



# Feasibility of Alternative Rural Enterprises



Section Three: Assessing Risks

## Section 3: Assessing Risks

- Risk Preferences
- Sources of Risk
- Risk Management Strategies
- *RightRisk* Example



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In this section, we will focus on assessing risk. We will learn about the sources of risk, risk preferences, and risk management strategies.

## Alternative Enterprises: Assess the Risks Involved

- **RISK:** The probability of an event occurring that can impact your:
  - Current profit level
  - Financial situation (equity position)
  - Satisfaction and well-being



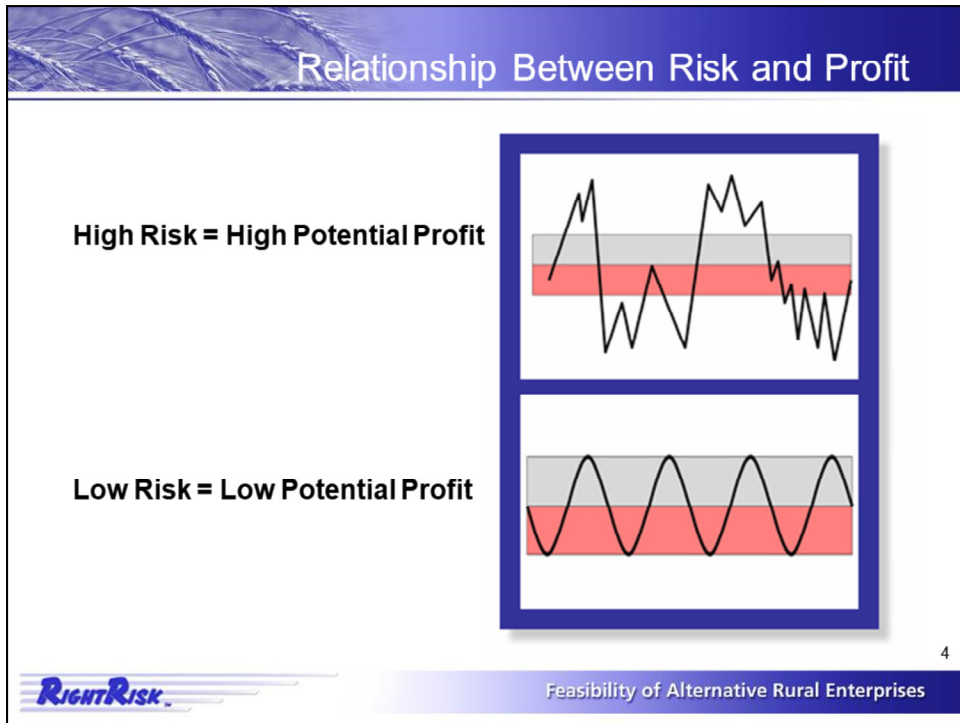
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Agricultural managers are forced to manage and operate in a high risk environment. Poor yields, low market prices, high costs, and other unfavorable outcomes impact the opportunity for agricultural managers to be successful.

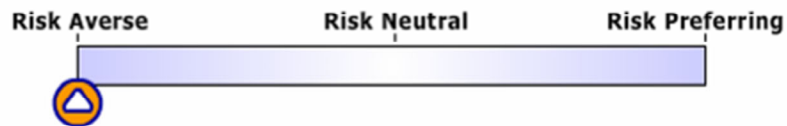
Risk management is the practice of managing the resources of the operation in such a way as to maintain an acceptable level of risk. This in turn should generate a corresponding level of return that will allow the goals of the operation and management to be achieved.



This risk/profit tradeoff is the balance a manager must decide on between the desire for the lowest possible risk for the highest possible returns. Remember to keep in mind that low levels of uncertainty (low risk) are associated with lower potential returns and lower potential losses. High levels of uncertainty (high risk) are associated with high potential returns and higher potential losses.

## Risk Preferences

- Risk Averse or Risk Avoiders
  - Cautious individuals
  - Prefer less risky sources of income/investments
  - Willing to accept some probability of lower income or losses for the opportunity of higher income



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Your attitude toward risk can be divided into three types: risk averse, risk preferring, and risk neutral. This risk attitude is not a reflection of managerial ability. There are no right or wrong risk attitudes. Individuals are commonly placed in one of these categories, however the individual may not stay in the same category for all decisions.

Discuss "risk averse".

## Risk Preferences

- Risk Neutral
  - Individuals between risk adverse and risk preferring
  - They choose the decision with the highest expected return



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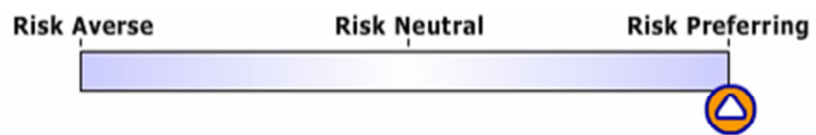
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Discuss "risk neutral".

## Risk Preferences

- Risk Preferrers or Risk Takers
  - More adventuresome individuals
  - Prefers more risky business alternatives
  - Willing to accept some probability of lower income or losses for the opportunity of higher income



Discuss "risk preferring".

## Activity: Risk Preference Game

- You flip a coin
- For every heads tossed, you win \$140
- For every tails tossed, you lose \$100
  
- Would you play this game? If so, what is the maximum amount you would pay to play this game?
  - Would you pay \$5?
  - Would you pay \$10?
  - Would you pay \$20?
  - Would you pay \$40?



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Let's pretend we are playing a game.

You flip a coin.

For every heads you toss, you win \$140.

For every tails you toss, you loss \$100.

Would you play? If so, what is the maximum amount you would pay to play this game?

Choose an answer: \$5, 10, 20, 40?



## Activity: Risk Preference Game

- Would you pay \$5?  Risk Averse
- Would you pay \$10?  Risk Averse
- Would you pay \$20?  Risk Neutral
- Would you pay \$40?  Risk Preferring

### Results

Win \$140 one turn

Lose \$100 the next.

Two turns = \$40 win

Were you willing to pay more than \$20 a turn? Less?

Look at the answers to the left to see your preference for risk

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Every two times you play the game, averages are you will get one head and one tail.

So you will win \$140 one turn and lose \$100 the next.

So on average, your expected return would be \$20 for each flip of the coin.

Were you willing to pay more than \$20 a turn? Less?

Look at screen to see your preference for risk.

## Sources of Risk

- Production
- Marketing
- Financial
- Legal
- Human



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There are five main sources of risk in an agricultural operation: production risk, marketing risk, financial risk, legal risk, and human resources risks. The next few slides will discuss these.

## Production Risk

Anything that can affect crop yields or livestock performance is referred to as production risk. This includes such things as weather, pests, and diseases



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Discuss Production Risk.

## Marketing Risk

- Marketing is that part of your business that transforms production activities into financial success
- Unanticipated market forces can lead to dramatic changes in market prices.
- These market forces are referred to as marketing risk



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Discuss Marketing Risk.

Financial risk has three basic components:

1. The cost and availability of debt capital
2. The ability to meet cash flow needs in a timely manner
3. The ability to maintain and grow equity



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Discuss Financial Risk.

## Legal Risk

The legal risks commonly associated with agriculture fall into four broad categories:

1. Appropriate legal business structure and tax and estate planning
2. Contractual arrangements
3. Tort liability
4. Statutory compliance, including environmental issues



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Discuss Legal Risk.

- Human risk includes:
  - Inadequate management
  - Inadequate labor resources
  - Divorce
  - Illness
  - Death
  - Orientation and training
  - Management succession
  - Other human risks



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Discuss Human Risk.

## Risk Management

- The objective of enterprise diversification and risk management is NOT to eliminate risk
- Risk management is taking the **RIGHT** risks to maximize profit while **REDUCING** income variability and **MEETING** strategic goals



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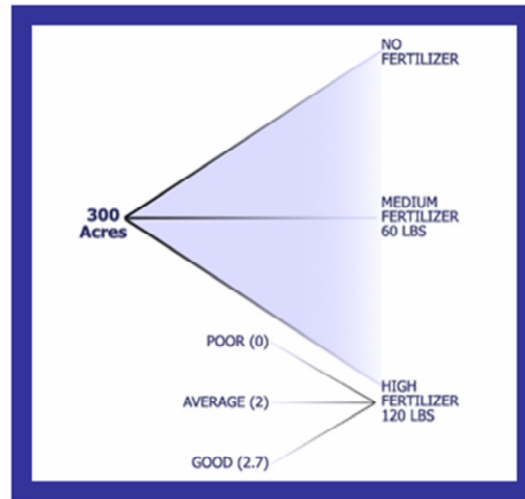
While risk can never be completely avoided, you can develop strategies to cope with risk.

Risk management can be defined as the use of time, financial and other resources to effectively manage risks so that goals can be achieved.

The objective of alternative enterprises and risk management is NOT to eliminate risk, but to take the right risks to maximize profits while reducing income variability and meeting strategic goals.



## Contingency Planning



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A decision tree is an excellent tool for working through the many possible outcomes for a given situation. But you may not even be aware of some of the outcomes, let alone know what probabilities to assign for their occurrence.

Just as with other sections of this course, there is a great deal more to planning for risk and developing contingency plans. However, the risk worksheet which follows should at least get an operation to the point of considering the risks to its' enterprise activities, as well as some possible responses to those risks.

## Risk Management Strategies

- Diversification
  - Reduce the odds
  - Transfer risk
- Technology
  - Mitigate impact
  - Avoid risks



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Diversification can be the most important risk management strategy to helping you reach your long-range financial goals while minimizing your risk.

Enterprise diversification involves having your income dependent on more than one product to avoid large income highs and lows that can come with production and price variability.

Use of technology is an important risk management strategy. New varieties, new vaccines, new production systems, and other technologies can help mitigate or avoid the impacts of risk.

**Risk Management Worksheet**

<b>Sources of Risk</b>	Enterprise #1:
<b>Market/Price Risk:</b>	
Current/Potential Risks From This Source:	
Methods/Plans for Addressing These Risks:	
<b>Production Risks:</b>	
Current/Potential Risks From This Source:	
Methods/Plans for Addressing These Risks:	
<b>Human Resource Risks:</b>	
Current/Potential Risks From This Source:	

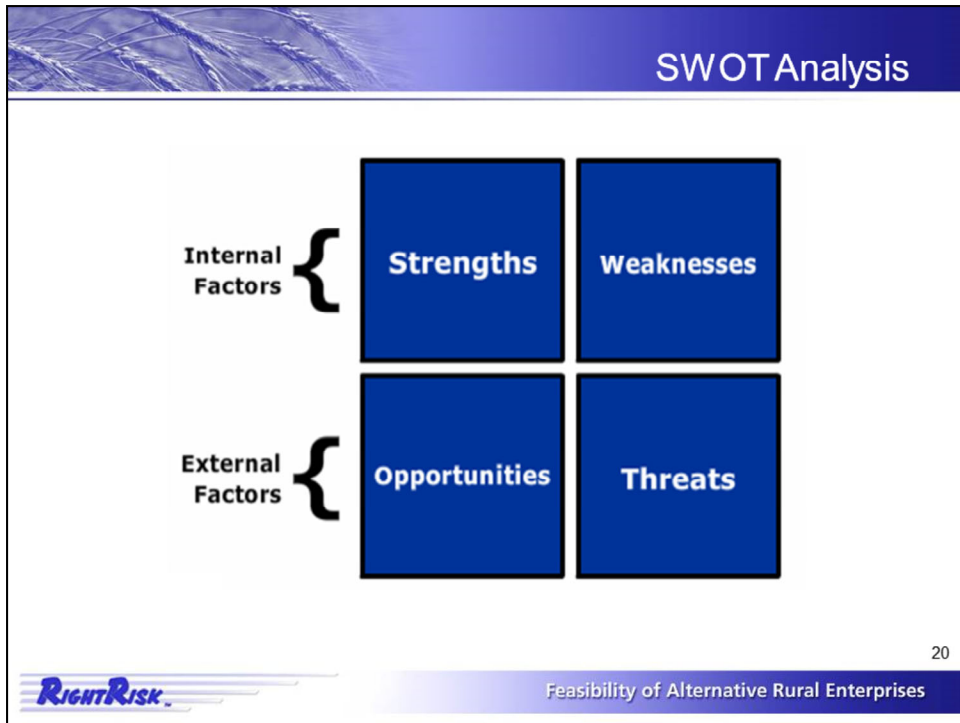
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This risk management worksheet is designed to help identify the greatest sources of risk for the operation for each of the five categories of risk. Once these risks have been identified, contingency plans can be developed to better prepare the business for the potential consequences.

PDF for worksheet:

[ftp://ftp.adayana.net/CLIENTS/UofWyo\\_Enterprise/08\\_Scripts\\_and\\_Media/b\)\\_Final/Ag%20Enterprises%20Course/!Final%20Course/resources/RiskManagementWorksheet.pdf](ftp://ftp.adayana.net/CLIENTS/UofWyo_Enterprise/08_Scripts_and_Media/b)_Final/Ag%20Enterprises%20Course/!Final%20Course/resources/RiskManagementWorksheet.pdf)



After you go through the Risk Management Worksheet, you may want to conduct a SWOT Analysis to consider the potential holes or opportunities these risks present for the enterprise.

PDF for SWOT:

[ftp://ftp.adayana.net/CLIENTS/UofWyo\\_Enterprise/08\\_Scripts\\_and\\_Media/b\)\\_Final/Ag%20Enterprises%20Course/!Final%20Course/lessons/SWOT.pdf](ftp://ftp.adayana.net/CLIENTS/UofWyo_Enterprise/08_Scripts_and_Media/b)_Final/Ag%20Enterprises%20Course/!Final%20Course/lessons/SWOT.pdf)

## RightRisk Example

- King Family Ranch
  - 500 cows
    - 94% - weaning percent
    - \$350 cow costs
  - 350 acres of hay
    - \$60 per acre costs
    - Normal yield 2.5 ton per acre or 875 ton
  - Expected income - \$51,996.50 per year
    - Revenues - \$247,996.50
    - Expenses - \$196,000.00



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Let's look at an example of evaluating and managing risks.

The King Family has a ranch with 500 cows and 350 acres of hay. Their expected income is almost \$52,000 per year.

The King Family must address the impacts of different severities of winter weather conditions.

This ranch normally produces 875 tons of hay each year and the cattle consumes 825 ton. With a severe winter, hay usage will increase 100 ton to 925 ton. The negative impacts on weaning percentages are increased if hay inventories become short.

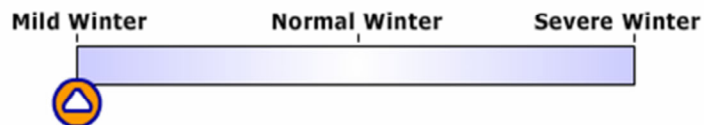
## Buy or Sell Hay?

**Probability:** 17% Probability

**Hay Prices:** Go Down \$20/ton

**Feed Usage:** 50 Ton Decrease (775 ton)

**Weaning:** No change in expected weaning



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In this scenario, the decision we will look at is whether to buy or sell hay. Hay may be purchased to increase feed inventories or sold to generate cash income. Current feed inventories, possible feed usage, and probabilities of increases or decreases in price are all important to consider.

The next few slides will show the Mild, Normal, and Severe winter conditions and will show the effects of weather on hay prices, feed usage, and weaning.

Discuss Mild.

## Buy or Sell Hay?

**Probability:** 67% Probability

**Hay Prices:** Go Down \$10/ton

**Feed Usage:** No Change (825 ton)

**Weaning:** No change in expected weaning



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Discuss Normal Winter.

## Buy or Sell Hay?

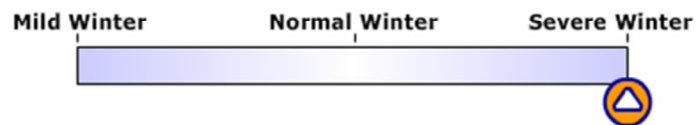
**Probability:** 17% Probability

**Hay Prices:** Go Up \$15/ton

**Feed Usage:** Increase 100 ton (925 ton)

**Weaning:**

- No required hay purchase – minus 3%
- Required to purchase 50 tons or less – minus 3.4%
- Required to purchase more the 50 tons- minus 4.2%



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Discuss Severe Winter.



RightRisk Decision		
<ul style="list-style-type: none"> <li>Always sell hay</li> <li>- 50 ton each year</li> </ul>	<b>17% Probability</b>	
<ul style="list-style-type: none"> <li>Always do nothing</li> </ul>	<b>67% Probability</b>	
<ul style="list-style-type: none"> <li>Always buy hay</li> <li>- 50 ton each year</li> </ul>	<b>17% Probability</b>	

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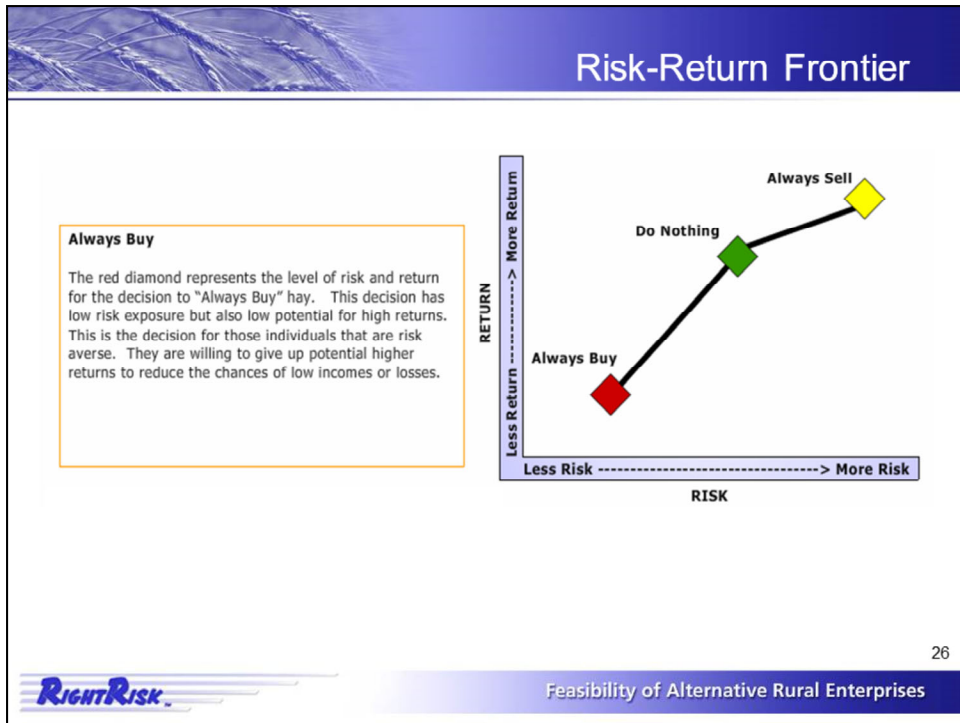
In the King Family Ranch example, in any given winter, what is the right decision?

Here are your choices:

You can always do nothing. With this choice you will never buy or sell hay.

Or, you can always buy 50 ton of hay each year.

Or, you can always sell 50 ton of hay each year.



The risk-return frontier graph is a way of considering which decision might be the correct level for you.

The graph represents returns on the vertical axis and risk on the horizontal axis. So, as you move up the vertical axis you are increasing returns or net income and as you move to the right on the horizontal axis you are increasing your exposure to risk.

The next few slides will show more about each decision.

Discuss "Always Buy"

# Risk-Return Frontier

### Do Nothing

Moving on the graph from "Always Buy" to "Do Nothing" (green diamond), we are substantially increasing the potential returns at the expense of increased risk. The individuals that would select "Do Nothing" are more risk preferring than those that selected "Always Buy".



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Discuss "Do nothing"

## Risk-Return Frontier

### Always Sell

Moving further on the graph from "Do Nothing" to "Always Sell" (yellow diamond) increases risk exposure substantially with very little gain in expected returns. Is this small increase in expected return worth the large increase in risk? Only those individuals with a higher risk preference would select this decision. These individuals are willing to take the chance of lower incomes or losses for the opportunity of higher returns.



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Discuss "Always Sell"

## Section 3: Summary

- Appropriate decisions must consider
- Sources of risk
- Risk probabilities
- Possible outcomes
- Risk preferences



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There are no right or wrong answers and going through the risk management assessment does not necessarily provide good decisions after the fact. A farmer may conclude at the end of harvest that the money spent on insurance premiums was a waste of money. After the fact, the decision was unwise if no disasters occurred because it reduced net income. However, if something would have happened to create cash flow problems or even put the farmer out of business it would have been a good decision.

Managers must make decisions without perfect knowledge. Your decisions must consider the sources of risk, the probabilities of the risk occurring, the impacts or outcomes if something happens, and your preference toward risk.