The Origins of Yield Busters

- Initiated by IHARF Board of Directors February 2010 in response to two main concerns:
  1. Strong desire as Directors (& Farmers) to become more directly engaged in process of establishing research priorities
  2. Unprecedented influx of products introduced & marketed with little or no 3rd party research supporting their efficacy

- Researchers saw the project as an effective means of connecting with farmers to identify their current challenges & potential gaps in research knowledge while enhancing public awareness & interest in activities

- Process involved canvassing individuals within agricultural community & challenging them to present the top 2 or 3 agronomic questions which they would like to see addressed

- All ideas put forward considered with final selections based on what was:
  1. Important to producers
  2. Practical and relatively straight forward to evaluate
  3. Has not / is not already been extensively tested in W. Canada
Field Trials - 2010

- Two separate trials initiated for 2010 growing season with funding provided by IHARF and Viterra and in-kind contributions from Western Ag Labs, BASF and Western Applied Research Corporation (WARC)

1. Micronutrient Seed Dressings on Various Crops

2. Fungicide Applications on Flax
Field Trials - 2011

- Secured additional funding from ADOPT & initiated a 3rd trial in 2011

1. Evaluating Various Fungicide Applications on Canola
   - In-kind contributions from BASF, Bayer CropScience & Syngenta
MicroNutrient Seed Dressings on Various Crops

Locations
1) Canora 2) Indian Head 3) Scott 4) Swift Current

Crops
1) Wheat 2) Canola 3) Lentil 4) Field Pea

Seed Treatments
1) Untreated 2) Treated*
*Omex Zn Primer for wheat/canola & Omex Pulse Primer for lentil/field pea)

Data Collection
1) Emergence 2) Yield
Emergence Rate (All Crops)
Indian Head 2010

Plant Density (plants m⁻²)

Days From Planting

- Untreated
- Treated

ns : not significant
* : 0.05 < P <= 0.10
** : 0.01 < P <= 0.05
*** : P <= 0.01

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Emergence Rate (All Crops)
Indian Head 2011

Days From Planting

Plant Density (plants m⁻²)

- Untreated
- Treated

ns : not significant
* : 0.05 < P <= 0.10
** : 0.01 < P <= 0.05
*** : P <= 0.01
Emergence Rate (All Crops)
Scott 2011

Days From Planting

Plant Density (plants m\(^{-2}\))

- Untreated
- Treated

ns : not significant
*
**
***: $P \leq 0.05$

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Emergence Rate (All Crops)
Swift Current 2011

Plant Density (plants m\(^{-2}\))

Days From Planting

- Untreated
- Treated

ns: not significant
*
P: 0.05 < P \leq 0.10
**
P: 0.01 < P \leq 0.05
***
P: P \leq 0.01
Seed Dressing Effects on Grain Yield
Canora 2010

**Treated vs Untreated***

<table>
<thead>
<tr>
<th>Crop Type</th>
<th>Grain Yield (kg ha⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>Untreated: 1000</td>
</tr>
<tr>
<td></td>
<td>Treated: 1600</td>
</tr>
<tr>
<td>Canola</td>
<td>Untreated: 1000</td>
</tr>
<tr>
<td></td>
<td>Treated: 1500</td>
</tr>
<tr>
<td>Lentil</td>
<td>Untreated: 2000</td>
</tr>
<tr>
<td></td>
<td>Treated: 2200</td>
</tr>
<tr>
<td>Field Pea</td>
<td>Untreated: 3000</td>
</tr>
<tr>
<td></td>
<td>Treated: 3500</td>
</tr>
<tr>
<td>All Crops</td>
<td>Untreated: 5000</td>
</tr>
<tr>
<td></td>
<td>Treated: 5500</td>
</tr>
</tbody>
</table>

*Results presented are from contrasts comparing yield with treated seed directly to untreated yields for each crop.

\[ P = 0.376 \] (Wheat)

\[ P = 0.878 \] (Canola)

\[ P = 0.109 \] (Lentil)

\[ P = 0.720 \] (Pea)

\[ P = 0.995 \] (All Crops)
Seed Dressing Effects on Grain Yield
Indian Head 2010

**Treated vs Untreated***
Wheat: $P = 0.860$
Canola: $P = 0.720$
Lentil: $P = 0.288$
Pea: n/a
All: $P = 0.482$

*Results presented are from contrasts comparing yield with treated seed directly to untreated yields for each crop

![Graph showing grain yield for different crops](image)
Seed Dressing Effects on Grain Yield
Scott 2010

Treated vs Untreated*
Wheat: $P = 0.275$
Canola: $P = 0.725$
Lentil: $P = 0.607$
Pea: $P = 0.783$
All: $P = 0.927$

*Results presented are from contrasts comparing yield with treated seed directly to untreated yields for each crop
Seed Dressing Effects on Grain Yield
Swift Current 2010

Treated vs Untreated*
Wheat: $P = 0.150$
Canola: $P = 0.567$
Lentil: $P = 0.947$
Pea: $P = 0.597$
All: $P = 0.973$

*Results presented are from contrasts comparing yield with treated seed directly to untreated yields for each crop.


**Seed Dressing Effects on Grain Yield**

**Canora 2011**

**Treated vs Untreated***

- Wheat: \( P = 0.819 \)
- Canola: \( P = 0.195 \)
- Lentil: \( P = 0.257 \)
- Pea: \( P = 0.661 \)
- All: \( P = 0.574 \)

*Results presented are from contrasts comparing yield with treated seed directly to untreated yields for each crop.

<table>
<thead>
<tr>
<th>Crop Type</th>
<th>Wheat</th>
<th>Canola</th>
<th>Lentil</th>
<th>Field Pea</th>
<th>All Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grain Yield (kg ha(^{-1}))</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
</tbody>
</table>

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**Seed Dressing Effects on Grain Yield**

**Indian Head 2011**

**Treated vs Untreated***
- Wheat: $P = 0.157$
- Canola: $P = 0.467$
- Lentil: $P = 0.809$
- Pea: $P = 0.822$
- All: $P = 0.638$

*Results presented are from contrasts comparing yield with treated seed directly to untreated yields for each crop*

---

**Crop Type**

<table>
<thead>
<tr>
<th>Crop Type</th>
<th>Untreated</th>
<th>Treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>4000</td>
<td>ns</td>
</tr>
<tr>
<td>Canola</td>
<td>1800</td>
<td>ns</td>
</tr>
<tr>
<td>Lentil</td>
<td>1000</td>
<td>ns</td>
</tr>
<tr>
<td>Pea</td>
<td>1500</td>
<td>ns</td>
</tr>
<tr>
<td>All Crops</td>
<td>2000</td>
<td>ns</td>
</tr>
</tbody>
</table>

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**Seed Dressing Effects on Grain Yield**
Scott 2011

**Treated vs Untreated***
Wheat: $P = 0.957$
Canola: $P = 0.277$
Lentil: $P = 0.634$
Pea: $P = 0.792$
All: $P = 0.650$

*Results presented are from contrasts comparing yield with treated seed directly to untreated yields for each crop*
Seed Dressing Effects on Grain Yield
Swift Current 2011

**Treated vs Untreated**
Wheat: \( P = 0.858 \)
Canola: \( P = 0.429 \)
Lentil: \( P = 0.164 \)
Pea: \( P = 0.177 \)
All: \( P = 0.984 \)

*Results presented are from contrasts comparing yield with treated seed directly to untreated yields for each crop*
Flax Response to Fungicide

Locations:
1) Indian Head 2) Canora 3) Swift Current

Treatments
• Untreated
• Headline® EC (0.16 l/ac)
• Proline® (0.15 l/ac - 2011 only)

Data Collected:
1) Seed Yield
Visible Response

Untreated Check

Aug 12

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Visible Response

Headline

Aug 12

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Visible Response
Visible Response
Effects of Fungicide on Flax Yield

Fungicide Treatment by Location

Seed Yield (kg/ha)

Check
Headline

CAN-10
CAN-11
IH-10
IH-11
SWC-10
SWC-11
ALL

0
500
1000
1500
2000
2500
3000

***
ns
***
**
ns
***

Location

**

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Canola Response to Fungicide

Locations
1) Indian Head
2) Canora
3) Swift Current

Treatments
1) Untreated
2) Headline (0.16 l/ac)
3) Lance (142 g/ac)
4) Lance + Headline (142 g/ac+0.12 l/ac)
5) Proline (0.15 l/ac)
6) Astound (390 g/ac)

Data Collected
1) Seed Yield
Canola Yield
Canora 2011

Seed Yield (kg/ha)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Yield (kg/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check</td>
<td>32</td>
</tr>
<tr>
<td>Headline</td>
<td>31</td>
</tr>
<tr>
<td>Lance</td>
<td>32</td>
</tr>
<tr>
<td>Headline &amp; Lance</td>
<td>37</td>
</tr>
<tr>
<td>Proline</td>
<td>33</td>
</tr>
<tr>
<td>Astound</td>
<td>37</td>
</tr>
</tbody>
</table>

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Canola Yield
All Sites 2011

Seed Yield (kg/ha)

- Check: 41
- Headline: 43
- Lance: 43
- Headline & Lance: 45
- Proline: 41
- Astound: 44

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# Top Research Priorities 2011

<table>
<thead>
<tr>
<th>Rank</th>
<th>Research Topic</th>
<th># of Votes</th>
<th>Rank</th>
<th>Research Topic</th>
<th># of Votes</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Fungicide application (more crops)</td>
<td>12</td>
<td>#7</td>
<td>Effects of elemental S on P2O5 availability</td>
<td>6</td>
</tr>
<tr>
<td>#2</td>
<td>Foliar (micro) nutrient products</td>
<td>11</td>
<td>#8</td>
<td>Nutritional / growth regulator products as ‘safeners’ for sensitive herbicide / crop combinations</td>
<td>5</td>
</tr>
<tr>
<td>#3</td>
<td>In-crop nutrition (micro and/or macro-nutrient products)</td>
<td>7</td>
<td>#9</td>
<td>Intercropping research (various aspects)</td>
<td>4</td>
</tr>
<tr>
<td>#4</td>
<td>Effects of ESN on canola yield (seed place vs side band)</td>
<td>7</td>
<td>#10</td>
<td>MES P/S fertilizer vs ammonium sulphate blends</td>
<td>3</td>
</tr>
<tr>
<td>#5</td>
<td>Row-spacing research (canola, pulses)</td>
<td>7</td>
<td>#11</td>
<td>Variety blends of wheat and/or canola (high disease pressure)</td>
<td>3</td>
</tr>
<tr>
<td>#6</td>
<td>Fungicides at herbicide timing</td>
<td>6</td>
<td>#12</td>
<td>Pod sealants for preserving grain quality (cereals and pulses)</td>
<td>3</td>
</tr>
</tbody>
</table>
Yield-Busters Acknowledgements

Western Applied Research Corporation
Wheatland Conservation Area Inc.
East Central Research Farm

Saskatchewan Ministry of Agriculture
Growing Forward

Agricultural Demonstration of Practices & Technologies

Bayer CropScience
BASF
ASC
OMEX

IHARF
Indian Head Agricultural Research Foundation

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