

Crop Insurance Fundamentals

Gary Brester

Department of Agricultural Economics and Economics

Montana State University



Montana MarketManager

February 11, 2002



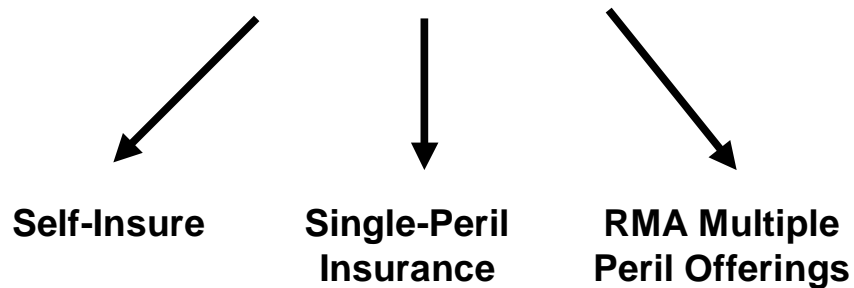
OUTLINE

- 1. Definitions**
- 2. Insurable Units**
- 3. Actual Production History (APH)**
- 4. Multiple Peril Crop Insurance**
- 5. Catastrophic Coverage**
- 6. Special Cases**
- 7. Product Availability**
- 8. Summary**

2

Production Risk Management Options

Choices When RMA Offerings Are Available



3

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

4

RMA Insurance Acronyms

1. **MPCI** **Multiple Peril Crop Insurance**
2. **IP** **Income Protection**
3. **CRC** **Crop Revenue Coverage**
4. **RA** **Revenue Assurance**
5. **GRP** **Group Risk Plan**
6. **GRIP** **Group Revenue Insurance Plan**
7. **AGR** **Adjusted Gross Revenue** 5

RMA Insurance Categories

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

6

OUTLINE

1. **Definitions**
2. **Insurable Units**
3. **Actual Production History (APH)**
4. **Multiple Peril Crop Insurance**
5. **Catastrophic Coverage**
6. **Product Availability**
7. **Malting Barley Riders**
8. **Summary**

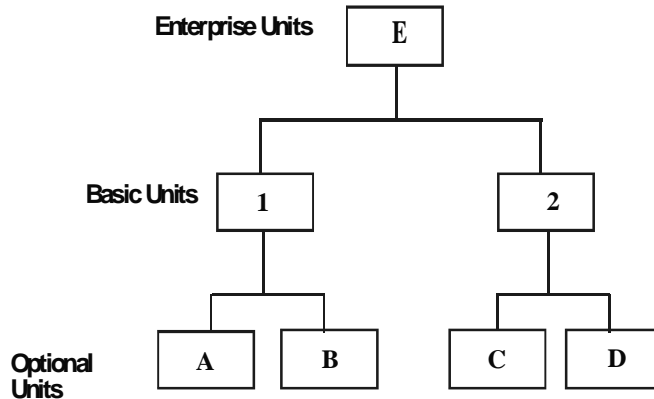
7

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 from a different landlord – 1/3 crop share.

9

Comparing Optional And Basic Units (MPCI)

Contract Data	Optional Unit A	Optional Unit B	Basic Unit
Unit Size	1000 acres	1000 acres	2000 acres
APH Yield	40 bushels	40 bushels	40 bushels
Coverage	70%	70%	70%
Trigger Yield	28 bushels	28 bushels	28 bushels
Elected Price	\$3/bushel	\$3/bushel	\$3/bushel

10

Comparing Optional And Basic Units (MPCI)

	Optional Unit A	Optional Unit B	Basic Unit
Trigger Yield	28 bushels	28 bushels	28 bushels
Actual Yield	20 bushels	36 bushels	28 bushels
Bushel Indemnity	8 bushels	0 bushels	0 bushels
Elected Price	\$3/bushel	\$3/bushel	\$3/bushel
Unit Size	1000 acres	1000 acres	2000 acres
Total Indemnity	\$24,000	\$0	\$0

11

OUTLINE

1. **Definitions**
2. **Insurable Units**
3. **Actual Production History (APH)**
4. **Multiple Peril Crop Insurance**
5. **Catastrophic Coverage**
6. **Special Cases**
7. **Product Availability**
8. **Summary**

12

Actual Production History

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**

13

Establishing An APH When Records Are Available

Year	Producer A	Producer B
1992	--	58
1993	--	16
1994	--	44
1995	--	40
1996	--	45
1997	--	60
1998	50	50
1999	40	40
2000	30	30
2001	15	15
APH Yield	34	40

14

Missing APH History

1. **If You Have Less Than 4 Years Of Proven Yields**
 - a. **A Transition Yield (T-Yield) Is Established**
 - b. **Similar To County Average Yields**
 - c. **You Are Allowed To Use 60% Of The T-Yield As A Substitute**

15

Missing APH Example

Year	Producer A	Producer B
1992	--	58
1993	--	16
1994	--	44
1995	--	40
1996	--	45
1997	--	60
1998	50	50
1999	24*	40
2000	30	30
2001	15	15
APH Yield	30**	40

Assume T-Yield = 40 bu/acre; * = 60% of T-Yield; **Previous APH=34

16

Years Of Low Yields

1. **If You Have 4 Or More Years Of Proven Yields**
 - a. **But, Some Yields Were Unusually Low**
 - b. **You Can Replace Those Years With 65% Of The T-Yield**

17

APH If Low Yields

Year	Producer A	Producer B
1992	--	58
1993	--	26*
1994	--	44
1995	--	40
1996	--	45
1997	--	60
1998	50	50
1999	40	40
2000	30	30
2001	26*	26*
APH Yield	37**	42***

Assume T-Yield = 40 bu/acre; * = 65% of T-Yield; **Previous APH=34; ***Previous APH=40

18

OUTLINE

- 1. Definitions**
- 2. Insurable Units**
- 3. Actual Production History (APH)**
- 4. Multiple Peril Crop Insurance**
- 5. Catastrophic Coverage**
- 6. Special Cases**
- 7. Product Availability**
- 8. Summary**

19

MPCI

- 1. Original FCIC, Subsidized Crop Insurance**
- 2. Producer Establishes An APH**
- 3. Producer Chooses A Yield Election**
 - a. 50%-75% (or 85%) Of APH**
- 4. Producer Chooses A Price Election**
 - a. 30%-100% Of FCIC Forecasted Harvest Price**
- 5. Premium Equals The Maximum Indemnity Multiplied By The Premium Rate**

20

MPCI Example

Contract Data	Value	Calculation
APH Yield	40 bu.	
Yield Election	70%	
Trigger Yield	28 bu.	0.70 x 40 bu.
FCIC Price Forecast	\$3.50/bu.	
Price Election	80%	
Elected Price	\$2.80/bu.	0.80 x \$3.50
Maximum Indemnity	\$78.40	28 bu. x \$2.80
Premium Rate	6%	
Premium	\$4.70/ac.	0.06 x \$78.40

21

MPCI Example

- 1. Suppose You Actually Harvest 20 Bushels Per Acre**
- 2. You Receive An Indemnity Because 20 Bushels Is Less Than Your Trigger Yield of 28 Bushels.**
- 3. You Receive The Difference In Bushels**
 - a. $28 - 20 = 8$ Bushels/Acre**
- 4. Valued At Your Elected Price**
 - a. $8 \times \$2.80 = \22.40 /Acre**

22

OUTLINE

- 1. Definitions**
- 2. Insurable Units**
- 3. Actual Production History (APH)**
- 4. Multiple Peril Crop Insurance**
- 5. Catastrophic Coverage**
- 6. Special Cases**
- 7. Product Availability**
- 8. Summary**

23

Catastrophic Risk Protection

- 1. CAT Endorsements May Be Purchased**
- 2. No Longer Required**
- 3. Coverage (No Options)**
 - a. 50% Yield Election**
 - b. 60% Price Election**
- 4. CAT Endorsements Cost \$100 For Each Crop In Each County**
- 5. Minimal Coverage But It Is Not Very Expensive**

24

Catastrophic Risk Protection

6. **In Our Example**
 - a. **50% Yield Election**
 - **40 bu x 0.50 = 20 bu/ac**
 - b. **60% Price Election**
 - **\$3.50 x 0.60 = \$2.10/bu**
 - c. **Maximum Indemnity**
 - **20 bu x \$2.10 = \$42/ac**
 - d. **If You Harvest 20 bu/ac**
 - **Your Indemnity = \$0.00/ac** 25

OUTLINE

1. **Definitions**
2. **Insurable Units**
3. **Actual Production History (APH)**
4. **Multiple Peril Crop Insurance**
5. **Catastrophic Coverage**
6. **Special Cases**
7. **Product Availability**
8. **Summary** 26

Winter Wheat Endorsement

1. **If Purchased Last Fall And You Have A Poor Stand This Spring**
 - a. **You Can Receive An Indemnity Of 70% Of Trigger Yield x Price Election**
 - b. **You Can Plant A Spring Crop**
2. **In Our Example, You Would Receive**
 - a. **$(0.70 \times 28) \times \$2.80 = \$54.88/\text{ac}$**

27

Prevented Plantings

1. **Developed Because Excess Rainfall Prevented Planting In North Dakota**
2. **What If It Is Too DRY To Plant A Crop?**
 - a. **In This Case, Your Indemnity Could Be 60% Of Your Trigger Yield x Price Election**
 - b. **$(0.60 \times 28) \times \$2.80 = \$47.04/\text{ac}$**

28

Prevented Plantings

3. **However, It Is Not Unusual To Plant A Crop And “Pray For Rain”**
4. **It May Be Difficult To Argue For A Prevented Planting Condition**
5. **However, If You Do Plant And Then Receive No Moisture (Zero Bushels)**
 - a. **You Then Receive 100% Of Your Trigger Yield**
 - b. **28 x \$2.80 = \$78.40/ac**

29

Malting Barley: MPC I

1. **You First Purchase A Feed Barley Contract**
2. **You Make Decisions Regarding**
 - a. **Units**
 - b. **Yield Election**
 - c. **Price Election**
3. **You May Elect To Purchase A Malting Barley Rider**
 - a. **Option A: Non-Contracted Malting Barley**
 - b. **Option B: Contracted Malting Barley**

30

Malting Barley: MPCCI

4. **Rider Applies To ALL Bushels Contracted For Delivery Regardless Of Selected Units**
5. **Indemnity Is Paid For Any Undelivered Bushels Below Your Trigger Yield**
6. **Option A: The FCIC Determines A Per Bushel Malting Barley Premium Over Feed Barley**
 - a. **Approximately \$0.50/bu**
 - b. **You Must Have Four Consecutive Years Of Malting Barley Sales Records**

31

Malting Barley: MPCCI

7. **Option B: Contracted Malting Barley**
 - a. **Indemnities Valued As**
 - **The Difference Between Malting Barley Contract Price and The FCIC Feed Barley Price Forecast**
 - **Feed Barley May Be Adjusted For Quality**

32

MPCI Malting Barley Example 1: Option B

	Value	Calculation
APH Yield	36 bu.	
Yield Election	70%	
Trigger Yield	25 bu.	$0.70 \times 36 \text{ bu.}$
FCIC Feed Barley Price Forecast	\$2.00/bu.	
Price Election	80%	
Elected Price	\$1.60/bu.	$0.80 \times \$2.00$
Option B Rider	36,000 bu.	$1000 \text{ ac} \times 36 \text{ bu}$
Contract Price	\$3.25/bu.	33

MPCI Malting Barley Example 1: Option B

1. **Suppose You Actually Harvest 20 Bushels Per Acre (Makes Malt)**
2. **You Receive An Indemnity For The Difference Between The Trigger Yield and Harvested Bushels**
 - a. $25 - 20 = 5 \text{ Bushels/Acre}$
3. **Valued At Your Feed Barley Price Election**
 - a. $5 \times \$1.60 = \$8/\text{ac}$
 - b. **Total = $\$8 \times 1,000 \text{ ac} = \$8,000$** 34

MPCI Malting Barley Example 1: Option B

4. **You Were Only Able To Deliver 20,000 Bushels (20 bu x 1,000 acres)**
5. **Malting Barley Indemnity Is Based On Your Yield Election (70% Of 36,000 bu.)**
 - a. **25,200 – 20,000 = 5,200 Bushels**
 - b. **Those Bushels Are Valued As The Difference Between The The Malting Barley Contract Price and The FCIC Feed Barley Price Forecast (Quality Adjusted)**

MPCI Malting Barley Example 1: Option B

6. **Your Malting Barley Indemnity Is:**
 - a. **\$3.25-\$2.00 = \$1.25/bu.**
 - b. **\$1.25/bu x 5,200 bu. = \$6,500**
7. **Total Indemnity Is:**
 - a. **\$8,000 + \$6,500 = \$14,500
or \$14.50/ac**

36

MPCI Malting Barley Example 2: Option B

1. **Suppose You Actually Harvest 36 Bushels Per Acre**
 - a. **All Rejected For Malt (Thins)**
2. **You Receive No Indemnity For Feed Barley (36 bu. > 25 bu.)**
3. **Your Malting Barley Indemnity Is:**
 - a. **25,200 Bushels Valued As The Difference Between The Malting Barley Contract Price And The FCIC Feed Barley Price Forecast (Quality Adjusted)**

37

MPCI Malting Barley Example 2: Option B

4. **Your Malting Barley Indemnity Is:**
 - a. **$\$3.25 - \$2.00 = \$1.25/\text{bu.}$**
 - b. **$\$1.25/\text{bu} \times 25,200 \text{ bu.} = \$31,500$**
5. **Total Indemnity Is \$31,500**
 - a. **Or \$31.50/ac**

38

OUTLINE

1. **Definitions**
2. **Insurable Units**
3. **Actual Production History (APH)**
4. **Multiple Peril Crop Insurance**
5. **Catastrophic Coverage**
6. **Special Cases**
7. **Product Availability**
8. **Summary**

39

Winter Wheat Production and MPCl Coverage

Winter Wheat Production,
2000 Crop Year



Insured Counties for Winter
Wheat, 2001 MPCl Coverage



40

Spring Wheat Production and MPCl Coverage

Spring Wheat Production,
2000 Crop Year



Insured Counties for Spring
Wheat, 2001 MPCl Coverage



41

Barley Production and MPCl Coverage

Barley Production,
2000 Crop Year



Insured Counties for Barley,
2001 MPCl Coverage



42

Canola Production and MPCl Coverage

Canola Production,
2000 Crop Year



Insured Counties for Canola,
2001 MPCl Coverage



43

Flaxseed Production and MPCl Coverage

Flaxseed Production,
2000 Crop Year



Insured Counties for Flaxseed,
2001 MPCl Coverage



44

Mustard Production and MPCCI Coverage

Mustard Production,
2000 Crop Year

Insured Counties for Mustard,
2001 MPCCI Coverage



45

Safflower Production and MPCCI Coverage

Safflower Production,
2000 Crop Year

Insured Counties for Safflower,
2001 MPCCI Coverage



46

Sunflower Production and MPCl Coverage

Sunflower Production,
2000 Crop Year



Insured Counties for Sunflower,
2001 MPCl Coverage



47

Dry Beans Production and MPCl Coverage

Dry Beans Production,
2000 Crop Year



Insured Counties for Dry Beans,
2001 MPCl Coverage



48

Dry Peas Production and MPCl Coverage

Dry Peas Production,
2000 Crop Year



Insured Counties for Dry Peas,
2001 MPCl Coverage



49

Lentil Production and MPCl Coverage

Lentil Production,
2000 Crop Year



50

OUTLINE

- 1. Definitions**
- 2. Insurable Units**
- 3. Actual Production History (APH)**
- 4. Multiple Peril Crop Insurance**
- 5. Catastrophic Coverage**
- 6. Special Cases**
- 7. Product Availability**
- 8. Summary**

51

Summary

- 1. Revenue Insurance Products**
 - a. IP, CRC, GRP**
 - b. February 18 – Vincent Smith**
- 2. What Can You Do If RMA Products Are Not Available For A Crop In Your County?**
 - a. Request For Actuarial Change**
 - b. Noninsured Crop Disaster Assistance Program (NAP)**
 - c. February 25 – James Johnson**

52

Summary

- 3. If You Insure Part Of Your Crop, You Must Insure All Of It**
 - a. However, May Be Under Different Insurance Contracts**
- 4. You Pay Higher Premiums To Insure Smaller Units**
- 5. You Pay Higher Premiums For Higher Price and Yield Elections (Lower Deductibles)**

53

Summary

- 6. Why Are You Buying Insurance?**
 - a. How Much Protection Do You Need?**
 - b. Trying To Maximize Indemnities May Not Be An Optimal Strategy**
- 7. Compare Premiums And Protection Across**
 - a. Products (MPCI, IP, CRC)**
 - b. Counties**
 - c. Years**
- 8. RMA Has Dramatically Increased Fraud Monitoring**

54

QUESTIONS?

