Premiere Pulse Virtual Series - Questions for Lentil Presenters

Lentil Disease (Melanie, Shannon)

- Once Aphanomyces is well established in a field and obviously causing significant yield reduction, is there any point in trying to grow lentils on that field, even with an attempt at seed treatment? Should you rest it from lentils or try a different legume? For how long?
    - Shannon
        - If there was a high level of Aphanomyces the last time that lentils were grown and it hasn't been at least 6 years (8 is better) since the last susceptible pulse crop (peas or lentils), then another crop should be seeded on that field.
        - Pulse crop options for that field could be soybeans, faba beans, or chickpeas depending on your area. Chickpeas can also develop low levels of infection.
        - A seed treatment can only protect a developing seedling for 3-4 weeks. After that time, the crop is as susceptible as a crop that didn't have a seed treatment because unfortunately root rots can infect crops at any stage. The odds of lentil seedlings surviving the first 3-4 weeks are better with a seed treatment.
        - If you grow a susceptible crop too soon and the weather and/or soil conditions are right for Aphanomyces, you are increasing the number of Aphanomyces oospores that are in that field and are likely extending the length of time that the field will have spores than can infect peas and lentils.
        - If you grow a crop that isn't susceptible to Aphanomyces, the spore level will maintain. There is research being conducted to see if there are crops that can reduce spore levels when they are grown in fields that have Aphanomyces spores.
    - Melanie
        - In my experience fields with significant levels of Aphanomyces are no longer viable for peas or lentils. The pulse crops Shannon mentioned are other options but may not be suitable for your soil zone. I have fields that have been left for 6 years and then planted to lentils and we have not seen a reduction in Aphanomyces in these fields. I suspect the timeframe before pulses could be planted again could be as long as 10 years or more.
        - Seed treatments are short term suppression of Aphanomyces and can only last for a few short weeks.

- What is the best way to identify root rot disease symptoms (Aphanomyces, Fusarium, and Rhizoctonia) and what can be done to develop a root rot disease resistant variety?
    - Shannon
        - The best way to determine if your crop has root rot is to look at patches that are yellowing and/or stunting and dig plants up and look at the roots. If the roots are dark brown, black, or caramel coloured instead of white or white with a thin layer of soil on them, they likely have root rot. Root rot can also cause the root to pinch off.
        - Diseases in the field are usually patchy so there may be patches throughout the field. Areas with more compaction and water runs are also places where there could be root rot or the root rot is worse.
        - It can be difficult to determine which pathogen (Aphanomyces, Fusarium, Rhizoctonia) is causing the root rot in the field and pulse researchers sometimes have trouble telling the difference. There is likely a combination of diseases happening at once. Fusarium

sometimes causes reddening of the inside of the root and you can peel back the outer layer with a knife or your fingernail to see. Aphanomyces usually has caramel roots that are slimy. The only way to know for sure is to send the roots to a lab to determine which disease it is. More information on soil testing and labs is available in this SaskPulse fact sheet.

- Lentil and pea breeders are working on bringing resistance to new varieties. A new variety takes a number of years to go from the start of breeding to being available for farmers.
- If you think that you have seen a difference in varieties on your farm, you can set up your own on farm trial but there isn't any significant difference in varieties of peas or lentils for resistance of root rot that I know of. The Indian Head Agricultural Research Foundation has a couple resources to help with on-farm trials on their website.

  - Melanie
    - Identifying exactly what species is causing root rot is very challenging. Many times, I have dug up plants that come from a yellowed patch and expect to find the characteristic caramel colour of Aphanomyces and there has been caramel, black, and the red of Fusarium. I encourage everyone to scratch back the surface of the root to check for Fusarium as I find it quite often. If you are unsure it doesn't hurt to send a sample to the Crop Protection Lab for identification or one of the labs listed on this SaskPulse article.

Weed Control (Shaun)

- The herbicide handout indicates Fierce is compatible with GoldWing®. Is this recommendation intended as an all-at-once application (one time in fall) or can/should it be split (Fierce® in Fall, GoldWing® in spring)?
  - I touched base with Nufarm regarding GoldWing® because I was uncertain about the label language regarding fall applications. They specified that BlackHawk® was a product they registered specifically for fall burn-down use patterns. The two products are similar, BlackHawk® has pyraflufen + 2,4-D while GoldWing® has pyraflufen + MCPA as active ingredients. Both 2,4-D and MCPA are Group 4 herbicides. Nufarm reports that BlackHawk® is a better agronomic option for burn-down weed management in the fall since it's more systemic and the cost is similar. For reference, BlackHawk® is included in their list of supported tank-mixes with Fierce® as well.To answer the question, I am exchanging GoldWing® for BlackHawk® for fall applications with that clarification from Nufarm.
  - In my opinion, the choice between applying a burn-down tank-mix in the fall or conduct a split application in the spring depends on your type of weed pressures.
  - Priority on spring annual broadleaf weeds (kochia, volunteer canola, Group 2 resistant weeds) – I'd probably look at saving GoldWing® for a spring burn-down if anything was coming through the Fierce® application put on in the fall. Your main targets (annual broadleaves) likely have already completed their lifecycle and have reproduced by post-harvest. If some fall burn-down is needed when applying Fierce®, glyphosate can be tank-mixed as well.
  - Priority on winter annual and perennial broadleaves (narrow-leafed hawksbeard for example) – In this case, I'd consider a tank-mix with Fierce® and BlackHawk® since the selection pressure towards resistance is so much higher (more weeds = more risk; might be larger plants = more risk). The Fierce® label does indicate glyphosate as a burn-down tank mix partner, so that should be included if using Fierce® as a component in a burn-down application.