FEDERAL CROP INSURANCE

AAE 320: Farming Systems Management
Paul D. Mitchell
Agricultural and Applied Economics
Learning Goals

- Overview current crop insurance programs for major crops
  - What the various crop insurance options are
  - How the various options work
  - The choices a farmer must make when using crop insurance
CBO Projected Spending: Crop Insurance the Largest Spending Category

Government Spending ($ B)
Trends in WI Crop Insurance Participation

Corn and soybeans have averaged 75% and 78% respectively for the last 3-4 years.
## WI vs. neighboring states

% planted acres insured in **2018**

<table>
<thead>
<tr>
<th>State</th>
<th>Corn</th>
<th>Soybeans</th>
<th>Wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>93%</td>
<td>94%</td>
<td>22%</td>
</tr>
<tr>
<td>IL</td>
<td>90%</td>
<td>87%</td>
<td>69%</td>
</tr>
<tr>
<td>MN</td>
<td>95%</td>
<td>95%</td>
<td>92%</td>
</tr>
<tr>
<td>MI</td>
<td>73%</td>
<td>75%</td>
<td>67%</td>
</tr>
<tr>
<td>WI</td>
<td>75%</td>
<td>77%</td>
<td>50%</td>
</tr>
</tbody>
</table>
WI vs. neighboring states
% planted acres insured in 2018

% Acres Insured in 2018

IA | IL | MN | MI | WI
---|---|---|---|---
Corn | | | | |
Soybeans | | | | |
Wheat | | | | |

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Crop Insurance

• Suppose I’m interested: Where do I start? **Contact a crop insurance agent!**
  • They all sell exactly the same polices for exactly the same prices, you are buying service – Find someone you like to work with

• For corn and soybeans: Choices you make
  1. What **policy** to buy?
  2. What **coverage level** to chose?
  3. What **unit structure** to use?
Types of Crop Insurance Policies

• Farmers have four choices for most crops
  • Are exceptions for regionally minor crops
• Yield Insurance vs Revenue Insurance
  • What triggers a payment? Yield or Revenue below the guarantee
• Individual vs. Area-Wide Coverage
  • Whose yield/revenue triggers payment? Your own or your county’s
**WI Crop Insurance Policies: Corn & Soybeans**

<table>
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<td>RP-HPE: Harvest Price Exclusion</td>
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- **Catastrophic coverage (CAT):** For YP, AYP
- **Whole-Farm Revenue Protection:** Insure Schedule F income
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- Catastrophic coverage (CAT): For YP, AYP
- Whole-Farm Revenue Protection: Insure Schedule F income
Types of Policies

- Yield Protection (YP)
  - Individual Yield Insurance
- Revenue Protection (RP) and RP-HPE (harvest price exclusion)
  - Individual Revenue Insurance
- Area Yield Protection (AYP)
  - Area-wide (County) Yield Insurance
- Area Revenue Protection (ARP) and ARP-HPE (harvest price exclusion)
  - Area-wide (County) Revenue Insurance
Farmer Choices

• After farmer chooses a policy (YP, RP, AYP, ARP), then they have three choices to make
  • Coverage Level (like the deductible)
  • Price Election (payment rate for losses)
  • Unit Structure (some policies have no options)
• Explain Yield Protection details to understand the other policies
YP: Yield Protection

- If actual harvested yield is less than your Yield Guarantee, receive an indemnity
- Actual Production History (APH): Average harvested yields over last 4-10 years
- **Yield Guarantee**: chose Coverage Level as % of your APH (Actual Production History)
- **Coverage Level**: % average yield (APH) chosen as guarantee, from 50% to 85% by 5% intervals
- **Price Election**: Choose price paid for each bushel below your yield guarantee, from 100% to 55% of established Base Price
Coverage Level sets Yield Guarantee: Example to Illustrate

<table>
<thead>
<tr>
<th>Year</th>
<th>Yield</th>
<th>Coverage Level</th>
<th>Yield Guarantee</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>165</td>
<td>50% x 155</td>
<td>78 bu/ac</td>
</tr>
<tr>
<td>2016</td>
<td>175</td>
<td>55% x 155</td>
<td>85 bu/ac</td>
</tr>
<tr>
<td>2017</td>
<td>150</td>
<td>60% x 155</td>
<td>93 bu/ac</td>
</tr>
<tr>
<td>2018</td>
<td>110</td>
<td>65% x 155</td>
<td>101 bu/ac</td>
</tr>
<tr>
<td>2019</td>
<td>145</td>
<td>70% x 155</td>
<td>109 bu/ac</td>
</tr>
<tr>
<td>2020</td>
<td>185</td>
<td>75% x 155</td>
<td>116 bu/ac</td>
</tr>
<tr>
<td>AVG</td>
<td>155</td>
<td>80% x 155</td>
<td>124 bu/ac</td>
</tr>
<tr>
<td>APH = 155</td>
<td>85% x 155</td>
<td>132 bu/ac</td>
<td></td>
</tr>
</tbody>
</table>
Price Election

• How much you are paid for each bushel that actual harvested yield is below yield guarantee
• Base Price set by USDA-RMA: Average of Dec corn (Nov soybean) futures contracts on Chicago Mercantile in Feb
• Choose 100% to 60% of this price in 1% intervals, appears as $/bu options
  • Most farmers choose 100%
  • Price set for large regions
  • 2014: Corn $4.62, Soybeans $11.36, Wheat $6.51
  • 2015: Corn $4.15, Soybeans $9.73, Wheat $5.85
  • 2016: Corn $3.86, Soybeans $8.85, Wheat $5.13
  • 2017: Corn $3.96, Soybeans $10.19, Wheat $4.74
  • 2018: Corn $3.96, Soybeans $10.16, Wheat $5.02
  • 2019: Corn $4.00, Soybeans $9.54, Wheat $4.35
  • 2020: Corn $3.88, Soybeans $9.17, Wheat $4.94
YP Indemnity

- If Actual Harvested Yield < Yield Guarantee
- Indemnity = Price \times (Y_{\text{guarantee}} - Y_{\text{harvested}})
- Price: Chosen Price Election
  - **Most farmers choose 100%**
- Coverage Level determines your trigger, pay more for higher coverage levels (lower deductible)
- Price Election determines how much you are paid when you have a loss, pay more for higher price election
Unit Structure

• Legally define the area (fields) insured
  • Planted to the same crop during the insurance period
  • Cannot cut across a county line
  • **Must have separate production records for each unit**

• Three unit types (smallest to largest)
  • Optional Unit, Basic Unit, Enterprise Unit

• **Current Recommendation**: Choose **Enterprise Units** if you qualify because of the large premium discount
  • Otherwise choose Optional Units

• Enterprise unit: need two units, with the smallest > 20 acres or 20% insured acres, or 660 total acres in one unit

• Lots of rules: Crop insurance agent can help you figure out rules
Unit Structure Choices

• All insurance guarantees work at the unit level, not on a per acre basis
• 100 acre unit, average yield 160 bu/ac, 75% coverage level = 100 x 160 x 0.75 = 12,000 bushels
  - Guaranteed 12,000 bu from those 100 acres
• Have to choose how to combine fields together into units
• Can’t just combine fields any way you want: Rules to follow
• Unit Sizes (smallest to largest):
  - Optional < Basic < Enterprise
• Smaller units means more indemnities (averaging over smaller area) and so larger premiums
• Government encourages larger units by giving larger premium subsidies for larger units (enterprise unit discount)
## Farms A-G: Same operator planting the same crop

<table>
<thead>
<tr>
<th>Township Section 1</th>
<th>Township Section 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm A Owned</td>
<td>Farm C cash rent from Smith</td>
</tr>
<tr>
<td>Farm B 50-50 crop share lease from Smith</td>
<td>Farm D cash rent from Jones</td>
</tr>
</tbody>
</table>

### Basic Units
1. A, C, D, and F
2. B and E
3. G

### Optional Units
1. A and C
2. B
3. D
4. E
5. F
6. G

### Enterprise Unit
1. A thru G
Simple YP Example for a Unit

- Suppose have one unit, 100 acres of corn
- APH (average yield) is 160 bu/ac
- Choose 70% coverage level, and 100% price election $5.65/bu
- Yield guarantee = 70% x 160 bu/ac = 112 bu/ac
- Unit Guarantee = 112 x 100 ac = 11,200 bushels
- Actual harvest from Unit is 10,500 bu (or 105 bu/ac)
- Indemnity: $5.65 x (11,200 – 10,500) = $3,955 (or $39.55/ac)
- Notice how guarantee and indemnity work at the unit level
- However, farmer and others often talk about it at the per acre level
Revenue Protection

- Combines Yield Protection with price protection based on CBOT futures prices
- Your yield history and the CBOT prices set your preliminary Revenue Guarantee
- Same coverage levels, same unit structures as YP
- Your actual revenue at harvest is your yield x CBOT prices (e.g., Nov average of Dec corn or Oct average of Nov soybean)
- If your actual harvested revenue is below your guarantee, triggers an indemnity payment
Initial and Final Revenue Guarantee: RP vs. RP-HPE

- **Base Price**: Feb avg of Dec corn futures
- **Harvest Price**: Nov avg of Dec corn futures
- **Initial Revenue Guarantee**: calculated using the Base Price
- **Final Revenue Guarantee**: calculated using the maximum of Base Price and Harvest Price
- With RP, if price increases over season, your revenue guarantee increases, if price falls, your guarantee remains unchanged
- **RP-Harvest Price Exclusion**: revenue guarantee is not updated with the maximum of the Base price and the Harvest price
- Lower indemnities with RP-HPE if price increases and have low yield, so **Lower Premiums**
- Very few farmers buy RP-HPE
RP Protects Against Both Price Increases & Decreases

• If the price falls or you have a low yield, you know you will have the grain, or the money to buy grain at harvest time prices, to fulfill contracts or feed livestock
• If the price increases, your revenue guarantee increases too, so again you know you will have the grain, or the money to buy the grain at existing prices, to fulfill contracts or feed livestock
• Payments base on CBOT prices, you still have to market your grain
  • Can now market more aggressively since you will have grain or indemnities to buy grain at existing harvest time market prices if you have a yield loss
Simple Example Comparing the YP, RP, RP-HPE

- Assume 150 bu/ac APH and 70% coverage level, so
- YP: per acre guarantee is 105 bu/ac
- Base price at plant $5.00, so RP and RP-HPE Initial Guarantee $5.00 x 105 = $525/ac
- Actual yield is 75 bu/ac, so loss is 105 – 75 = 30 bu/ac
- YP pays $5.00 x 30 bu/ac = $150/ac
- What happens if harvest price increased to $6.00?
  - RP Guarantee $6.00 x 105 bu/ac = $630/ac
  - RP pays: $630 – ($6.00 x 75) = $630 – $450 = $180/ac
  - RP-HPE: Guarantee not change: $525 – $450 = $75/ac
- What happens if harvest price decreased to $4.00?
  - RP and RP-HRE Guarantees do not change
  - Both pay $525 – ($4.00 x 75) = $525 – $300 = $225/ac
- Note: all of these would be at unit level, not per acre
### RP vs. RP-HPE vs. YP (150 bu/ac APH & 70% coverage level)

<table>
<thead>
<tr>
<th>Policy</th>
<th>Base Price $/bu</th>
<th>Guarantee $/ac bu/ac</th>
<th>Harvest Price $/bu</th>
<th>Guarantee $/ac bu/ac</th>
<th>Actual Yield bu/ac</th>
<th>Actual Revenue $/ac</th>
<th>Indemnity $/ac</th>
</tr>
</thead>
<tbody>
<tr>
<td>RP</td>
<td>$5.00</td>
<td>$525</td>
<td>$6.00</td>
<td>$630</td>
<td>75</td>
<td>$450</td>
<td>$180</td>
</tr>
<tr>
<td>RP-HPE</td>
<td>$5.00</td>
<td>$525</td>
<td>$6.00</td>
<td>$525</td>
<td>75</td>
<td>$450</td>
<td>$75</td>
</tr>
<tr>
<td>YP</td>
<td>$5.00</td>
<td>105 bu/ac</td>
<td>$6.00</td>
<td>105 bu/ac</td>
<td>75</td>
<td>$450</td>
<td>$150</td>
</tr>
<tr>
<td>RP</td>
<td>$5.00</td>
<td>$525</td>
<td>$4.00</td>
<td>$525</td>
<td>75</td>
<td>$300</td>
<td>$225</td>
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<tr>
<td>RP-HPE</td>
<td>$5.00</td>
<td>$525</td>
<td>$4.00</td>
<td>$525</td>
<td>75</td>
<td>$300</td>
<td>$225</td>
</tr>
<tr>
<td>YP</td>
<td>$5.00</td>
<td>105 bu/ac</td>
<td>$4.00</td>
<td>105 bu/ac</td>
<td>75</td>
<td>$300</td>
<td>$150</td>
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RP vs. RP-HPE vs. YP

- If harvest price > base price and low yield, larger indemnity for RP than for RP-HPE
- If harvest price < base price, no difference for RP vs RP-HPE
- Note: RP-HPE: can do worse than YP if high prices and low yields
  - RP-HPE uses actual higher harvest price to calculate actual revenue, while YP uses actual yield loss at lower base price
- RP-HPE: worst if low yields and high prices, best if low yields and low prices
Simple RP Example for a Unit

- Suppose have one unit, 100 acres of corn
- APH (average yield) is 160 bu/ac
- Announced Base Price is $3.75
- Choose 70% coverage level
- Initial Revenue Guarantee = 70% x 160 bu/ac x $3.75/bu x 100 ac = $42,000 (or $420/ac)
- Harvest time price announced as $4.00/bu
- Final Revenue Guarantee = 70% x 160 bu/ac x $4.00/bu x 100 ac = $44,800 (or $448/ac)
- Actual harvest from Unit is 10,500 bu (or 105 bu/ac), so actual revenue from Unit = $4.00 x 10,500 = $42,000
- Indemnity: $44,800 – $42,000 = $2,800 (or $28/ac)
- Again, guarantee and indemnity work at the unit level, but farmers and others often talk about it at the per acre level
AYP Area Yield Protection
ARP Area Revenue Protection

• AYP is same as YP, except that it uses USDA-NASS county average yield (not your yield)
• ARP is the same as RP except that it uses USDA-NASS county average yield
• ARP-HPE is the same as RP-HPE except uses USDA-NASS county average yield
• Payments not made until Mar/Apr when USDA-NASS yields come out, while RP and YP are paid sooner
  • Can create cash flow issues
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- **Catastrophic coverage (CAT):** For YP, AYP
- **Whole-Farm Revenue Protection:** Insure Schedule F income
% of Insured Corn and Soybean Acres by Policy Type in 2017 in Wisconsin

87% Corn

93% Soybean

95.5% of Corn and 98.0% of Soybean acres insured use RP or YP
What policies have IL farmers used?

Figure 2. Acres Insured in Illinois by Product, Corn, 1989 - 2017

Source: Summary of Business, Risk Management Agency. Prior to 2011, the COMBO product did not exist (i.e., RP, UP, and RPhpe plans). Acres of the predecessor products are listed in this graph.
Figure 1. Acres Insured in Illinois by Product, Soybeans, 1989 - 2017

Source: Summary of Business Risk Management Agency. Prior to 2011, the COMBO product did not exist (i.e., RP, UP, and RPhpe plans). Acres of the predecessor products are listed in this graph.
Farmers not using RP with the Harvest Price Option are using RP-HPE.

Farmers use RP-HPE if local prices are less tied to CBOT prices.

https://farmdocdaily.illinois.edu/2018/05/overwhelming-use-of-harvest-price-option.html
## Number of Policies Sold in WI in 2019 by Policy Type

<table>
<thead>
<tr>
<th>Policy</th>
<th>Corn</th>
<th>Soybeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>RP</td>
<td>12,456</td>
<td>9,499</td>
</tr>
<tr>
<td>RP+SCO</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>RP-HPE</td>
<td>23</td>
<td>11</td>
</tr>
<tr>
<td>RP-HPE+SCO</td>
<td>262</td>
<td>199</td>
</tr>
<tr>
<td>YP</td>
<td>1,251</td>
<td>629</td>
</tr>
<tr>
<td>ARP</td>
<td>198</td>
<td>54</td>
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<tr>
<td>AYP</td>
<td>49</td>
<td>8</td>
</tr>
<tr>
<td>MP</td>
<td>33</td>
<td>30</td>
</tr>
</tbody>
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## Coverage Levels used by WI farmers for RP and YP in 2019 for Corn and Soybeans

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<tr>
<th>Coverage Level</th>
<th>Corn RP</th>
<th>Soy RP</th>
<th>Corn YP</th>
<th>Soy YP</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>1%</td>
<td>1%</td>
<td>51%</td>
<td>45%</td>
</tr>
<tr>
<td>55%</td>
<td>0%</td>
<td>0%</td>
<td>1%</td>
<td>1%</td>
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<td>60%</td>
<td>1%</td>
<td>1%</td>
<td>4%</td>
<td>8%</td>
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<td>65%</td>
<td>3%</td>
<td>3%</td>
<td>7%</td>
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<tr>
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<td>42%</td>
<td>15%</td>
<td>11%</td>
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<tr>
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<td>30%</td>
<td>31%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>85%</td>
<td>5%</td>
<td>6%</td>
<td>0%</td>
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<th>Corn YP</th>
<th>Soy YP</th>
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<td>5%</td>
<td>6%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

- **65%-70% of all corn & soybean acres planted in WI use RP with a 70% to 80% coverage level.**
- **89% of RP**
- **88% of RP**
### Average Number of Units per Policy in WI

<table>
<thead>
<tr>
<th>Year</th>
<th>CORN RP</th>
<th>SOY RP</th>
<th>CORN YP</th>
<th>SOY YP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>1.98</td>
<td>1.73</td>
<td>1.84</td>
<td>1.57</td>
</tr>
<tr>
<td>2012</td>
<td>1.78</td>
<td>1.58</td>
<td>1.80</td>
<td>1.54</td>
</tr>
<tr>
<td>2013</td>
<td>1.71</td>
<td>1.53</td>
<td>1.78</td>
<td>1.49</td>
</tr>
<tr>
<td>2014</td>
<td>1.67</td>
<td>1.51</td>
<td>1.74</td>
<td>1.38</td>
</tr>
<tr>
<td>2015</td>
<td>1.60</td>
<td>1.50</td>
<td>1.67</td>
<td>1.39</td>
</tr>
<tr>
<td>2016</td>
<td>1.56</td>
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<td>1.64</td>
<td>1.43</td>
</tr>
<tr>
<td>2017</td>
<td>1.51</td>
<td>1.47</td>
<td>1.57</td>
<td>1.31</td>
</tr>
<tr>
<td>2018</td>
<td>1.48</td>
<td>1.44</td>
<td>1.55</td>
<td>1.41</td>
</tr>
<tr>
<td>2019</td>
<td>1.49</td>
<td>1.40</td>
<td>1.56</td>
<td>1.32</td>
</tr>
</tbody>
</table>

- More and more WI farmers are using Enterprise Units
Lots of Crop Insurance Rules

- There are lots and lots of crop insurance rules not covered here
- Planting dates, Late and prevented planting, Double cropping, Alternative crop uses, Corn maturity, Yield guarantees, Unit structures, Breaking new ground (CRP vs pasture)
- You can forfeit your coverage if you break a rule, so know the rules, always communicate with your agent
- Insurance agents don’t always know all the rules, but good agents do
- Agents all sell exactly the same polices for exactly the same prices, you are buying service – Find someone you like to work with
- There are ways to get the most out of your policy, to use the rules to your advantage, good agents know how
Government Role in Crop Insurance

- Administered by USDA-Risk Management Agency (RMA) and Federal Crop Insurance Corporation (FCIC)
- USDA develops policies, rules, and premium rates
  - Development & administration costs paid by the public
- USDA pays subsidy to companies for Administration and Operating (A&O) ~20-25% of total premiums
- FCIC reinsures the insurance companies (insures the insurance companies), plus retains some of the policies (pays some of the indemnities)
Government Role in Crop Insurance

- Private companies sell insurance policies, but the government regulates the market
  - All companies sell exactly the same policies at the same prices set by the government
- USDA subsidizes the premiums
- Farmers pay about $\frac{1}{3}$ of the “actuarially fair” premiums on average, the USDA subsidizes the rest
  - If on average, $100$ indemnity paid once every 4 years, then actuarially fair premium is $25
- **Means on average, farmers should make money from crop insurance**
## Premiums Subsidized: For RP and YP, % of the Fair Premium Farmers Pay

<table>
<thead>
<tr>
<th>Coverage Level</th>
<th>Optional Units</th>
<th>Basic Units</th>
<th>Enterprise Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>33%</td>
<td>33%</td>
<td>20%</td>
</tr>
<tr>
<td>55%</td>
<td>36%</td>
<td>36%</td>
<td>20%</td>
</tr>
<tr>
<td>60%</td>
<td>36%</td>
<td>36%</td>
<td>20%</td>
</tr>
<tr>
<td>65%</td>
<td>41%</td>
<td>41%</td>
<td>20%</td>
</tr>
<tr>
<td>70%</td>
<td>41%</td>
<td>41%</td>
<td>20%</td>
</tr>
<tr>
<td>75%</td>
<td>45%</td>
<td>45%</td>
<td>23%</td>
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<tr>
<td>80%</td>
<td>52%</td>
<td>52%</td>
<td>32%</td>
</tr>
<tr>
<td>85%</td>
<td>62%</td>
<td>62%</td>
<td>47%</td>
</tr>
</tbody>
</table>
Premiums Subsidized: For AYP and ARP
% of Fair Premium Farmers Pay

<table>
<thead>
<tr>
<th>Coverage Level</th>
<th>AYP</th>
<th>ARP</th>
</tr>
</thead>
<tbody>
<tr>
<td>70%</td>
<td>41%</td>
<td>41%</td>
</tr>
<tr>
<td>75%</td>
<td>41%</td>
<td>41%</td>
</tr>
<tr>
<td>80%</td>
<td>45%</td>
<td>45%</td>
</tr>
<tr>
<td>85%</td>
<td>45%</td>
<td>51%</td>
</tr>
<tr>
<td>90%</td>
<td>49%</td>
<td>56%</td>
</tr>
</tbody>
</table>

- Main point: Government and farmers share the premium cost
  - Higher coverage, farmer pays greater share
- CAT: 100% subsidized, just pay $300 admin fee
## Premiums ($/A): Dane County WI, 2018

(165 Trend Adjusted APH)  **Yield Protection**

<table>
<thead>
<tr>
<th>Coverage</th>
<th>Enterprise</th>
<th>Basic</th>
<th>Optional</th>
<th>Guarantee</th>
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</thead>
<tbody>
<tr>
<td>50%</td>
<td>1.01</td>
<td>1.66</td>
<td>2.55</td>
<td>82 bu</td>
</tr>
<tr>
<td>55%</td>
<td>1.41</td>
<td>2.53</td>
<td>3.79</td>
<td>91 bu</td>
</tr>
<tr>
<td>60%</td>
<td>1.88</td>
<td>3.38</td>
<td>4.98</td>
<td>99 bu</td>
</tr>
<tr>
<td>65%</td>
<td>2.48</td>
<td>5.08</td>
<td>7.36</td>
<td>107 bu</td>
</tr>
<tr>
<td>70%</td>
<td>3.34</td>
<td>6.86</td>
<td>9.74</td>
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</tr>
<tr>
<td>75%</td>
<td>4.93</td>
<td>9.65</td>
<td>13.5</td>
<td>124 bu</td>
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<tr>
<td>80%</td>
<td>9.24</td>
<td>15.43</td>
<td>21.16</td>
<td>132 bu</td>
</tr>
<tr>
<td>85%</td>
<td>16.72</td>
<td>22.67</td>
<td>30.58</td>
<td>140 bu</td>
</tr>
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</table>
### Revenue Protection

<table>
<thead>
<tr>
<th>Coverage</th>
<th>Enterprise</th>
<th>Basic</th>
<th>Optional</th>
<th>Initial Guarantee</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>1.21</td>
<td>2.00</td>
<td>3.13</td>
<td>$327/A</td>
</tr>
<tr>
<td>55%</td>
<td>1.78</td>
<td>3.25</td>
<td>4.79</td>
<td>$359/A</td>
</tr>
<tr>
<td>60%</td>
<td>2.32</td>
<td>4.46</td>
<td>6.39</td>
<td>$392/A</td>
</tr>
<tr>
<td>65%</td>
<td>3.16</td>
<td>6.92</td>
<td>9.54</td>
<td>$424/A</td>
</tr>
<tr>
<td>70%</td>
<td>4.47</td>
<td>9.53</td>
<td>12.75</td>
<td>$457/A</td>
</tr>
<tr>
<td>75%</td>
<td>6.81</td>
<td>13.66</td>
<td>17.88</td>
<td>$490/A</td>
</tr>
<tr>
<td>80%</td>
<td>12.56</td>
<td>21.76</td>
<td>27.76</td>
<td>$522/A</td>
</tr>
<tr>
<td>85%</td>
<td>23.02</td>
<td>32.36</td>
<td>40.44</td>
<td>$555/A</td>
</tr>
</tbody>
</table>
## Premiums ($/A): Dane County WI, 2018

(165 Trend Adjusted APH) **Revenue Protection-HPE**

<table>
<thead>
<tr>
<th>Coverage</th>
<th>Enterprise</th>
<th>Basic</th>
<th>Optional</th>
<th>Guarantee</th>
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</thead>
<tbody>
<tr>
<td>50%</td>
<td>0.92</td>
<td>1.52</td>
<td>2.41</td>
<td>$327/A</td>
</tr>
<tr>
<td>55%</td>
<td>1.30</td>
<td>2.40</td>
<td>3.71</td>
<td>$359/A</td>
</tr>
<tr>
<td>60%</td>
<td>1.68</td>
<td>3.31</td>
<td>4.99</td>
<td>$392/A</td>
</tr>
<tr>
<td>65%</td>
<td>2.33</td>
<td>5.21</td>
<td>7.53</td>
<td>$424/A</td>
</tr>
<tr>
<td>70%</td>
<td>3.35</td>
<td>7.24</td>
<td>10.06</td>
<td>$457/A</td>
</tr>
<tr>
<td>75%</td>
<td>5.10</td>
<td>10.32</td>
<td>14.08</td>
<td>$490/A</td>
</tr>
<tr>
<td>80%</td>
<td>9.39</td>
<td>16.62</td>
<td>22.21</td>
<td>$522/A</td>
</tr>
<tr>
<td>85%</td>
<td>17.27</td>
<td>24.78</td>
<td>32.42</td>
<td>$555/A</td>
</tr>
</tbody>
</table>
Compare 2018 Policy Prices (Optional Units) in Dane County

![Graph showing premium ($)A vs coverage level (%)](image)

- **Premium ($)A**
- **Coverage Level (%)**
  - 50%
  - 55%
  - 60%
  - 65%
  - 70%
  - 75%
  - 80%
  - 85%

- **Lines in the graph**:
  - RP
  - RP-HPE
  - YP
Revenue Protection Farmer Premiums in 2018 Dane County, WI
165 bu/A Yield, $3.96/bu Base Price
Wisconsin Farmer Experiences with Crop Insurance

• Quick overview of WI farmer practices
  • Which policies are most popular?
  • Which coverage levels are most commonly used?
• Quick overview of WI farmer experiences
  • What are Farmer Loss Ratios for corn and soybeans
Loss Ratio and Farmer Experience with Crop Insurance

- Loss ratio is the insurance’s average payout over years or regions
- Program Loss Ratio = Total Indemnities / Total Premiums
- Total Premium = Farmer Premium + Premium Subsidy
- Farmer Loss Ratio = Total Indemnities / Farmer Premium
- By law, USDA-RMA is supposed to target a total crop insurance program loss ratio of 1.0 over the long-term for each crop
- Farmers pay less than actuarially fair premiums, and so on average they should make money on crop insurance
  - In aggregate, farmers pay about 1/3 of the fair premiums
- Break it down by crop, policy, region and year
- WI for 2011 to 2019 for RP and YP for corn and soybean
<table>
<thead>
<tr>
<th>Year</th>
<th>Program Loss Ratio</th>
<th>Farmer Loss Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Corn RP</td>
<td>Soy RP</td>
</tr>
<tr>
<td>2010</td>
<td>0.181</td>
<td>0.125</td>
</tr>
<tr>
<td>2011</td>
<td>0.160</td>
<td>0.179</td>
</tr>
<tr>
<td>2012</td>
<td>2.033</td>
<td>0.682</td>
</tr>
<tr>
<td>2013</td>
<td>1.897</td>
<td>1.274</td>
</tr>
<tr>
<td>2014</td>
<td>1.317</td>
<td>0.792</td>
</tr>
<tr>
<td>2015</td>
<td>0.159</td>
<td>0.183</td>
</tr>
<tr>
<td>2016</td>
<td>0.085</td>
<td>0.076</td>
</tr>
<tr>
<td>2017</td>
<td>0.421</td>
<td>0.336</td>
</tr>
<tr>
<td>2018</td>
<td>0.259</td>
<td>0.529</td>
</tr>
<tr>
<td>2019</td>
<td>1.076</td>
<td>1.047</td>
</tr>
<tr>
<td>Avg</td>
<td>0.759</td>
<td>0.522</td>
</tr>
</tbody>
</table>
RP Program Loss Ratio in Wisconsin

Loss Ratio

Corn RP
Soy RP

RP Farmer Loss Ratio in Wisconsin

![Graph showing the RP Farmer Loss Ratio in Wisconsin from 2010 to 2020. The graph compares Corn RP and Soy RP. The loss ratio is shown along the y-axis, and the years are shown along the x-axis. The graph indicates fluctuations in the loss ratio over the years, with a peak in 2012 for Corn RP and in 2011 for Soy RP. The trend shows a general decrease in loss ratio from 2014 onwards.]
Supplemental Coverage Option (SCO)

- SCO: allows you to insure part of your RP/YP deductible with a county policy (ARP/AYP)
  - Layer individual & county coverage
  - Can’t exceed 86% total coverage
- Add SCO to your RP policy to increase coverage up to the 86% of your expected revenue
  - SCO will not pay until county loss exceeds 14%
  - 65% SCO premium subsidy (farmer pays 35%)
- SCO available in 2015, only if choose PLC
  - If choose ARC, cannot buy SCO
Possible outcomes with RP plus SCO

1. SCO pays, but not RP
2. RP pays, but not SCO
3. Both SCO and RP pay
4. Neither SCO nor RP pays
Supplemental Coverage Option (SCO)

- Suppose you have 75% RP on corn (25% deductible)
- Suppose you added 86% SCO (max you can buy)
- Outcome 3: both RP and SCO pay
- Suppose county revenue is 80% of average
- Suppose your revenue is 65% of your guarantee
- Receive SCO indemnity for a 6% loss
- Receive RP indemnity for a 10% loss
- Sales in WI: RP-SCO sold 1 policy for corn in 2019
- RP-HPE+SCO sold 262 for corn and 199 for soybeans in 2019
SCO Availability in Wisconsin

- SCO available for corn, soybeans and wheat in most Wisconsin counties (https://prodwebnlb.rma.usda.gov/apps/MapViewer/index.html)
- Available in 2020 in the green counties on these maps
New for 2021: Enhanced Coverage Option (ECO)

- ECO: Insure part of your RP/YP deductible with a county policy (ARP/AYP)
- Covers from 86% up to 95% of expected revenue based on county revenue
- Can use ECO whether sign up for ARC or PLC
- Can add ECO on top of SCO or use ECO instead of SCO

[Diagram showing coverage levels and bands]

Crop Insurance for Other Crops

- Almost all major WI crops have a standard crop insurance policy for them, usually only YP
  - Corn silage is a type of corn (RP, YP, ARP, AYP)
  - Small Grains: Wheat (RP, YP), oats, rye, barley, sorghum
  - Vegetables: Potatoes, sweet corn, snap beans, green peas, cabbage, cucumbers, dry beans
  - Miscellaneous: Cranberries, hybrid seed corn, apples, tart cherries
  - Forage production and seeding (1,045 & 1,046 WI policies in 2019)
  - Pasture Rangeland Forage (PRF): insure weather station precipitation and temperature ranges, for forage production (363 WI policies in 2019)
Margin Protection for Corn and Soybeans in WI

- Protects the margin between expected revenue and expected operating costs in the area
- Available for Corn, Soybeans, Wheat and Rice
- WI: only corn and soybeans: See map: blue is corn and soybeans, pink is soybeans only, yellow is corn only
- Crop prices like RP, based on CBOT
- Inputs costs based on fuel, fertilizer, interest rate with futures markets
- Corn Inputs: Diesel, Urea, Diammonium Phosphate price (DAP), Potash, Interest
- Soybean Inputs: Diesel, DAP, Potash, Interest
- First available in 2016, sold 33 corn and 30 soybean policies in 2019
Other Alternative Crop Insurance Policies

- **Whole Farm Revenue Protection (WFRP):** Insure Schedule F income, for farms with specialty crops, livestock, organic growers (9 WI policies in 2019)
- Alternatives if no policy exists
  - USDA-FSA non-insured crop assistance program (**NAP policy**)
  - **Written Agreement:** apply RMA policy from a similar area to your crop (e.g., grapes in WI based on MI policy)
- Organic prices now available for many crops
- Livestock price (not production) policies
  - **Livestock Gross Margin (LGM):** LGM Dairy was somewhat popular, but has MPP and now DMC killed it?
  - **Dairy Revenue Protection (Dairy RP):** new in 2018
Dairy Revenue Protection (Dairy RP)

- Area-wide revenue protection against declines in quarterly revenue from milk sales
  - Not dairy margin like LGM Dairy (and DMC)
- Uses futures prices and production data to create revenue guarantee, with payments triggered when actual market prices fall below the guarantee
  - Milk Prices: USDA-AMS monthly average
  - Milk Production: USDA-NASS Milk Production Report
- 2 pricing options: mix of class III/IV or component prices (fat, protein, other solids), you choose price weights
- Can cover up to 5 quarters into the future, depending on futures price data
Farmer chooses
1. Price Election (%’s)
2. Milk Covered
3. Coverage Level

- Used to set guarantee
- I do not understand State-Indexed Actual Production and options for farmer’s choice of Milk Covered

Sales in 2019
- US: 2,500 policies, 30 B lbs
- WI: 800 policies, 5 B lbs
- Average cows/policy
- US ~ 480, WI ~250
Main Point

• Crop insurance has become the core of commodity support from the federal government
  • Most acres are insured and most government spending for ag support is for crop insurance premium subsidies
• Why crop insurance is popular in Congress
  • Market-based, not government run program
  • Farmers share in cost of program
  • Farmers receive payments only if demonstrated losses
  • Public-private partnership between government & insurance companies, who both bear some of the risk & costs
  • Historically, program has been financially solid
• Budget hawks target premium subsidies for reduction
Summary

• Overviewed 4 main types of crop insurance
  • YP, RP, AYP, ARP
  • Individual vs. Area-wide, Yield vs. Revenue
  • Farmers choices: policy type, coverage level, unit structure (& price election)
  • Know typical choices: 70-80% RP with enterprise units
• Know how payments are made for each type of policy
• Talked about subsidies and pricing: know how subsidies work and relative costs of each policy (RP > YP premium)
• Talked about government policy issues, program cost
• Lots of issues not covered (e.g., Late and prevented plant, replant, alternative crop uses, breaking new ground, trend adjusted APH, …)