#### RISK MANAGEMENT STRATEGIES FOR FARM ENTERPRISE DIVERSIFICATION: RightRisk Management for California Farms





John P. Hewlett, University of Wyoming Ramiro Lobo, University of California

http://california.erightrisk.com

RIGHTRISK "

#### What is RISK?

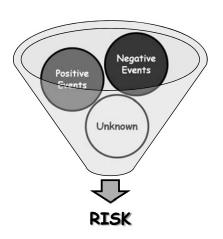
• Certainty- lack of doubt

The demand for certainty is one which is natural to man, but is nevertheless an intellectual vice.

Bertrand Russell British Philosopher 1872-970

#### What is RISK?

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



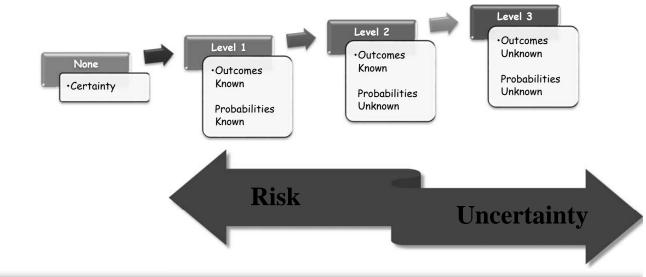
3

Roun Roun -

http://california.erightrisk.com

#### What is RISK?

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



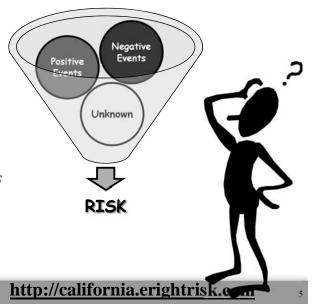
#### What is RISK?

#### Cost of Loss

- Income
- Resources
- Productive capacity, etc.

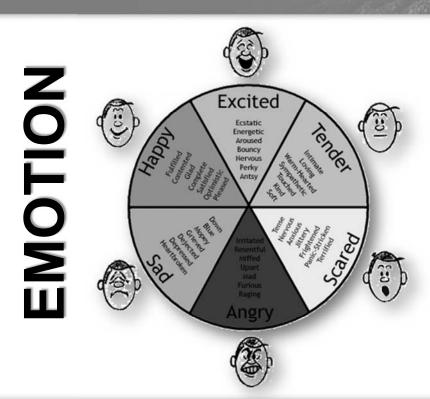
#### • Cost of Uncertainty

- Worry, doubt, fear, misallocation of resources, etc.
- With potential for gain or loss comes moral or ethical implications



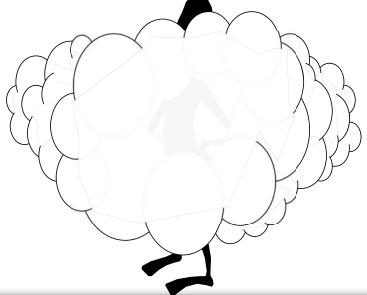
RomRisk<del>ii -</del>

HUMAN Dimension of Risk Management



#### The HUMAN Dimension of Risk Management

- Emotionally we avoid risk (uncertainty) to avoid the shame of:
  - Failure,
  - Being wrong,
  - Being laughed at
  - Being made fun of,
  - Loosing the farm, etc.



रिस्तासिकार्यः 🚃 💆

http://california.erightrisk.com

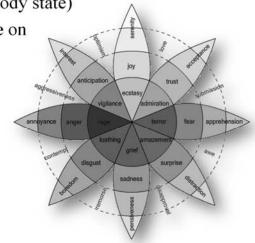
**HUMAN Dimension of Risk Management** 

- 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)

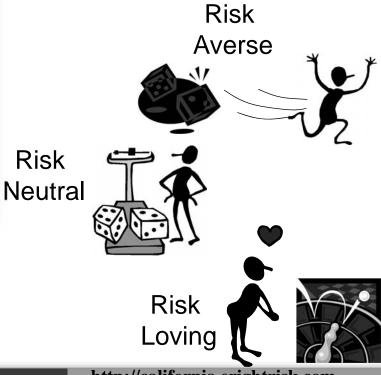
 Emotions have been found by research to be *necessary* for decision making\*



\* MIT Technology Review, A. Damasio, 2014.

#### Types of Risk Preference





Rianding.

http://california.erightrisk.com

#### Personal Perspectives on Risk

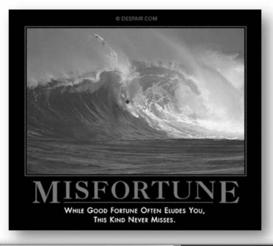
- Generational differences
- Gender differences
- Life stage/family differences
- Life experiences

These are dynamic and change over time.



#### Risk Tradeoffs

# <u>Profits</u> 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?



http://california.erightrisk.com

11

#### Sources of Risk in Agriculture – Ag Risk 5

- 1. Marketing and Price Risk
- 2. Production Risk
- 3. Institutional Risk
- 4. Human Risk
- 5. 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

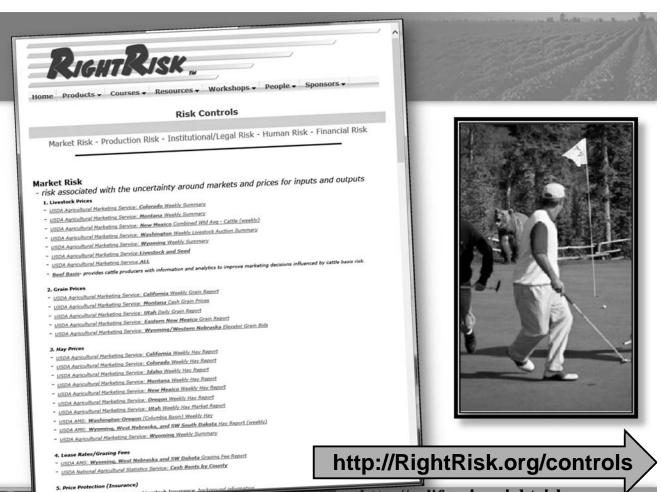


http://california.erightrisk.com

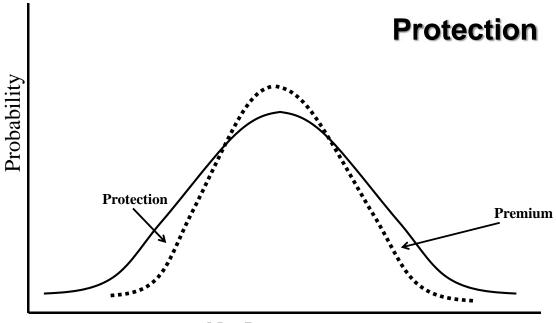
http://california.erightrisk.com

1.2





#### How much risk is right for you?

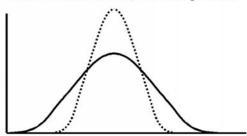


Net Income

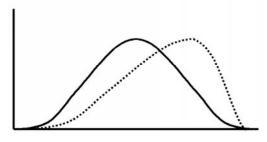
http://california.erightrisk.com

#### **Strategy Impacts**

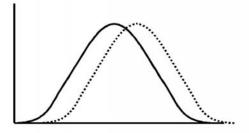
Panel 1: Same Mean, Less Dispersion



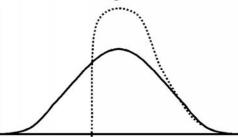
Panel 3: Skewing the distribution



Panel 2: Same Dispersion, Higher Mean



Panel 4: Truncating the Distribution



http://california.erightrisk.com

#### **Key Point**

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...

17

=रिशवातरिकार<del>ः ====</del>

http://california.erightrisk.com

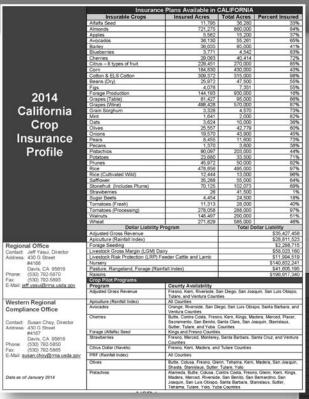
#### Risk Tradeoffs

# <u>Profits</u> 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?

#### **Current Federal Insurance Options**



http://www.rma.usda.gov/pubs/2015/stateprofiles/california14.pdf

#### California Fifteen Year Crop Insurance History

Year	Policies Earning Premium	Net Acres Insured	Liability	Gross Premium	Losses	Loss Ratio
2000	29,191	4,278,811	2,796,253,781	143,343,081	92,359,660	0.64
2001	27,958	4,010,128	2,690,254,801	142,519,840	117,359,756	0.82
2002	27,200	3,920,007	2,833,618,262	146,356,279	79,069,948	0.54
2003	26,471	3,990,438	2,951,841,797	150,191,677	79,366,135	0.53
2004	25,629	3,908,123	3,153,568,412	157,913,694	83,152,323	0.53
2005	24,859	3,818,813	3,317,832,621	168,995,411	92,497,107	0.55
2006	24,490	3,732,668	3,658,867,941	186,617,268	88,506,353	0.47
2007	24,207	3,780,829	3,708,288,115	187,455,253	154,139,100	0.82
2008	24,074	3,810,375	3,911,645,612	197,920,945	89,455,031	0.45
2009	24,723	3,932,306	4,648,316,411	243,273,227	177,694,925	0.73
2010	24,649	3,752,230	4,493,432,544	219,282,609	111,142,020	0.51
2011	24,726	4.062.207	4.792,588,280	248.898.972	110,209,054	0.44
2012	25,462	4,600,044	5,394,444,735	260,903,031	112,207,209	0.43
2013	25,408	5,238,284	6,135,260,032	288,391,743	129,091,231	0.45
2014"	26.300	6.765.108	7.720.921.518	392,164,580	302.683.204	0.77

http://california.erightrisk.com

19

	e Plans Available in (		
Insurable Crops	Insured Acres	Total Acres	Percent Insure
Alfalfa Seed	11,795	36,280	33
Almonds	721,275	860,000	8
Apples	5,562	15,200	3
Avocados	36,130	55,261	6
Barley	38,635	95,000	4
Blueberries	3,771	4,542	8
Cherries	29,063	40,414	7
Citrus – 8 types of fruit	229,451	270,000	8
Corn	184,830	430,000	4
Cotton & ELS Cotton	309,372	315,000	9
Beans (Dry)	25,972	47,500	5
Figs	4,076	7,351	5
Forage Production	144,193	930,000	1
Grapes (Table)	81,427	95,000	8
Grapes (Wine)	498,428	570,000	8
Grain Sorghum	3,328	4,570	7
Mint	1,641	2,000	8
Oats	3,624	10,000	3
Olives	25,557	42,779	6
Onions	19,570	43,900	4
Pears	8,455	11,600	7
Pecans	1,370	3,600	3
Pistachios	90,097	203,000	4
Potatoes	23,680	33,500	7
Prunes	45,972	50,000	9
Rice	478.856	495,000	9
Rice (Cultivated Wild)	12,444	13,000	9
Safflower	35,268	55,000	6
Stonefruit (Includes Plums)	70,125	102,073	6
Strawberries	26	41,500	
Sugar Beets	4,454	24,500	1
Tomatoes (Fresh)	11,313	28,000	4
Tomatoes (Processing)	278,058	288,000	9
Walnuts	148.497	290,000	5
Wheat	271.829	585,000	4
	Dollar Liability Program		ollar Liability
Adjusted Gross Revenue		\$35,427,45	
Apiculture (Rainfall Index)	-	\$28,811,5	
Forage Seeding	\$2,288,71		
Livestock Gross Margin (LGM) Da	\$58,023,16		
Livestock Risk Protection (LRP) F		\$11,994,5	
Nursery	\$140,832,24		
Pasture, Rangeland, Forage (Rai	2	\$41,605,	
Raisins	man mack)		\$196,617,3



http://www.rma.usda.gov

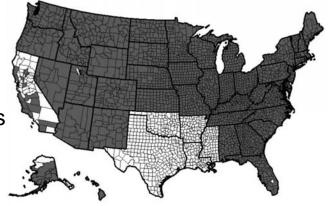


### Whole-Farm Revenue Protection

 A whole-farm insurance product that provides producers with risk management protection for all eligible commodities on the farm under one

insurance policy

 WFRP is a combination of Adjusted Gross Revenue (AGR) and Adjusted Gross Revenue-Lite (AGR-Lite) policies



■ WFRP Pilot Area

http://www.rma.usda.gov

21



#### Whole-Farm Revenue Protection cont.

- Coverage is based on:
  - The operation's whole-farm historic average revenue and expenses using information from five consecutive tax years before the insurance year (adjusted according to the WFRP policy and procedures)
- An indemnity payment occurs when:
  - Allowable Revenue during the insurance year falls below the Insured Revenue (the amount of revenue the farm operation is expected to earn during the insurance year multiplied by the coverage level elected)



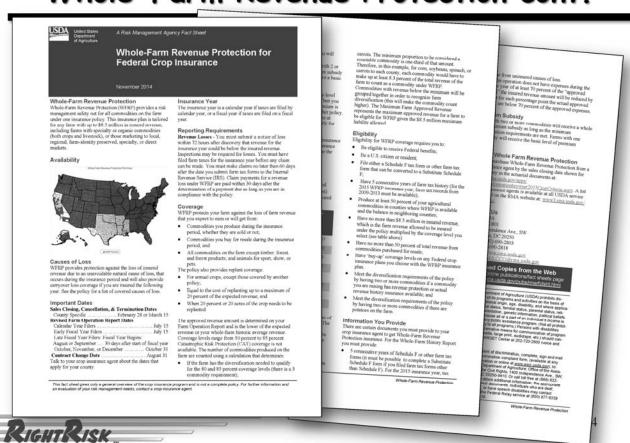
#### Whole-Farm Revenue Protection cont.

COMPARISON	WFRP	AGR-Lite	AGR
Liability Limit	\$8.5 Million	\$1 Million	\$6.5 Million
Coverage Level	50-85 in 5% increments	65 ,75, 80*	65 ,75 , 80*
	3 Commodities for 80 and 85%	*3 Commodities	*3 Commodities
One Commodity	Not eligible for WFRP if only one commodity and that commodity has an MPCI revenue product available.	No Restriction	No Restriction
Payment Rate	None	75, 90	75,90
Animal or Animal Product Limit	35% of expected revenue or up to \$1 million (Max)	None	35 % of Expected Income
Nursery and Greenhouse Limit	35% of expected revenue or up to \$1 million (Max)	None	None
Potato Requirement	Minimum of 2 Commodities (with calculation)	Minimum of 2 Commodities (with calculation)	Minimum of 2 Commodities (with calculation)
Replant Payments	Up to 20 percent of expected revenue for annual commodity with 20 acres or 20 percent of crop needing replant. Not allowed if also insured under MPCI with replant provisions.	None	None
Other Federal Crop Insurance	Optional - MPCI -buy up coverage level only for both WFRP and MPCI. No CAT level MPCI allowed.	Optional	MPCI required if 50% of expected income from MPC crops
Market readiness amounts in insured revenue	Yes	No	No
Expanding operations	Average allowable historic revenue increased by 10% if you can prove expansion and approved by AIP, to allow for minor farm growth that might not trigger indexing.	No	No
Cancellation/Termination	Same as sales closing date for county. (2/28, 3/15)	31-Jan	31-Jan
Contract Change	31-Aug	31-Aug	31-Aug
Sales Closing Date	In Actuarial Documents-same as dates for spring crops for county:	March 15 New	31-Jan
	2/28 and 3/15 depending on county	Jan 31 Carryover	
Rating Methodology	Same as AGR	Same as AGR	Rates revenue variability of individual commodities.



23

#### Whole-Farm Revenue Protection cont.





www.fsa.usda.gov/nap



Noninsured Crop Disaster

#### • ELIGIBLE CROPS:

- Any commercial agricultural crop (excluding livestock and their by-products), commodity, or acreage of a commodity grown for food or fiber, and commercial or industrial crops for which CAT or additional coverage is not available
- Biomass crops or feedstock crop grown for purpose of producing bio-based product

Assistance Program (NAP): ELIGIBLE crops

#### CROPS NOT ELIGIBLE:

- Where CAT or additional level of insurance coverage IS available
- Where Group Risk Protection insurance <u>IS</u> available





26

## Noninsured Crop Disaster Assistance Program (NAP): Coverage Summary

- NAP available through 2018 crop years:
  - CAT-level coverage 50/55, and
  - Buy-up coverage
    - 50, 55, 60 or 65 percent coverage at 100 percent of the established market price
- Protects against eligible causes of loss during the coverage period before or during harvest: drought, hail, excessive moisture, freeze, tornado, hurricane, excessive wind, insufficient chill hours (limited), earthquake, flood, volcanic eruption
- Market price established by FSA as an average market price for the eligible crop



27

# Noninsured Crop Disaster Assistance Program (NAP): Coverage Updates

#### **Organic Crop Option**

- May receive payment based on an organic price if:
  - RMA has established a separate organic price in the State
  - Producers elect the organic option on CCC-471
  - Acreage is certified organic or exempt from certification according to the National Organic Program regulations
  - A copy of organic system plan provided to FSA

#### **Direct Market Price Option**

- May receive payment based on an direct market price if:
  - Buy-up coverage is elected with direct market price option
  - Sufficient data is available for FSA to approve separate average market prices within a State



## Noninsured Crop Disaster Assistance Program (NAP): BUY-UP Coverage cont.

#### Premium calculation:

Eligible acres

- X Producer share
- X Approved yield
- X Coverage level
- X 100% of market price
- X 5.25 percent
- NAP fees or buy-up premiums are reduced by 50 percent for:
  - Beginning farmers (BF)
  - Limited resource farmers (LR)
  - Socially disadvantaged farmers (SDA)



29

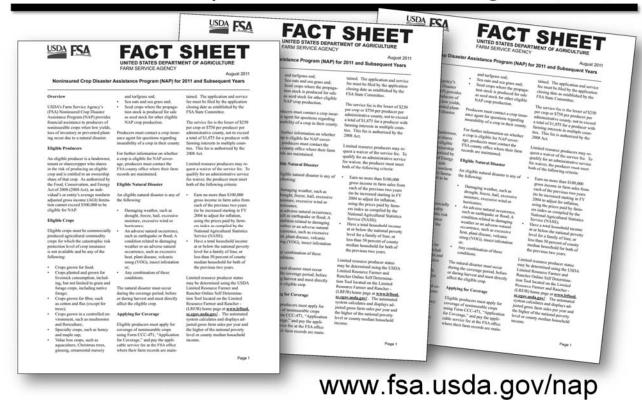
## Payment Limits

- <u>NO</u> person or legal entity, may receive directly or indirectly more than:
  - \$125,000 total in payments under LFP, LIP, and ELAP combined
  - \$125,000 total in payments under NAP
  - \$125,000 total in payments under TAP
- An individual or legal entity is <u>ineligible</u> for payments where average adjusted gross income (AGI) exceeds \$900,000
- A producer may receive benefits under a buy-up policy for crop insurance and LFP/LIP/ELAP/NAP/TAP, but combined benefits may not exceed the loss



30

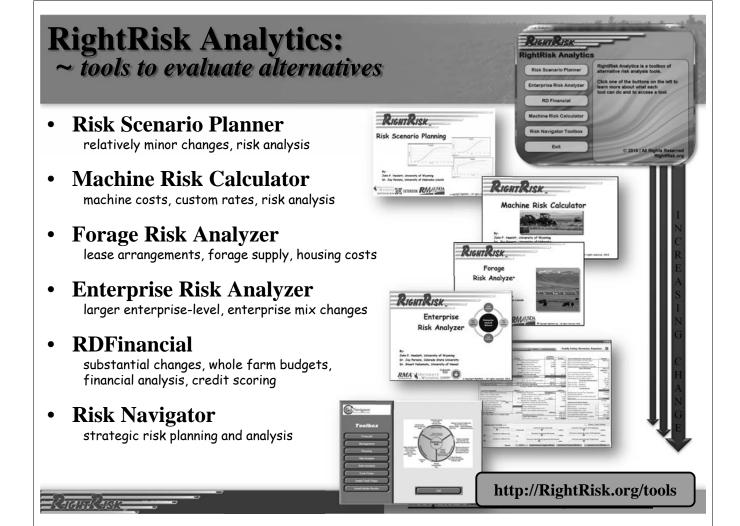
# Farm Service Agency: Noninsured Crop Disaster Assistance Program (NAP)

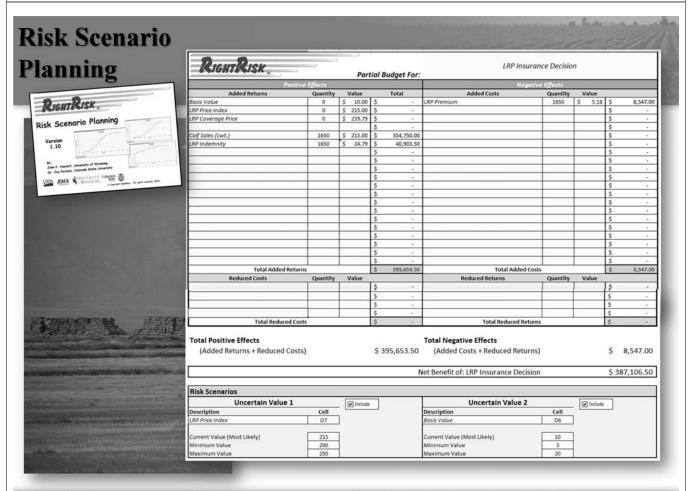


RIGHTRISK...

Evaluating Alternatives

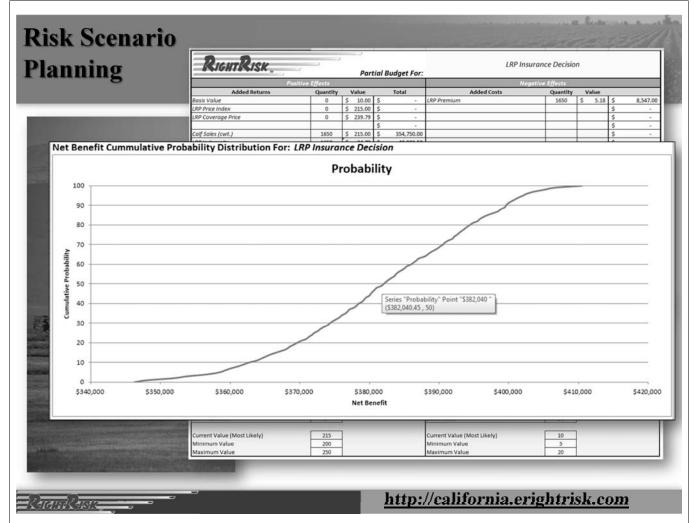
| Specifical Analytics | Specifical Analyti

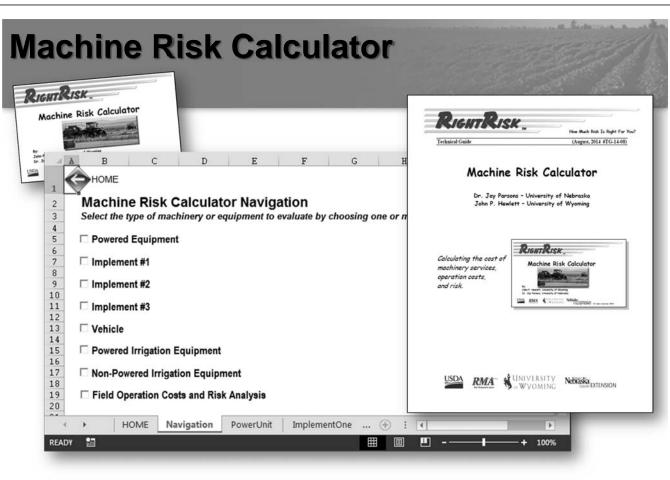


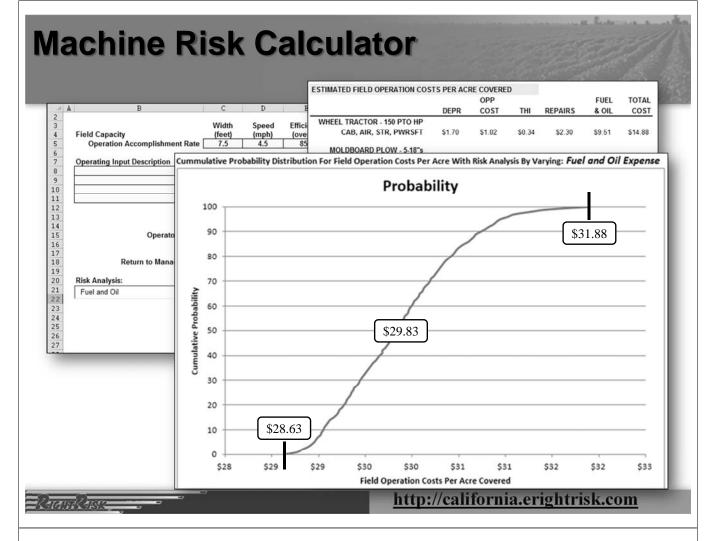


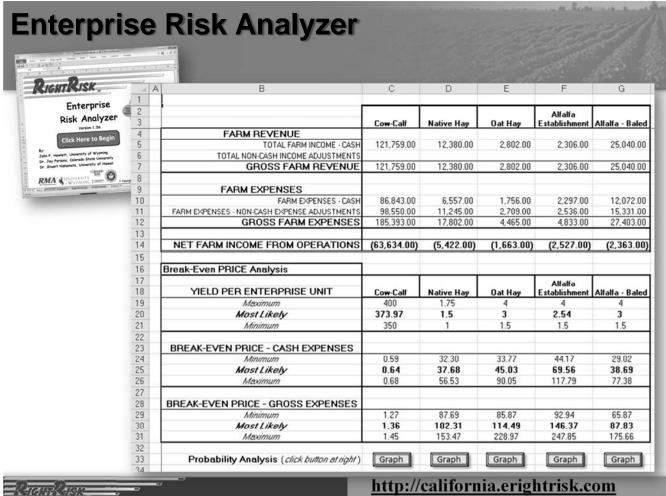
**=**८शवाम्ब८शवाट

http://california.erightrisk.com



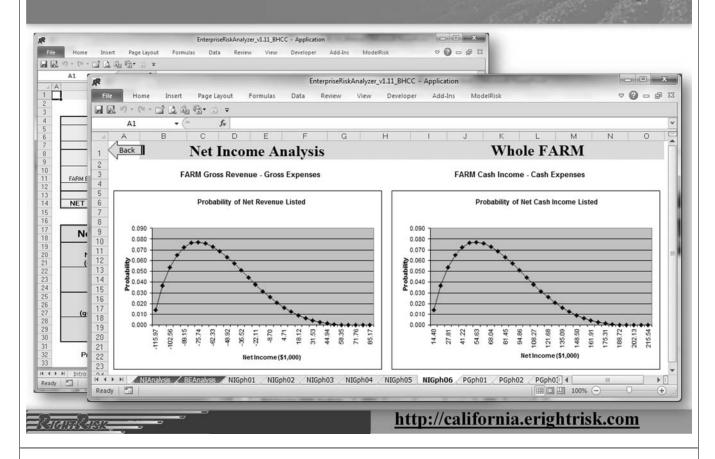






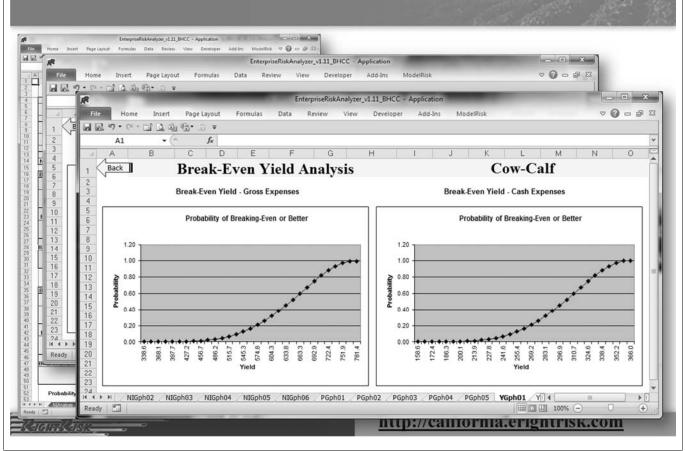
## Enterprise Risk Analyzer

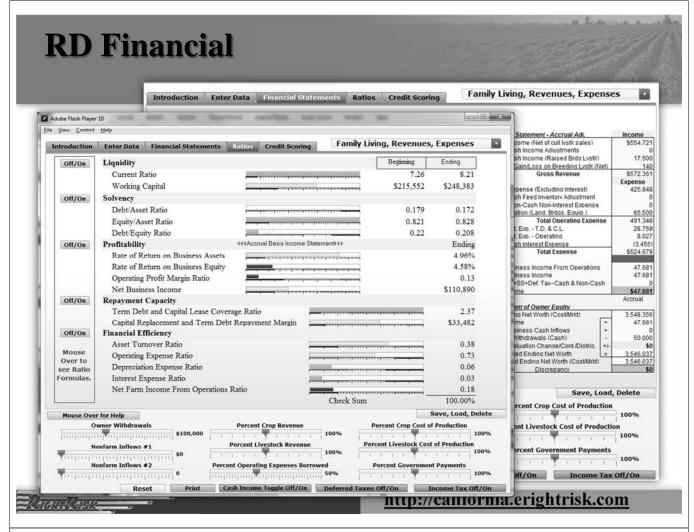
#### Net Return Analysis

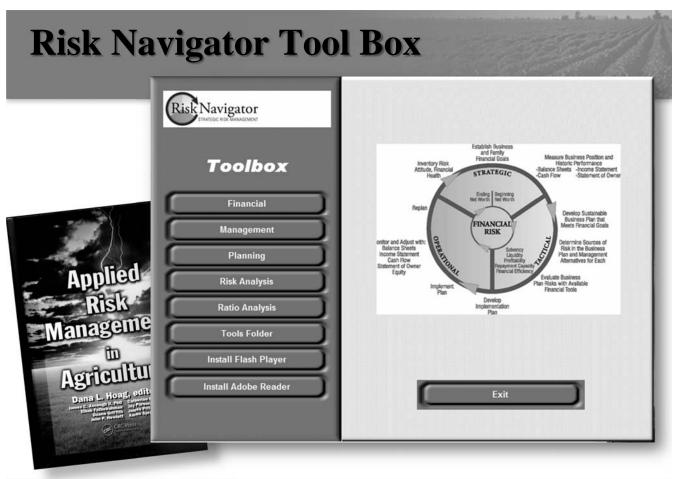


## Enterprise Risk Analyzer

### Breakeven Analysis







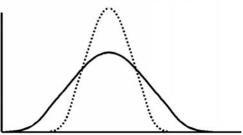
=शिवामिश्रासः===

http://california.erightrisk.com

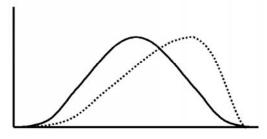


#### **Strategy Impacts**

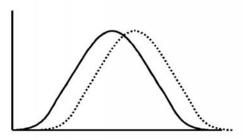
Panel 1: Same Mean, Less Dispersion



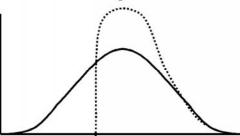
Panel 3: Skewing the distribution



Panel 2: Same Dispersion, Higher Mean



Panel 4: Truncating the Distribution









#### **RightRisk Newsletter**

APRIL 2015

RIGHTRISK "

#### RIGHTRISK NEWS

You?

Noninsured Crop Disaster Assistance Program

in may use insurance as a strategy to belp manage the risks associated with growing crops. Continued Crop Distancer Assistance Program (NAP), administrated by USDA's Farm Sca-ness, (FSA), provides producers of noninsurable crops, which at least some basic or extan-covering when low yields, loss of inventors, or prevented planning occurs due to natural covering when low yields, loss of inventors, or prevented planning occurs due to natural covering when loss with the province of the natural covers o

Suck is produced for sale as seed stock for other eligible NAP production.

When purchasing NAP, producers pay a service fee which is the lesser of \$250 per crop or \$750 per producer per administrative county, not to exceed a total of \$1,875 per producer with farming interests in multiple counties. The 2014 Farm Bill authorized the FSA to offer producers an opportunity to purchase higher levels of coverage on all cligible crops except those crops and grasses intended for grazing. NAP "bay-up coverage," allows a producer to select higher levels of yield protection (\$0, 55, 60, or 65 percent) at 100 percent of the established price.

#### Buy-Up Example

KIGHTISISK "

Assume a farmer grows 100 acres of forage sorghum with an approved yield of 2 tons per acre on land he owns. Forage sorghum is eligible for NAP coverage in the county he resides and he owns. Forage sorghum is eligible for NAP coverage. The established price is \$137.33 chooses 60 percent yield/100 percent price "buy-up" coverage. The established price is \$137.33

The farmer would pay a \$250 administrative fee plus the buy-up premium. The pre-culated by multiplying the yield times coverage level times the price times the nations convening percentage times 5.25 percent. Thus, the premium for buy-up co-tines convenibly percentage times 5.25 percent. Thus, the premium for buy-up co-be \$250 + \$865 (ZT x 60 percent x \$137.33 x 1000 x 100 percent x \$.25 percent)

If due to an qualifying event, the farmer harvests one ton per acre, the NAP payment we calculated by first multiplying the approved yield by the selected yield coverage, the nur acres, and the producer share to arrive at the distance coverage level. Any actual producers

be subtracted from the disaster coverage level to establish the net production for payment. The net production for payment multiplied by the price coverage level to get the calculated NAP payment.

facer purchased NAP insurance without buy-up coverage, he would have paid only the \$250 administrative fee. Since the evecl is 50 percent and the farmer's 1 ton per acre actual yield would equal this disaster coverage level, there would be no md no payment.

just one fool available to farmers for managing their production and price risks when crop insurance products are not rs interested in possibly using NAP or NAP Buy-Up should contact their local FSA office or visit www.fsa.usda.gov to

is the annual deadline by which most people must file their tax returns and pay any taxes owed for the past tax year. It is also see for making the first installment payment for any estimated taxes due runt tax year.

as payments should be the leaser of: (1) 90 percent of the tax expected for the current year or (2) 100 percent of the tax owed for the prior with a tax liability of \$1,000 or more should file quarterly estimated is to avoid possible penalties and interest changes. For calendar year winnied payments are due quarterly on April 15th, June 15th, Separal Jamany 15th.

**RURAL TAX EDUCATION** 

y may choose to make a single estimated tax payment by the 15th of the month following the close of their tax year or nt of their income tax liability by the first day of the third month following the close of their tax year – January 15th and estively, for calendary year taxpayers.

225 (Farmer's Tax Guide) explains how the federal tax laws apply to farming. This publication and other information returns and making estimated psynenes is available at www.ing.gov. The Rural Tax Education web site (www.uradax.org/) the resource for articles or tax topics, sample tax returns, and other general tax information.

alt with their tax advisor about the proper filing of their taxes and whether they may be required to make qui



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

ching

ghtRisk.org

Seatech tion@RightRisk.org

http://RightRisk.org/News

