Brassica carinata

Eric Johnson, AAFC, Scott, Sk
### Brassica carinata seeding rates

<table>
<thead>
<tr>
<th>Seeds m⁻²</th>
<th>Seed rate kg ha⁻¹</th>
<th>Carinata Seed Yld kg ha⁻¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>1.2</td>
<td>1100</td>
</tr>
<tr>
<td>50</td>
<td>2.3</td>
<td>1504</td>
</tr>
<tr>
<td><strong>100</strong></td>
<td><strong>4.7</strong></td>
<td><strong>1796</strong></td>
</tr>
<tr>
<td>200</td>
<td>9.3</td>
<td>1891</td>
</tr>
<tr>
<td>400</td>
<td>18.6</td>
<td>2009</td>
</tr>
<tr>
<td>800</td>
<td>37.2</td>
<td>2086</td>
</tr>
</tbody>
</table>

Yields increase at higher seeding rates but net returns maximized at these rates.
Brassica carinata N response
(Adapted from Johnson et al. 2014. CJPS and unpublished data)

Assumptions:
N fertilizer cost = 45 cents/lb
Camelina Price = $ 9.50 / bushel
Assumptions:
N fertilizer cost = 45 cents/lb
Camelina Price = 18 cents/lb or $ 9.00 / bushel
Hemp Response to N. Vera et al. CJPS 2004.
“The Old”

- Trifluralin registered in “mustards”. Fortress, a combination of granule of triallate and trifluralin also registered in mustards.
- Ethafluralin has completed PMRA Re-review and may be eligible for new registrations, eg. for *Brassica carinata*
Assure / Muster in *B. carinata*

- Assure (quizalifop) and Muster Toss-N-Go (ethametsulfuron) are registered in *carinata*.
- 2012 data raised some concerns about tank-mix and crop injury (was it due to adjuvant, timing?)
- Additional studies conducted in 2013
  – Scott, Stewart Valley
Assure / Muster tank-mix studies

• Applied 1 and 2X rates of Assure and Muster tank-mix either with Sure-Mix or Merge adjuvant at 2, 4 and 6-leaf stage of carinata.

• Also, had a weed-free check for comparison.
Assure / Muster tank-mix in carinata – Scott, 2013

Seed Yield

Yield (bus/acre) vs. Carinata Leaf-Stage

- Assure / Muster / Sure-Mix 1X
- Assure / Muster / Sure-Mix 2X
- Assure / Muster / Merge 1X
- Assure / Muster / Merge 2X

Legend:
- Blue: Assure / Muster / Sure-Mix 1X
- Red: Assure / Muster / Merge 1X
- Yellow: Assure / Muster / Sure-Mix 2X
- Orange: Assure / Muster / Merge 2X

Graph shows yields at different leaf stages (2-lf, 4-lf, 6-lf) and an untreated control.
Assure / Muster tank-mix in carinata – Scott, 2013

Seed Yield

<table>
<thead>
<tr>
<th>Carinata Leaf-Stage</th>
<th>Yield (bus/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-lf</td>
<td></td>
</tr>
<tr>
<td>4-lf</td>
<td></td>
</tr>
<tr>
<td>6-lf</td>
<td></td>
</tr>
</tbody>
</table>
Assure / Muster tank-mix in carinata – Scott, 2013

Visual Injury ratings

% injury

Carinata Leaf-Stage

- 2-If
- 4-If
- 6-If
- Untreated

- Assure / Muster / Sure-Mix 1X
- Assure / Muster / Sure-Mix 2X
- Assure / Muster / Merge 1X
- Assure / Muster / Merge 2X
Assure / Muster tank-mix in carinata Stewart Valley, 2013 Visual Injury ratings

% injury vs Carinata Leaf-Stage

- Assure / Muster / Sure-Mix 1X
- Assure / Muster / Sure-Mix 2X
- Assure / Muster / Merge 1X
- Assure / Muster / Merge 2X
- Untreated
Assure / Muster tank-mix in carinata Stewart Valley, Seed Yield
Authority in Mustards

- Registration has been submitted
- Registration will be for 43 acre / jug rate only (105 g ai/ha rate)
- Have seen injury when soils get saturated
- Lower rate?
Authority in Mustard, Scott, 2013

Effect on plant stand

Cross-hatched bars are statistically lower than the untreated check

Plants per square meter

Mustard Species

Carinata

Oriental

Yellow

0 70 105 140 210

0 20 40 60 80 100 120 140

0 20 40 60 80 100 120 140
Authority in Mustard, Scott, 2013

Effect on Seed Yield

Cross-hatched bars are statistically lower than the untreated check.
Authority in Mustard, Scott, 2013
Effect on Crop Injury
HERBICIDE TOLERANCE DEVELOPMENT
Herbicide Tolerance Goals

• *Brassica carinata*
  – Group 2 herbicide tolerance (imi, su) stacked with Group 4 tolerance (fluroxypyr, dicamba)

• Tolerance being developed either through seed or microspore mutagenesis.
New Agronomic Studies

• Located at Scott, Swift Current, and Lethbridge, AB
• Crop Sequence Study
• N X seeding rate – Weedy and Weed-free