

Risk Management

Chapter 11

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Risk Management:

Protecting income
Protecting resources

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Every decision involves risk,
We can't avoid it.

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So the ultimate goal of making decisions should be:

- ◆ To INCREASE the chance of POSITIVE outcomes
- ◆ To DECREASE the chance of NEGATIVE outcomes
- ◆ NOT to make the right decision

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Sources of Risk

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SOURCES OF RISK:

- ◆ Production
- ◆ Marketing
- ◆ Financial
- ◆ Legal
- ◆ Human resource

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Production risk

- ◆ Uncertain yields
- ◆ Uncertain animal productivity
- ◆ Weather, pests, diseases
- ◆ Changes in technology
- ◆ Equipment breakdowns
- ◆ Input quality

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Marketing risk

- ◆ Changes in market prices
- ◆ Availability of markets
(essentially a price of zero)
- ◆ Weather
- ◆ Government actions
- ◆ Transportation problems
- ◆ Other unanticipated forces

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Financial risk

- ◆ Cost & availability of credit
- ◆ Ability to meet cash flow needs
- ◆ Ability to maintain & grow equity
- ◆ Increasing debt level in total relative to net worth

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Legal risk

- ◆ Business structure
- ◆ Tax and estate planning
- ◆ Contractual arrangements
- ◆ Tort liability
- ◆ Statutory compliance
- ◆ Political risk

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Political risk

- ◆ Policies change
- ◆ Government policies
- ◆ The new farm bill
- ◆ Environmental restrictions
- ◆ Zoning rules
- ◆ Institutional policies
- ◆ Lending policies
- ◆ Market access

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Human resource risk

- ◆ Improper operation of equipment & application of inputs
- ◆ Improper marketing
- ◆ Low productivity
- ◆ Retirement
- ◆ Illness, disability, death

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Moral risk

- ◆ Part of human risk, but comes from both within and outside the farm
- ◆ Corrupt and criminal behavior
- ◆ Devious and less-than-truthful behavior
- ◆ Not "keeping their word"
- ◆ Not talking about all the fine print
- ◆ Skipping town

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Managing Risk

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With all these risks, how do we decide which ones need our attention?

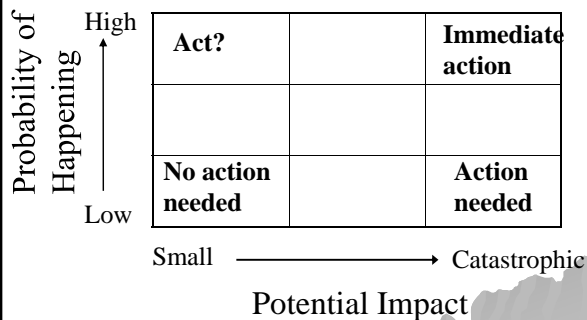
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One way is to prioritize based on:

1. Potential impact &
2. Probability of happening

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PRIORITIZING RISKS



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Once we've prioritized, how do we handle risk?

- ◆ Retain
- ◆ Shift
- ◆ Reduce
- ◆ Self-insure
- ◆ Avoid
- ◆ Improve decision making

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Retain Risk

- ◆ For example, holding an unpriced commodity, with no protection from downside risk

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SHIFT

- ◆ A contractual arrangement where someone else takes on some of the chance of a negative occurrence happening in exchange for a premium.
- ◆ The more risk you shift, the higher the cost.

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REDUCE

- ◆ Implementing a marketing plan that locks in some level of guaranteed return
- ◆ Keeping fences in good condition to prevent livestock on the highways

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SELF-INSURE

- ◆ Emergency reserves funded from previous years' profits.

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Examples of risk management methods

- ◆ Buy insurance
- ◆ Hedging
- ◆ Forward contracts
- ◆ Options
- ◆ Choice of activities

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Activities to reduce risk

- ◆ Diversification
- ◆ Crop & variety choice
- ◆ Renting versus owning
- ◆ Sharecropping instead of cash renting
- ◆ Retaining experts
- ◆ Obtaining more & better information
- ◆ Shortening lead times in production

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Activities to reduce risk, cont.

- ◆ Learning new skills and knowledge
- ◆ Environmental control
- ◆ Redundancy of resources
- ◆ Financial reserves
- ◆ Reversibility of decisions
- ◆ Flexibility

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We can't avoid every risk so we need to increase our understanding of and use of decision tools

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Crop Insurance

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Types of crop insurance

- ◆ Catastrophic Risk Protection (CAT)
- ◆ Multi-Peril Crop Insurance (MPCI)
- ◆ Crop Revenue Coverage (CRC)
- ◆ Revenue Assurance (RA)
- ◆ Income Protection (IP)
- ◆ Group Risk Protection (GRP)

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Making Risky Decisions

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Parts of a risky decision problem:

- ◆ Actions, choices, alternatives
 - We control these
- ◆ Events, conditions, scenarios
 - We can't control these
- ◆ Payoffs, returns, regrets
- ◆ Probabilities
- ◆ Criteria for choosing

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Structuring information for a risky decision

- ◆ Payoff matrices
- ◆ Regret matrices
- ◆ Decision trees

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Example Payoff and Regret Matrix,

from Table 11.1

Price change	prob	Payoff matrix		Regret matrix	
		Sell now	Sell next week	Sell now	Sell next week
5¢ down	.2	31	-20	0	51
Steady	.5	31	30	0	1
5¢ up	.3	31	80	49	0
Minimum		31	-20	xxx	xxx
Maximum		xxx	xxx	49	51
Expected		31	35	14.7	10.7
Average		31	30	16.3	17.3

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Decision Criteria

- ◆ Maximin (for returns or payoffs)
 - The maximum of the minimums
- ◆ Minimax (for regrets)
 - The minimum of the maximums
- ◆ Maximum simple average
- ◆ Maximum expected returns
 - or Minimum expected regrets
- ◆ Safety-first
- ◆ Probability of success

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Probability of Success

- ◆ Instead of choosing based on "most likely"
- ◆ Change the question to "What chance of success do I want?"
 - ◆ First, estimate probabilities
 - ◆ Second, estimate costs and the "breakeven" point
 - ◆ Now decide whether the probability of success is high enough

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Scenarios for Management Planning

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Developing scenarios

1. Identify the uncertainties
 - Classify each as constant, predetermined, or uncertain
2. Classify uncertainties as independent or dependent
3. Identify causal factors for independent uncertainties
4. Develop internally logical and consistent scenarios
5. Analyze results under each scenario
 - Develop payoff and regret matrices
 - Estimate the probability of success

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