Ultimate Canola Challenge Trials Any Promising New Products?

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Provincial Oilseed Specialist

Dr. Neil Harker (AAFC)
Production Economics

• In theory spend on the input that still has the greatest marginal return
  – For example $3 crop revenue for $1 input

• Reality is not so perfect
  – Can’t predict weather, pests
  – Some product claims are exaggerated
  – At best, we might be able to crudely predict if a positive response is likely or not
Blogging: education or advertising?

![Control]  ![with Penergetic]

Grow more. Make more.

<table>
<thead>
<tr>
<th>Brand/Product</th>
<th># of Comp.</th>
<th>Pioneer Yield</th>
<th>Yield Adv.</th>
<th>% Wins</th>
</tr>
</thead>
<tbody>
<tr>
<td>DeKalb 73-45RR</td>
<td>80</td>
<td>49.6</td>
<td>1.1</td>
<td>60%</td>
</tr>
<tr>
<td>DeKalb 73-65RR</td>
<td>20</td>
<td>45.3</td>
<td>1.4</td>
<td>70%</td>
</tr>
<tr>
<td>InVigor 5440</td>
<td>23</td>
<td>54.9</td>
<td>-0.5</td>
<td>48%</td>
</tr>
</tbody>
</table>

2-year (2010, 2011) yield data collected from large-scale, grower managed trials across Western Canada as of December 16, 2011.


Stoller products have played a very important role in our progression to higher yields and better quality crops on our farm and our customers’ farms.

Ben Hudye, Grower & Retailer
Hudye Soil Services, Norquay, SK

Get more from every acre
Vital nutrients are delivered in a ratio best suited to the productivity of each and every plant.
Keep Your Perspective Simple

• Things to keep in mind when considering new product / practice

  1. Response claims based only on function or content in plants should be ignored
  2. Western Canadian field trials conducted by unbiased researchers trumps data from those with vested interests and sponsored testimonials
  3. Spend money only on things with a good chance for response based on many trials
What’s “a good chance”?

• Is there at least 15 to 20 location – years of data across the prairies?

• Response classes:
  – **Probably** – positive response in more than 50% of the trials
  – **Maybe** – positive response in 25-50%
  – **Unlikely** – positive responses less than 25% of the time or sometimes negative response

• Lastly consider magnitude of response in addition to consistency
What about extra seed?

**Hybrid density vs relative yield**

Exponential Association: $y = 93.4(1-e^{-0.0763x})$
Standard Error: 8.4119183
Correlation Coefficient: 0.5062847
Comments:
The fit converged to a tolerance of $1e-006$ in 10 iterations. No weighting used.
What about extra fertilizer?

• More N?
  – Or more costly “enhanced efficiency” forms of N?

• More P?
  – Biological P inoculants?

• More S?

• Micronutrients?
  – Foliar vs seed primers?
Are there profitable inputs to add to current BMPs?

Funded by provincial canola commissions
Levy dollars for product efficacy verification
Which products to test?

- Canola Council of Canada agronomists, Dr. Neil Harker (AAFC) and Murray Hartman (ARD) picked products based on amount of inquiries and personal interest
- Compare to a Best Management plot
- Seed primers (Precede and Protinus)
- Biostimulator (penergetic P)
- Boron (two different timings in crop)
- +/- 25% N fertilizer rates / top dressing
- 50% more seed
- Foliar “stress relievers” (C3, Fortified Foliar)
- CO₂ fertilizer (AGROSOLution)
- In 2014, individual cooperator could add another treatment of interest
How and where

• Small plot experiments with AAFC and ARA’s across AB, SK and MB
  – Pre-planned contrast analysis
    • More sensitive than general ANOVA and suitable for comparing treatments only to BMP

• 2013: 2 levels of trials (# of treatments)
  – Lacombe, Beaverlodge, Medicine Hat, Lethbridge, Manning, Neerlandia, Dapp, Forestburg, High Prairie, St. Isidore, Scott (SK)
    • Red indicates site was cancelled or dropped
2014 treatments / locations

• 2014: 1 treatment list + cooperator choice of an extra treatment
  – Lacombe, Beaverlodge, Lethbridge, Medicine Hat, North Star, Fort Vermilion, Neerlandia, Forestburg, St. Paul
  – Scott, Melfort, Swift Current, Outlook, Indian Head, Prince Albert
  – Arborg, Beausejour, Winnipeg
# 2 Treatment Lists in 2013

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 BMP</td>
<td>1 BMP</td>
</tr>
<tr>
<td>2 Sideband N - 125%</td>
<td>2 Sideband N - 125%</td>
</tr>
<tr>
<td>3 Foliar N (UAN) - 125%</td>
<td>3 Foliar N (UAN) - 125%</td>
</tr>
<tr>
<td>4 Protinus Seed Primer</td>
<td>4 Protinus Seed Primer</td>
</tr>
<tr>
<td>5 C3 with herbicide</td>
<td>5 C3 with herbicide</td>
</tr>
<tr>
<td>6 Boron (flowering)</td>
<td>6 Boron (flowering)</td>
</tr>
<tr>
<td></td>
<td>7 More Seed – 150 seeds/m² (vs 100 in check)</td>
</tr>
<tr>
<td></td>
<td>8 Less N - Sideband 75%</td>
</tr>
<tr>
<td></td>
<td>9 Precede Seed Primer</td>
</tr>
<tr>
<td></td>
<td>10 Fortified Foliar (5 leaf)</td>
</tr>
<tr>
<td></td>
<td>11 BioStimulator (1 leaf &amp; rosette)</td>
</tr>
<tr>
<td></td>
<td>12 Boron (3-5 Leaf)</td>
</tr>
<tr>
<td></td>
<td>13 AGROSOLUTION CO₂ (2-4 leaf &amp; 2 wk. later)</td>
</tr>
</tbody>
</table>
## 2013 N Applied (lbs N/acre)

<table>
<thead>
<tr>
<th>Site</th>
<th>75% N</th>
<th>100% N</th>
<th>125% N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaverlodge</td>
<td>58</td>
<td>77</td>
<td>96</td>
</tr>
<tr>
<td>Lacombe</td>
<td>93</td>
<td>123</td>
<td>152</td>
</tr>
<tr>
<td>Lethbridge</td>
<td>47</td>
<td>62</td>
<td>78</td>
</tr>
<tr>
<td>Medicine Hat</td>
<td>43</td>
<td>58</td>
<td>72</td>
</tr>
<tr>
<td>Manning</td>
<td>0</td>
<td>33</td>
<td>61</td>
</tr>
<tr>
<td>High Prairie</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forestburg</td>
<td></td>
<td>70</td>
<td>87</td>
</tr>
<tr>
<td>St. Isidore</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scott</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
UCC - 2014

All Sites – Emergence & Yield
5 Sites – 1000 kwt & % Green Seed

Unique Site Treatment

Single degree of freedom Contrasts

- Indicates significantly < BMP (P < 0.05)
- Indicates significantly > BMP (P < 0.05)
## 2014 N Applied (lbs N/acre)

<table>
<thead>
<tr>
<th>Site</th>
<th>75%</th>
<th>100%</th>
<th>125%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaverlodge</td>
<td>78</td>
<td>100</td>
<td>118</td>
</tr>
<tr>
<td>Fort Vermilion</td>
<td>22</td>
<td>35</td>
<td>42</td>
</tr>
<tr>
<td>Lacombe</td>
<td>96</td>
<td>125</td>
<td>154</td>
</tr>
<tr>
<td>Outlook</td>
<td>74</td>
<td>98</td>
<td>123</td>
</tr>
<tr>
<td>Prince Albert</td>
<td>60</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Scott</td>
<td>67</td>
<td>89</td>
<td>112</td>
</tr>
<tr>
<td>St. Paul</td>
<td>51</td>
<td>78</td>
<td>105</td>
</tr>
<tr>
<td>Swift Current</td>
<td>75</td>
<td>100</td>
<td>125</td>
</tr>
</tbody>
</table>
All Sites - 2013 + 14 (17 locs) - Yield (bu/ac)

- CO2
- Boron @ 4-6 Leaf
- Fortified Foliar
- BioStimulator
- Precede
- 75% N
- More Seed
- Boron @ Flowering
- Foliar N - 125%
- C3 with herbicide
- Protinus
- 125% N
- BMP

Sites included:
- Big Lakes 13
- Beaverlodge 13, 14
- Fort Vermillion 13, 14
- Lacombe 13, 14
- Lethbridge 13, 14
- Manning 13
- Medicine Hat 13
- NSC 13
- Outlook 14
- Scott 13, 14
- St. Paul 14
- Swift Current 14

Trt 2 vs Trt 8
P = 0.0007