

Introduction to Risk & Risk Management Strategies



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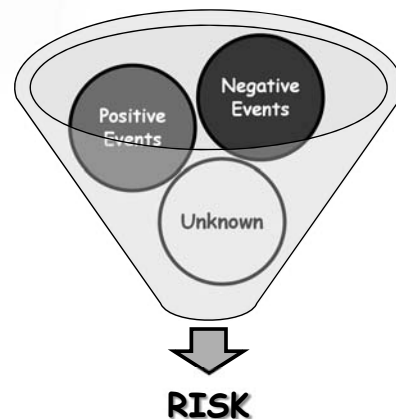
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- **Certainty**- lack of doubt
- **Uncertainty**- doubt about future events
- **RISK**- potential variation in the outcome of future events

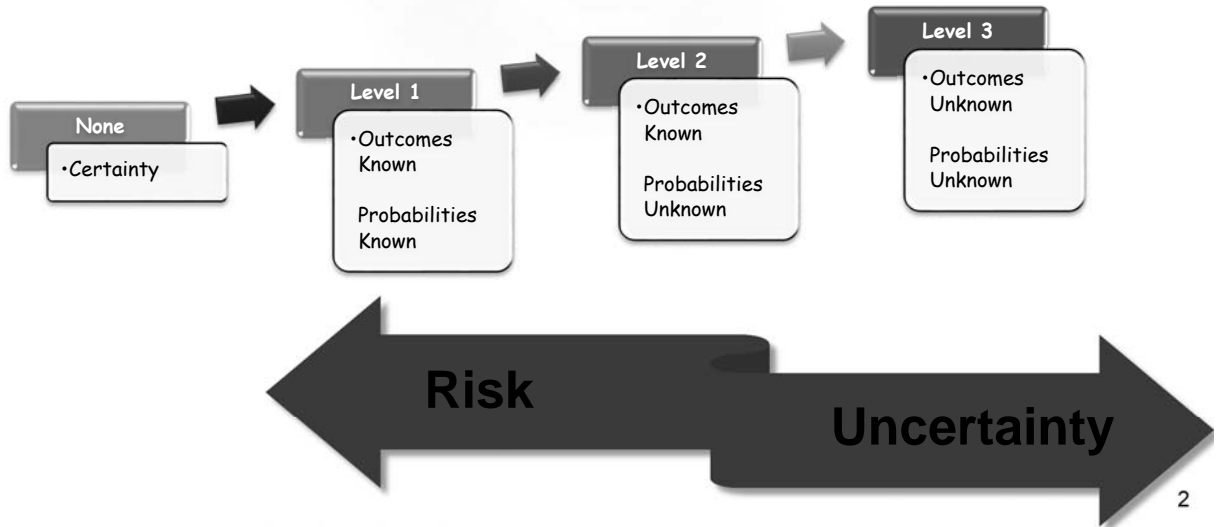


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What is RISK?

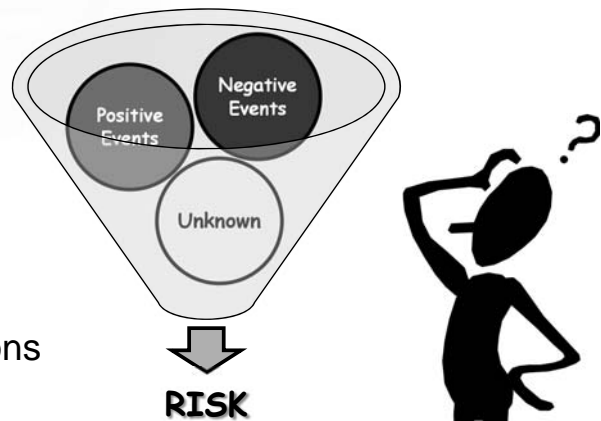
- **RISK**- potential variation in the outcome of future events



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What is RISK?

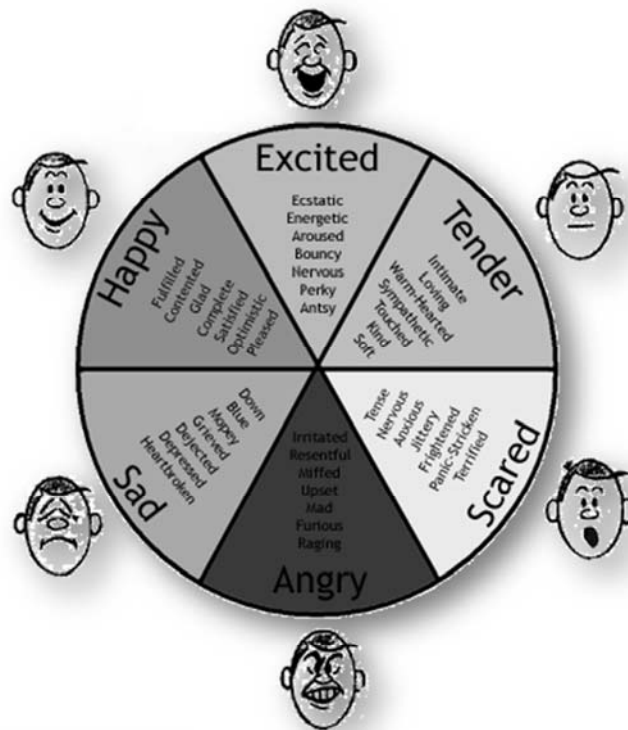
- **Cost of Loss**
 - Income
 - Resources
 - Productive capacity, etc.
- **Cost of Uncertainty**
 - Worry, doubt, fear, misallocation of resources, etc.
 - With potential for gain or loss comes moral or ethical implications



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HUMAN Dimension of Risk Management

EMOTION

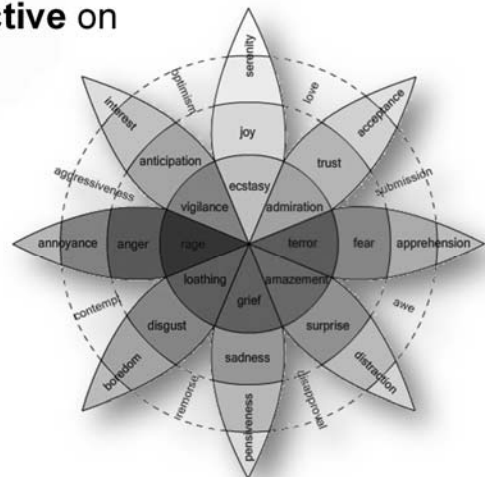


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HUMAN Dimension of Risk Management

- Emotions = physical state of our body as it responds to external stimuli
- Emotions are *separate* from our feelings
 - **Emotions**- result in us from our **actions** (body state)
 - **Feelings**- result in us from our **perspective** on our actions (consciousness)
- Emotions have been found by research to be **necessary** for decision making*

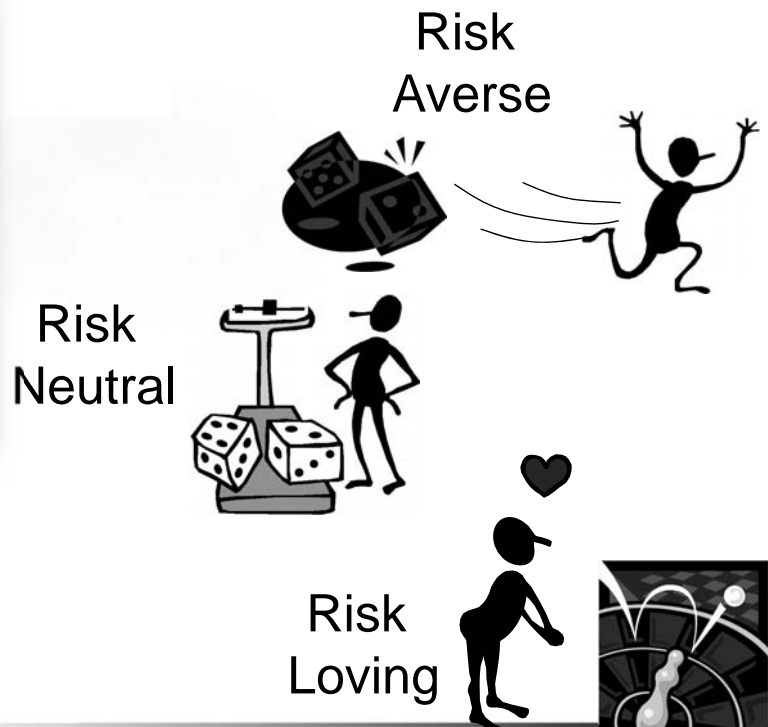


* MIT Technology Review, A. Damasio, 2014.

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Types of Risk Preference



Personal Perspectives on Risk

- Generational differences
- Gender differences
- Life stage/family differences
- Life experiences

These are dynamic and change over time.



*Profits are
returns for
taking risks*



- **Upside:** Greater risk taking usually leads to greater wealth over time
- **Downside:** Losses from risk taking can potentially be devastating
- Managing risks are a matter of **evaluating tradeoffs**
- How much **risk** (uncertainty) are you willing to accept for **possible higher returns?**

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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



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Strategies for Managing Risk

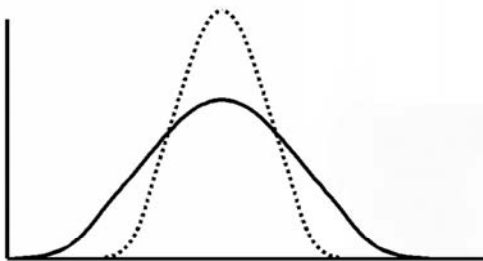
1. **Avoid it**
2. **Reduce it**
 - a) Reduce the probability it will happen
 - b) Reduce the impact if it does happen
3. **Transfer it outside the business**
 - a) Insurance
 - b) Contracting
4. **Increase capacity to bare**
 - a) Increase reserves
 - b) Maintain flexibility
5. **Accept it**



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Strategy Impacts

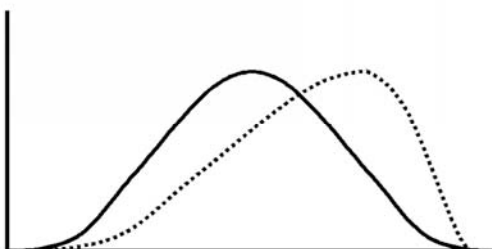
Panel 1: Same Mean, Less Dispersion



Panel 2: Same Dispersion, Higher Mean



Panel 3: Skewing the distribution



Panel 4: Truncating the Distribution



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Risk Controls

Market Risk - Production Risk - Institutional/Legal Risk - Human Risk - Financial Risk

Market Risk

- risk associated with the uncertainty around markets and prices for inputs and outputs

1. Livestock Prices

- USDA Agricultural Marketing Service: *Colorado Weekly Summary*
- USDA Agricultural Marketing Service: *Montana Weekly Summary*
- USDA Agricultural Marketing Service: *New Mexico Combined Wld Avg - Cattle (weekly)*
- USDA Agricultural Marketing Service: *Washington Weekly Livestock Auction Summary*
- USDA Agricultural Marketing Service: *Wyoming Weekly Summary*
- USDA Agricultural Marketing Service: *Livestock and Seed*
- USDA Agricultural Marketing Service: *ALL*
- *Beef Basis*: provides cattle producers with information and analytics to improve marketing decisions influenced by cattle basis risk.

2. Grain Prices

- USDA Agricultural Marketing Service: *California Weekly Grain Report*
- USDA Agricultural Marketing Service: *Montana Cash Grain Prices*
- USDA Agricultural Marketing Service: *Utah Daily Grain Report*
- USDA Agricultural Marketing Service: *Eastern New Mexico Grain Report*
- USDA Agricultural Marketing Service: *Wyoming/Western Nebraska Elevator Grain Bids*

3. Hay Prices

- USDA Agricultural Marketing Service: *California Weekly Hay Report*
- USDA Agricultural Marketing Service: *Colorado Weekly Hay Report*
- USDA Agricultural Marketing Service: *Idaho Weekly Hay Report*
- USDA Agricultural Marketing Service: *Montana Weekly Hay Report*
- USDA Agricultural Marketing Service: *New Mexico Weekly Hay Report*
- USDA Agricultural Marketing Service: *Oregon Weekly Hay Report*
- USDA Agricultural Marketing Service: *Utah Weekly Hay Market Report*
- USDA AMS: *Washington-Oregon (Columbia Basin) Weekly Hay*
- USDA AMS: *Wyoming, West Nebraska, and SW South Dakota Hay Report (weekly)*
- USDA Agricultural Marketing Service: *Wyoming Weekly Summary*

4. Lease Rates/Grazing Fees

- USDA AMS: *Wyoming, West Nebraska and SW Dakota Grazing Fee Report*
- USDA National Agricultural Statistics Service: *Cash Rents by County*

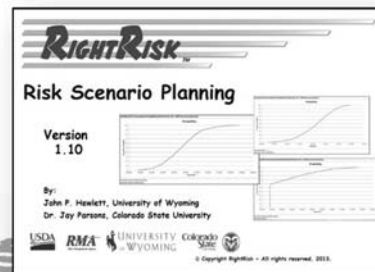
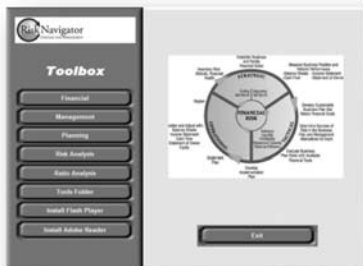
5. Price Protection (Insurance)

- USDA Risk Management Agency: *Livestock Insurance*, background information



<http://RightRisk.org/controls>


Evaluating Alternatives



- Selecting one or more **options for modifying risks** and implementing those options
- Involves a **cyclical process** of assessing a risk treatment and deciding whether residual risk levels are acceptable
- If not, then selecting a **new risk treatment** and assessing the effect of that treatment until the residual risk matches the risk goal(s)

LIKELIHOOD (Probability) How likely is the event to occur at some time in the (Linear Scale time specific matrix)	CONSEQUENCES What is the Severity of injuries / potential damages / financial impacts (if the event actually occurs)? (Logarithmic Scale, property industry specific matrix)				
	Insignificant	Minor	Moderate	Major	Catastrophic
No Injuries First Aid No Envir Damage -< \$1,000 Damage	Some First Aid required Low Envir Damage -< \$10,000 Damage	External Medical Medium Envir Damage -\$100,000 Damage	Extensive Injuries High Envir Damage -< \$1,000,000 Damage	Death or Major Injuries Toxic Envir Damage -> \$1,000,000 Damage	
Almost certain - expected in normal circumstances (100%)	MODERATE RISK	HIGH RISK	HIGH RISK	CRITICAL RISK	CRITICAL RISK
Likely - probably occur in most circumstances (75%)	MODERATE RISK	MODERATE RISK	HIGH RISK	HIGH RISK	CRITICAL RISK
Possible - might occur at some time (25%)	LOW RISK	MODERATE RISK	HIGH RISK	HIGH RISK	CRITICAL RISK
Unlikely - could occur at some future time (5.1%)	LOW RISK	MODERATE RISK	MODERATE RISK	HIGH RISK	HIGH RISK
Rare - only in exceptional circumstances (0.01%)	LOW RISK	LOW RISK	MODERATE RISK	MODERATE RISK	HIGH RISK





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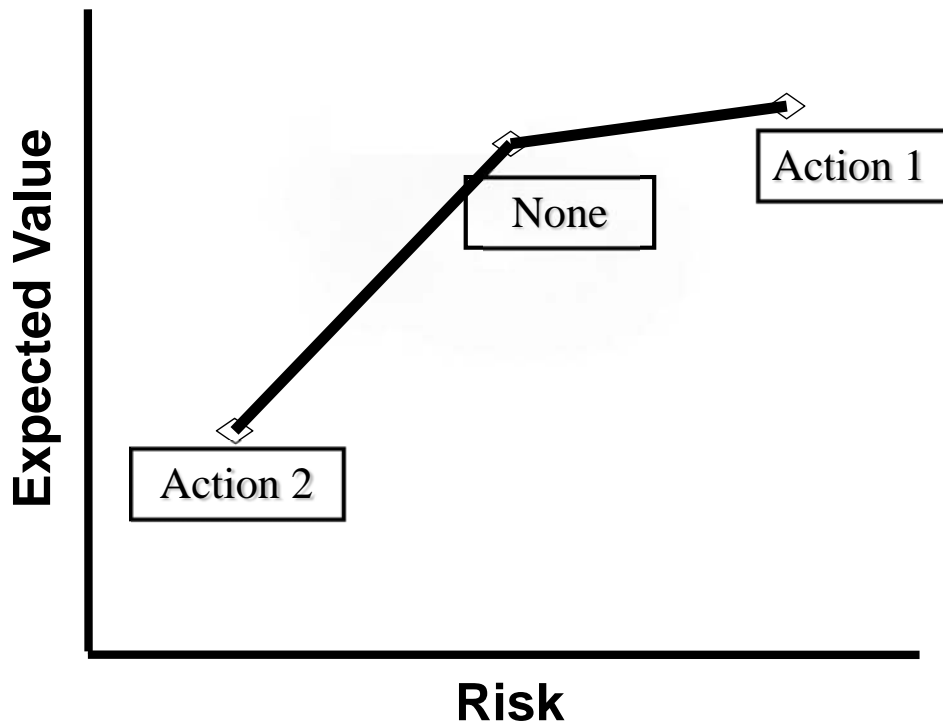
Risk Management Tools

- 1. Partial Budget Analyzer**
- Use this tool to evaluate smaller changes in the operation.
+ [Click here for a guide on using a partial budget.](#)
- 2. Risk Scenario Planning**
- Use this tool to evaluate the risk or uncertainty in your partial budget projections.
+ [Click here for a guide on using the Risk Scenario Planning tool and examples of its application.](#)
+ [Click here for a version of the Risk Scenario Planning tool depicting the Cow/Calf "Raise Bred Heifers to Sell" example outlined in the guide linked above.](#)
+ [Click here for a version of the Risk Scenario Planning tool depicting the crop farm "Replace Corn with more Dry Beans acres" example outlined in the guide linked above.](#)
+ [Click here for a version of the Risk Scenario Planning tool depicting the Cow/Calf "LRP Insurance Decision" example outlined in the guide linked above.](#)
- 3. Enterprise Risk Analyzer**
- Use this tool to evaluate larger changes or changes in enterprise mix for the operation.
- [Click here for a 32bit version of the Enterprise Risk Analyzer tool.](#)
- [Click here for a 64bit version of the Enterprise Risk Analyzer tool.](#)
+ [Click here for a guide to use the Enterprise Risk Analyzer tool.](#)
+ [Click here for a version of the ERA populated with Wyoming Big Horn Basin Cow/Calf Ranch data.](#)
+ [Click here for a version of the ERA populated with Wyoming Big Horn Basin Farm data.](#)
- 4. Machine Risk Calculator**
- Use this tool to estimate the cost of individual machinery services, the cost of a field operation (power unit + implement), or to estimate the cost of performing a custom operation.
- 5. Whole Farm Budget**
- Use this tool to evaluate more substantial changes, adding ranches/farms, whole enterprises, etc. to the operation.
- [Click here for a guide to use the RDFinancial tool.](#)
- 6. Risk Navigator Toolbox**
- Access the extensive risk management library (20+ tools) designed to implement a strategic risk management strategy
- 7. Price Risk Analysis: Futures, Options, LRP Comparisons**





Risk-Return Tradeoff



Example: Hay Inventory

Actions



Buy More Hay	Do Nothing	Sell Some Hay
--------------------	---------------	---------------------

Possible Winter Weather

Severe



Normal



Mild

Hay Inventory Decision

Winter Weather	Actions		
	Buy		Sell Some Hay
Severe			\$31,524
Normal			\$51,997
Mild	\$52,997	\$53,997	\$54,997

Which would you choose?



Hay Inventory Decision

Winter Weather	Prob.	Actions		
		Buy More Hay	Do Nothing	Sell Some Hay
Severe	1/6	\$36,159	\$34,365	\$31,524
Normal	4/6	\$50,997	\$51,497	\$51,997
Mild	1/6	\$52,997	\$53,997	\$54,997



Hay Inventory Decision

Winter Weather	Prob.	Actions		
		Buy	Hold	Sell Some Hay
Severe	1/6			\$31,524
Normal	4/6	\$50,997	\$51,997	\$51,997
Mild	1/6	\$52,997	\$53,997	\$54,997
Exp. Value		\$48,857	\$49,058	\$49,085

Maximize Expected Value

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Hay Inventory Decision

Winter Weather	Prob.	Actions		
		Buy More Hay	Hold	Sell Some Hay
Severe	1/6	\$36,159	\$34,365	\$31,524
Normal	4/6	\$50,997	\$51,497	\$51,997
Mild	1/6	\$52,997	\$53,997	\$54,997
Min. Value		\$36,159	\$34,365	\$31,524

Maximize Minimum Value

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Hay Inventory Decision

Winter Weather	Prob.	Actions		
		Buy More Hay	Do Nothing	Sell Some Hay
Severe	1/6	\$36,159	\$34,365	\$31,524
Normal	4/6	\$50,997	\$51,497	\$51,997
Mild	1/6	\$52,997	\$53,997	\$54,997
Max. Value		\$52,997	\$53,997	\$54,997

Maximize Maximum Value

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Hay Inventory Decision

Winter Weather	Prob.	Actions		
		Buy More Hay	Do Nothing	Sell Some Hay
Severe	1/6	\$36,159	\$34,365	\$31,524
Normal	4/6	\$50,997	\$51,497	\$51,997
Mild	1/6	\$52,997	\$53,997	\$54,997

Most Likely Outcome

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Hay Inventory Decision

Winter Weather	Prob.	Actions		
		Buy More Hay	Do Nothing	Sell Some Hay
Severe	1/6	\$36,159	\$34,365	\$31,524
Normal	4/6	\$50,997	\$51,497	\$51,997
Mild	1/6	\$52,997	\$53,997	\$54,997
Max. Regret				

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Hay Inventory Decision

Winter Weather	Prob.	Actions		
		Buy More Hay	Do Nothing	Sell Some Hay
Severe	1/6	\$36,159	\$34,365	\$31,524
Normal	4/6	\$50,997	\$51,497	\$51,997
Mild	1/6	\$52,997	\$53,997	\$54,997
Max. Regret		\$2,000		

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Hay Inventory Decision

Winter Weather	Prob.	Actions		
		Buy More Hay	Do Nothing	Sell Some Hay
Severe	1/6	\$36,159	\$34,365	\$31,524
Normal	4/6	\$50,997	\$51,497	\$51,997
Mild	1/6	\$52,997	\$53,997	\$54,997
Max. Regret		\$2,000	\$1,794	

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Hay Inventory Decision

Winter Weather	Prob.	Actions		
		Buy More Hay	Do Nothing	Sell Some Hay
Severe	1/6	\$36,159	\$34,365	\$31,524
Normal	4/6	\$50,997	\$51,497	\$51,997
Mild	1/6	\$52,997	\$53,997	\$54,997
Max. Regret		\$2,000	\$1,794	\$4,635

Minimize Maximum Regret

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Hay Inventory Decision

Winter Weather	Prob.	Actions		
		Buy More Hay	Do Nothing	Sell Some Hay
Severe	1/6	\$36,159	\$34,365	\$31,524
Normal	4/6	\$50,997	\$51,497	\$51,997
Mild	1/6	\$52,997	\$53,997	\$54,997

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Key Points

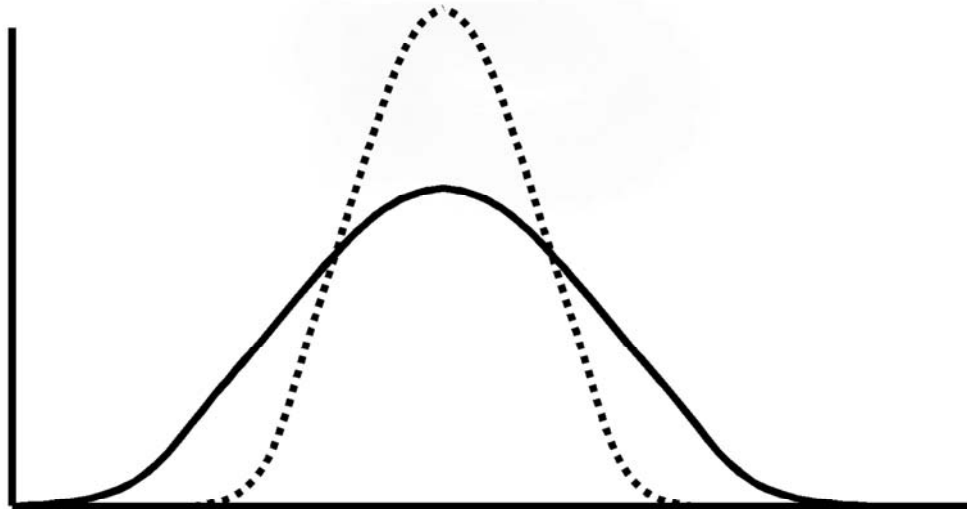
- Risk management is an active learning process that involves considering tradeoffs and making decisions to alter or not alter the probability distribution for a future event.

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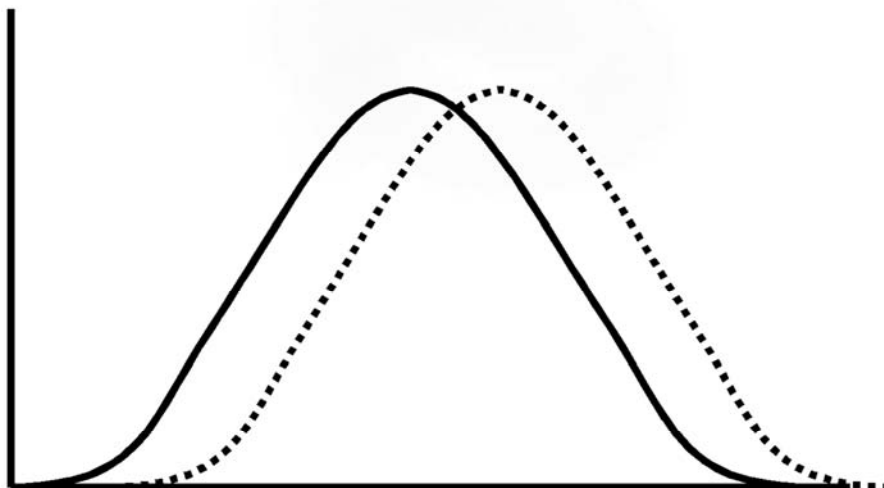
Panel 1: Same Mean, Less Dispersion



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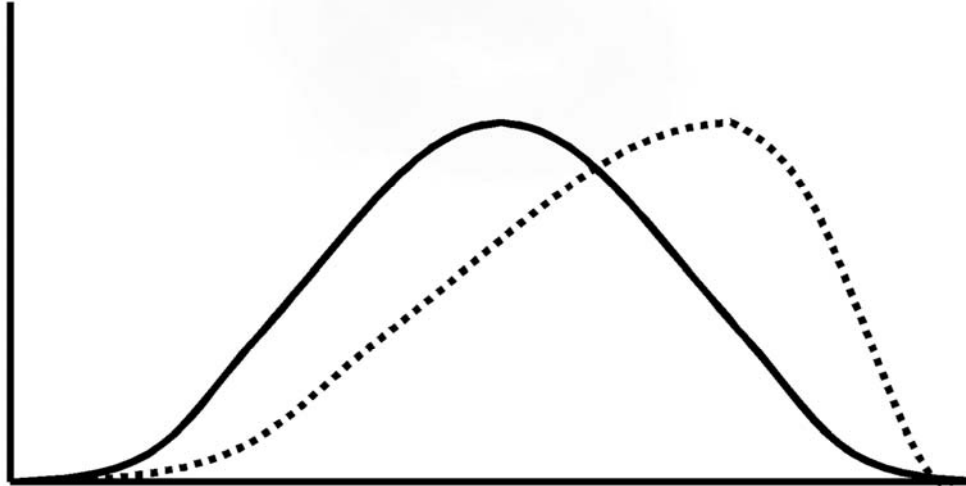
Panel 2: Same Dispersion, Higher Mean



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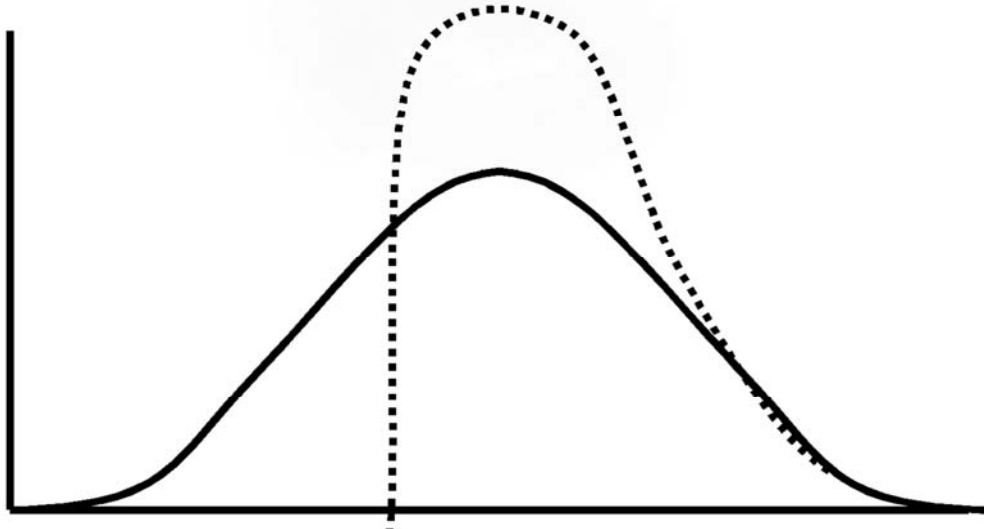
Panel 3: Skewing the distribution



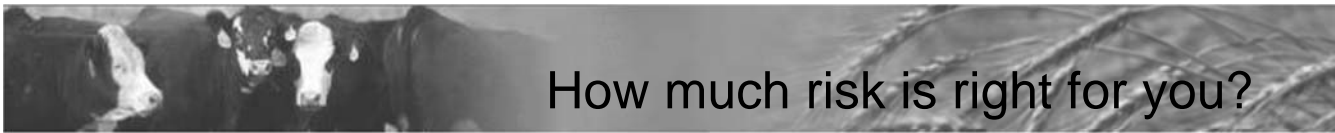
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Panel 4: Truncating the Distribution

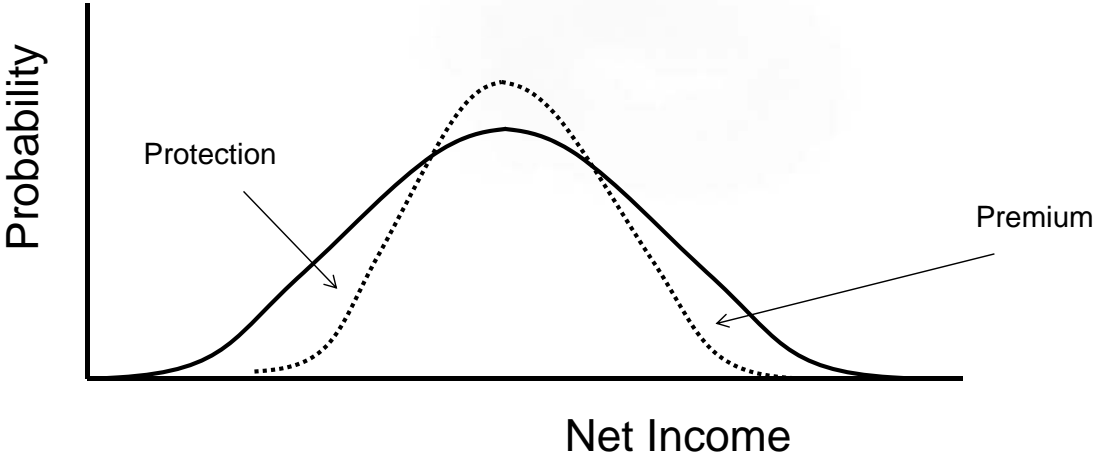


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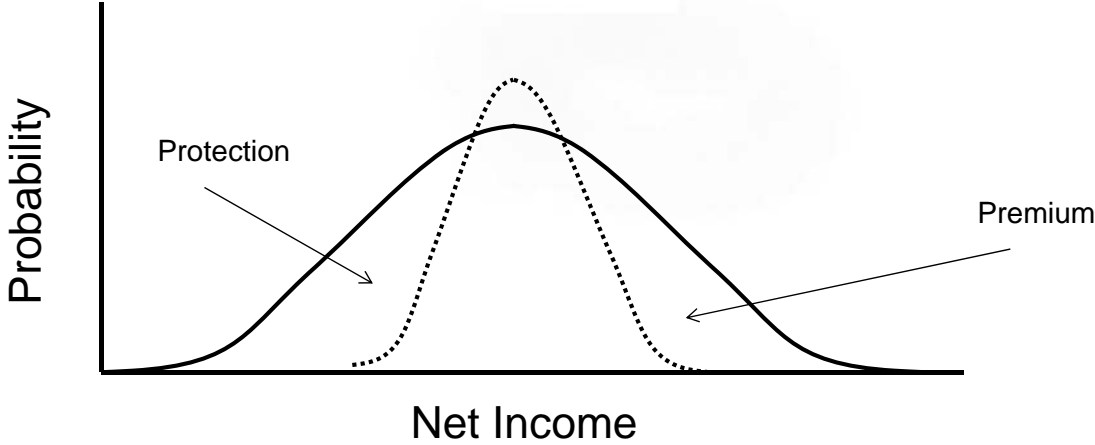
How much risk is right for you?

Crop Insurance Protection



How much risk is right for you?

MORE Crop Insurance Protection



VOLUME 1, ISSUE 11
NOVEMBER 2013

RIGHTRISK NEWS

How Much Risk is Right for You?

DATES TO REMEMBER

- November 15, 2013: Pasture, Rangeland, Forage insurance (PRF)
- November 15, 2013: Apiculture
- November 15, 2013: Noninsured Crop Disaster Assistance Program (NAP) coverage reporting deadline for forage crops including grazing
- December 1, 2013: NAP application deadline for fall seeded crops and forage

Risk Management Strategies for Livestock Producers

Livestock and bee producers have several risk management options to manage forage production risk. Given recent periods of extreme drought and price variability, managers might consider addressing forage risks using one or more insurance tools. Programs are available and can help protect against serious production losses, while helping to guarantee revenue levels.

Pasture, rangeland, forage (PRF) and Apiculture insurance protect against a decline in an index. The index is designed to serve as a proxy for pasture, range, and hay production in a specific area of land or grid.

The Noninsured Crop Disaster Program (NAP), administered by the Farm Service Agency (FSA), is designed to provide low cost catastrophic loss coverage to producers when federal crop insurance is not available.

NAP coverage may be used separately but not in conjunction with PRF and Apiculture insurance to provide protection against low yields, loss of inventory or prevented planting insurance for a typical ranch such as grains planted for hay (and that occur due to natural disasters for a typical ranch such as grains planted for hay (and that insured as grain), native (grass) hay and certain mixed forages, and grainland).

Coverage begins 30 days following sign-up. NAP covers losses of 50 percent or greater of expected production, at 55 percent of the market price (set by the state committee).

The 2008 Farm Bill required that livestock and apiculture producers enroll under either NAP coverage or crop insurance for all pastures, rangeland and native hay forage crops to qualify for certain disaster assistance programs, including the Livestock Forage Disaster Program (LFP) and Emergency Assistance for Livestock, Honey Bees, and Farm-raised Fish Program (ELAP). These requirements are expected under the new farm bill (or extension program (ELAP)). These requirements are expected under the new farm bill (or extension program (ELAP)). These requirements are expected under the new farm bill (or extension program (ELAP)).

Recent bulletins that outline how these programs may work for operators include: "Production Risk Management Options for Wyoming Ranches: Crop Insurance and Federal Disaster Programs" and "Risk Management Programs for Honey Bee Producers in Wyoming" and may be found in the Western Risk Management Library located at <http://riskmgmt.sagepub.com>.

More information is available for the programs mentioned in this article on the Internet at: www.rightrisk.org, www.fsa.usda.gov, or www.fsa.usda.gov.



RISK MANAGEMENT PROFILE

VI-PRF pilot insurance minimizes feed risk for Z-F
Early fall 2010 on the Z-F Ranch found owners Bob and Betsy Zomer assessing risk management strategies for their cow-calf and yearling operation. The Zomers are situated on 12,000 acres of pasture and 200 acres of native hay in Fremont County, Wyoming. Both husband and wife were concerned about the coming production year. This year's late summer and early fall had been dry, and they were worried it would carry over into next year.

To read more see:
[RightRisk.org > Resources > Risk Mgt Profiles](#)

HIGHLIGHTED COURSE

The Pasture, Rangeland, Forage (PRF) Pilot Insurance Program course available at RightRisk.org offers a step-by-step approach to learn more about PRF insurance and how PRF can be applied. The course includes audio and interactive features, while example farm profiles demonstrate application to real-world examples.

Course materials provide maps to assist in first deciding the type of PRF insurance available in the area. Links to appropriate Web pages help determine the grid identification numbers for individual grids. The next two sections in the course go into greater depth on Vegetative and Rainfall Index policies.

A section of the PRF course explains how to go online to the RMA website and make the most of the cost estimator. Finally, users are encouraged to compare their own yield/historical experience for their grids with that presented in the online decision tool/cost estimator Web pages.

RightRisk helps decision-makers discover innovative and effective risk management solutions.

RightRisk News is brought to you by the RightRisk Team

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Risk Management Profiles

RISK MANAGEMENT PROFILES

VI-PRF pilot insurance minimizes feed risk for Z-F

Early fall 2010 on the Z-F Ranch found owners Bob and Betsy Zomer assessing risk management strategies for their cow-calf and yearling operation. The Zomers are situated on 12,000 acres of pasture and 200 acres of native hay in Fremont County. Both husband and wife were concerned about the coming production year. This year's late summer and early fall had been dry, and they were worried it would carry over into next year.

- Buy alfalfa hay to supplement native hay production. They knew this option might become expensive, though, with hay prices high and up-front cost tying up operating capital.
- Rent additional pasture. Unfortunately, this option would be difficult to achieve and expensive due to the lack of locally available pasture. Plus, the Zomers would prefer not to travel long distances to their cattle.
- Send the yearlings to a custom feed yard or sell them early. With high feed prices, this may or may not be economically viable.
- Use the new Vegetative Index Pasture, Rangeland, Forage (VI-PRF) insurance. Bob recently became aware of a local extension meeting.
- Insure against drought using Non-insured Crop Disaster Assistance Program (NAP) coverage.

Like many producers, the Zomers decided on a combination of available options. They chose to utilize VI-PRF insurance for 3,500 acres from April 1 to June 30; 5,500 acres from July 1 to September 30; and 200 acres of hay land from June 1 to August 30. They also chose to budget \$20,000 to purchase 200

Premium/acre	Indemnity/acre	Total indemnity	Total cost/acre
\$0.28	\$0.00	\$0	\$0.80
\$0.58	\$6.51	\$35,805	\$3,190
\$9.15	\$57.27	\$11,454	\$1,830
	Total	\$47,259	\$6,000

With the second method, calculate the carrying capacity of 19.48 acres per AU for a normal carrying capacity of 462 AU's multiplied by 30 days (\$13,860) multiplied by the daily feed cost (\$40.04/30) = \$1,334 multiplied by 60 percent to find a total payment of \$11,093.54. Therefore, the first calculation provides the smaller amount. If the Zomers had utilized NAP coverage in 2010, they would have received two added benefits.

RMP-201206 004
 J. Hewlett, University of Wyoming and
 J. Sedberry, Consultant to the University of Wyoming

<http://RightRisk.org > RM Profiles>



<http://RightRisk.org> > Courses

COLLEGE OF AGRICULTURE

How Much Risk Is Right For You?

Risk management workshop: with King Family Ranch

The USDA's Risk Management Agency, California State University- Chico, Custom Ag Solutions and the RightRisk Team invite you to learn about risk management strategies and discover the right level of risk for you in this interactive hands-on workshop offered at California State University in Chico.

Friday, April 24th 2015
12:00 noon - 1:50PM
 Chico State University - 321 Plumas Hall
 400 W. First St. | Chico, CA

✓	I ntrouction to Risk & Risk Management Strategies <i>John Hewlett, Ranch/Farm Management Specialist, University of Wyoming</i>
✓	A g Survivor Simulation: Making Decisions for King Family Ranch <i>Jay Parsons, Risk Management Specialist, University of Nebraska-Lincoln</i>
✓	R isk-Return Frontier: A RightRisk Lesson with King Family Ranch <i>Jay Parsons, Risk Management Specialist, University of Nebraska-Lincoln</i> <i>John Hewlett, Farm/Ranch Management Specialist, University of Wyoming</i>

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 Project Director John Mangus, Custom Ag Solutions

How Much Risk Is Right For You?

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