

Risk Management Education for Ranches and Priority Commodities

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Co-Sponsors: *Risk Management Agency & Billings Regional Service Office*
Montana Stockgrowers Association
Montana MarketManager
MSU Extension Service



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**Risk Management
Agency**

WORKSHOP OUTLINE

- 1. Pre-Test**
- 2. Production Risk Management**
 - a. Tools**
 - b. Multiple Peril Crop Insurance**
 - c. Income Protection**
 - d. Crop Revenue Coverage**
 - e. Revenue Assurance**
 - f. Feed Grain Product Availability**
- 3. Livestock Risk Protection**
 - a. Comparison With Options**

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 - a. **Comparison With Options**

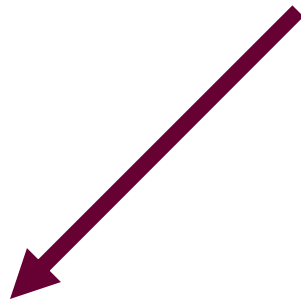
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Production Risk Management Options

Choices When RMA

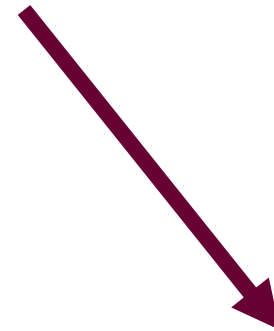
Offerings Are Available



Self-Insure



**Single-Peril
Insurance**



**RMA Multiple
Peril Offerings**

RMA Insurance Categories

Two Broad Categories



1. Yield Insurance
 - a. Indemnities Paid When Per Acre Yields Are Low

2. Revenue Insurance
 - a. Indemnities Paid When Per Acre Revenue Is Low

RMA Insurance Categories

	Individual Farm Plans (APH)	Group Plans (County Yield/Revenue)
Yield Insurance	MPCI	GRP
Revenue Insurance	IP CRC, RA, AGR	GRIP

Insurable Units

**May Be Able To Insure Different Areas
Within A County
Under Different Contracts**

1. **Optional Units**

a. **Land In Different Sections**

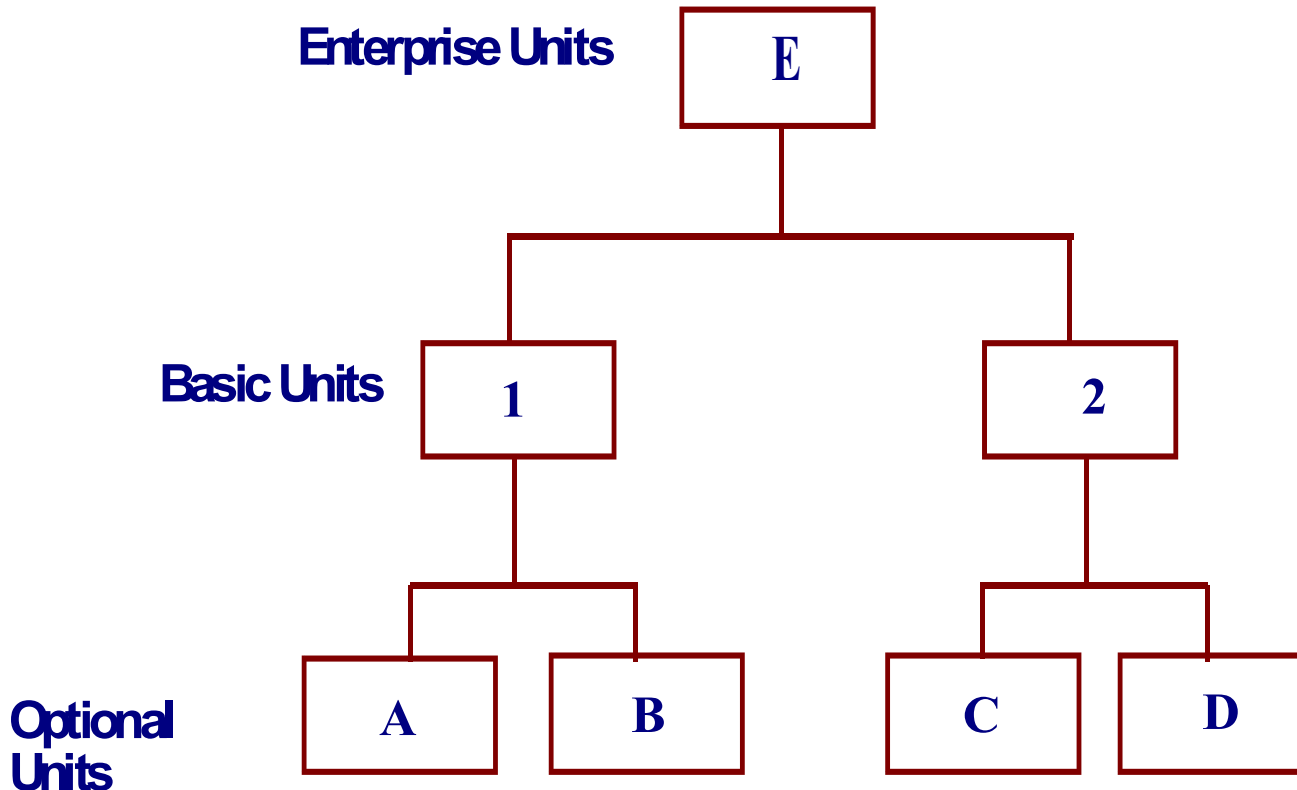
2. **Basic Units**

a. **Land Operated Under Same
Cost/Share Arrangements**

3. **Enterprise Units**

a. **All Of Your Land In The County⁸**

Insurable Units Pyramid



All four farms are in the same county.

A & B are operated under 100% crop share (may be owned or cash leased) but in separate sections.

C is leased from a landlord – 1/3 crop share.

D is leased in a different section – 1/3 crop share.

Comparing Optional And Basic Units (MPCI)

Contract Data	Optional Unit A	Optional Unit B	Basic Unit
Unit Size	100 acres	100 acres	200 acres
APH Yield	100 bushels	100 bushels	100 bushels
Coverage	70%	70%	70%
Yield Guarantee	70 bushels	70 bushels	70 bushels
Elected Price	\$2/bushel	\$2/bushel	\$2/bushel

Problem 1: Comparing Optional And Basic Units

	Optional Unit A	Optional Unit B	Basic Unit
Yield Guarantee	70 bushels	70 bushels	70 bushels
Elected Price	\$2/bushel	\$2/bushel	\$2/bushel
Unit Size	100 acres	100 acres	200 acres
Actual Yield Per Acre	60 bushels	80 bushels	
Per Acre Bushel Indemnity			
Total Dollar Indemnity			

Problem 1: Comparing Optional And Basic Units

	Optional Unit A	Optional Unit B	Basic Unit
Yield Guarantee	70 bushels	70 bushels	70 bushels
Elected Price	\$2/bushel	\$2/bushel	\$2/bushel
Unit Size	100 acres	100 acres	200 acres
Actual Yield Per Acre	60 bushels	80 bushels	70
Per Acre Bushel Indemnity	10	0	0
Total Dollar Indemnity	\$2,000	0	0

Actual Production History

Producers Must Establish An APH For MPCl

- 1. APH Must Be Established On Each Insurable Unit**
- 2. Based on Historical Proven Yields For The Past 4 to 10 Years**
- 3. This History Must Be For Consecutive Years**
- 4. Must Start With Most Recent Crop Year**
- 5. New Producer APH Briefing Paper**

Establishing An APH When Records Are Available

Year	Producer A	Producer B
1994	--	104
1995	--	80
1996	--	60
1997	--	86
1998	--	105
1999	--	60
2000	90	90
2001	60	60
2002	75	75
2003	50	50
APH Yield	69	77

Incomplete APH History

1. **If You Have Less Than 4 Years Of Proven Yields**
 - a. **A Transition Yield (T-Yield) Is Specified**
 - b. **Similar To The County Average**
2. **If You Are Unable To Supply Any Proven Production Information**
 - a. **Limited To 65% Of The T-Yield**¹⁵

Incomplete APH History

3. **If You Have Proven Yields For Only One Year**
 - a. **Can Use 80% Of The T-Yield For The Other Three Years**
4. **If You Have Proven Yields For Only Two Years**
 - a. **Can Use 90% Of The T-Yield For The Other Two Years**
5. **If You Proven Yields For Three Years**
 - a. **Can Use 100% Of The T-Yield For The Missing Year**

Establishing An APH When Records Are Not Complete

Year	Producer C	Producer C		Producer D	Producer D
2000	N.A.			N.A.	
2001	60	60		N.A.	
2002	75	75		N.A.	
2003	50	50		N.A.	
APH Yield	??			??	

If The T-Yield Was 80 Bushels Per Acre

Establishing An APH When Records Are Not Complete

Year	Producer C	Producer C		Producer D	Producer D
2000	N.A.	80		N.A.	52
2001	60	60		N.A.	52
2002	75	75		N.A.	52
2003	50	50		N.A.	52
APH Yield	??	66		??	52

If The T-Yield Was 80 Bushels Per Acre

Producer C: 100% Of 80 Bushels (2000)

Producer D: 65% Of 80 Bushels (All Years)

APH Yields And Low Yields

1. **If You Have Had Some Years With Unusually Low Yields**
 - a. **You Can Replace Those Years With 60% Of The T-Yield**
 - b. **However, Premium Increases**
 - **Rates**
 - **Yield**

APH Yields And Low Yields

Year	Producer E	Producer E
1994	104	104
1995	80	80
1996	15*	48
1997	86	86
1998	105	105
1999	25*	48
2000	90	90
2001	60	60
2002	75	75
2003	20*	48
APH Yield	66	74

If The T-Yield Was 80 Bushels Per Acre

Producer E: 60% Of 80 Bushels (1996, 1999, 2003)

WORKSHOP OUTLINE

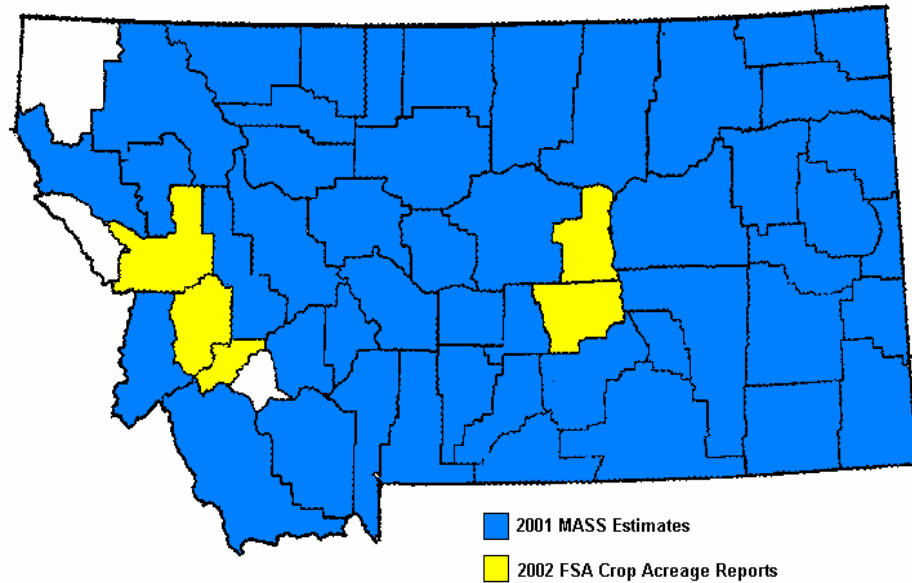
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Multiple Peril Crop Insurance

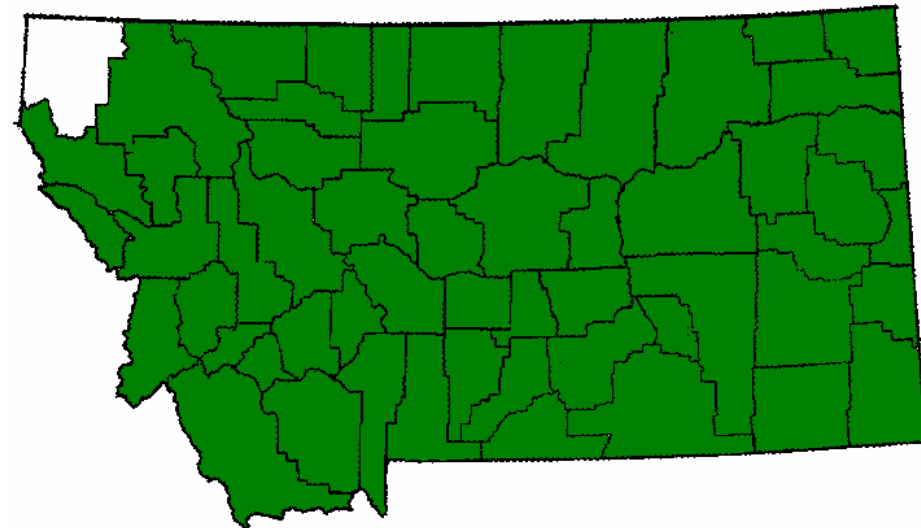
- 1. Original FCIC, Subsidized Crop Insurance**
- 2. Producer Establishes An APH**
- 3. Producer Chooses A Coverage Level**
 - a. 50%-75% (Or 85%) Of APH**
- 4. Producer Chooses A Price Election**
 - a. 55%-100% Of MPCCI Price Forecast**
- 5. Premium Equals The Maximum Indemnity Multiplied By The Premium Rate**

Barley

**Barley Production,
2003 Crop Year**



**Insured Counties for Barley,
2004 MPCl Coverage**



MPCI Irrigated Feed Barley Example

Contract Data	Value	Calculation
APH Yield	100 bu.	producer
Coverage Level	70%	producer*
Yield Guarantee	70 bu.	0.70 x 100 bu.
MPCI Price Forecast	\$2.50/bu.	RMA
Price Election	80%	producer*
Elected Price	\$2.00/bu.	0.80 x \$2.50
Maximum Indemnity	\$140	70 bu. x \$2.00
Premium Rate	6%	RMA
Producer's Premium	\$8.40/ac.	0.06 x \$140₂₄

MPCI Irrigated Feed Barley Problem

- 1. Suppose You Actually Harvest 50 Bushels Per Acre**
- 2. Will You Receive An Indemnity?**
- 3. If So, Calculate The Indemnity In Bushels/Acre**
- 4. Calculate The Indemnity In Dollars/Acre**

MPCI Irrigated Feed Barley Problem

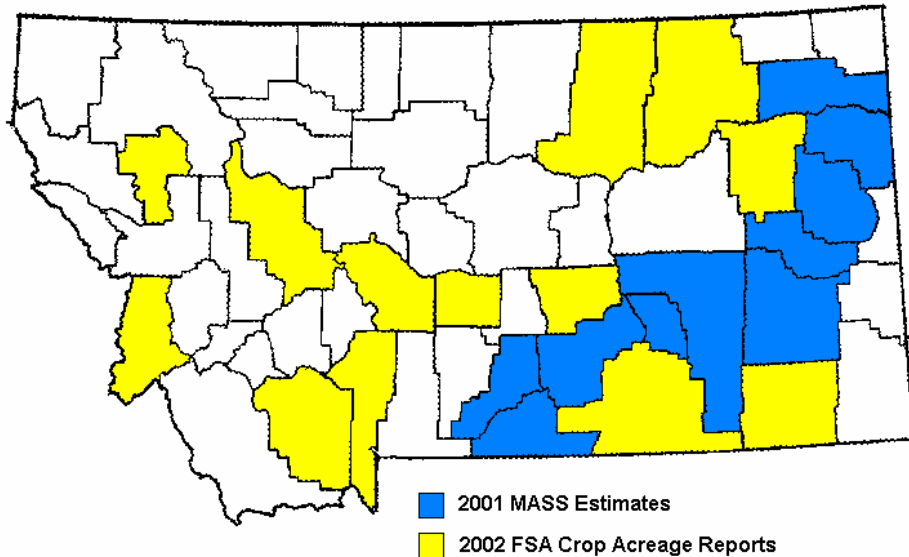
1. **Suppose You Actually Harvest 50 Bushels Per Acre**
2. **You Receive An Indemnity Because 50 Bushels Is Less Than Your Yield Guarantee Of 70 Bushels.**
3. **You Receive The Difference In Bushels**
 - a. **$70 - 50 = 20$ Bushels/Acre**
4. **Valued At Your Elected Price**
 - a. **$20 \times \$2.00 = \$40/\text{Acre}$**

Catastrophic Risk Protection (CAT)

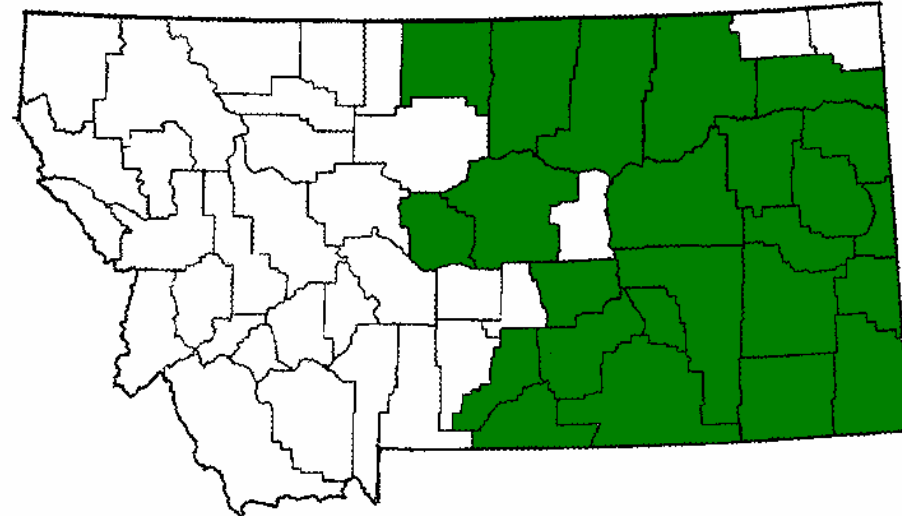
1. **If An RMA Product Exists For A Crop In A County**
 - a. **A Producer May Choose To Purchase A CAT Endorsement**
2. **Costs \$100 For Each Crop In Each County (No Additional Premium)**
3. **Must Establish An APH**
4. **Given A 50% Coverage Level**
5. **Given A 55% Price Election**

Corn for Silage-Irrigated

**Corn for Silage Production
(mostly irrigated),
2002/2003 Crop Years**

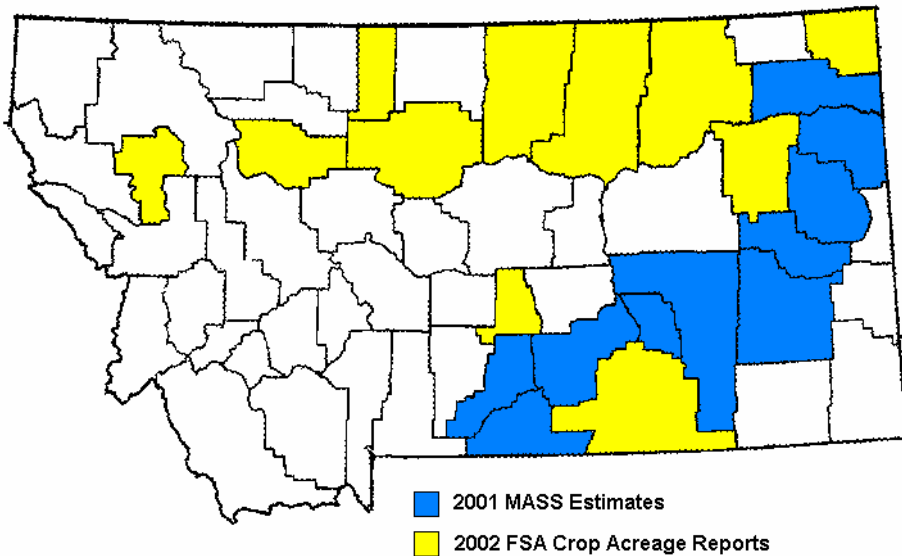


**Insured Counties for
Irrigated Corn Silage
2004 MPCJ Coverage**

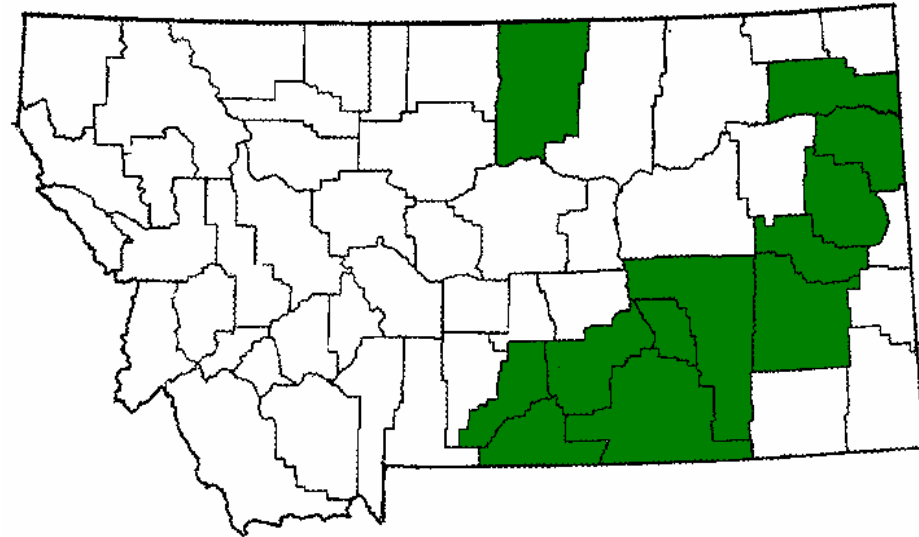


Corn for Grain-Irrigated

**Corn for Grain Production
(mostly irrigated),
2002/2003 Crop Years**



**Insured Counties for Irrigated
Corn for Grain,
2004 MPCJ Coverage**



MPCI Corn Silage/Grain

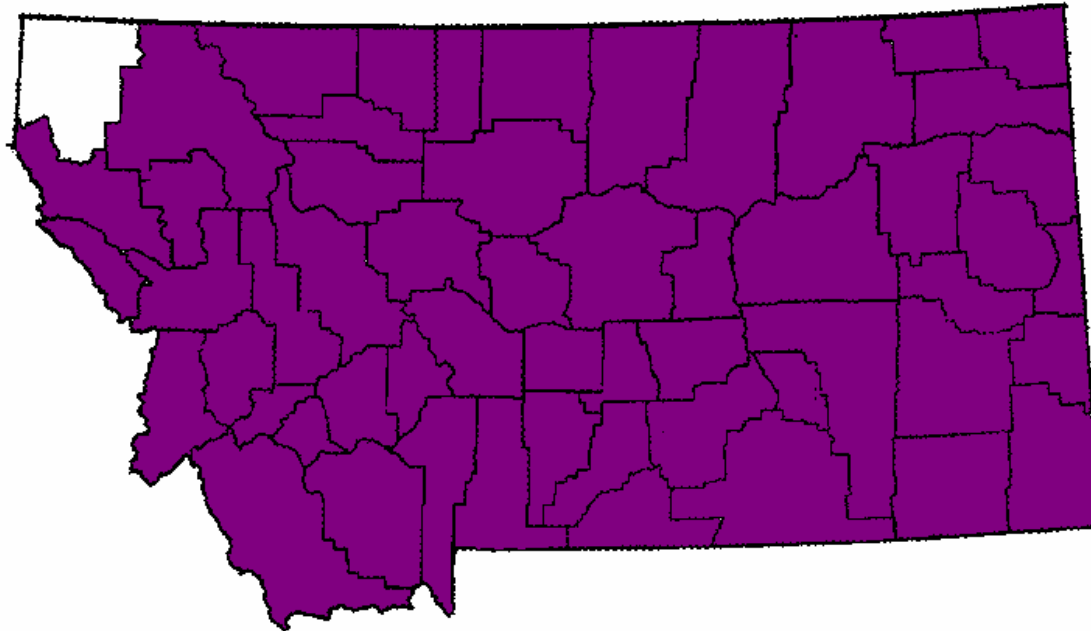
- 1. Multiple Peril Crop Insurance**
- 2. Producer Establishes An APH By Unit**
- 3. Producer Chooses A Coverage Level**
 - a. 50, 55, 60, 65, 70, 75% Of APH**
- 4. Producer Chooses A Price Election**
 - a. 60%-100% Of MPCI
Price Forecast**
- 5. Primarily Irrigated Production**

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Barley

Insured Counties for Barley, 2004 Income Protection



Income Protection (IP)

1. **Can Only Insure Enterprise Units**
2. **Producer Establishes An APH**
3. **Producer Chooses A Coverage Level**
 - a. **50%-75% (or 85%)**
4. **RMA Establishes A “*Projected Harvest Price*”**

Income Protection (IP)

5. IP Revenue Insurance Guarantee
 - a. APH Yield x Coverage Level
x RMA Projected Harvest Price
6. “Crop Value” Is Your Actual Harvest Yield Multiplied By The “RMA *Actual Harvest Price*”
7. Producer Receives An Indemnity When
 - a. “Crop Value” Is Less Than the IP Revenue Insurance Guarantee

IP Example

Contract Data	Value	Calculation
APH Yield	100 bu.	producer
Coverage Level	70%	producer*
RMA Price Forecast	\$2.50/bu.	RMA
IP Revenue Guarantee?		


IP Example

Contract Data	Value	Calculation
APH Yield	100 bu.	producer
Coverage Level	70%	producer*
RMA Price Forecast	\$2.50/bu.	RMA
IP Revenue Guarantee	\$175/ac	100 bu. X 0.70 x \$2.50

IP Example 1: Price Constant

1. **Suppose You Actually Harvest 50 Bushels Per Acre (Yield Protection)**
2. **Suppose The Actual RMA-Determined Harvest Price Is \$2.50/bushel**
3. **Your “Crop Value” Is**
 - a. **$50 \text{ bu} \times \$2.50 = \$125/\text{Acre}$**
4. **You Receive An Indemnity Of \$50/Acre Because \$125/Acre Is Less Than \$175/Acre**
 - a. **$\$175 - \$125 = \$50/\text{Acre}$**

IP Example 2: Price Increase

1. **Suppose You Actually Harvest 50 Bushels Per Acre**
2. **But, The Actual RMA-Determined Harvest Price Increased To \$2.75/bushel (Rather Than The Projected Harvest Price of \$2.50/bu.)**

3. **What Is Your “Crop Value”?**
4. **Will You Receive An Indemnity?**
5. **If So, Calculate The Indemnity**

IP Example 2: Price Increase

1. **Suppose You Actually Harvest 50 Bushels Per Acre**
2. **But, The Actual RMA-Determined Harvest Price Increased To \$2.75/bushel (Rather Than The Projected Harvest Price of \$2.50/bu.)**
3. **Your “Crop Value” Is**
 - a. **$50 \text{ bu} \times \$2.75 = \$137.50/\text{Acre}$**
4. **You Receive An Indemnity Of \$37.50/Acre**
 - a. **$\$175 - \$137.50 = \$37.50/\text{Acre}$**

IP Example 3: Price Decrease

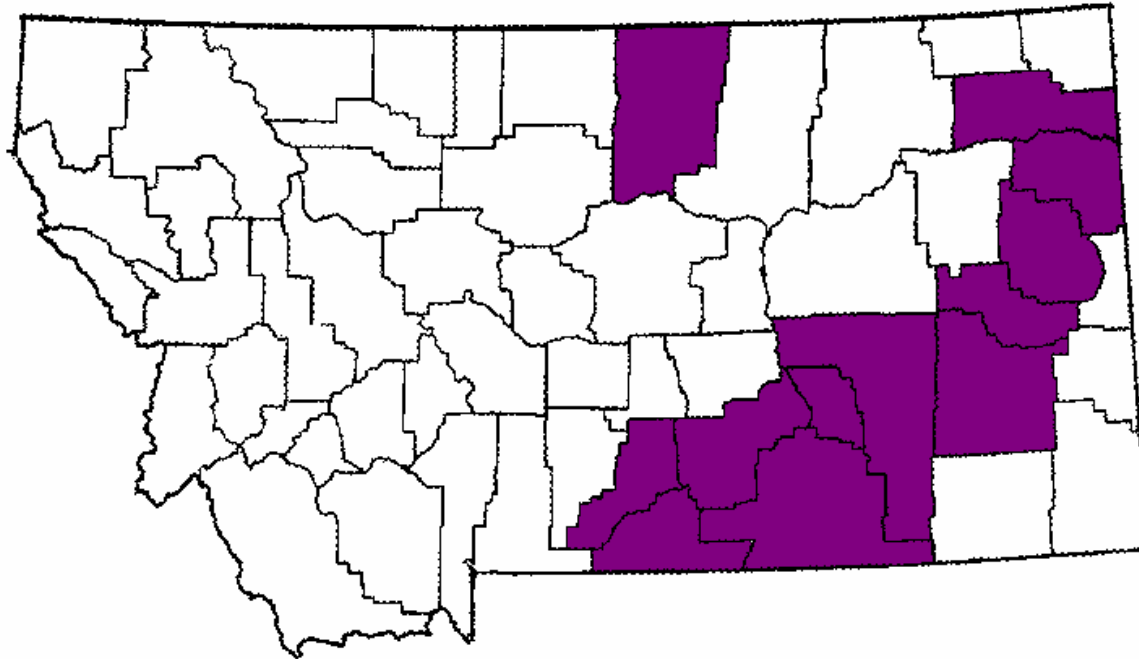
1. **Suppose You Actually Harvest 85 Bushels Per Acre (Price Protection)**
2. **But, The Actual RMA-Determined Harvest Price Decreased To \$2.00/bushel (Rather Than The Expected Harvest Price of \$2.50/bu.)**
3. **Your “Crop Value” Is**
 - a. **$85 \text{ bu} \times \$2.00 = \$170/\text{Acre}$**
4. **You Receive An Indemnity Of \$5.00/Acre**
 - a. **$\$175 - \$170 = \$5/\text{Acre}$**

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Corn for Grain-Irrigated

**Insured Counties for Irrigated
Corn for Grain,
2004 CRC Coverage**



CRC Insurance

1. **Can Insure Optional, Basic, Or Enterprise Units**
2. **Producer Establishes An APH For Each Unit**
3. **Producer Chooses A Coverage Level**
 - a. **50%-75% (or 85%)**
4. **RMA Establishes A “*Base Price*”**
5. **Producer Chooses 95% or 100% Price Election**

CRC Insurance

6. Minimum Revenue Guarantee
 - a. APH Yield x Coverage Level
x RMA Base Price x
Price Election

7. Producer Receives An
Indemnity When
 - a. Actual Yield Multiplied By The
RMA “Harvest Price” Is Less
Than The Minimum Revenue
Guarantee

CRC Insurance

8. **Producer Minimum Revenue Guarantee Is Adjusted Upward If**
 - a. **RMA Harvest Price Is Greater Than The RMA Base Price**

9. **CRC Insurance Results In**
 - a. **Downward Yield Protection**
 - b. **Downward Price Protection**
 - c. **Upward Price Participation**

CRC Irrigated Corn Example

Contract Data	Value	Calculation
APH Yield	140 bu.	producer
Coverage Election	70%	producer*
RMA Base Price	\$2.10/bu.	RMA
Price Election	95%	producer*
Minimum Revenue Guarantee?		

CRC Irrigated Corn Example

Contract Data	Value	Calculation
APH Yield	140 bu.	producer
Coverage Election	70%	producer*
RMA Base Price	\$2.10/bu.	RMA
Price Election	95%	producer*
Minimum Revenue Guarantee?	\$195.50	140 bu. x 0.70 x \$2.10 x 0.95

CRC Example 1: Price Constant

1. **Suppose You Actually Harvest 75 Bushels Per Acre (Yield Protection)**
2. **Suppose The RMA Harvest Price Is \$2.10/bushel**
3. **Your “Crop Value” Is**
 - a. **$75 \text{ bu} \times \$2.10 = \$157.50/\text{Acre}$**
4. **You Receive An Indemnity Of \$38/Acre Because \$157.50/Acre Is Less Than \$195.50/Acre**
 - a. **$\$195.50 - \$157.50 = \$38/\text{Acre}$**

CRC Example 2: Price Decrease

1. **Suppose You Actually Harvest 140 Bushels Per Acre (Price Protection)**
2. **But, The RMA Harvest Price Decreased To \$1.25/bushel (Rather Than The RMA Base Price Of \$2.10/bu.)**
3. **Your “Crop Value” Is**
 - a. **140 bu x \$1.25 = \$175/Acre**
4. **You Receive An Indemnity Of \$20.50/Acre**
 - a. **\$195.50 - \$175 = \$20.50Acre**

CRC Example 3: Price Increase

1. **Suppose You Actually Harvest 75 Bushels Per Acre (Price Participation)**
2. **But, The RMA Harvest Price Increased To \$2.50/bushel (Rather Than The RMA Base Price of \$2.10/bu.)**
3. **What Is Your New Minimum Revenue Guarantee?**
 - a. **$140 \times 0.70 \times \$2.50 \times 0.95 = \$232.75/\text{Acre}$**

CRC Example 3: Price Increase

4. **What Is Your Crop Value?**

a. $75 \times \$2.50 = \187.50

5. **Calculate Your Indemnity**

a. $\$232.75 - \$187.50 = \$45.25/\text{Acre}$

6. **If The Price Increase Was Not Considered**

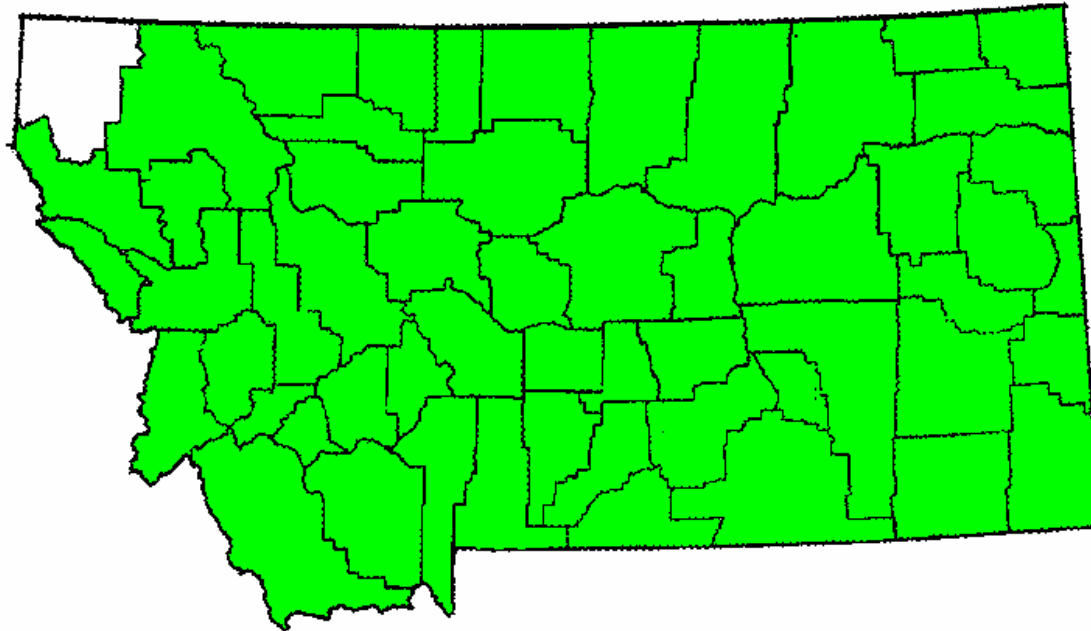
a. **You Would Have Received
\$38/Acre**

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Barley

Insured Counties for Barley, 2004 Revenue Assurance



Revenue Assurance

- 1. Very Similar Product To Crop Revenue Coverage**
- 2. A Few Differences In Terminology**
- 3. Developed By A Different Company**
- 4. Differences In The RMA-Determination Of Harvest Price**
- 5. Different Premiums**

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Feed Grain Product Availability

Feed Grains*	MPCI	IP	CRC	RA
Barley (Malt Endorsements)	X	X		X
Corn For Silage	X			
Corn For Grain	X		X	
Oats	X	X		X

*Some Products Are Only Available For Some Crops In Some Counties

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3. **Livestock Risk Protection**
 - a. **Comparison With Options**

Livestock Risk Protection

- 1. Currently Available In 10 States**
 - a. Colorado, Iowa, Kansas, Nebraska, Nevada, Oklahoma, South Dakota, Texas, Utah, Wyoming**
 - b. A Similar Product Exists For Fed Cattle (Steers And Heifers) In Illinois, Iowa, and Nebraska**
- 2. Protection Against A Price Decline Below A Coverage Price**
- 3. Starting With 2004 Crop Year, Can Insure 400-900 Pound Feeder Calves**
 - a. Steers, Heifers, Brahma, Dairy**

Livestock Risk Protection

- 3. LRP Is Offered For 13, 17, 21, 26, 30, 34, 39, 43, and 52 Week Periods**
 - a. These Periods Represent The Number Of Weeks Between Attaching Insurance And Marketing Calves Between 550 And 900 Pounds**
- 4. Crop Year Is July 1 Through June 30**

Livestock Risk Protection

- 5. Insurance Is Limited To 2,000 Head Per Crop Year**
- 6. No Offsetting Transactions On Feeders That Are Covered By LRP**
 - a. Selling A CME Put Option**
 - b. Buying A CME Futures Contract**

Livestock Risk Protection

- 7. Coverage Price Represent Expected Ending Value For Feeder Cattle**
 - a. Published By RMA Each Business Day**

- 8. Coverage Level Ranges From 70% To 95% Of Expected Ending Value**

LRP Example

Contract Data	Value	Source
Number Of Steers	1,000	producer
Expected Weight	800 lb	producer
Current Date	Aug 11	producer
Marketing Date	Jan 5	producer
Endorsement Length	21 weeks	producer*
Expected Ending Value	\$87.227	RMA
Selected Coverage	92.04%	producer*
Coverage Price	\$80.28	RMA

LRP Example

Contract Data	Value	Calculation
Insured Value	\$642,240	1,000 hd x 8 cwt/hd x \$80.28
Premium Rate	0.016430	RMA
Total Premium	\$10,552	\$642,240 x 0.016430
Subsidy Rate	13%	RMA
Subsidy Amount	\$1,372	\$10,552 x 0.13
Producer Premium	\$9,180	\$10,552-\$1,372

LRP Example

1. **Suppose You Actually Sell 1,000
800 Pound Calves On Jan 5**
 - a. **You Sold Your Calves
For \$74.00/cwt**
2. **The CME-Reported Actual Ending
Value Is \$75.20/cwt**
3. **You Receive An Indemnity Because
The CME Feeder Cattle Index
Declined Below \$80.28/cwt**

LRP Example

4. Indemnity Calculation

a. $1,000 \text{ Head} \times 8 \text{ Cwt/Head} \times (\$80.28 - \$75.20) = \$40,640$

5. Revenue From Calves

a. $1,000 \times 8 \text{ Cwt/Head} \times \$74.00 = \underline{\$592,000}$

b. **Plus Indemnity Of \$40,640**

c. **Less Premium Of \$9,180**

d. **Net Revenue = \$623,460**

LRP Example

6. Recall That You Were Expecting \$87.227/Cwt
 - a. $1,000 \times 8 \text{ Cwt/Head} \times \$87.227 = \underline{\$697,816}$
7. Without LRP, You Would Have Received \$592,000
8. With LRP, You Received \$623,460
9. Note That Your Actual Sales Price Does Not Affect The Indemnity

Summary Of LRP

1. **Note That You Are Not Insuring For**
 - a. **Death Loss**
 - **But You Are Compensated For Price Differences On Those That Died**
 - b. **Rates Of Gain**
 - c. **A Decline In YOUR Price**
 - **You Are Still Subject To Basis Risk**
2. **You Are Insuring Against A Decline In The CME Feeder Cattle Index**

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Comparison Of LRP And Options

1. **LRP And CME Put Options BOTH Protect Against Downside Price Risk**
 - a. **For LRP, The Selected 'Coverage Price' Is Your Price Floor**
 - b. **For Options, The Selected 'Strike Price' Is Your Price Floor**

Comparison Of LRP And Options

2. **BOTH LRP And Options Require The Payment Of A Premium**
 - a. **LRP: An Insurance Premium Is Paid To An Insurance Agent**
 - b. **Options: An Option Premium Is Paid To A Broker**

Comparison Of LRP And Options

3. **BOTH LRP And Options May Result In A Payout**
 - a. **LRP: The Payout Is An Insurance Indemnity**
 - b. **Options: Option Premium Increases In Value**

Comparison Of LRP And Options

4. **Payouts Are Received When Prices Decline Below An Insured Level**
 - a. **LRP: Receive An Indemnity**
 - b. **Options: Option Premium Increases In Value And You Receive The Increase In Your Brokerage Account**

Comparison Of LRP And Options

5. **No Payouts Are Received If Market Prices Remain Above The Insured Level**
 - a. **LRP: No Indemnity**
 - b. **Options: Option Premium Declines To Zero And There Is No Increase In Your Brokerage Account**

Comparison Of LRP And Options

6. **BOTH LRP And Options Are Subject To Basis Risk**
 - a. **Both Products Protect You From A Decline In The CME Feeder Cattle Price Index**
 - b. **Neither Product Protects You From A Decline In YOUR Price**

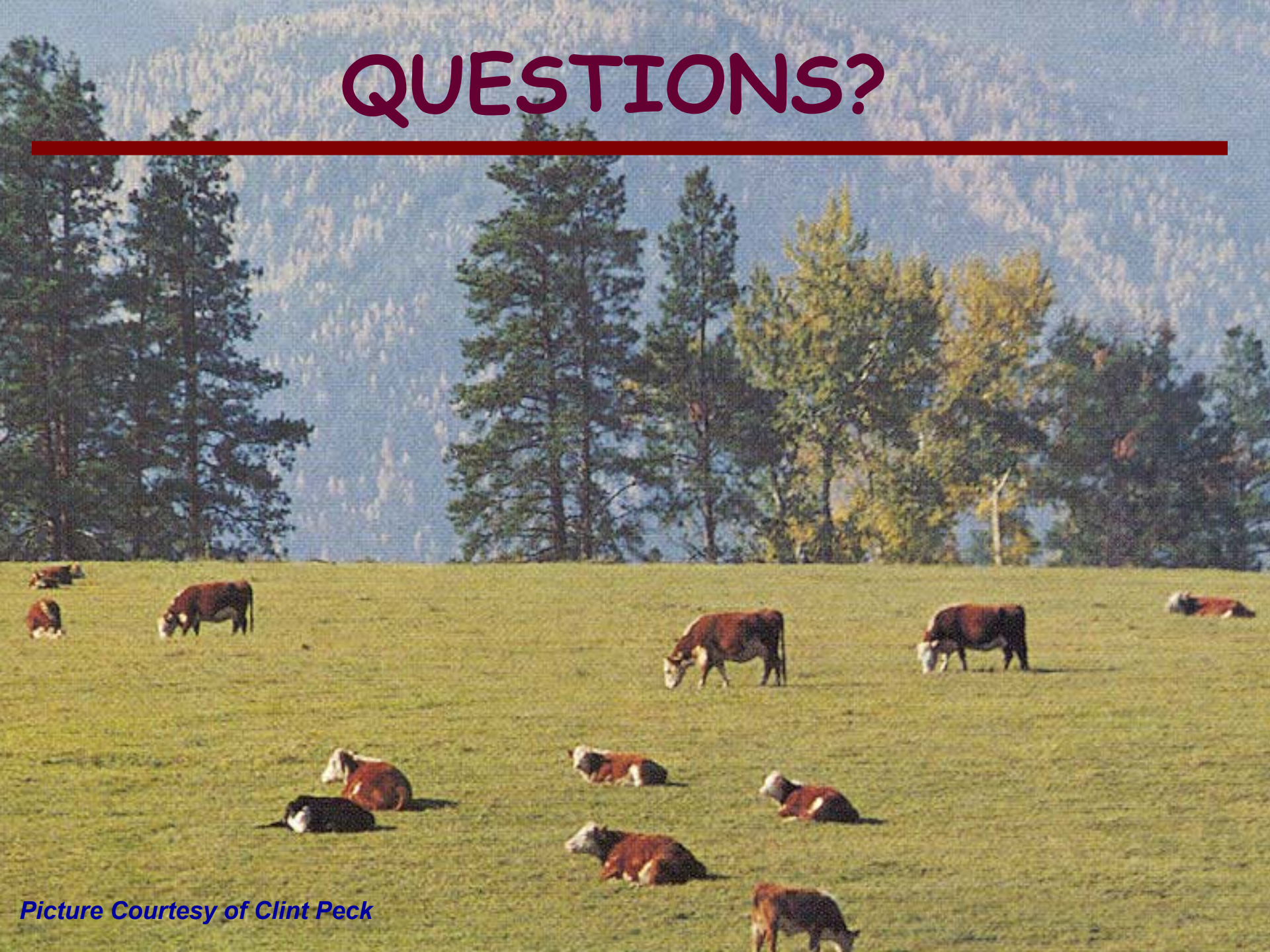
Comparison Of LRP And Options

7. **Disadvantages Of Options Relative To LRP**
 - a. **Need A Brokerage Account**
 - b. **Subsidies Are Not Available For Option Premiums**
 - c. **Requires Brokerage Fees**
 - d. **No Price Adjustments For Varying Weights**
 - e. **50,000 Pound Contracts**

Comparison Of LRP And Options

8. **Advantages Of Options Relative To LRP**
 - a. **Can Buy Higher Price Coverage Levels Than LRP**
 - b. **More Timing Flexibility Because You Can Sell An Option Prior To Expiration**
 - c. **Can Re-purchase An Option At Any Time**

QUESTIONS?



Picture Courtesy of Clint Peck