Agronomics & Economics
Crop Management Decisions Need Both!

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Planning Should Start with COP’s

- The cornerstone of your Production, Management, or Marketing plan should start with calculating **Cost of Production (COP)**.
- Knowing **your** COP (per bushel) is the first step in deciding what is a profitable or breakeven price.
- **Cost : Benefit** needs to be evaluated for every change to your crop plan.
Manitoba Crop Production Costs ($/Acre) - 2017

- **Canola**: $253.52
- **Wheat**: $191.77
- **Winter Wheat**: $182.06
- **Soybeans**: $198.20
- **Oats**: $120.16
- **Corn**: $311.19

**Operating Costs**:
- Canola: $233.16
- Wheat: $191.77
- Winter Wheat: $182.06
- Soybeans: $198.20
- Oats: $120.16
- Corn: $311.19

**Fixed Costs**:
- Canola: $15.36
- Wheat: $1.77
- Winter Wheat: $2.30
- Soybeans: $3.83
- Oats: $3.00
- Corn: $30.00

**Labour**:
- Canola: $30.00
- Wheat: $30.00
- Winter Wheat: $30.00
- Soybeans: $30.00
- Oats: $30.00
- Corn: $30.00
Manitoba Crop Marginal Returns ($/Acre) - 2017

- **Canola**: $420.00
- **Wheat**: $320.00
- **Winter Wheat**: $360.00
- **Soybeans**: $400.00
- **Oats**: $340.00
- **Corn**: $580.00

**Legend**:
- **Red**: Gross Revenue
- **Blue**: Margin Over Operating
- **Green**: Margin Over Operating & Fixed
Manitoba Breakeven Price ($/unit) - 2017

- Canola: $6.34
- Wheat: $3.49
- Winter Wheat: $2.43
- Soybeans: $5.51
- Oats: $1.51
- Corn: $3.68

$ per unit for Operating Costs and Operating & Fixed Costs.
Manitoba Breakeven Yields (per Acre) - 2017

Target or Average Yield as % of B/E Yield

- Canola: 106.4%
- Wheat: 100.0%
- Winter Wheat: 111.3%
- Soybeans: 119.2%
- Oats: 103.5%
- Corn: 108.0%
Manitoba Crop Marginal Returns 'Stress Test' - Price Down 10% & Yield Down 5% ($/Acre) - 2017

<table>
<thead>
<tr>
<th>Crop</th>
<th>Margin Over Op &amp; Fixed Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canola</td>
<td>($6.56)</td>
</tr>
<tr>
<td>Wheat</td>
<td>($20.55)</td>
</tr>
<tr>
<td>Winter Wheat</td>
<td>$13.20</td>
</tr>
<tr>
<td>Soybeans</td>
<td>$35.61</td>
</tr>
<tr>
<td>Oats</td>
<td>($6.04)</td>
</tr>
<tr>
<td>Corn</td>
<td>($6.51)</td>
</tr>
</tbody>
</table>
Manitoba - 80% Insured Value AgrilInsurance Risk Analysis - 2017

- **Canola**: $7.59, 2.37% Premium
- **Wheat**: $6.79, 2.78% Premium
- **Winter Wheat**: $6.92, 2.60% Premium
- **Soybeans**: $13.30, 5.79% Premium
- **Oats**: $7.78
- **Corn**: $26.42, 7.88% Premium

Legend:
- Blue: 80% Insured Value Premium $/Acre
- Red: Premium % of Insured Value
Manitoba Costs Not Covered By 80% Insured Value
AgrilInsurance - 2017

Manitoba

Canola: $30.00
Wheat: $30.00
Winter Wheat: $30.00
Soybeans: $30.00
Oats: $30.00
Corn: $30.00

$/Acre

Operating Costs  Fixed Costs  Labour
Manitoba - 80% Insured Value AgrilInsurance Risk Analysis - 2017

- Canola: $319.73, 126%
- Wheat: $244.01, 127%
- Winter Wheat: $266.15, 146%
- Soybeans: $229.71, 116%
- Oats: $218.42, 145%
- Corn: $335.20, 108%

Legend:
- Blue: 80% Insured Value
- Red: Coverage of Operating Costs
- Green: Coverage of Total Costs
What is the best stubble to plant the Soybeans on for 2017:

A. Wheat
B. Corn
C. Canola
D. Anything, can’t go wrong
## Crop Rotation – Yield (2010-2015)

<table>
<thead>
<tr>
<th>Stubble</th>
<th>Sp.Wht</th>
<th>W.Wht</th>
<th>Oat</th>
<th>Canola</th>
<th>Flax</th>
<th>Soybean</th>
<th>SF</th>
<th>Corn</th>
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<tbody>
<tr>
<td>Sp.Wheat</td>
<td>85</td>
<td>84</td>
<td>98</td>
<td>102*</td>
<td>105</td>
<td>101*</td>
<td>101</td>
<td>98</td>
</tr>
<tr>
<td>W.Wheat</td>
<td>75</td>
<td>83</td>
<td>97</td>
<td>98</td>
<td>94</td>
<td>105</td>
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<td>74</td>
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<tr>
<td>Oat</td>
<td>93</td>
<td>86</td>
<td>77</td>
<td>95</td>
<td>92</td>
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<td>104</td>
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</tr>
<tr>
<td>Canola</td>
<td>101</td>
<td>105*</td>
<td>101</td>
<td>86</td>
<td>87</td>
<td>100*</td>
<td>75*</td>
<td>99</td>
</tr>
<tr>
<td>Flax</td>
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<td>103</td>
<td>79</td>
<td>98</td>
<td>71</td>
<td>78</td>
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<tr>
<td>Soybean</td>
<td>108</td>
<td>93</td>
<td>108</td>
<td>104</td>
<td>104</td>
<td>94</td>
<td>101*</td>
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<td>Sunflower</td>
<td>102</td>
<td>NSD</td>
<td>103</td>
<td>91</td>
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<td>93</td>
<td>NSD</td>
<td>95</td>
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<tr>
<td>Corn</td>
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<td>67</td>
<td>111</td>
<td>112</td>
<td>NSD</td>
<td>102</td>
<td>119</td>
<td>89</td>
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</table>

Source: MASC Harvest Production Reports
# Economics in Rotations

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>NET Return</th>
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</thead>
<tbody>
<tr>
<td>#1</td>
<td>Canola</td>
<td>Wheat (+1%)</td>
<td>Canola (+2%)</td>
<td>Wheat (+1%)</td>
<td>Canola (+2%)</td>
<td>Wheat (+11%)</td>
</tr>
<tr>
<td></td>
<td>$182</td>
<td>$176</td>
<td>$190</td>
<td>$176</td>
<td>$190</td>
<td>$176</td>
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</table>
# Economics in Rotations

<table>
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<tr>
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<td><strong>#1</strong></td>
<td>Canola</td>
<td>Wheat (+1%)</td>
<td>Canola (+2%)</td>
<td>Wheat (+1%)</td>
<td>Canola (+2%)</td>
<td>Wheat (+11%)</td>
<td>$1090</td>
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<td></td>
<td>$182</td>
<td>$176</td>
<td>$190</td>
<td>$176</td>
<td>$190</td>
<td>$176</td>
<td></td>
</tr>
<tr>
<td><strong>#2</strong></td>
<td>Canola</td>
<td>Wheat (+1%)</td>
<td>Soybean (+1%)</td>
<td>Canola (+4%)</td>
<td>Wheat (+1%)</td>
<td>Soybean (+1%)</td>
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<tr>
<td></td>
<td>$182</td>
<td>$176</td>
<td>$197</td>
<td>$199</td>
<td>$176</td>
<td>$197</td>
<td></td>
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</table>

Gross revenues minus operating costs adjusted from MASC Crop Rotation chart
# Economics in Rotations

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>NET Return</th>
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</thead>
<tbody>
<tr>
<td><strong>#1</strong></td>
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<td>Wheat</td>
<td>Canola</td>
<td>Wheat</td>
<td>Canola</td>
<td>Wheat</td>
<td>$1090</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(+1%)</td>
<td>(+2%)</td>
<td>(+1%)</td>
<td>(+2%)</td>
<td>(+11%)</td>
<td></td>
</tr>
<tr>
<td>$182</td>
<td>$176</td>
<td>$190</td>
<td>$176</td>
<td>$190</td>
<td>$176</td>
<td></td>
<td></td>
</tr>
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<td><strong>#2</strong></td>
<td>Canola</td>
<td>Wheat</td>
<td>Soybean</td>
<td>Canola</td>
<td>Wheat</td>
<td>Soybean</td>
<td>$1127</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>(+1%)</td>
<td>(+4%)</td>
<td>(+1%)</td>
<td>(+1%)</td>
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</tr>
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<td>$182</td>
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<td>$197</td>
<td>$199</td>
<td>$176</td>
<td>$197</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>#3</strong></td>
<td>Canola</td>
<td>W.Wheat</td>
<td>Soybean</td>
<td>Oat</td>
<td>Canola</td>
<td>W.Wheat</td>
<td>$1223</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(+5%)</td>
<td>(+5%)</td>
<td>(+8%)</td>
<td>(-5%)</td>
<td>(+5%)</td>
<td></td>
</tr>
<tr>
<td>$182</td>
<td>$238</td>
<td>$228</td>
<td>$177</td>
<td>$160</td>
<td>$238</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Gross revenues minus operating costs adjusted from MASC Crop Rotation chart
• How Much Fertilizer Were You or Your Clients Able to Apply in Fall 2016?

A. None
B. 25% of fields intended
C. 50% of fields intended
D. 75% of fields intended
E. Same amount as other years
# Nitrogen Efficiency Based on Application Time and Placement

<table>
<thead>
<tr>
<th>Time and Method of Application</th>
<th>Relative Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring Broadcast</td>
<td>100%</td>
</tr>
<tr>
<td>Spring Banded</td>
<td>120%</td>
</tr>
<tr>
<td>Fall Broadcast</td>
<td>80%</td>
</tr>
<tr>
<td>Fall Banded</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: MB Ag Soil Fertility Guide, 2007
Fall vs. Spring Purchase

• True or False – Fertilizer is always priced lower in the previous fall than in the spring?

A. TRUE
B. FALSE
Fall vs. Spring Purchase

• True or False – Fertilizer is always priced lower in the previous fall than in the spring?

• Almost True – but not always.

• Based on long term data - Roughly 15% increase from fall to spring.
Urea Nitrogen Fall vs. Spring Prices (2001-2017)

Previous Fall vs. Spring Prices Trend (2001-2017)
11-52-0 Fall vs. Spring Prices (2001-2017)
Fertilizer Spring vs. Fall Price Change

Average Increase 2001-2017: 13.3%
Average without 2009: 16.6%
Average without 2008 and 2009: 20.7%

Average without 2008 and 2009: 17.3%

% Price Change

Average Increase 2001-2017: 46-0-0
Average without 2009: 11-52-0
Average without 2008 and 2009: 17.3% 

46-0-0 11-52-0
### Reseeding Decision Tool - Canola

#### Farm Information:
- **MASC - Risk Area**: RA #2
- **MASC - Soil Zone**: E
- **MASC - Individual Productivity Index (IPI)**: 1.00
- **MASC Agrilnurance Coverage level**: 80%
- **Calculated MASC Probable Yield (bu/ac)**: 34.6
- **Original Crop**: Canola
- **Reseeded Crop**: Canola
- **Estimated Market Price ($/bu)**: $10.89

#### Damaged Canola Plant Stand Evaluation:
- **Field Sample Plant Counts/m²**: 15
- **Average Plant Count/m²**: 15.0
- **Plant Count - Yield Factor**: 0.75
- **Estimated Yield (bu/ac)**: 26.0
- **Estimated Gross Revenue ($/ac)**: $282.60

---

*Enter/select changes to items in **BLUE** only*
## Canola Reseeding Evaluation:

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reseed Date</strong></td>
<td>1st week June</td>
</tr>
<tr>
<td><strong>Date - Yield Factor</strong></td>
<td>0.8953</td>
</tr>
<tr>
<td><strong>Estimated Reseed Yield (bu/ac)</strong></td>
<td>31.0</td>
</tr>
<tr>
<td><strong>Estimated AgrilInsurance Reseeding Indemnity ($/ac)</strong></td>
<td>$75.36</td>
</tr>
<tr>
<td><strong>Estimated Seed Company Reimbursement ($/ac)</strong></td>
<td>$0.00</td>
</tr>
<tr>
<td><strong>Reseed Seed Costs ($/ac)</strong></td>
<td>$60.00</td>
</tr>
<tr>
<td><strong>Reseed Machinery Costs ($/ac)</strong></td>
<td>$15.00</td>
</tr>
<tr>
<td><strong>Estimated Gross Revenue ($/ac)</strong></td>
<td>$337.95</td>
</tr>
<tr>
<td>(net reseeding indemnity, reimbursements &amp; expenses)</td>
<td></td>
</tr>
<tr>
<td><strong>Estimated Benefit (Cost) of Reseed Decision ($/ac)</strong></td>
<td>$55.35</td>
</tr>
</tbody>
</table>
• When is the “best” week to seed canola?

A. First week May
B. Second week May
C. Third week May
D. Fourth week May
E. First week June
NEW !!

**MYFARM Crop Management Calculator**

Cost of Production / Marketing / Management

2017 Crop Year

- Based on the Crop COP (simple & easy to use)
- **Cash** costs on annual basis (bushel, ac & total)
- Use it for: pre season planning; growing season management; & crop marketing before **and** after the crop is in the bin.
MYFARM Crop Mgmt Calculator

- **Cost of Production:**
  - Costs per bushel, per acre, & total farm.
  - Gross revenue estimates.

- **Marketing:**
  - Breakeven prices & yields
  - Avg. price sold to date.
  - B/E price on remaining unsold production.

- **Management:**
  - Fertilizer, seed and grain storage required.
  - AgrilInsurance values and coverage estimates.
  - Avg. & B/E land and machinery payment per ac
  - What If? Analyzer
## What If?

<table>
<thead>
<tr>
<th>What If?</th>
<th>0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop Price (Change %, +/-)</td>
<td>0%</td>
</tr>
<tr>
<td>Crop Yield (Change %, +/-)</td>
<td>0%</td>
</tr>
<tr>
<td>Fuel Cost (Change %, +/-)</td>
<td>0%</td>
</tr>
<tr>
<td>Fertilizer Cost (Change %, +/-)</td>
<td>0%</td>
</tr>
<tr>
<td>Added Machinery Lease Annual Payment ($)</td>
<td>$0</td>
</tr>
<tr>
<td>Added Machinery Purchase Annual Payment ($)</td>
<td>$0</td>
</tr>
<tr>
<td>Acreage Change - Land Purchase (Additional Annual Payment)</td>
<td>$0</td>
</tr>
<tr>
<td>Acreage Change - Land Sale (Reduced Annual Payment)</td>
<td>$0</td>
</tr>
<tr>
<td>Acreage Change - Land Rental Payments Per Acre (+/-)</td>
<td>$0</td>
</tr>
<tr>
<td>Land Rental Rate (Change $/acre, +/-)</td>
<td>$0</td>
</tr>
<tr>
<td>Hired Labour Cost (Change +/- $)</td>
<td>$0</td>
</tr>
<tr>
<td>Owner Withdrawl (Change +/- $)</td>
<td>$0</td>
</tr>
<tr>
<td>Canadian Dollar Exchange Rate - USD (Change $, +/-)</td>
<td>$0.00</td>
</tr>
</tbody>
</table>

- Calculates the impact of the ‘what if’ changes on costs, revenues and marginal returns.
Pest Risk Models and Tools

• Difficult to know everything that is happening on the farm or in a region

• Suite of risk maps or calculators can provide background for economic decisions
  – Pest presence
  – Risk maps based on environmental factors
Manitoba Grasshopper Forecast - 2016

Average Density in August 2015

- 0 - 2 / m²: None to Very Light
- >2 - 4 / m²: Very Light
- >4 - 8 / m²: Light
- >8 - 12 / m²: Moderate
- >12 - 24 / m²: Severe
- > 24 / m²: Very Severe

Maximum Risk Rating for 2016

0 - 2 / m²: None to Very Light
>2 - 4 / m²: Very Light
>4 - 8 / m²: Light
>8 - 12 / m²: Moderate
>12 - 24 / m²: Severe
>24 / m²: Very Severe
### Sclerotinia Treatment Decision Tool

*** Enter/select changes to items in **BLUE** only ***

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Possible Answers</th>
<th>Risk Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Years Since last Canola Crop</td>
<td>One to two years</td>
<td>10</td>
</tr>
<tr>
<td>Disease Incidence in Last Host</td>
<td>Low (1% to 10%)</td>
<td>5</td>
</tr>
<tr>
<td>Crop Density</td>
<td>Normal</td>
<td>5</td>
</tr>
<tr>
<td>Rain in the Last Two Weeks</td>
<td>Less than 10 mm (0.4&quot;)</td>
<td>0</td>
</tr>
<tr>
<td>Weather Forecast</td>
<td>Variable</td>
<td>10</td>
</tr>
<tr>
<td>Regional Risk for Apothecia Development</td>
<td>Low Numbers</td>
<td>10</td>
</tr>
</tbody>
</table>

**Estimated Canola Yield**: 40 bu/ac
**Estimated Price**: $10.75 /bu
**Estimated Fungicide Cost**: $21.88 /acre
**Estimated Application Cost**: $8.00 /acre
# Sclerotinia Treatment Decision Tool

## Sclerotinia Treatment Profitability Analysis

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Infection Range</td>
<td>15%</td>
<td>25%</td>
</tr>
<tr>
<td>Potential $ Return/acre</td>
<td>$2.37</td>
<td>$23.87</td>
</tr>
<tr>
<td>Potential Return on Investment</td>
<td>8%</td>
<td>80%</td>
</tr>
<tr>
<td>Profit Probability</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

### Spray Decision - Likely Beneficial to Spray

Created and maintained by Manitoba Agriculture Farm Management

**Darren Bond**
Farm Management Specialist

**Roy Arnott**
Farm Management Specialist

December, 2017
Farm Software & Worksheets (Crops)

- Farm Machinery Custom & Rental Rate Guide Calculator - 2016/17
- Crop Land Purchase Values – 2016
- Crop Land Rental Rate - 2016
- Crop Share Lease – 2017
- FertPlan - 2017
- Grain Bin and Farm Building Rental Cost Planner
- Grain Drying Cost Calculator
- Sclerotinia Treatment Decision Tool (Canola and Sunflower versions)
Questions?

For more information
Visit our website:
www.manitoba.ca/agriculture
Follow us on Twitter:
@MBGovAg
View our videos on YouTube:
www.youtube.com/ManitobaAgriculture