Integrating Crop Insurance and Marketing Plans

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Two Different “Schools of Thought”

A. Crop marketing plans and crop insurance choices are two separate decisions and are not connected.

B. Crop marketing plans and crop insurance choices must be coordinated to develop appropriate risk management plans.
Which is right?
Which bushels does crop insurance cover?
Which bushels does a marketing plan cover?
Example:
Assume 120 bu./a. corn APH and 70% Yield Coverage
Which bushels are covered?

70 % Yield Insurance

Crop Insurance

Not Covered
(30%)

Insured
(70%)
Which bushels are covered?

70% Yield Insurance

Crop Insurance

Marketing Plan

Bushel per Acre

0.0

20.0

40.0

60.0

80.0

100.0

120.0

Insured

Not Covered

36.0

84.0
Which bushels are covered?

70% Yield Insurance

<table>
<thead>
<tr>
<th>Bushel per Acre</th>
<th>Crop Insurance</th>
<th>Marketing Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>84.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36.0</td>
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Not Covered

Insured
Which bushels are covered?

70% Yield Insurance

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<th>Bushel per Acre</th>
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<th>Not Covered</th>
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</table>
Which bushels are covered?

70% Yield Insurance

Crop Insurance:
- Insured: 84.0 bushels
- Not Covered: 36.0 bushels

Marketing Plan:
- Insured: 30.0 bushels x 3 = 90.0 bushels
Which bushels are covered?

70 % Yield Insurance

Crop Insurance

Marketing Plan

Bushel per Acre

0.0

100.0

120.0

Not Covered

Insured

36.0

84.0

30.0

30.0

30.0

30.0

30.0
Which bushels are covered?

70 % Yield Insurance

Bushels NOT Produced

Bushels Produced

Crop Insurance

Marketing Plan

Bushel per Acre

Not Covered

Insured

36.0

84.0

30.0

30.0

30.0

30.0

30.0
How are these bushels priced?
How are bushels priced?

70 % Yield Insurance

[Diagram showing bushel pricing with Crop Insurance and Marketing Plan sections]
How are bushels priced?

70 % Yield Insurance
How are bushels priced?

70 % Yield Insurance

Crop Insurance

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Marketing Plan

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<tr>
<th>Bushel per Acre</th>
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</tr>
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<tr>
<td>30.0</td>
<td></td>
</tr>
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Not Priced

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70% Yield Insurance

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<td>30.0</td>
</tr>
<tr>
<td>Not Priced</td>
<td>30.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Average Futures</td>
<td>30.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Price in</td>
<td>30.0</td>
<td>30.0</td>
</tr>
<tr>
<td>February</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How are bushels priced?

70% Yield Insurance

Crop Insurance
- Not Priced: 36.0
- Average Futures Price in February: 84.0

Marketing Plan
- 30.0
- 30.0
- 30.0
- 30.0

Bushel per Acre

0.0 20.0 40.0 60.0 80.0 100.0 120.0
Which bushels are covered?

70% Yield Insurance

Crop Insurance

Bushel per Acre

Not Priced

Average Futures Price in February

Marketing Plan

Phase 1

Phase 2

Phase 3

Phase 4

0.0

20.0

40.0

60.0

80.0

100.0

120.0
How are bushels priced?

70% Yield Insurance

Crop Insurance

- Average Futures Price in February: 84.0
- Not Priced: 36.0

Marketing Plan

- Cash Forward Contract: 30.0
- Futures Fixed Contract: 30.0
- Buy Option: 30.0
- Store and Wait: 30.0

Bushel per Acre

0.0 10.0 20.0 30.0 40.0 50.0 60.0 70.0 80.0 90.0 100.0 110.0 120.0
Why do marketing consultants recommend forward pricing up to your crop insurance guarantee?
What does the yield distribution look like?

• 120.0 bu./a. = Average yield
  – If symmetrically distributed:
    • 50% chance actual yield will be above the average.
    • 50% chance actual yield will be below the average.

• 70% Coverage = 84.0 bu./a. guarantee.

• What are the odds the actual yield will be below 84.0 bu./a.
  – Whole farm average yield for marketing plan.
Some marketing consultants will argue that the crop insurance indemnity payments can be used to help pay for cost of “getting out” of an over sold marketing plan.
What happens when there is a shortfall?
Comparing Pre-Harvest Sales Outcomes

<table>
<thead>
<tr>
<th>&quot;High&quot; Yield</th>
<th>Price Rises</th>
<th>Pre-priced grain is sold at lower price, but more bushels to sell.</th>
</tr>
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<tbody>
<tr>
<td>&quot;Low&quot; Yield</td>
<td>Price Falls</td>
<td></td>
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Comparing Pre-Harvest Sales Outcomes

"High" Yield

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<tr>
<th>Price Rises</th>
<th>Price Falls</th>
</tr>
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<td>Pre-priced grain is sold at lower price, but more bushels to sell.</td>
<td>Pre-priced grain is sold at higher price, but more bushels to sell.</td>
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</table>

"Low" Yield

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tr>
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<td></td>
</tr>
</tbody>
</table>
Comparing Pre-Harvest Sales Outcomes

- **Price Rises**
  - "High" Yield: Pre-priced grain is sold at lower price, but more bushels to sell.
  - "Low" Yield: (Blank)

- **Price Falls**
  - "High" Yield: Pre-priced grain is sold at higher price, but more bushels to sell.
  - "Low" Yield: Pre-priced grain is sold at higher price, but fewer bushels to sell. **Crop Insurance?**
Comparing Pre-Harvest Sales Outcomes

**Price Rises**

**“High” Yield**
- Pre-priced grain is sold at lower price, but more bushels to sell.

**“Low” Yield**
- Pre-priced grain is sold at lower price, but fewer bushels to sell.
  - *Crops Insurance?*

**Price Falls**

**“High” Yield**
- Pre-priced grain is sold at higher price, but more bushels to sell.

**“Low” Yield**
- Pre-priced grain is sold at higher price, but fewer bushels to sell.
  - *Crop Insurance?*
Factors Impacting Alternatives

• Is shortfall widespread in local market or unique to you?
  – May impact whether there is a basis adjustment (size of adjustment) and fees charged.

• Is shortfall realized early in the growing season or near harvest?
  – May impact whether there is a basis adjustment and fees charged.

• Have crop prices changed significantly?
  – Increase
  – Decrease
Delivery Based Contracts

• Working with elevator or processor.
• Grain delivery is expected.
• Elevator/Processor does not want to be your broker!
• Timing: Notify buyer as soon potential shortfall is recognized.
• Size and timing of shortfall may impact the alternatives available to deal with situation.
• Expected to deliver production that is available.
Cash Forward Contract

- Deliver stored grain to fulfill shortfall.
- Buyer uses spot market cash price to cancel contract. Seller pays/receives difference between contracted price and spot price.
- Buyer uses change in futures market price to cancel contract. Seller pays/receives difference (basis in contract is used to determine price).
- Cancellation fees are normally charged.
Cash Forward Contract

• Contract is “rolled forward” into next cropping season. Price difference between current and forward price is incorporated into new contract.
• Next years contract price is forward futures price less contract basis.
  – Basis may also be adjusted if significant difference between original contract basis and forward basis exist.
• Service fees may be deducted from new contract price. (cover margin calls)
Futures Fixed/Hedge-to-Arrive

• Deliver stored grain to fulfill contract.
• Cancellation: Buyer offsets futures market position. Seller is charged/paid for any price difference, plus fees.
• Roll Forward: Contract is rolled into next cropping season. Price difference between current and forward futures price is applied to new contract, plus fees. Basis is open.
Minimum Price Contract

- Deliver stored grain to fulfill contract.
- Buyer offsets options market position. Seller is charged/paid for any premium price difference, plus fees.
- Rolling forward is possible, but may not make economic sense due to large option premiums.
Basis Fixed Contract

• Deliver stored grain to fulfill contract.
• Buyer purchases spot market grain to fill shortfall. Seller is charged/paid for any basis difference, plus fees.
  – There may be change in local basis or change in destination basis.
• Basis fixed contracts can be rolled forward, but usually at basis levels for forward delivery.
Futures or Options Based Contracts

- Working directly with a broker.
- No delivery requirement and very liquid futures market.
- Hold existing position(s) and recognize a hedge strategy has become a speculative strategy.
- Offset existing position(s) and recognize gain or loss.
How are bushels priced?

70% Yield Insurance

Crop Insurance

Average Futures Price in February

Buy Option

Cash Forward Contract

Futures Fixed Contract

Buy Option

Store and Wait

Marketing Plan

Bushel per Acre

0.0

100.0

120.0

0.0

20.0

30.0

84.0

36.0

Not Priced

30.0

30.0

30.0

30.0
Reminder!

- RMA uses **monthly average** of daily closing prices for harvest month **futures** contracts.
- Marketing plan focuses on effective **cash** prices.
  - Futures price.
  - Local basis
    - Local basis levels can become volatile when local yields are below expectations.
How are bushels priced?

NOTE: May want to consider matching futures market contract month for marketing plan with contract month used for price discovery.
What about Revenue Protection?
Revenue Protection Overview

- Considers both yield and price variation to estimate gross revenue guarantee.
- Yield: APH (actual production history)
- Price:
  - Projected Price = monthly average harvest futures price in February.
  - Harvest Price = monthly average harvest futures price before harvest.
## Price Discovery

### Commodity Exchange Price Provision

<table>
<thead>
<tr>
<th>Crop Insured</th>
<th>Exchange Used</th>
<th>Commodity Used</th>
<th>Contract Month</th>
<th>Projected Price Avg Daily Close</th>
<th>Harvest Price Avg Daily Close</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley</td>
<td>CBOT</td>
<td>Corn</td>
<td>September</td>
<td>February&lt;sup&gt;2&lt;/sup&gt;</td>
<td>July&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Canola</td>
<td>ICE</td>
<td>Canola</td>
<td>November</td>
<td>February&lt;sup&gt;3&lt;/sup&gt;</td>
<td>September&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Corn</td>
<td>CBOT</td>
<td>Corn</td>
<td>December</td>
<td>February</td>
<td>October</td>
</tr>
<tr>
<td>Soybeans</td>
<td>CBOT</td>
<td>Soybeans</td>
<td>November</td>
<td>February</td>
<td>October</td>
</tr>
<tr>
<td>Sunflower</td>
<td>CBOT</td>
<td>Soy Oil</td>
<td>December</td>
<td>February&lt;sup&gt;4&lt;/sup&gt;</td>
<td>October&lt;sup&gt;4&lt;/sup&gt;</td>
</tr>
<tr>
<td>Spring Wheat</td>
<td>MGE</td>
<td>HRSW</td>
<td>September</td>
<td>February</td>
<td>August</td>
</tr>
</tbody>
</table>

1) Harvest price has upper limit of two times projected price  
2) Multiplied by factor determined by RMA  
3) Quotes in Canadian dollars per metric ton are converted to U.S. dollars per pound  
4) Divide each settlement price by two and add one cent  
5) Same as spring wheat but multiplied by a factor determined by RMA
Revenue Protection Overview

• If average futures prices rise (harvest price is higher than projected price), bushels below yield guarantee are valued at the harvest price.

• This results in the same analysis as the Yield Protection example.
  – Over-sold bushels must be dealt with.
Revenue Protection Overview

• If average futures prices fall (harvest price is lower than projected price), indemnity payments will increase relative to Yield Protection.

• Has been compared to a “subsidized put option”.

• A put option for “bushels not produced”
Questions?