BARNYARDS & BACKYARDS

August 2018
UNIVERSITY OF WYOMING

UNIVERSITY OF WYOMING EXTENSION | AG & HORT

USDA

UW EXTENSION | AGRICULTURE & HORTICULTURE | USDA | RISK MANAGEMENT AGENCY

Tool tests multiple enterprises

In previous installments we demonstrated how the Enterprise Risk Analyzer (ERA) can be used following our Jason and Melinda Collins'* diversified crop and livestock example.

We entered their income and expense information into the ERA tool, including cash and non-cash items, and allocated those over each enterprise (alfalfa hay, cow-calf, wheat, corn silage, and calf backgrounding). ERA can generate enterprise net income and break-even analysis and describe whole farm net return.

ERA calculates these results using the range of prices and yields (maximum, minimum, and most likely) entered under the General tab. This helps account for some of the risk involved in enterprise budgeting.

For example, consider how ERA provides results based on the Collins' estimate of the most likely price ($85/ton) for alfalfa hay: Would net income and break-even calculations change if this price went up or down significantly? We are not locking ourselves into a single estimate for price or yield and are able to describe a more accurate picture of the potential profit (or loss) for each enterprise by using a range of values.

The potential net cash income for the alfalfa hay enterprise ranges between a loss of $12,600 to a potential profit of $92,400, with a most likely estimate of $33,400, after covering all costs (cash and non-cash), Table 1.

Table 1. Enterprise Risk Analyzer Net Income Analysis - Collins Ranch Data

Net Income RISK Analysis	WHOLE FARM	Alfalfa Hay
NET Enterprise CASH INCOME (cash income - cash expenses)		
Minimum	(98,975.00)	(12,600.00)
Most Likely	**53,800.00**	**33,400.00**
Maximum	245,000.00	92,400.00
NET Enterprise REVENUE (gross revenue - gross expenses)		
Minimum	(230,021.00)	(50,984.20)
Most Likely	**(77,246.00)**	**(4,984.20)**
Maximum	113,954.00	54,015.80

Table 2. Enterprise Risk Analyzer Net Income Analysis Tab - Collins Ranch Data

Break-Even YIELD Analysis					
PRICE PER ENTERPRISE UNIT	Alfalfa Hay	Corn Silage	Wheat	Cow-calf	Background Calves
Minimum	65	22	2.85	1.45	1.25
Most Likely	**85**	**30**	**3.75**	**1.75**	**1.4**
Maximum	120	45	4.5	2	1.5
BREAK-EVEN YIELD - CASH EXPENSES					
Minimum	2.16	17.84	96.22	305.28	303.75
Most Likely	**3.05**	**26.77**	**115.47**	**348.89**	**325.45**
Maximum	3.99	36.50	151.93	421.07	364.50
BREAK-EVEN YIELD - GROSS EXPENSES					
Minimum	3.76	25.38	138.83	420.41	406.53
Most Likely	**5.31**	**38.07**	**166.60**	**480.46**	**435.57**
Maximum	6.94	51.92	219.21	579.87	487.84

Evaluating Break-even Analysis with the ERA Tool

Break-even analysis is presented on both a Net Cash (cash-only) and Net Revenue (cash and non-cash) basis. These results provide an even deeper view of profitability (or loss) for each enterprise.

The previous Net Income Analysis (Table 2) revealed that alfalfa and cow-calf were the two better-performing enterprises. The Collins' most likely break-even price for alfalfa (per ton) is $51.90 to cover only cash expenses and $90.28 to cover all (gross) expenses. The break-even calf price (per pound) is $1.22 covering only cash expenses and $1.68 to cover all (gross) expenses.

The wheat and backgrounding enterprises show a fairly large range of break-even prices. The most likely break-even price for backgrounding is estimated at $2.28 per head just to cover cash expenses, almost $1.00 per pound higher than the expected price range.

Scrolling further down under the Break-even Analysis tab, we see the Collins' break-even yield analysis. Table 3 provides a picture similar to the break-even price analysis, where backgrounding calves and wheat have a wider range of yields than the expected range entered on the General Tab. When we examine gross expenses, only the alfalfa hay and cow-calf enterprises result in yields that approach levels we might reasonably expect.

Probability analysis is another important ERA feature for evaluating enterprise performance, allowing the user to examine the likelihood of various price and yield levels of covering either cash-only or gross (cash and non-cash) expenses.

Probability curves show the probability of breaking even at a given price (or yield) for each enterprise.

One or more risk management strategies could be developed from this data. For example, increasing insurance coverage or adjusting the level of production across the enterprise mix may improve the chances of breaking even. Looking at alfalfa hay, there is a 50-percent probability of breaking even at approximately $97/ton for gross expenses and $56/ton for cash expenses, Table 4.

Continues next page.

Table 3. Break-even Analysis Tab - Collins Ranch Data

	WHOLE FARM	Alfalfa Hay	Corn Silage	Wheat	Cow-calf	Background Calves
FARM REVENUE						
TOTAL FARM INCOME - CASH	350,300.00	85,300.00	40,300.00	16,800.00	162,800.00	45,100.00
TOTAL NON-CASH INCOME ADJUSTMENTS						
GROSS FARM REVENUE	350,300.00	85,300.00	40,300.00	16,800.00	162,800.00	45,100.00
FARM EXPENSES						
FARM EXPENSES - CASH	296,500.00	51,900.00	40,150.00	21,650.00	109,900.00	72,900.00
FARM EXPENSES - NON-CASH EXPENSE ADJUSTMENTS	131,046.00	38,384.20	16,961.20	9,587.20	41,446.20	24,667.20
GROSS FARM EXPENSES	427,546.00	90,284.20	57,111.20	31,237.20	151,346.20	97,567.20
NET FARM INCOME FROM OPERATIONS	**(77,246.00)**	**(4,984.20)**	**(16,811.20)**	**(14,437.20)**	**11,453.80**	**(52,467.20)**

Net Income RISK Analysis	WHOLE FARM	Alfalfa Hay	Corn Silage	Wheat	Cow-calf	Background Calves
NET Enterprise CASH INCOME (cash income - cash expenses)						
Minimum	(98,975.00)	(12,600.00)	(20,850.00)	(12,725.00)	(200.00)	(52,600.00)
Most Likely	**53,800.00**	**33,400.00**	**150.00**	**(4,850.00)**	**52,900.00**	**(27,800.00)**
Maximum	245,000.00	92,400.00	30,150.00	2,650.00	120,400.00	(600.00)
NET Enterprise REVENUE (gross revenue - gross expenses)						
Minimum	(230,021.00)	(50,984.20)	(37,811.20)	(22,312.20)	(41,646.20)	(77,267.20)
Most Likely	**(77,246.00)**	**(4,984.20)**	**(16,811.20)**	**(14,437.20)**	**11,453.80**	**(52,467.20)**
Maximum	113,954.00	54,015.80	13,188.80	(6,937.20)	78,953.80	(25,267.20)
Probability Analysis (*click button at right*)	Graph	Graph	Graph	Graph	Graph	Graph

Table 4. Break-even Alfalfa Hay Price Analyses - Collins Ranch Data

Break-Even Price Analysis — **Alfalfa Hay**

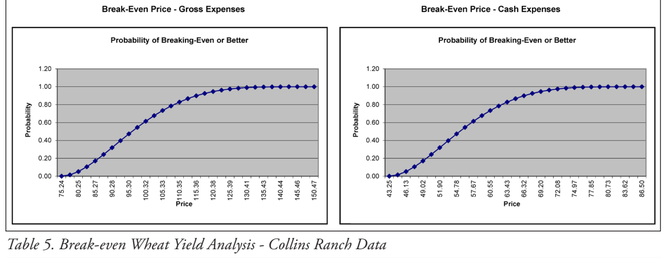
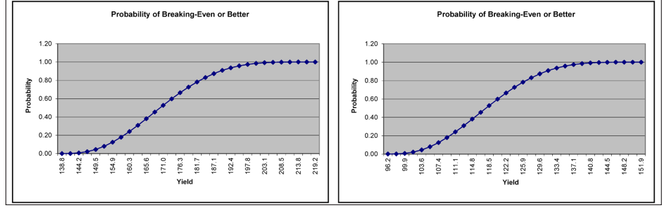
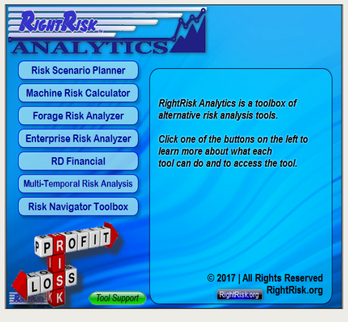


Table 5. Break-even Wheat Yield Analysis - Collins Ranch Data

Break-Even Yield Analysis — **Wheat**





The Enterprise Risk Analyzer (ERA) provides useful decision-making information for farm and ranch managers. ERA can be downloaded from the Tools section of the Resources tab at RightRisk.org.

Included with ERA are two pre-loaded examples showing how ERA might work with both farm and livestock scenarios. This tool is just one of many risk management planning resources and tools available at RightRisk.org, including tools for estimating machinery costs, determining forage resource values, and other important budgeting tools.

Visit RightRisk.org to download the RightRisk Analytics Toolbox and start using any of the several tools for budgeting and quantifying risk in your operation.

Fall is best time for planting our future urban/rural forests

Fall tree planting is such a fruitful experience, and the anticipation that comes from that plant waking up from dormancy ready for the next growing season is well worth the effort.

I'm often asked, "When is the best time to plant?"

My answer is we all need to follow Mother Nature's lead and plant in the fall, and the second best time is spring. The warm autumn soil encourages root growth until the ground cools and growth slows until the first freeze and plant dormancy. The air temperatures are cooler and less likely to stress newly planted trees that otherwise would have been parched for water due to high summer temperatures.

The new additions will go dormant based on local conditions. This is especially true for plants from a seed source with similar conditions to the planting location. Plants from a seed source with much warmer or longer growing conditions will struggle to acclimatize to the new, cooler and shorter growing season site.

Take time to plan and be sure to select the right tree for the right place and the most benefit with the least potential conflict with utility easements, snow drift build up, and encroachment on structures or property lines.

Once that is done, dig a proper planting hole.

Holes for most trees and shrubs should be three to five times as wide as the root ball, but only as deep as the root ball. To ensure the plant is not planted too deep, look for the root flare at the base of the trunk. Once identified, the hole can be dug as deep as the remaining root ball of the plant, from the root flare down.

If concerned the plant may sink due to a soft root ball, set the plant on top of a cone-shaped pile of soil or a platform in the bottom of the hole for support. The roots should then be spread out in all directions from the trunk to ensure good root spread into the soil that was removed and backfilled into the hole.

This soft growing medium will encourage tender young roots to grow into the wide planting space and develop a set of strong anchoring roots to hold the tree up in our heavy winds as well as provide water and nutrients from all directions surrounding the new tree.

Whether or not to amend the soil has been a topic of much debate over the past 20 or more years. It was once recommended to amend the soil with organic matter, and fertilizer was spread in the bottom of the hole. The amended soil was used to backfill the planting hole.

For a while the recommendation changed to a method of tough love and no amendment was suggested, unless the whole site could be amended.

Now we are back to recommending amending the soil dug from the hole to give the tree the best start possible.

Keeping up with the latest recommendations and the reasoning behind them can be frustrating, but the main point is to start the tree off with the best possible care at planting and then do what can be done to ensure the tree is still growing in 20 to 30 years rather than having continual replacement every three to 10 years.

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

iTree Design at https://design.itreetools.org can help select the best planting site for trees around a structure. Simply put in the address of the planting location. The design tools will indicate the best location for trees at the site, and a variety of trees can be tried before the final one is selected. An animation feature shows the growth rate of the tree over a 60-year period.

Enterprise analysis, continued.

Decision Making

ERA information provided could help the Collins determine if their enterprise mix is the best use of their resources or if changes might be needed. Our example is a high-cost business. Potential profitability is heavily influenced by the relatively high costs compared to the potential revenue, even for the more profitable enterprises such as cow-calf.

The wheat enterprise shows almost zero chance for turning a profit, with only a 50-percent chance of breaking even at 119 bushels per acre to cover only cash expenses (Table 5). This yield is beyond the reasonably expected maximum. The Collins may be better served to plant an alternative crop if one would fit their rotation. That alternative might be one that produces a feed input to their livestock enterprises.

The backgrounding enterprise should be further evaluated to determine whether cost savings could be realized and if the strategy of taking the calves to just 850 pounds is the most feasible. Alternatives might be to sell the calves sooner or feed them longer.

The wheat and corn silage enterprises might be viewed as less likely to be profitable; however, we might also evaluate them from the perspective of providing feed to "sell" at market prices to the livestock enterprises. In such a case, they may contribute to overall farm profitability, which must be the ultimate goal of the entire enterprise portfolio.

The main objectives of the ERA tool are to provide an accurate description of enterprise profitability, enterprise contributions to overall business profitability, and to offer analytics to help evaluate alternative strategies and courses of action to improve that performance over time.

**The Collins operation is a case study example created to demonstrate RightRisk tools and their applications. No identification with actual persons (living or deceased), places, or agricultural operation is intended nor should be inferred.*

James Sedman is a consultant to the Department of Agricultural and Applied Economics in the University of Wyoming College of Agriculture and Natural Resources, and **John Hewlett** is a farm and ranch management specialist in the department. Hewlett may be reached at (307) 766-2166 or hewlett@uwyo.edu.