Safety First:
A RightRisk[TM] Lesson Guide with Mountain View Farms

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Management decisions can change the impact and/or probability of risky events.

There are many different sources of risk that can affect an agricultural operation and, ultimately, its ability to survive and prosper in the long run. Management decisions have the ability to change both the impact and the probability of the outcomes associated with risky events. Yet, many things remain out of the manager's control and bad outcomes can still occur. Identifying and implementing a risk management strategy can help a manager gain piece of mind when it comes to managing risk and systematically incorporate risk management preferences into the decision-making process. RightRisk$_{TM}$ Ag Survivor scenarios provide an outstanding opportunity to experiment with different risk management strategies quickly and easily. In this lesson guide, you are going to practice making risk management decisions on Mountain View Farms while incorporating a "safety-first" decision strategy.

Safety-First Decision Strategy

With safety-first, you choose the best option available that assures a minimum level of income.

The "safety-first" decision strategy is based on the idea that there is some minimum outcome level the operation must achieve in order to ensure its survival (Kay and Edwards, 1994). The concept of "safety-first" is used to help managers choose the best strategy when faced with the risk of a bad outcome that could put them out of business. For example, let's say the Mountain View Farms operation in the Ag Survivor scenario has been informed by their banker that if they miss their loan payment of $20,000, the bank will foreclose. In this case, the safety-first decision rule dictates that a manager of Mountain View Farms would want to make sure he/she manages the operation so there is little or no chance of not being able to make that $20,000 payment each year.

Practicing Safety-First

Ag Survivor provides you an opportunity to try different management strategies to see if you can improve over what you did last time. It is this ability to practice several strategies that we are going to take advantage of in learning about "safety-first." You are going to practice making management decisions that you think will allow Mountain View Farms to make its $20,000 annual loan payment and meet family living obligations. We'll consider a few different safety first rules and allow you the opportunity to practice implementing strategies that meet them.

1. Play the Mountain View Farms scenario all the way through and record your final bank balance at the end of Year 2. Final Bank Balance = _____

2. From the End of Game Summary page, click the Distribution Analysis button and run the scenario 100 times. Notice the distribution and statistical calculations that are presented. Record the following statistics from the distribution page into their corresponding slots at the bottom of the Option 1 column of Figure 1: Mean, Standard Deviation, Minimum, Maximum, 10th Percentile and Coefficient of Variation. Record the decisions listed into the Option 1 column of Figure 1.

Figure 1: Matrix of Alternative Decisions

Year 1	Decisions		Option 1	Option 2	Option 3	Option 4	Option 5
Period 1	1	Buy Barley Insurance					
	2	Buy Wheat Insurance					
Period 2	1	Forward Price Wheat					
	2	Forward Price Feed Barley					
	3	Forward Price Calves					
Period 3	1	Forward Price Wheat					
	2	Forward Price Feed Barley					
	3	Forward Price Calves					
Period 4	1	Sell Wheat					
	2	Sell Barley					
	3	Cross Hedge Barley					
Year 2							
Period 1	1	Buy Barley Insurance					
	2	Buy Wheat Insurance					
Period 2	1	Forward Price Wheat					
	2	Forward Price Feed Barley					
	3	Forward Price Calves					
Period 3	1	Forward Price Wheat					
	2	Forward Price Feed Barley					
	3	Forward Price Calves					
Period 4	1	Sell Wheat					
	2	Sell Barley					
	3	Cross Hedge Barley					
STATISTICS							
		Mean					
		Standard Deviation					
		Minimum					
		Maximum					
		10th percentile					
		Coefficient of Variation					

3. The managers of Mountain View Farms have $60,000 in annual living expenses and fixed costs they feel they have to cover on an annual basis in addition to the $20,000 loan payment. If their safety-first rule is to achieve $160,000 in net returns over the two-year scenario span 100% of the time, does your strategy in Option 1 meet this obligation?

4. Now, click the "Compare Second Option" button on the Distribution Results page. On the Second Option page, make changes to your decision set by changing the entries in the Decisions table. Record the new Option 2 set of decisions in the Option 2 column of Figure 1 and click the Re-Calculate button.

5. For Option 2, record the Mean, Standard Deviation, Minimum, Maximum, 10th Percentile and Coefficient of Variation statistics from the distribution page into their corresponding slots at the bottom of the Option 2 column of Figure 1.

6. Considering the information you have available for the Option 1 and Option 2 decision sets, do they both meet your safety first rule? Compare their summary statistics. Which one do you prefer?

7. From the Second Option distribution page, make changes to your decision set to create an Option 3. Record these new decisions in the Option 3 column of Figure 1 and click the Re-Calculate button to generate a new distribution and statistics to record. Does Option 3 meet your safety-first rule? Comparing Option 3 to Options 1 and 2, now which option do you prefer?

8. Suppose the managers of Mountain View Farms would prefer to have at least $140,000 in addition to the $20,000 loan payment amount in order to cover living expenses and fixed costs on an annual basis. However, they are willing to accept a little bit of risk of not achieving that amount. The 10th percentile statistic indicates the level of income above which 90% of the outcomes in the distribution lie. If their safety-first rule is to achieve $320,000 in net returns over the two-year scenario span 90% of the time, do any of your strategies in Option 1-3 meet this obligation?

9. From the Second Option distribution page, make changes to your decision set to create an Option 4 that does meet the safety-first rule of achieving $320,000 net income 90% of the time. Record these new decisions and the summary statistics in the Option 4 column of Figure 1. Comparing Options 1-4, which option do you prefer?

10. Consider your answer to question 9. Can you come up with an Option 5 that meets both of these safety- first criteria and that you think is better? Record this as Option 5 in Figure 1 and explain why it's better.

Safety-First lesson

The important thing to remember from this lesson is *a "safety-first" decision rule provides a benchmark for you as a manager to use in your risk management plan*. As a manager, if you choose to use a safety-first rule *you must decide what level of income you want to protect and the maximum probability you're willing to accept of not achieving it.* This may be an absolute minimum you need with 100% certainty in order to keep your operation in business. Once you decide on your safety-first rule, you must assess what potential outcomes can keep you from meeting it and choose a strategy to reduce the damage from those outcomes. You must assess what potential outcomes you are willing to trade off in order to provide this level of security to your business. While no strategy is perfect, any strategy will likely be more successful than no risk management strategy at all.

Additional Resources

Bastian, Chris and John P. Hewlett. 2004. Safety-First: A RightRisk_{TM} Lesson Guide. Publication #RR–L–1. http://agecon.uwyo.edu/rightrisk/School/RR-L-1%20January%202004.pdf (accessed 3/4/2009).

Kay, R. D., and W. M. Edwards. 1994. *Farm Management*. 3rd ed. McGraw-Hill, Inc.: New York.

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