1755	8324
Avg SD*		575	776	1137	592	177	644	271	554	743	498	252	556

* Average standard deviation

Seed yield in 2010-11

Tall fescue variety/line	N rate lb/acre	PREC						Stroh Farm					
		2010			2011			2010			2011		
		No cut	Early cut	Late cut	No cut	Early cut	Late cut	No cut	Early cut	Late cut	No cut	Early cut	Late cut
DM (lb/acre)													
97TF1	0	162	195	110	414	491	390	109	113	44	483	368	209
	100	270	199	117	1469	1271	397	130	115	52	481	729	197
584	150	256	312	145	1469	1158	262	149	164	66	1525	968	155
Cowgirl	0	175	260	98	462	641	406	71	32	25	474	349	239
	100	294	252	112	1205	1189	300	80	59	30	483	724	241
	150	280	603	162	1493	1267	212	94	115	45	1607	1085	262
Fawn	0	127	183	62	251	377	157	89	65	36	466	275	201
	100	182	99	59	663	734	199	120	95	42	569	680	220
	150	172	374	97	895	1194	237	138	161	60	1800	1017	206
KY 31	0	89	95	40	240	295	310	128	91	33	480	288	206
	100	235	149	74	957	936	225	124	93	35	433	494	208
	150	234	291	91	1131	1281	180	135	150	60	1274	879	213
Maximize	0	127	214	92	415	496	385	95	101	66	364	303	136
	100	209	212	85	1303	1331	378	165	116	86	544	537	241
	150	180	453	151	1219	1361	623	178	199	112	1603	888	188
PDF 584	0	225	265	87	453	591	418	120	114	41	337	298	174
	100	338	259	108	1570	1493	452	109	88	48	411	715	189
	150	227	459	141	1685	1187	222	172	205	89	1178	599	260
Soft	0	78	88	31	270	373	234	109	62	33	434	380	185
	100	86	115	39	966	913	181	98	73	35	598	640	262
	150	96	245	50	735	932	242	98	141	55	1617	1076	244
Avg SD*		67	137	32	198	178	119	49	40	23	189	188	84

* Average standard deviation

Three dry-land wheat studies over four years yield budgets

By Brian Lee

Dry-land wheat budgets were compiled using data from the James C. Hageman Sustainable Agriculture Research and Extension Center (SAREC) studies from 2008 to 2012.

Three different dry-land winter wheat production practices were examined for profitability, including no-till wheat/fallow, organic wheat/fallow and conventional wheat/fallow.

The practices followed in these budgets are SAREC-specific, along with yields. The three dry-land wheat practices are fallow rotations comprised of one year of production followed by a fallow year.

Profitability is not the main focus of these studies. Many other soil and sustainability projects are being analyzed. The land is considered very marginal; one of the main goals is to keep/build the soil profile.

Inputs Minimized

The inputs for these three wheat studies are minimized. This allows us to take some of the variability out of the operations and makes for easier comparison but is not necessarily a typical dry-land operation. For example, no fertilizer is applied. This is not a typical practice in dry-land wheat production, but it does take some of the variability out of the operation. The profit figures presented do not include crop insurance payments.

Net Present Value (NPV) was used to determine profitability of the practices over the length of the projects. NPV was calculated using the profit or loss over the life of the project, which is discounted at a rate of 7 percent. Table 1 summarizes the NPV of the three rotations.



Brian Lee

Least Negative Overall Net Present Value

Organic wheat/fallow had the least negative overall NPV at -\$320.97. 2012 was the fourth year of production for this operation. Yields have varied from 9.44 bushel/acre in 2012 to 33.2 bushel/acre in 2010. Field operations on the organic wheat/fallow acres include one disk operation, three sunflower tillage operation and one stubble undercutting. As expected, the organic operation has the highest fuel costs per acre as a percentage of total cost. Cash costs per bushel for 2012 were \$5.80.

The no-till wheat/fallow also has a negative NPV at -\$390.77, although not as low as the conventional operation. 2012 was the fifth year of production for this variety, with yields as low as 7.7 bushel/acre in 2012 and as high as 19.8 bushel/acre in 2009. Field operations included two herbicide applications during production and three herbicide applications during the fallow period. Cash costs per bushel for 2012 were \$11.60. The no-till wheat/fallow operation has the lowest fuel cost per acre as a percentage of total cost.

Most Negative Overall Net Present Value

The conventional wheat/fallow operation has the most negative NPV of the three experiments

at -\$608.50. 2012 was the fifth year of production for this operation, and yields ranged from 10.49 in 2012 to 36.3 in 2009. Field operations include one herbicide application during production, one disk operation and three sunflower tillage operations during the fallow period. Cash costs per bushel for the 2012 year were \$6.07. Fuel usage as a percentage of total cost is 7 percent for this operation.

What can We Really Take Away from Such Negative Profits?

From a profit standpoint, the organic wheat/fallow performed the best in this very marginal soil. There is the possibility of greater premiums with an organic certification, although the organic operation will vary greater with the price of fuel. The no-till variety has the lowest fuel cost, which may be of interest if fuel costs are extremely high in a certain year.

This by no means hints that wheat production is not profitable. Remember, no crop insurance payments have been considered in these budgets, and these plots are not managed like a typical operation. No fertilizer has been used, which affects wheat stand and moisture/organic matter-holding ability. Also, the period of time being considered for these operations has been extremely dry in southeast Wyoming, and we expect profitability to increase with rainy years.

The conventional operation has had the highest average yield per acre with 25.17 bushel, with organic coming in at 25.08 bushel, and no-till at 16.325 bushel.

Fuel usage is another tool to evaluate the different dry-land wheat operations. Fuel usages as a percentage of total cost were calculated and can be found in Table 2.

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

Table 1. Net Present Values of SAREC dry-land wheat

Wheat rotation	NPV at 7%
Conventional wheat/fallow	\$ (608.50)
No-till wheat/fallow	\$ (390.77)
Organic wheat/fallow	\$ (320.97)

Table 2. Fuel usage as a percentage of total cost for SAREC dry-land wheat

Wheat rotation	Fuel usage as % of TC
No-till wheat/fallow	4%
Conventional wheat/fallow	7%
Organic wheat/fallow	8%



Wildfires leave stock water issues to consider

By Kellie Chichester

Persistent hot and dry weather across Wyoming last summer led to many wildfires. As the rangelands are restored, water sources in those areas need attention.

Wildfires that burn near streams and ponds reduce or remove grasses that help stabilize banks and edges of waterways. Removing this material can increase water temperature and the likelihood of runoff and erosion.

Good Water Supply Essential

Temperature and runoff may affect water quality for weeks to years. Cattle grazing in these areas still need clean, fresh water. Cattle can drink 6-12 percent of their bodyweight in water per day. A decrease may affect performance and growth. Amounts will also vary depending upon stage of production, weight, gender and environmental temperature. Diet also affects water intake.

Alkalinity, Nitrogen may Increase

Alkalinity may increase in water due to an increase in ash from runoff, erosion or wind. A sudden alkalinity increase can cause physiological and digestive upset in livestock. Mineralization may cause a salinity increase. Animals may refuse to drink the water for several days and then finally drink a large amount. If this occurs, there may be short-term laxative effects. Animals can adapt to saline waters, but abrupt changes from low-salt content to high-salt content may cause harm.

Due to a lack of plant uptake post-fire, an increase in stream nitrogen can occur. Nitrogen in the form of nitrate is not especially toxic, but, when reduced in the rumen to nitrite, it can be a concern. Nitrite may



Kellie Chichester

reduce the oxygen-carrying capacity of the blood by reacting with hemoglobin. High nitrite levels can actually suffocate an animal.

Phosphorus may Cause Eutrophication

Phosphorus will usually increase the first year after a fire. Adding phosphorus to water will increase eutrophication, a process of nutrient enrichment that encourages aquatic plant growth in water bodies with low oxygen.

Depending upon fire severity, plant recovery will occur over time. Low-severity burn areas will show re-growth sooner than high-severity burn areas. During recovery, it may be necessary to haul water or adjust grazing plans to include pastures with fresh-water sources.

Water testing may be necessary if there have been changes to waterways. Many laboratories in the region perform water tests. Call the labs and visit with them about your concerns to find the best test. Prices range from \$16 to \$100-plus.

Kellie Chichester is an educator with the University of Wyoming Extension based in Albany County and also serves Carbon, Goshen, Laramie and Platte counties. She can be reached at 307-721-2571 or kelliec@uwyo.edu.





Here's a way to enjoy the fruits of your labors

Plant, then relish the pies made of fruit from your garden

By Donna Cuin

One of my favorite childhood memories is picking fresh cherries and enjoying them in the summer sun.

Now one of my joys of summer is eating fresh, sweet cherries.

Since we can't grow sweet cherries in our Wyoming growing conditions, I'll probably never eat cherries out of the garden, but the next best thing is making pies from fresh fruit from the garden.

My Grandmother used to run a restaurant at Red Desert between Wamsutter and Rock Springs. Her specialty was having pies on the menu all year long. I have inherited her handwritten cookbook and, with it, her pie recipes. Since she homesteaded in Wyoming in the early 1900s, I am quite certain they did not have a wide selection of fruits they could use fresh for pie making, but I know that what fruits she could grow were preserved for use when fruit was scarce during long Wyoming winters.

I am in hopes of trying as many of our local fruits as possible in pies in the next growing season, even if I have to purchase them at our local farmers markets.

Fruit That Will Grow in Wyoming

We can't grow sweet cherries here in Wyoming, but we can grow a wonderful variety of tart pie cherries and a number of other fruits well-suited for making pies. These include apple, apricot, chokecherry, currants, elderberry, gooseberry, grape, peaches, pear,



Donna Cuin

plum, pumpkin, raspberry, rhubarb, and of course, strawberries.

If starting a new garden space and lucky enough to take the time and effort necessary to invest in preparing the new garden area, orchard, or vineyard, you will enjoy the fruits of that labor for years – even decades.

A good job preparing the soil for gardening is one of the best investments to make. Developing a deep soil bed of about 5-percent organic matter is most important. Adding a layer of 4 to 6 inches of organic matter and working that into the soil will develop the garden environment for healthy plant growth for years. Microorganisms will begin to thrive in the soil and help continue to develop the soil for the benefit of plant growth.

Researchers at the USDA Horticulture Research Station northeast of Cheyenne planted and grew many of the first fruit trees and shrubs in the region starting in the early 1900s

– about the time my Grandmother arrived. Many of these early trial plants proved fruit could be grown in Wyoming and helped confirm which varieties could handle our climatic conditions.

Select Varieties for Your Conditions

Selecting varieties suited for our colder growing conditions is important and helps ensure success. There are a few areas in Wyoming jokingly referred to as our banana belt locations. These may have a wider selection of successful fruit varieties than most of the state. A few locations have fewer varieties to select from, but we can all grow a few of the fruits.

When selecting fruit trees, shrubs and vines for a garden, ask local experts before investing in plants that may not be well-suited to survive our coldest winter conditions. Check with the local UW Extension office – a good source of research-based information for local conditions.

Once the plants are planted, add an organic mulch layer around the plants. The mulch replenishes organic matter as it breaks down and becomes incorporated in the soil. As it breaks down, the mulch will need to be replaced periodically to provide all the benefits to the soil and to the gardening process:

- Mulch helps hold down the soil, preventing erosion.
- It slows evaporation of moisture and also keeps the soil cooler.

- Mulch reduces the number of weed seeds that may germinate and grow.

Understand the Pests

Pest control is likely the most contentious issue in producing your own fresh fruit. Many of the pests in our state are not controllable or at least not easily controllable with organic methods preferred by those who want to grow what they eat and know the food is chemical free. Understanding what the pests are, pest life cycles, and what controls are available will help growers choose the best option as the plants reach maturity and begin producing fruit.

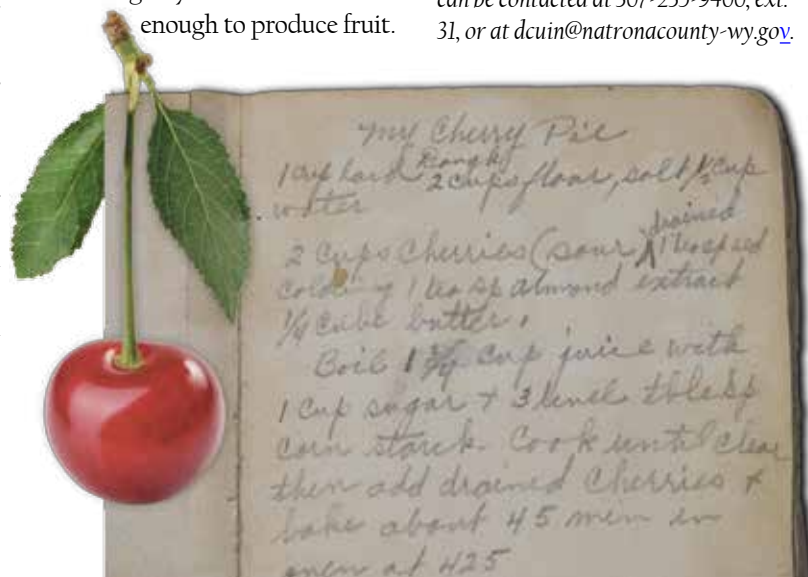
Some fruit plants suited for Wyoming will begin producing fruit in as little as two or three years, while fruit-bearing trees may need to be established for at least six to eight years before mature enough to produce fruit.

Woody plants will need a pruning schedule developed and sustained year-to-year so healthy plant size is maintained and plant health is kept at its peak. Dwarf trees need annual pruning that may seem excessive once they reach their maximum desired size so that fruit harvest remains accessible.

Once your plants are established, are producing fruit and thriving in a well-maintained garden, you will enjoy, literally, the fruits of your labor.

And, if lucky enough to own a dairy cow, your garden will benefit from the manure and, at harvest time, you will benefit by enjoying your pie with fresh, whipped cream.

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A cherry pie recipe of Cuin's grandmother, who operated a restaurant between Wamsutter and Rock Springs in the early 1900s.

Information helps you prepare for disasters, carry on if happens

By Ron Cunningham

University of Wyoming has joined most other states and state and national agencies to provide resources to help in preparing for, mitigating and recovering from natural and manmade disasters.

The national Extension Disaster Education Network (EDEN) can be found under the University of Wyoming Extension website at <http://bit.ly/wyoeden> or Google EDEN LSU.

The site offers information about droughts, earthquakes, blizzards, floods, tornados, wildfires and even wind damage in Wyoming and throughout the country. After the many disasters in Wyoming the past several years, EDEN and its resources will be a much-needed information network to prepare for and mitigate future disasters.



Ron Cunningham

Another area of disaster assistance can be found for human-caused disaster informational help for bio-security, animal health, diseases, farm safety and terrorism.

Prepare, Prepare, Prepare

Along with a vehicle survival

kit (see right), rural families are encouraged to develop their own family survival plans. Make sure family members know where to meet if there is a flood, blizzard or wildfire and you cannot get home. Make sure someone is in charge of taking care of all the farm animals and family pets. Always have a food survival kit in your home for those times rural roads are impassible and you cannot drive for supplies. Several days of non-perishable food is always recommended, as is bottled water.

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Make a winter vehicle survival kit

Assemble a winter survival kit to take when you travel on Wyoming highways. Start the kit with a jacket of superior winter quality and wicks moisture, is tight knit and waterproof, if possible. Add a vest, mittens, winter-insulated boots, wicking socks, and a hat with earflaps or a stocking cap that is warm and a scarf for the face and neck.

Add non-perishable food to your vehicle kit, along with nuts and candy bars, bottled water and a flashlight or headlamp. The best survival tool may be your cell phone. Always make sure to have it and that it is fully charged. Many cell phones today have GPS tracking that could be used to help find you if stranded or lost. The cell phone must be on for the tracking to work. And, always tell someone where you are traveling and when you plan to return.

Add tire chains, tow or log chains, jumper cables and shovel.

Never leave on a trip without checking road reports, Web cams and weather forecasts. And, if stopping during your trip, check conditions ahead because the weather can change fast and you could be driving into dangerous conditions that did not exist several hours earlier.

Tight beef supply, steady demand, drought prime factors driving cattle market

By Bridger Feuz

Three major factors affect the market dynamics of the beef industry: the supply of beef, the demand for beef and the status of beef trade.

Looking at each factor provides a better understanding of long-term market trends; however, additional influences that also must be addressed are input costs and resource availability – both of which are highly dependent upon moisture.

Cow Inventory

Starting in 2006, the January 1 cow inventory has declined year over year and declined again in 2012. The 2013 January 1 beef cow inventory declined -2.9 percent from 2012 to 29.3 million head. The number of heifers held as beef cow replacements has also been in decline since 2006 but actually saw a rebound of 1.9 percent in the January 1 numbers. However, last year's heifer numbers were also positive in January, but with drought conditions by July, the increase in retained heifers had disappeared. The U.S. calf crop will be at its lowest level this year since the 1950s.

Several factors have led to this decline in cow numbers with severe drought conditions in many of the cattle-producing areas being a large contributor.



BEEF FOCUS

Beef cattle inventory January 2013

- Down 2.9% from 2012

Calf crop

- Expected lowest since the 1950s

Beef demand index

- At 77, up two points from 2010

Export markets

- Sales of exports minus cost of imports was more than \$3 billion in 2012

Beef Demand Index

The beef demand index, which adjusts for inflation and uses 1990 as the base year for comparison with a value of 100, bottomed out in 1997 at 77 – a 33-percent decline from 1980 levels but showed consistent growth through 2004 managing a 14-percentage point increase. Much of this growth can be attributed to a positive image of beef quality and to consumer diets that encourage protein and discourage carbohydrates; however, in 2005, the demand index again started to decline and dropped to a low of 75 in 2010.

This recent decline emphasizes a constant need to focus on meeting the changing needs and requirements of consumers, especially as consumer disposable income tightens. The beef demand index has rebounded slightly in the last two years and is now at 77.

Export Markets

The export markets were a strong asset for U.S. beef producers in 2012. On a monthly basis, the U.S. exported on average nearly 30 million pounds of beef per month



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more than it imported. The annual net value of our exports (sales of exports minus cost of imports) was more than \$3 billion for 2012. Although the trade balance was slightly down from 2011, look for strong U.S. beef trade to continue in 2013.

Input Costs

Cattle producers continue to face significant input costs, which were exacerbated by drought in 2012. During the 2012 growing year, corn was up more than \$2 from the previous five-year average. This led to record-high feedlot costs of gain. The average

cost of gain reported for steers in 2012 was \$111.23 per cwt., which was an increase of \$13.88 above 2011. In November, feedlot cost of gain climbed over \$120 for the first time.

Last year was characterized by a tight supply, strong export market and steady demand; however, 2012 was also characterized by severe drought, high input costs and limited forage resources.

The overall balance led to prices remaining nearly level as compared to 2011, which was a record-breaking year for beef producers.

Consulting a weatherman may be more important than consulting an economist like myself when projecting prices this fall. Certainly, if the weather cooperates with some spring moisture to grow grass and the moisture needed for a strong corn crop, the fundamentals would suggest record calf prices this fall.

Bridger Feuz is the University of Wyoming Extension livestock marketing specialist and can be reached at 307-783-0570 or bmfuz@uwyo.edu.

Protect against livestock losses from toxic tall larkspur Two ways: Manage around the weed or control it

By Brandon Greet, Andrew Kniss, Brian Mealor

Throughout the drought and other production pressures, poisonous plants still need to be dealt with.

Tall larkspur is a native perennial weed that can cause cattle producers significant economic losses. While generally safe for sheep, tall larkspur takes its toll on cattle through death losses and decreased production due to poisonous alkaloids.

Mitigating tall larkspur includes managing around their toxicity or controlling them.

Window of Toxicity

Time of grazing is the most important management practice. Tall larkspur has what is called a "window of toxicity." If grazed inside this window, significant death loss will likely occur. Proper identification of tall larkspur is important because tall larkspur has a different window of toxicity than short or plains larkspurs.

Prior to the window, tall larkspur plants are short and in the veg-



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Brian Mealor

etative growth stage. The plants are extremely poisonous but have very low palatability. The bitter taste will keep cattle from consuming deadly amounts.

Palatability becomes acceptable for cattle when the plants enter the flower stage. This is the most important time to keep cattle from grazing pastures infested with tall larkspur. Later, during the seed stage, tall larkspurs will senesce, or dry up. Once completely brown, they are no longer poisonous to cattle. The alkaloids have mostly been pulled into the roots for winter dormancy.

How to Manage

To completely prevent death loss due to tall larkspur and allow

flexibility in grazing management, remove the plants. If there is a small patch, hand pulling and removing from the pasture is practical. This takes a lot of labor and persistence but doesn't require chemicals and can save money. However, larger infestations must be controlled other ways.

In the past, broadcast applications of Tordon (picloram) and Escort (metsulfuron-methyl) and spot applications of Roundup (glyphosate) have shown good efficacy against these plants. Applications of Escort in the spring have generally shown the best results. However, there are new chemicals to consider in the near future. Dupont is putting its new, active

ingredient, aminocyclopyrachlor (the active ingredient in Imprelis), in several chemicals. Although not yet labeled for rangeland use, these chemicals have shown good efficacy for tall larkspur control and, at 2012 prices, would be cheaper than Tordon or Escort.

Be Persistent

Know what the effect could be on grazing when using any chemical means of control. Any of these chemicals can reduce grass produc-

tion in the short term. Many times, this loss is worth reducing the tall larkspur presence.

Persistence is the key for any weed control program. Chemical applications will likely have to be repeated, and modifications to the grazing programs during these applications may be necessary. Increased toxicity of tall larkspur plants is likely immediately after herbicide application. Ranchers need to wait until plants are completely desiccated before the treated area is grazed.

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