## Canola Variety Trials

### Mercedes
- High Yield
- Early maturity
- Blackleg resistance

### Edimax
- IMI tolerance
- Early-medium maturity
- Blackleg resistance

### Safran
- Medium maturity
- Excellent fall vigor
- Early planting
- Blackleg resistance

### Inspiration
- Early maturity
- High yield potential
- Blackleg resistance

### Largo
- “Rapa”
- “True Winter” needs vernalization
- Easier to establish
- Deer/Elk resistant

### Falstaff
- Swedish heritage
- Winter hardy

### HyClass 115
- Excellent yield potential
- Mid-maturity
- Roundup & SURT technology
- Blackleg resistance
- First time growers

### HyClass 125
- Stronger yield potential than 115
- Mid-maturity (later then 115)
- Roundup & SURT technology
- Blackleg resistance

### HyClass 13-26
- Very early maturity

### Amanda
- Still U of I best
- High yield and oil content
- Partial Blackleg resistance

### UI WC-1
- Early flowering / maturity
- Higher yield potential than Amanda
- Continue research

### UI 05.6.33
- Selected from national breeding project
- Intermediate maturity
- High yield potential
- Blackleg resistance (natural mutation)

### Griffin
- KSU variety
- Dual purpose forage and grain
- Early planting
- Better winter survival following grazing
- Available 2014

### Claremore
- Wyoming variety
- IMI tolerant
- Do not use for early planting
Winter canola establishment, survival and yield for 2013-2014 at Pomeroy, WA.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Establishment</th>
<th>Survival (%)</th>
<th>Yield (lbs/A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edimex</td>
<td>5.0</td>
<td>67</td>
<td>2445</td>
</tr>
<tr>
<td>Safran</td>
<td>2.3</td>
<td>109</td>
<td>2105</td>
</tr>
<tr>
<td>Casino</td>
<td>2.3</td>
<td>104</td>
<td>1765</td>
</tr>
<tr>
<td>Falstaff</td>
<td>4.0</td>
<td>92</td>
<td>2340</td>
</tr>
<tr>
<td>Largo</td>
<td>3.8</td>
<td>93</td>
<td>965</td>
</tr>
<tr>
<td>WC-1</td>
<td>3.0</td>
<td>108</td>
<td>2400</td>
</tr>
<tr>
<td>05.6.33</td>
<td>3.8</td>
<td>100</td>
<td>2295</td>
</tr>
<tr>
<td>Amanda</td>
<td>4.0</td>
<td>73</td>
<td>2235</td>
</tr>
<tr>
<td>Claremore</td>
<td>3.8</td>
<td>74</td>
<td>2215</td>
</tr>
<tr>
<td>Sumner</td>
<td>3.3</td>
<td>77</td>
<td>2020</td>
</tr>
<tr>
<td>Griffin</td>
<td>3.0</td>
<td>118</td>
<td>2055</td>
</tr>
<tr>
<td>CP 115</td>
<td>4.5</td>
<td>78</td>
<td>1810</td>
</tr>
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<td>CP 125</td>
<td>4.3</td>
<td>72</td>
<td>1840</td>
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<tr>
<td>DKW 46-15</td>
<td>3.5</td>
<td>75</td>
<td>2330</td>
</tr>
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</table>

* Establishment on a 1 to 5 basis (fall 2013)


<table>
<thead>
<tr>
<th>Variety</th>
<th>Okanogan Establishment</th>
<th>Okanogan Survival</th>
<th>Asotin Establishment</th>
<th>Asotin Survival</th>
<th>Pomeroy Establishment</th>
<th>Pomeroy Survival</th>
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<tbody>
<tr>
<td>Mercedes</td>
<td>4.3</td>
<td>36</td>
<td>4.8</td>
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<td>4.5</td>
<td>18</td>
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<tr>
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<td>14</td>
<td>4.0</td>
<td>0</td>
<td>3.6</td>
<td>24</td>
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<tr>
<td>Safran</td>
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<td>13</td>
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<td>0</td>
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<td>28</td>
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<tr>
<td>Inspiration</td>
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<td>4.9</td>
<td>0</td>
<td>4.0</td>
<td>5</td>
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<tr>
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<td>71</td>
<td>4.8</td>
<td>37</td>
<td>4.4</td>
<td>101</td>
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<tr>
<td>Falstaff</td>
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<td>12</td>
<td>4.5</td>
<td>0</td>
<td>3.6</td>
<td>25</td>
</tr>
<tr>
<td>Cp115</td>
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<td>30</td>
<td>4.8</td>
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<td>31</td>
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<tr>
<td>Cp125</td>
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<td>8</td>
<td>4.8</td>
<td>0</td>
<td>4.3</td>
<td>39</td>
</tr>
<tr>
<td>Cp13-26</td>
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<td>8</td>
<td>5.0</td>
<td>0</td>
<td>4.3</td>
<td>0</td>
</tr>
<tr>
<td>Amanda</td>
<td>4.3</td>
<td>25</td>
<td>4.8</td>
<td>0</td>
<td>4.4</td>
<td>25</td>
</tr>
<tr>
<td>WC-1</td>
<td>3.9</td>
<td>26</td>
<td>4.8</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>05.6.33</td>
<td>3.6</td>
<td>7</td>
<td>4.6</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Griffin</td>
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<td>40</td>
<td>4.8</td>
<td>0</td>
<td>3.9</td>
<td>39</td>
</tr>
<tr>
<td>Claremore</td>
<td>4.1</td>
<td>35</td>
<td>4.8</td>
<td>0</td>
<td>4.6</td>
<td>44</td>
</tr>
</tbody>
</table>

* Establishment on a 1 to 5 basis (fall 2014). Survival percentage (Spring 2015).
2014-2015 OKANOGAN CANOLA, WATER, AND NITROGEN DYNAMICS

Below is a graph showing average plant available (not total) water information for a 5-foot soil profile at several sampling dates, as well as rainfall. August 25 is near planting. Soil water content decreased when canola actively grew and used stored soil water. After October 16, canola slowed growth for winter and didn’t extract much water from the soil profile. It rained 2.69 inches from planting until November 9. Winter precipitation includes rainfall from November 9 – March 1, totaling 5.26 inches.

Water use can be estimated by growing season precipitation + water extracted from soil. **During fall vegetative growth (Aug 25 – Nov 9), the canola used 3.26 inches of water.** The graph on the left below relates water use to biomass production (green, right axis) and N uptake (orange, left axis). Water use is highly correlated to both of these factors in a linear fashion. The graph on the right indicates how water use and biomass production increase as growing degree days (a measure of thermal time) accumulate. This relationship is more sigmoidal, showing that canola growth and water use slow as winter approaches.
Above is a graph showing average water content throughout soil profiles at different sampling dates. Solid lines show Pomeroy, WA canola water extraction patterns. In this case, canola uses water in the top few feet of soil during the first month of growth. Then water stored deeper in the profile is utilized. Canola continues to use deep stored water while precipitation recharges some moisture in the top foot (seen in 4-Nov sampling date). Eventually, fall growth and water extraction ceases, allowing winter precipitation to fill the entire profile. This pattern was also seen in Ritzville and Asotin, WA.

However, it isn’t clear in Okanogan, shown in the dotted lines. Rather, very little extraction was seen in the first month. Some water use occurred by mid-October, but it was confined to the top three feet of the soil profile. An interesting note is the consistently higher water content at 1-2 feet for nearly every sampling date; a rod-weeding hardpan may cause lower water contents in 0-1 feet, with the glacial-caused hardpan resulting in lower water contents at 2-3 feet. Another point shown clearly in this chart is that Pomeroy has a much higher total water content than Okanogan. Pomeroy also had a higher initial soil N content (262 lb N/ac) and accumulated more biomass (3013 lb/ac).

Below is a table showing nitrogen values for Okanogan.

<table>
<thead>
<tr>
<th>Soil nitrogen at planting</th>
<th>Fall fertilizer application</th>
<th>Nitrogen in fall canola biomass</th>
<th>Spring soil nitrogen (3/1/15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>119.6 lb/ac</td>
<td>50 lb N/ac</td>
<td>38.3 lb/ac</td>
<td>20.0 lb/ac</td>
</tr>
</tbody>
</table>

As clear in the pie chart to the left, a large portion of the fertilized nitrogen and the nitrogen present in the soil at planting is unaccounted for. It’s still a mystery…. Leaching? Further immobilization from first-year no-till wheat residue? Ammonia fixation? Unrepresentative sampling? Future samplings and harvest measurements may give a better idea of N fate.
DO IT YOURSELF!
Soil sampling for water content

Supplies needed
- Soil probe
- Ziploc bags
- Paper plates
- Microwave (and an understanding wife)
- Scale

Steps
Use a soil probe (auger, post hole digger, shovel, whatever equipment you have) to take soil samples. Make sure to note the depth increment of each sample. You could even break it down into 0-6", 6-12", 1-2' etc. Put each soil sample in a labelled plastic bag, mix thoroughly, and seal. Keep samples cool if possible.

It’s best if you can set your scale to weigh in kg or g. Weigh a paper plate and record the weight. Then add about 500 grams (about 1 pound) of a soil sample to the plate, spread it fairly evenly over the plate’s surface, and record the weight. Microwave the plate/soil for 10 minutes and then weigh. Return to the microwave for 5 minutes and reweigh. Repeat this process until the weight doesn’t change much. Record this final weight. Typical drying time for a fairly moist sample is around 20-25 minutes. You can also use a drying convection oven at 220°F and leave the samples for 24 hours.

Calculations
You should have the following numbers for each sample: depth of sample, paper plate weight, wet sample+plate weight, and dry sample+plate weight. In case you need to convert, note that 1 kilogram = 1000 grams = 2.2 pounds. First, find the wet and dry soil weights by:

\[
\text{wet sample} + \text{plate wt (g)} - \text{plate wt (g)} = \text{wet soil (g)}
\]

\[
\text{dry sample} + \text{plate wt (g)} - \text{plate wt (g)} = \text{dry soil (g)}
\]

Now you can find the gravimetric water content by:

\[
\frac{\text{wet soil (g)} - \text{dry soil (g)}}{\text{dry soil (g)}} \times 100 = \% \text{ of weight that is water}
\]

To find volumetric water content:

\[
\% \text{ of weight that is water} \times \text{bulk density} = \% \text{ of volume that is water}
\]

Use the table to find approximate bulk density values depending upon your soil type.

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Bulk Density (g·cm⁻³)</th>
<th>Soil Type</th>
<th>Bulk Density (g·cm⁻³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand</td>
<td>1.52</td>
<td>Silt loam</td>
<td>1.28</td>
</tr>
<tr>
<td>Sandy loam</td>
<td>1.44</td>
<td>Clay loam</td>
<td>1.26</td>
</tr>
<tr>
<td>Loam</td>
<td>1.36</td>
<td>Clay</td>
<td>1.20</td>
</tr>
</tbody>
</table>
Now you can find inches of water in the sample:

\[
\text{\% of volume that is water} \div 100 \times \text{depth of sample (in)} = \text{inches of water}
\]

Note that this is total water content, and that not all of this water is available for plants to uptake.

Repeat for each sample!

For example, say you had soil that weighed 500 grams wet and 425 grams dry:

\[
\frac{500g - 425g}{425g} \times 100 = 17.6\% \text{ of weight is water}
\]

Say it’s a silt loam soil, so:

\[
17.6\% \text{ of weight is water} \times 1.28 = 22.5\% \text{ of volume is water}
\]

Now say that you took this sample from 0 – 1 foot, so:

\[
22.5\% \text{ of volume is water} \div 100 \times 12 \text{ inches} = 2.7 \text{ inches of water in the first foot}
\]

Megan Reese
WSU Soil Science MS Student
megan.reese@wsu.edu

_Drying protocol adapted from:_
Subsoil Quality: Chemical and Physical Factors

Taylor Beard

What is subsoil? It is the soil underneath the A horizon (topsoil). Like topsoil it is composed of a variable mixture of sand, silt, and clay, but is lower in organic matter and typically higher in clay sized particles and minerals. Factors that can influence subsoil quality include: soil formation processes, soil type, history of tillage, pH, and crop rotation.

Why is it important to maximize subsoil quality?

- Enhance crop root growth and development by minimizing physical resistance and maximizing root channels.
- Maximize the storage and timing of nutrient and water availability for crop uptake to improve crop yield and quality.
- One of canola’s best traits is the ability to mine nutrients from the soil, however if it cannot get down to those nutrients then more fertilizer may be required.
- Topsoil water is quickly used early in the season, and active roots locate in the subsoil during summer months.

Site 1

Figure 1. J-hooked canola root found in Mansfield area in the summer of 2014. J-hooking begins approximately 2.5” below

Site 2

Figure 2. Two sites located in the Mansfield area displaying the impacts of soil formation processes and century long wheat rotations with consistent tillage. Total depth of both soil pits were approximately 17”. R = rodweeding layer, G = glacier layer.
High amounts of silicon (Si) have been linked to soil pan formation in previous studies. Silicon amounts can be influenced by many factors including crop type. Grass crops such as wheat can accumulate up to 10 times as much Si as broadleaf crops.

Soil pH affects the availability of Si within the soil. More acidic pH allows the Si to become available in the soil solution while higher pH levels cause Si to be adsorbed to soil particles.
Fertilizer Toxicity in Deep Banded Canola
Isaac Madsen and Bill Pan

Establishment of canola stands is a challenge facing the adoption of growing Canola in Washington state. A potential contributor to difficulties with stand establishment of canola is fertilizer toxicity. Fertilizer toxicity has been well studied in the past demonstrating that fertilizers can have toxic affects when banded with or below the seed. In order to image fertilizer toxicity office scanners were buried in growth chamber experiments, demonstrating the potential of banding to inhibit root growth (figure 1). Different crop species react differently to fertilizer bands. Here we imaged the effects of a urea band (100 lbs N/A) on canola and wheat in order to compare the different root architectures and the survivability of each root architecture under similarly toxic conditions. The fibrous root system of the wheat allowed it to survive while the canola seedlings with tap root systems died (figure 2). With the high resolution images collected during these studies symptoms of premature lateral emergence, root shrinkage, browning, and root hair dieback were observed (figure 3). The initial findings presented here clearly demonstrate the toxicity deep banded fertilizers has on roots.

Conclusion: Tap rooted plants such as canola are more susceptible to deep banding of fertilizer than crops with fibrous root systems such as wheat.

Figure 1: Fertilizer Urea at 80 lbs N/A demonstrating the toxicity to the root system.
Figure 2: Canola is has a greater vulnerability to fertilizer toxicity. The canola’s tap root (right) is more vulnerable to the effects of fertilizer toxicity than the wheat’s fibrous root system.

Figure 3: High resolution images of toxicity show root width shrinking, premature lateral root emergence, root browning, and root hair dieback.
**Spring Canola Nitrogen Requirements**

**Wheat vs canola.** Similar to wheat, N fertilizer requirements of canola grown in the inland PNW is **correlated with yield potential and moderated by non-fertilizer soil N** supplied from residual carryover from previous seasons, and from organic matter and crop residue N release. Although the factors and principles for making N recommendations are similar to wheat, the absolute N requirements of canola are very different. Here is where it gets a little confusing: canola is a better scavenger for soil N than wheat, but it also takes more N to produce a unit of canola than wheat (unit N requirement).

**Yield potential.** We conducted spring canola N response trials over 12 site-years in Pullman and Davenport, WA between 2008 and 2013. Yield responses (Y) to increasing N supply (Ns) obeyed Mitscherlich’s Law of Diminishing returns (e.g. fig. 1) where yield increases per unit of N input diminished as the yield potential was approached.

![Figure 1 Canola yield response to N supply under high and low water.](image1)

Maximum yields averaged 1333 lb/A ranging from 650 to 2300 lb/A as water availability varied amongst site-years (fig. 2). As we learn how to optimize spring canola management and identify the best varieties, the yield potential will increase. Water is the main factor affecting yield potential.

![Figure 2. Spring canola yield vs available water](image2)
Accounting for non-fertilizer N sources will reduce your fertilizer bill. To make an accurate N fertilizer recommendation, it is essential to know how much soil N can contribute to canola:

1. Soil N supply =

   (root zone nitrate-N) + (surface ammonium-N (0-1 ft)) + organic matter N mineralization.

2. Organic matter mineralization is estimated to be 20 lb/A/year or 10 lb/A/6 months.

3. Fertilizer N rate (Nf) = total optimal N supply (from table 1) – soil N supply (equation 1).

**Total N supply requirements correlate to yield potential (table 1). Most other regional guides report unit N requirements (UNRs) on the low end of this range. Why do our UNRs vary with a wider, higher range than other regions report?** First, we examined a wider range of low to high yield environments than others have reported. Second, we account for more sources of available N than other guides by including nitrate available in the 3rd and 4th feet and by including an estimate of organic matter N mineralization. Finally, canola’s ability to efficiently access and use available N improves in vigorous plants grown in higher yield environments. More available water promotes a more expansive root system, more developing pods, etc., all of which lead to higher N use efficiency in high yield environments.

**Table 1. Total N supply requirements for spring canola yield potentials.**

<table>
<thead>
<tr>
<th>Yield Potential (lb Gw/A)</th>
<th>600</th>
<th>1200</th>
<th>1800</th>
<th>2400</th>
<th>3000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total N Supply (lb Ns/A)</td>
<td>110</td>
<td>140</td>
<td>175</td>
<td>205</td>
<td>235</td>
</tr>
<tr>
<td>UNR (lb Ns/100 lb Gw)</td>
<td>19</td>
<td>12</td>
<td>10</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>NUE (Gw/Ns)</td>
<td>Low-----------------------------------------→ High</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Fallow vs. continuous cropping.** Be alert to potentially high soil N supply when following fallow with canola compared to lower N supply following wheat. We observed an average of 183 lb soil N/A following fallow compared to 69 lb soil N/A following wheat. When soil N supply is high and yield potential is low due to low available water, little fertilizer N will be required. But when yield potential is high, total N supply requirements will also be high.

Questions? Contact: Bill Pan wlp@wsu.edu or Tai Maaz tai.mcclellan@wsu.edu
Subsoil Quality Part 2:
Do our subsoils provide wheat and canola roots with ample nutrients during grain filling?

The inland Pacific Northwest is blessed with deep soils that are capable of storing water and nutrients that the crops can access over their life cycle in producing abundant grain. But 125 years of producing annual crops has extracted subsoil nutrients, and we now need to ask if we have a problem with subsoil deficiencies of the soil-immobile nutrients? And if so, are these deficiencies exacerbated by alkaline subsoil conditions? Let's take a look at some soil test data on some samples taken by Megan Reese on a field near Okanogan.

- Typically, routine soil tests are only conducted on surface soil samples. This approach was developed for Midwestern and southern U.S. where summer rains replenish topsoil moisture, thereby sustaining shallow root uptake of topsoil nutrients. The PNW adopted the same approach, but does this make sense for us? We decided to run soil tests on all root zone depths to begin assessment of subsoil fertility status.
- Currently we only test for subsoil mobile nutrient forms (nitrate and sulfate), replenished with vertical infiltration of water that carry these anions during soil recharge.
- Many nutrients are not soluble enough to be carried in high concentrations into the subsoil, and mainly remain in the surface soils that receive these nutrients. Soil immobile nutrients include P, Zn, Mn, Fe, B.
- Over years of crop extraction, these soil-immobile nutrients have reached very low levels, and high subsoil pHs render some of these even more unavailable. (See table)
- But wheat and canola root systems rely on subsoil water and nutrients mid to late season as surface soils dry in our semi-arid climate.
- Topsoils dry out in our systems and shallow roots become inactive. Do our subsoils provide wheat and canola roots with ample nutrients during grain filling?
- With our unique patterns of winter precipitation and dry summers, improving subsoil fertility subsoils may be crucial to achieving full soil productivity potential.
## Seasonal Availability of Immobile Nutrients

<table>
<thead>
<tr>
<th>Soil Depth (ft)</th>
<th>OKANOGAN composite B</th>
<th>pH 1:1</th>
<th>E.C. 1:1 m.mhos/cm</th>
<th>E.C. saturated paste m.mhos/cm</th>
<th>Effervescence</th>
<th>Organic Matter W.B.</th>
<th>Ammonium – N mg/kg</th>
<th>Nitrate – N mg/kg</th>
<th>Sulfate – S mg/kg</th>
<th>Phosphorus Olsen mg/kg</th>
<th>Potassium Olsen mg/kg</th>
<th>Boron DTPA mg/kg</th>
<th>Zinc DTPA mg/kg</th>
<th>Manganese DTPA mg/kg</th>
<th>Copper DTPA mg/kg</th>
<th>Iron DTPA mg/kg</th>
<th>Calcium NH₄OAc meq/100g</th>
<th>Magnesium NH₄OAc meq/100g</th>
<th>Sodium NH₄OAc meq/100g</th>
<th>Total Bases NH₄OAc meq/100g</th>
</tr>
</thead>
<tbody>
<tr>
<td>0_1'</td>
<td>6.7</td>
<td>0.28</td>
<td>0.68</td>
<td>Low</td>
<td>1.3</td>
<td>4.1</td>
<td>1.7</td>
<td>7</td>
<td>16</td>
<td>449</td>
<td>0.15</td>
<td>0.9</td>
<td>2.8</td>
<td>0.6</td>
<td>26</td>
<td>6.1</td>
<td>1.1</td>
<td>0.1</td>
<td>0.1</td>
<td>8.5</td>
</tr>
<tr>
<td>1_2'</td>
<td>7.5</td>
<td>0.17</td>
<td>0.44</td>
<td>Low</td>
<td>0.9</td>
<td>2.7</td>
<td>3.6</td>
<td>6</td>
<td>9</td>
<td>406</td>
<td>0.21</td>
<td>0.2</td>
<td>0.9</td>
<td>0.6</td>
<td>8</td>
<td>6.4</td>
<td>1.5</td>
<td>0.1</td>
<td>0.1</td>
<td>9.1</td>
</tr>
<tr>
<td>2_3'</td>
<td>8.8</td>
<td>0.22</td>
<td>0.57</td>
<td>Med</td>
<td>0.4</td>
<td>0.6</td>
<td>0.9</td>
<td>6</td>
<td>4</td>
<td>350</td>
<td>0.2</td>
<td>0.1</td>
<td>0.5</td>
<td>0.6</td>
<td>5</td>
<td>11.4</td>
<td>2.2</td>
<td>0.7</td>
<td>0.7</td>
<td>15.1</td>
</tr>
<tr>
<td>3_4'</td>
<td>9.3</td>
<td>0.28</td>
<td>0.73</td>
<td>Med</td>
<td>0.5</td>
<td>0.5</td>
<td>0.8</td>
<td>7</td>
<td>7</td>
<td>365</td>
<td>0.13</td>
<td>0.1</td>
<td>0.8</td>
<td>0.5</td>
<td>7</td>
<td>6.6</td>
<td>2.3</td>
<td>1.23</td>
<td>1.1</td>
<td>11.1</td>
</tr>
<tr>
<td>4_5'</td>
<td>9</td>
<td>0.27</td>
<td>0.7</td>
<td>Med</td>
<td>0.004</td>
<td>1.6</td>
<td>0.8</td>
<td>6</td>
<td>7</td>
<td>324</td>
<td>0.07</td>
<td>0.1</td>
<td>0.7</td>
<td>0.1</td>
<td>6</td>
<td>12.8</td>
<td>2.4</td>
<td>1.15</td>
<td>1.15</td>
<td>17.2</td>
</tr>
</tbody>
</table>

What are ways to improve subsoil fertility? For example deep phosphorus movement is only achieved when P fixation sites are saturated during P overfertilization. It will be tough. However, organically bound nutrient forms are more mobile. Green cover crops, animal manures, biosolids, and perennial forages may all provide more organic compounds such as organic acids that solubilize soil-immobile nutrients.

Bill Pan [wlpan@wsu.edu](mailto:wlpan@wsu.edu) Megan Reese [megan.reese@wsu.edu](mailto:megan.reese@wsu.edu)
The simple answer: no. However, there is reason to be aware of and knowledgeable about blackleg. The top three lines of defense:

1. **Crop rotation** – be sure that canola, other Brassica crops and cover crops containing Brassica species are only grown in the same field every 4 years, and control volunteers
2. **Buy blackleg resistant varieties** that have been tested and certified blackleg-free and have a seed treatment (e.g. Helix Xtra)
3. **If blackleg is discovered,** consider applying fungicide (read and follow label instructions).

**Some FAQs:**

- **What is blackleg?** Blackleg is a disease of canola and other Brassica species caused by the fungus *Leptosphaeria maculans*. It can be a serious disease of canola and can cause significant yield losses in susceptible varieties.

- **Has blackleg been found in WA State?** No. However, the recent discovery of multiple fields in ID is a reminder of why we need to keep this disease out of Washington and other areas where the disease currently does not appear to be present. More than 20 fields have been scouted in 5 counties in WA and no signs of blackleg were found.

- **Is blackleg only an issue in winter canola?** No, Blackleg can impact any Brassica crop, e.g. spring canola, rapeseed, mustard, tillage radish, and also Brassica weeds. It can also be a major problem in vegetable brassicas - cabbage, broccoli, cauliflower, and especially the seed production of these crops in the Skagit Valley of Washington. This disease could have a major impact on this industry.

- **Should I scout my field? What if my canola winterkilled? And what should I look for?** Definitely! Blackleg symptoms can be found on growing plants, winterkilled residue and residue from crops one and two years prior. For winter canola, look for lesions on primarily the lower leaves and leaf material that died back during the winter. The center of the lesions will have tiny black specks (pycnidia) (see photos below). The pycnidia may also be present on canola residue/stalks from previous crops. The lesions may be small and tricky to spot; be willing to get a close look near the base of the plants. If you had a cover crop containing Brassica species that residue should also be observed.

- **Should I go ahead and apply a fungicide just to be safe?** Not necessarily. Resistant or moderately resistant varieties should stop the disease if and when it enters the vascular (stem) tissue. In susceptible varieties, fungicide will help prevent non-infected plants from getting infected, but won’t kill the disease established in the plant if it’s already present.

- **How do I know if the seed I buy has been tested and certified blackleg free?** The WA State Dept. of Agriculture is in the process of a Rule Change to require ALL Brassica crops or cover crops containing Brassicas go through testing, seed treatment and certification. The certification must be clearly marked on any Brassica seed sold for any purpose. That is on track to take effect by June or July.
• Where can I find more information?
The WA Oilseed Cropping Systems website (www.css.wsu.edu/biofuels) has resources listed ranging from sampling protocol to a presentation about blackleg by WSU seed pathologist Dr. Lindsey du Toit

• Are there WSU/USDA-ARS people available to meet me at my fields to scout together?
Yes, several contacts are listed on the WOCS website (Tim Paulitz, Karen Sowers, Jim Davis, Don Wysocki). Also consider contacting your crop consultant, seed salesman, or your WSU County Extension Educator.

From Tim Paulitz, USDA-ARS plant pathologist in Pullman, “The more eyes we have out there, the better. I think the reason it went undetected in the Camas Prairie is that no one was looking for it. Let’s not let it get away in Washington!”