

RISK SCENARIO PLANNING

Evaluating Mineral Supplementation for Hawai'i Beef Production



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Sources of Risk in Agriculture - Ag Risk 5

1. Marketing/Price Risk
2. Production Risk
3. Institutional/Legal Risk
4. Human Risk
5. Financial Risk



Managing agricultural businesses in today's environment is definitely challenging, perhaps more challenging than in the past. One of the reasons for the increased difficulties comes from the many risks operators face.

Risk is described as a special case of uncertainty where the outcomes and probabilities are known. In popular usage, risk is generally understood to mean future events for which the outcomes are uncertain. Not all uncertainty is created equal, however. We might describe risk as a case where the uncertainty matters; if the outcomes did not matter there would be no risk.

Traditionally, we have described risk in agricultural as coming from five distinct sources: market risk, production risk, institutional risk, human risk, and financial risk.

Strategies for Managing Risk

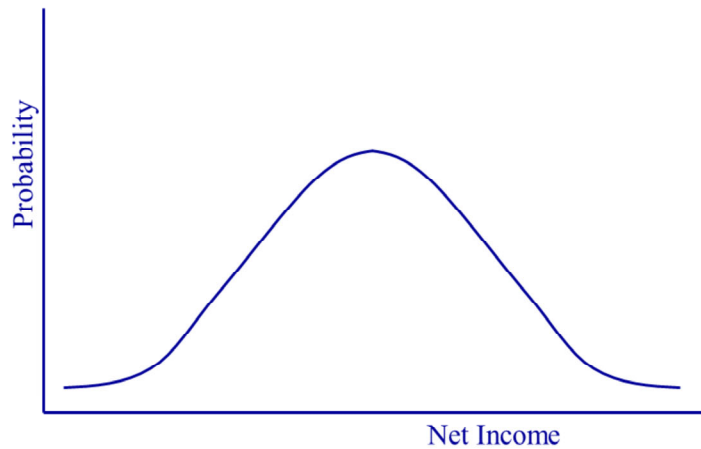
1. **Avoid it**
2. **Reduce it**
 - a) Reduce the probability it will happen
 - b) Reduce the impact if it does happen
3. **Transfer it outside the business**
 - a) Insurance
 - b) Contracting
4. **Increase capacity to bare**
 - a) Increase reserves
 - b) Maintain flexibility
5. **Accept it**



Strategies for managing risk or the consequences of a negative event, should it occur, vary by source of risk and level of protection already in place.

In general, the options range from avoiding the risky practice entirely (minimizing the risk) to accepting the risk (self-insuring). Between these two extremes are several possibilities for managing the risk to a more acceptable level by: reducing the risk, transferring the risk, or increasing the capacity to bear the risk.

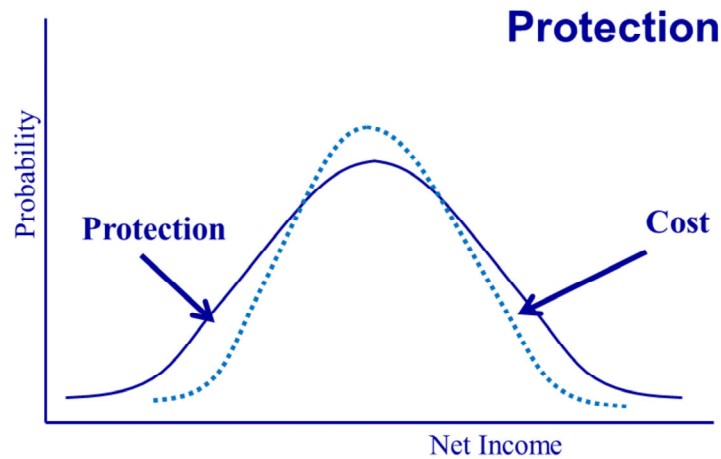
How much risk is right for you?



Risk management may be accomplished at several levels within a business. At the highest level—the strategic level—management makes decisions regarding the allocation of resources across business activities, the timing of the application of those resources, and the level of resource use. At this higher level, management also decides which enterprise activities to engage in. Put in another way, these decisions include which crops to grow, which stage to sell at, whether to diversify or vertically integrate, whether to sell direct to consumers or to contract with wholesalers. Such decisions represent “big picture” or macro-level decisions about the business and its activities.

In general, risk management strategies are intended to improve the net income of the business over time. One way of depicting this is with a probability curve. Here you can see we have net income described on the x-axis with probability described on the y-axis. As we move upward along the curve, the probability is increasing. As a result, the highest point on the curve is where the average net income would be found and along the tails to either side are lesser probability events with either low or high levels of income.

How much risk is right for you?



Now if we follow some sort of risk management strategy we might want to consider how we might like to change the probability curve. We need to think through how it is we want that probability curve to change, whether that might be by changing its shape, shifting it left or right, or by some other adjustment.

In this conceptual graph on the screen, we see that we have reduced the spread of the distribution. By doing so, we have reduced the consequence of the lowest returns, as indicated by the protection arrow to the left. In order to gain that protection we've also had to give up some of the higher-level returns labeled as cost to the right. In return, we have increase the probability of earning an average level return centered around the middle of the diagram, as shown at the peak of the curve.

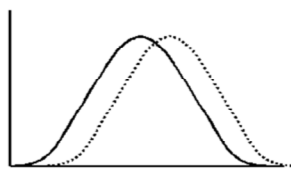
On short, we've purchased some level of protection by having made some sort of payment, but in return we have increased the possibility of earning a more consistent level of income.

Strategy Impacts

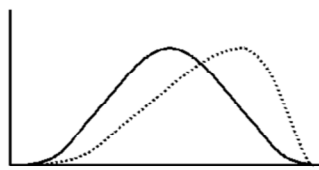
Panel 1: Same Mean, Less Dispersion



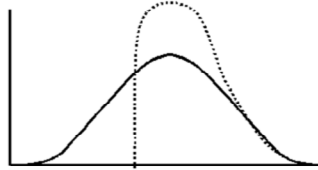
Panel 2: Same Dispersion, Higher Mean



Panel 3: Skewing the distribution



Panel 4: Truncating the Distribution



There is definitely more than one way to influence the probability distribution and impact net income. This slide depicts several possibilities open to us. The trick is for us to decide what might be the intended impact of any risk management strategy we might be considering for our business.



Comparing risk management strategies can be challenging without analytical tools to help us. In fact, that may be the biggest challenge to selecting and following a strategy for managing risk.

RightRisk Analytics: ~ tools to evaluate alternatives

- Risk Scenario Planner**
 relatively minor changes, risk analysis
- Machine Risk Calculator**
 machine costs, custom rates, risk analysis
- Forage Risk Analyzer**
 lease arrangements, forage supply, housing costs
- Enterprise Risk Analyzer**
 larger enterprise-level, enterprise mix changes
- RDFinancial**
 substantial changes, whole farm budgets,
 financial analysis, credit scoring
- Multi-Temporal Risk Analysis**
 partial budgets incorporating time, risk analysis
- Risk Navigator**
 strategic risk planning and analysis

UNIVERSITY OF WYOMING **RightRisk**

The RightRisk team has spent the last several years developing risk analytics to evaluate various management decisions, including comparing risk management strategies.

The balance of this presentation will focus on the Risk Scenario Planner tool, which is designed to assist farm and ranch managers evaluate the impact of relatively minor management changes and to include the effects or impacts of risk in that analysis.

Risk Scenario Planner Description

- The Risk Scenario Planner (RSP) Tool is designed to provide financial analysis of management strategies and decisions involving **risk**
- Examples include: changes in production practices, adding and subtracting operating inputs, or other management alternatives that are fairly straight forward to define and evaluate
- The RSP tool uses a **partial budget framework** for collecting data to reflect one or more decisions for analysis



The Risk Scenario Planning Tool was developed to help producers play the “what-if” game while analyzing proposed changes to their operation. The tool is based on the standard set-up for a partial budget.

Partial Budget Framework

A partial budget is a tool used to analyze the **financial effect** of simple management changes

- **Positive Effects**

- *Added Returns*
- *Reduced Costs*

- **Negative Effects**

- *Reduced Returns*
- *Added Costs*



A partial budget is a simple framework to analyze changes for a portion of an operation.

Those changes are described by entering the financial consequence of the change as:

An Add return

or

An Reduce cost

OR as

An Add cost

or

An Reduce return

Positive effects of the change are calculated by adding the added returns and reduced costs

From which we subtract the

Negative effects of the change or the sum of the reduced returns and added costs

RSP Tool

- The RSP tool goes beyond a partial budget by taking **risk** (change over time) into consideration
- The RSP tool allows one or possibly two of the input values to be **uncertain numbers** for any alternative analyzed
- This can lead to a more thorough understanding of **possible outcomes** if the change is implemented



The Risk Scenario Planning Tool provides a template for the decision-maker to enter the financial effects of making proposed change(s) to their operation. It then adds the ability for the decision-maker to further refine estimates for some of input values as uncertain numbers. This produces a more robust analysis of the proposed change and a more thorough understanding of the possible outcomes if the change is implemented.

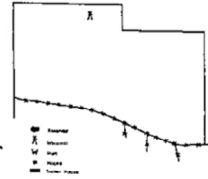
RSP Input Page

The image shows a screenshot of the 'RightRisk' RSP Input Page. The form is titled 'Partial Budget For:' and includes a field for 'Enter description of action/concern here'. It is divided into two main sections: 'Positive Effects' on the left and 'Negative Effects' on the right. Each section has columns for 'Quantity', 'Value', and 'Total'. The 'Positive Effects' section includes 'Added Returns' and 'Reduced Costs'. The 'Negative Effects' section includes 'Added Costs' and 'Reduced Returns'. At the bottom, there are summary rows for 'Total Positive Effects (Added Returns + Reduced Costs)', 'Total Negative Effects (Added Costs + Reduced Returns)', and 'Net Benefit of:'. Callouts point to various parts of the form: 'Decision Description' points to the top right; 'Description of Change', 'Quantity Expected', and 'Value per Unit Expected' point to the input columns; 'TOTAL Positive Effects', 'Expected Total Net Benefit', and 'TOTAL Negative Effects' point to the summary rows at the bottom. The University of Wyoming and RightRisk logos are visible at the bottom left.

The calculations include totaling the Positive Effects on the left, as well as the total Negative Effects on the right side of the form. The total overall expected net benefit is also calculated at the bottom.

Case 1: Bred Heifers

- The WX Ranch runs a 350 head cow/calf operation in the Rocky Mountain region. Each year they expect to replace about 15 percent of their mother cows or 52 head. As a result, they normally hold 52 heifers out of each calf crop over the winter to breed as replacement animals.
- The WX Ranch is considering making a change that would involve keeping back an additional 40 heifers to put through the heifer development program.



An example may be an easier way to see how this tool might be used.

Consider the WX Ranch which has a 350 head, cow/calf enterprise in the Rocky Mountain region. Each year they expect to replace about 15 percent of their mother cows or 52 head. As a result, they normally hold 52 heifers out of each calf crop over the winter to breed as replacement animals.

The WX is considering making a management change that would involve keeping back an additional 40 heifers to put through a heifer development program.

Case 1: Bred Heifers

- For **added returns** the WX expects 34 of the 40 extra replacement heifers to be bred and ready to sell as herd replacements each fall. They expect that these should sell for around \$1,200 per head or \$40,800 total.
- The 6 heifers that do not get bred can be sold as yearling feeder animals. The WX expects them to weigh about 900 pounds each and bring about \$134.50 per cwt. This will result in another \$7,263 in additional revenue.
- Finally, the extra replacement heifers will require a couple of additional bulls to run with the herd. The WX estimates that this change will result in about 600 more pounds of cull bull sales each year at \$85.00 per cwt. or \$510 total.
- The total positive effects that the WX Ranch expects to gain from making this change to the operation are \$48,573 in added returns.



For added returns the WX expects 34 of the 40 extra replacement heifers to be bred and ready to sell as herd replacements each fall. They expect that these should sell for around \$1,200 per head or \$40,800 total.

The 6 heifers that do not get bred can be sold as yearling feeder animals. The WX expects them to weigh about 900 pounds each and bring about \$134.50 per cwt. This will result in another \$7,263 in additional revenue.

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The total positive effects that the WX Ranch expects to gain from making this change to the operation are \$48,573 in added returns.

Case 1: Bred Heifers

- For **reduced returns**, saving back 40 extra replacement heifers means the WX will have 40 fewer weaned heifers to sell each fall. They estimate that their weaned heifers weigh about 500 pounds each and the market price for them is about \$137.00 per cwt. This results in \$27,400 in total reduced returns.



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Case 1: Bred Heifers

- For **added costs**, the WX estimates that six AUMs of grazing per head would be needed at \$20 per AUM that adds an expense of \$4,800.
- A winter feed estimate of 1.75 tons of hay per head at \$190 per ton adds an additional hay expense of \$13,300.
- The WX also estimates \$10 per head or \$400 total in additional vet & medicine expenses.
- Additional labor expenses are a little more difficult to estimate but their best guess is about 275 additional hours will be needed to check, move, handle, and feed the animals with the rest of your herd. At \$12 per hour, this totals to \$3,300 in added labor costs.



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Case 1: Bred Heifers

- The \$27,400 in reduced returns from not selling the 40 heifers as weaned calves is money the WX does not have in the bank and it will be a full year before they see the returns from selling the heifers as yearlings. At 8 percent interest, this adds \$2,192 in interest costs.
- Having two more bulls in the herd will also cost the WX in terms of opportunity costs (\$69.15) and depreciation (\$666.66).
- Finally, they tally up a subset of their fuel, supplies, repairs, and maintenance costs that they expect to increase with the additional animals and come up with a current cost of \$29.81 per cow. Applying this to 40 head of additional replacement heifers results in \$1,192.40 in added costs.
- The end result is \$25,920.18 in added costs resulting from making the change to the WX Ranch operations.




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The end result is \$25,920.18 in added costs resulting from making the change to the WX Ranch operations.

Case 1: Bred Heifers



Partial Budget For:

Positive Effects			
Added Returns	Quantity	Value	Total
Bred Heifers	34	\$ 1,200.00	\$ 40,800.00
6 Feeder Heifers (9cwt.)	54	\$ 134.50	\$ 7,263.00
Cull Bulls (cwt./year)	6	\$ 85.00	\$ 510.00
			\$ -

- **Added returns** would result from
 - *Selling 40 bred heifers each year*
 - *Selling 6 feeder open heifers each year*
 - *Selling 6 additional cull bulls each year*



Added returns would result from

Selling 40 bred heifers each year

Selling 6 feeder open heifers each year

Selling 6 additional cull bulls each year

Case 1: Bred Heifers

Reduced Returns	Quantity	Value	
40 Heifer Calves @ 5 cwt.	200	\$ 137.00	\$ 27,400.00
			\$ -
			\$ -
Total Reduced Returns			\$ 27,400.00

- **Reduced returns** would result from not selling the 40 heifer calves each fall

Reduced returns would result from not selling the 40 heifer calves each fall

Case 1: Bred Heifers

Added Costs	Quantity	Value	
Private Grazing (40 hd. X 6 AUMs)	240	\$ 20.00	\$ 4,800.00
Hay (40 hd. X 1.75 tons)	70	\$ 190.00	\$ 13,300.00
Vet & Medicine	40	\$ 10.00	\$ 400.00
Hired Labor (hours)	275	\$ 12.00	\$ 3,300.00
Interest - Operating Capital	27400	\$ 0.08	\$ 2,192.00
Bull Opportunity Cost	2	\$ 34.56	\$ 69.12
Annual Bull Depreciation	2	\$ 333.33	\$ 666.66
Fuel, Supplies, Repairs, Maintenance, etc.	40	\$ 29.81	\$ 1,192.40

- **Added costs** would include:
 - *Added grazing and added hay,*
 - *Added vet & medicine*
 - *Added labor*
 - *Interest on operating capital*
 - *Bull depreciation*
 - *Added fuel, supplies, repairs, maintenance, etc.*



Added costs would include:

Added grazing and added hay,

Added vet & medicine

Added labor

Interest on operating capital

Bull depreciation

Added fuel, supplies, repairs, maintenance, etc.

Case 1: Bred Heifers RSP Input Screen

Positive Effects				Negative Effects			
Added Returns	Quantity	Value	Total	Added Costs	Quantity	Value	
Bred Heifers	34	\$ 1,200.00	\$ 40,800.00	Private Grazing (40 hd. X 6 AUMs)	240	\$ 20.00	\$ 4,800.00
6 Feeder Heifers (9 cwt.)	54	\$ 134.50	\$ 7,263.00	Hay (40 hd. X 1.75 tons)	70	\$ 190.00	\$ 13,300.00
Cull Bulls (cwt./year)	6	\$ 85.00	\$ 510.00	Vet & Medicine	40	\$ 10.00	\$ 400.00
		\$ -	\$ -	Hired Labor (hours)	275	\$ 12.00	\$ 3,300.00
		\$ -	\$ -	Interest - Operating Capital	27400	\$ 0.08	\$ 2,192.00
		\$ -	\$ -	Bull Opportunity Cost	2	\$ 34.56	\$ 69.12
		\$ -	\$ -	Annual Bull Depreciation	2	\$ 333.33	\$ 666.66
		\$ -	\$ -	Fuel, Supplies, Repairs, Maintenance, etc.	40	\$ 29.81	\$ 1,192.40
		\$ -	\$ -			\$ -	\$ -
		\$ -	\$ -			\$ -	\$ -
Total Added Returns			\$ 48,573.00	Total Added Costs			\$ 25,920.18
Reduced Costs	Quantity	Value		Reduced Returns	Quantity	Value	
		\$ -	\$ -	40 Heifer Calves @ 5cwt.	200	\$ 137.00	\$ 27,400.00
		\$ -	\$ -			\$ -	\$ -
		\$ -	\$ -			\$ -	\$ -
Total Reduced Costs			\$ -	Total Reduced Returns			\$ 27,400.00
Total Positive Effects				Total Negative Effects			
(Added Returns + Reduced Costs)			\$48,573.00	(Added Costs + Reduced Returns)			\$53,320.18
Net Benefit of: Raise Bred Heifers to Sell							\$ (4,747.18)

These are all the entries to describe the WX strategy for keeping back an additional 40 heifers to put through a heifer development program.

Total positive effects of the change would amount to \$48,573

Total negative effects are -\$53,320.18

The Net Benefit, adding the positive and negative effects together come to about -\$4,747.18.

Case 1: Bred Heifers RSP Input Screen

Risk Scenarios	
Uncertain Value 1 <input type="checkbox"/> Include	
Description	Cell
Bred Heifer Value	D6
Current Value (Most Likely)	1200
Minimum Value	1100
Maximum Value	1500

What if the WX sets the value of your bred heifers as uncertain?

- The current value of \$1,200 is in cell D6 of the Risk Scenario Planning tool. We enter “Bred Heifer Value” as the description and “D6” as the cell under Uncertain Value 1
- Then enter 1200 as the current value,
- 1100 as a possible minimum value, and
- 1500 as a possible maximum value.



What if the WX sets the value of the bred heifers as uncertain?

The current value of \$1,200 is in cell D6 of the Risk Scenario Planning tool.

We enter “Bred Heifer Value” as the description and “D6” as the cell under Uncertain Value 1
Then enter 1200 as the current or most likely value,
1100 as a possible minimum value, and
1500 as a possible maximum value.

Case 1: Bred Heifers RSP Input Screen

Risk Scenarios					
Uncertain Value 1		<input checked="" type="checkbox"/> Include	Uncertain Value 2		<input checked="" type="checkbox"/> Include
Description	Cell		Description	Cell	
Bred Heifer Value	D6		Hay Price	H7	
Current Value (Most Likely)	1200		Current Value (Most Likely)	190	
Minimum Value	1100		Minimum Value	130	
Maximum Value	1500		Maximum Value	250	

The WX Ranch wants to make hay price an uncertain value as well.

- The current hay price of \$190 per ton is contained in cell H7, so we enter “Hay Price” as the description and “H7” as the cell under Uncertain Value 2.
- We use 190 as the current value, and
- 130 as a possible minimum value, and
- 250 as a possible maximum value for hay price



In addition, how would the analysis come out if the hay price is uncertain as well?

The current hay price of \$190 per ton is contained in cell H7,

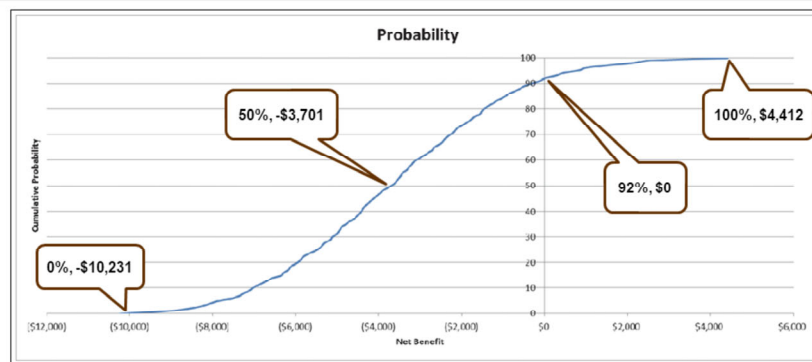
so we enter “Hay Price” as the description and “H7” as the cell under Uncertain Value 2.

We use 190 as the current or most likely value,

130 as a possible minimum value, and

250 as a possible maximum value for hay price

Case 1: Bred Heifers RSP Results Screen



- A cumulative distribution graph gives the probability of earning a net return at or below any certain value.



A cumulative distribution graph gives the probability of earning a net return at or below any certain value.

After allowing the two uncertain values (bred heifer and hay prices) to vary over 1,000 possible outcomes, the results of the RSP analysis are presented on this slide.

What can we see from the analysis? Over the long run, we would expect the following:

There is a 100 percent probability that the Net Benefit would fall below \$4,412

There is a 100 percent probability that the Net Benefit would be above -\$10,231

In addition, there would be a 50/50 chance that the Net Benefit would come out around -\$3,701

Finally, the analysis shows there would be a 18 percent chance that the Net Benefit would be above \$0
or a 92 chance that it would be below \$0.

After learning these results, we might ask again “Should the WX retain more heifers?”

Summary

The Risk Scenario Planning tool:

- Can be a useful tool for analyzing **management** strategies and decisions involving **risk**
- Represents a better way to handle the presence of **uncertainty** by thinking in terms of **distributions** of possible outcomes over time
- Results in more **informed** decision-making



The Risk Scenario Planning tool:

Can be a useful tool for analyzing management strategies and decisions involving risk

Represents a better way to handle the presence of uncertainty by thinking in terms of distributions of possible outcomes over time

Results in more informed decision-making



If you have questions at this point, you might review the slides presenting the WX example problem again.

If you are wondering about how the Risk Scenario Planning tool works, you might consider visiting the RightRisk website at RightRisk.org and downloading the technical guide explaining the Risk Scenario Planning tool and demonstrating some additional examples.

Case 2: Convert to Free-Choice Mineral Supplementation

- The X Bar Ranch, a 500 cow/calf operation in the Waimea area, has been supplementing their cattle with a commercial mineral mix for over the past 10 years.
- Current prices for commercial mineral mix runs about \$34.66/cow/year. Recent work by the UH Cooperative Extension Service has found that an individual, cafeteria-style mineral program may reduce the cost of supplementation to about \$16.69/cow/year.



Now consider a second example. The X Bar Ranch, a 500 cow/calf operation in the Waimea area, has been supplementing their cattle with a commercial mineral mix for over the past 10 years.

Current prices for commercial mineral mix runs about \$34.66/cow/year. Recent work by the UH Cooperative Extension Service has found that an individual, cafeteria-style mineral program may reduce the cost of supplementation to about \$16.69/cow/year.

Case 2: Convert to Free-Choice Mineral Supplementation

- Five new mineral bunks (1 bunk/100 head) would need to be constructed at an estimated cost of \$1,000 each and are expected to last 10 years. Currently they are paying about 7 percent interest on their operating capital.
- They anticipate they will spend an average of about 1 additional hour per week putting out mineral following the free-choice approach. Labor cost is around \$20/hour, including all payroll taxes and benefits.
- Other expenses for additional fuel, vehicle maintenance and miscellaneous costs are expected to increase about \$250/year.
- They also anticipate management costs will increase around \$500/year to manage the new mineral program.



Five new mineral bunks (1 bunk/100 head) would need to be constructed at an estimated cost of \$1,000 each and are expected to last 10 years. Currently they are paying about 7 percent interest on their operating capital.

They anticipate they will spend an average of about 1 additional hour per week putting out mineral following the free-choice approach. Labor cost is around \$20/hour, including all payroll taxes and benefits.

Other expenses for additional fuel, vehicle maintenance and miscellaneous costs are expected to increase about \$250/year.

They also anticipate management costs will increase around \$500/year to manage the new mineral program.

Case 2: Convert to Free-Choice Mineral Supplementation

- Based on past prices, they find that the free-choice mineral mix could be expected range between \$14.19 and \$19.19/cow/year.
- After further reflection, they realize that commercial mineral mix prices have varied between \$29.46 and \$39.86/cow/year.



Based on past prices, they find that the free-choice mineral mix could be expected range between \$14.19 and \$19.19/cow/year.

After further reflection, they realize that commercial mineral mix prices have varied between \$29.46 and \$39.86/cow/year.

RSP Input Page

We can use the Risk Scenario Planning tool to help us evaluation this management decision. Should the X Bar change their mineral supplementation program?

You could STOP viewing this presentation here and return to the web page to download a document with all the details for the X Bar Ranch mineral supplementation program by clicking the link “RSP Tool PROBLEM HAWAII County.”

You can also download a copy of the Risk Scenario Planning tool to enter the X Bar information and answer the question for yourself.

Case 1: Convert to Free-Choice Mineral Supplementation - RSP Input Screen

Risk Scenarios	
Uncertain Value 1	
Description	Cell
Free-choice mineral mix	H6
Current Value (Most Likely)	16.69
Minimum Value	14.19
Maximum Value	19.19

The X Bar wants to make the price of the free-choice mineral mix uncertain:

- The current value of \$16.69/cow/year is in cell H6 of the Risk Scenario Planning tool. We enter “Free-choice Mineral Mix” as the description and “H6” as the cell under Uncertain Value 1
- Then enter \$16.69 as the current value,
- \$14.19 as a possible minimum value, and
- \$19.19 as a possible maximum value.



Now consider that the X Bar wants to make the price of the free-choice mineral mix uncertain:

The current value of \$16.69/cow/year is in cell H6 of the Risk Scenario Planning tool.

We enter “Free-choice Mineral Mix” as the description and “H6” as the cell under Uncertain Value 1

Then enter \$16.69 as the current or most likely value,

\$14.19 as a possible minimum value, and

\$19.19 as a possible maximum value.

Case 1: Convert to Free-Choice Mineral Supplementation - RSP Input Screen

Risk Scenarios					
Uncertain Value 1		<input type="checkbox"/> Include	Uncertain Value 2		<input type="checkbox"/> Include
Description	Cell		Description	Cell	
Free-choice mineral mix	D28		Commercial mineral mix	D28	
Current Value (Most Likely)	16.99		Current Value (Most Likely)	34.66	
Minimum Value	14.19		Minimum Value	29.46	
Maximum Value	18.19		Maximum Value	39.86	

The X Bar also wants to make the price of the commercial mineral mix uncertain:

- The current value of \$34.66/cow/year is in cell D28 of the Risk Scenario Planning tool. We enter “Free-choice Mineral Mix” as the description and “D28” as the cell under Uncertain Value 1
- Then enter \$34.66 as the current value,
- \$29.46 as a possible minimum value, and
- \$39.86 as a possible maximum value.



In addition, the X Bar also wants to make the price of the commercial mineral mix uncertain:

The current value of \$34.66/cow/year is in cell D28 of the Risk Scenario Planning tool.

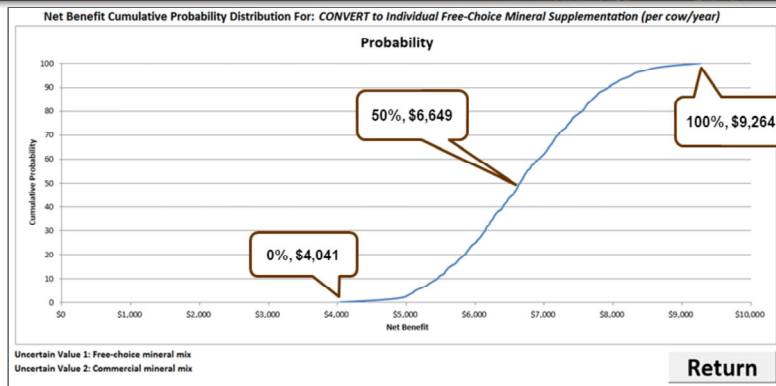
We enter “Free-choice Mineral Mix” as the description and “D28” as the cell under Uncertain Value 2.

Then enter \$34.66 as the current or most likely value,

\$29.46 as a possible minimum value, and

\$39.86 as a possible maximum value.

Case 2: Covert to Free-Choice Mineral Supplementation



- A cumulative distribution graph gives the probability of earning a net return at or below any certain value.



After allowing the two uncertain values (price of free-choice and commercial mineral mixes) to vary over 1,000 possible outcomes, the results of the RSP analysis are presented on this slide.

What can we see from the analysis? Over the long run, we would expect the following:

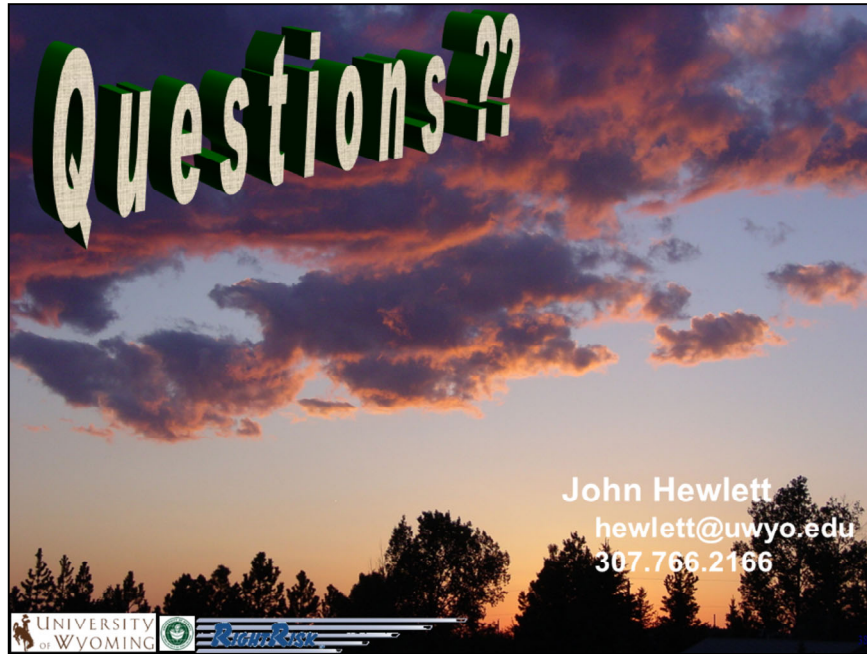
There is a 100 percent probability that the Net Benefit would fall below \$9,264 per year

There is a 100 percent probability that the Net Benefit would be above \$4,041 per year

In addition, there would be a 50/50 chance that the Net Benefit would come out around \$6,649

Finally, the analysis shows there would be a 100 percent chance that the Net Benefit would be above \$0, given our assumptions.

Now we might ask again, “Should the X Bar change their mineral supplementation program?”



Thank you for taking time to view this recorded presentation.

We hope you have learned a little about how the Risk Scenario Planning tool might be used to analyze management strategies and decisions involving risk.

The Risk Scenario Planning tool and an online course explaining its use is available via a link on the webpage where you accessed this presentation, as well as at the RightRisk website: RightRIsk.org.

My contact information is on the slide, should have further questions.