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Valuing forage resources with the Forage Risk Analyzer tool

Previously we described how the Forage Risk Analyzer (FRA) can explore a potential lease between two parties.

Platte County producers Ryan and Lonna Johnson* were deciding whether a potential forage lease with a neighboring landowner would be feasible. The potential lease involved converting an old stand of alfalfa into irrigated pasture.

After entering the expected revenues and expenses, the FRA tool generates a Resource Net Return Summary (Figure 1), and allows users to allocate expenses and revenues between the Johnsons and their neighbor. The Johnsons would receive an estimated 90.1 percent of the net return and the landlord 9.9 percent, when including all costs and returns.

Risk Analysis using the FRA Tool

The capacity to consider risk under the Analysis tab is a unique feature of the FRA tool. In budgeting or other forecasting, we often make assumptions about estimates (production factors, costs, etc.), without the capability to consider the inherent variability in these values.

We often assume a value such as available animal unit months (AUMs) is a fixed number; the question then becomes how does the analysis (and the associated decision) change if the AUM number is higher or lower than expected?

The Johnsons are concerned about variations in the available AUMs of forage under the potential lease. The agreement could become infeasible for one or both of the parties if the available AUMs fall below a certain point.

Users complete the analysis by selecting either Supplier, User, or Total Lease Arrangement and any one of the six factors for risk analysis. By first choosing to vary the number of expected AUMs, we can account for a large portion of the risk in the proposed lease.

First, we select the Total Lease Arrangement, then select AUMs Per Year as the uncertain variable. For most likely we enter 420 AUMs, at the low end we enter 300, and 500 AUMs for the high value (Figure 2). Clicking the Run button generates a probability curve for net returns, given the fluctuating number of AUMs (Figure 3). The curve shows a 50-percent probability of earning a net return of no higher than $-64.20 per AUM and ranging between $-77.70 and $-46.60 per AUM per year.

Note that the depreciation expense for the 70 cows ($28,000/year) is the factor driving the negative returns on the Johnson's side of the agreement. If we zero-out the 70 cows and their initial value under the Livestock tab and we remove the depreciation expense entered under the Allocation tab, we see a revised net return of $575 with a split of $3,400 landowner (54.6 percent) and the Johnsons at $-2,825 (45.4 percent).

Rerunning the analysis for AUMs provides a bit different perspective. The new curve shows a 50-percent probability of earning a net return of no higher than $1.40 per AUM, ranging as low as $1 and as high as $1.60 per AUM per year (Figure 4).

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Figure 1. FRA Net Return Analysis for Example Forage Lease.

Net Return Analysis*		Supplier #1	Supplier #2	Supplier #3	User #1	User #2	User #3
Net Return per *YEAR*	-$27.425	$3.400	$0	$0	-$30.825	$0	$0
Net Return per *ACRE*	-$195.89	$24.29	$0.00	$0.00	-$220.18	$0.00	$0.00
Net Return per *ANIMAL*	-$262.44	$32.54	$0.00	$0.00	-$294.98	$0.00	$0.00
Net Return per *POUND of AVAILABLE TDN*	-$0.11	$0.01	$0.00	$0.00	-$0.13	$0.00	$0.00
Net Return per *ANIMAL UNIT MONTH*	-$65.30	$8.10	$0.00	$0.00	-$73.39	$0.00	$0.00
Net Return per *ANIMAL UNIT*	-$783.57	$97.14	$0.00	$0.00	-$880.71	$0.00	$0.00

**Net return analysis for suppliers and users allocated based on their relative share of total resource expenses per YEAR.*

Figure 2. FRA Risk Analysis for Example Forage Lease.

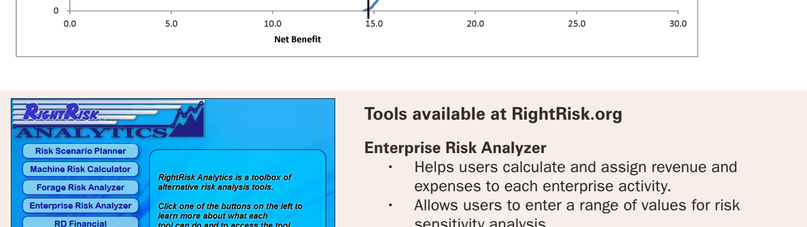
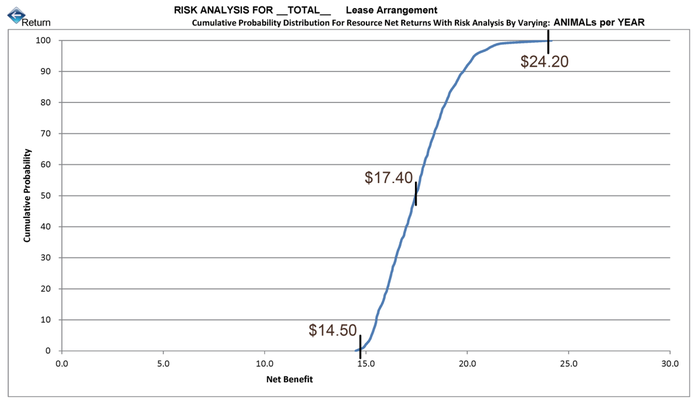


Figure 3. FRA AUMs per Year Analysis for Example Forage Lease. With Cow Depreciation.

Figure 4. FRA AUMs per Year Analysis for Example Forage Lease, Without Cow Depreciation.

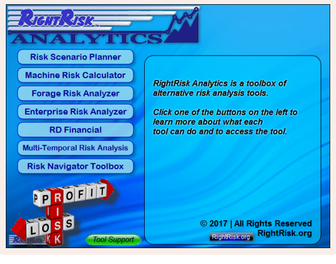
Figure 5. FRA Animals per Year Analysis for Example Forage Lease.



For more information

The Forage Risk Analyzer (FRA) is just one of many useful resources available at RightRisk.org.

The Machinery Risk Calculator, Risk Scenario Planning tool, and Enterprise Risk Analyzer tool help users include variability in risk management planning. Instead of just assuming a single cost or production estimate, these tools allow the user to define a range of values to more accurately evaluate the extent of possible results. Visit RightRisk.org today to get started.



Tools available at RightRisk.org

Enterprise Risk Analyzer

- Helps users calculate and assign revenue and expenses to each enterprise activity.
- Allows users to enter a range of values for risk sensitivity analysis.

Multi-Temporal Risk Analyzer

- Designed to allow users to analyze multi-year strategies and production decisions involving risk.
- Allows for a broad range of risk-strategy analysis.

Preparation helps reduce blizzard mayhem

ORGANIZE FEED TO ENSURE STORM SURVIVAL

Brutal blizzards often occur in early fall, late spring, or after a period of mild weather. Worse, they may come when producers are not prepared and hit with greater force and last longer than other storms.

Blizzards can cut survival rates of newborn calves, challenge the metabolism of livestock and block, or complicate access to feed. Organizing feed to help cattle survive usually boils down to putting livestock in the right place, putting feed in the right place, and being equipped to get feed to cattle.

On most operations that provide winter cattle feed – usually hay and supplements – producers have devised a system based on prior experience with storms. Experience influences where they stack hay, where cattle are grazed during the year, and what equipment they buy.

Planning and organization can prepare producers, including next-generation and novice producers, to get feed to their livestock and avoid challenges that come with storms.

Put Livestock in the Right Place

Placing livestock for access to feed is the oldest practice used in Wyoming. Moving cattle to thickets of brush and protected canyon floors are examples.

Range cattle were moved to sheltered sites where feed was available whenever bad weather was expected. Producers identified and saved sheltered spots for grazing during drifting snow and severe cold and wind chill. Effective managers also found locations where vegetation remained exposed or protruded above snow cover.

Any blizzard survival location requires protective elements, water, and a source of feed. Livestock must have a passable route to feed, whether it is stacked, windrowed, or left standing. Moving livestock to feed sources during a blizzard is fraught with risk and not recommended.

Put Feed in the Right Place

Having feed in the right location is usually the top factor for winter cattle survival. If feed is stacked in yards, it helps to use windy sites where snow is blown off rather than accumulate. Because the stacks serve as wind foils that accumulate snow downwind, it is crucial to align stacks and access pathways so they also blow clear. Understanding how your operation's topography and dominant weather patterns affect snow accumulation helps reduce the chances of feed becoming inaccessible.

Having more than one feed location within a reasonable distance, such as half a mile from livestock, provides alternatives if the snow does not form traditional drift patterns.

In flatter, wind-driven locations, many Wyoming ranchers have erected large wind shelters stocked with water and hay stacked along the inside perimeter. Cattle become familiar with the structure and naturally move to it for shelter, feed, and water. Structures can be permanent or temporary but allow producers to travel to the site to feed livestock rather than transport feed. Structures should be sized to accommodate the number of livestock in the vicinity.

Remember, if all animals cannot be sheltered, they will be directly affected by snow drifting downwind of the structure.

The occasional need to move feed in or out is another consideration in choosing an optimal location. Placing major feed distribution points along developed and maintained public roads enhances the likelihood of open access.

And remember to place a few small stacks in unusual locations and know where your neighbors have theirs – just in case.

Invest in Infrastructure

Getting through a blizzard is usually three to five times harder than other storms. Think how a regular 6-inch snow storm over 48 hours compares to a blizzard that drops 38 inches of snow over five days and blows it into drifts 8 to 10 feet high.

Many infrastructure needs, including equipment and horse power, are dependent on the format of your feedstuffs. If you use small hay bales or loose hay, you may be able to reach these on a snow machine, by horse, or on foot and simply hand-feed the hay. In some locations, horse-drawn hay sleds are feasible.

Large bales require larger equipment, which may not easily traverse deep snow. Some producers use equipment such as dozers or crawlers to open pathways for traditional large-bale equipment. In the mountains, some Wyoming producers use large multi-staged snow blowers 8-10 feet wide and 60 inches high to open pathways. During several disastrous blizzards, very large bulldozers were used to drag semi-truck trailers of hay through the snow, and volunteers fed hay from the loads.

Always remember, though, during severe blizzards, most heavy equipment is dedicated to human concerns, not livestock.

Plan for the Big One

Members of the UW Extension Agriculture and Horticulture Initiative Team can help you review your readiness and winter plans. Basing feed locations, livestock positioning, and equipment on the worst-case scenario may be expensive, but it could make the difference in your cattle's survival.

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Valuing forage resources, continued

Looking at the lease from yet another viewpoint, consider a good forage year that allows the Johnsons to run additional calves on the lease. We select Total Lease Arrangement and Animals per Year as the uncertain variable. Thinking optimistically, the Johnsons set the low value at 30 head and the high at 50, with the most likely remaining at 34.5 head after death losses. Results describe a 50-percent probability of a net return of no more than $17.40/head, ranging between $14.50/head and $24.20 (Figure 5).

Decision

The Johnsons now have a more comprehensive understanding of the potential lease arrangement. On the face of it, where the forage is valued at $120/acre and the Johnsons do not include their cow depreciation, the split between the two parties is nearly 50/50. The neighbor looks to cover his expenses and turn a small profit under the most likely scenario, which was his goal in entering the agreement. The Johnsons have determined they can approximately break-even, covering their costs of entering into this agreement, and any additional return would go to cover their annual cow depreciation of $28,000.

Keep in mind, that in addition to the lease payment, the Johnsons estimated they would incur only about $5,700 in other lease-related expenses. Further costs in the budget were associated with the livestock and would no doubt be incurred whether on the lease or on the home place.

In addition, if the Johnsons were to continue the lease in future years, the other lease-related costs would likely go down.

Finally, keep in mind that while the cow/calf herd is grazing on the neighbor's place, the Johnsons have the forage on the home place they can either stockpile, harvest, or hold for grazing when the herd returns.

This gives them several risk management options should the lease details not always work in their favor in coming years.

** The Johnson 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.*

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