

2021 Premiere Pulse Virtual Series: Chickpea Questions for Panelists

Bunyamin Tar'an

- What data are used to develop the Ascochyta ratings for chickpeas in the Varieties of Grain Crops publication? I see over the last five years the ratings on some of the chickpea varieties have changed and it would be interesting to know how the varieties are being evaluated on an annual basis. Of particular interest was the recent increase in the Ascochyta rating for CDC Orion. How many fungicide applications are made on the variety trials?
 - All entries in the Varieties of Grain Crops were evaluated every year across 8-10 locations in Saskatchewan (except in 2020, only four locations due to restrictions related to COVID-19). Trials at any locations at any given year that showed Ascochyta infestation were scored for Ascochyta infection at podding stage using a scale of 0-9 ratings (0 = no symptoms; 1 = few, very small (<2 mm²) lesions on leaves and/or stems, <2 % plant area affected (PAA); 2 = very small (<2 mm²) lesions, 2-5 % PAA; 3 = many small lesions (2-5 mm²), 5-10% PAA; 4 = many small lesions, few large (>5 mm²) lesions, 10-25% PAA; 5 = many large lesions, 25-50% PAA; 6 = lesions coalescing, 50-75% PAA; 7 = lesions coalescing with stem girdling, 75-90% PAA; 8 = stem girdling or breakage, >90% PAA; 9 = plants dead). The data were then included in the long-term means and presented as updated data in the Varieties of Grain Crops for the year, therefore, you would see some changes in the disease scores and other data.
 - Maximum two fungicide applications were done in all our breeding trials. First application at 8-10 node stage, the second application was on case-per-case basis (i.e. only if we observed significant infection). In our trials, CDC Orion also showed the symptom at pre-flowering stage as described by other researchers, as such the plants weakened and were more prone to Ascochyta infection resulting in higher scores especially at later stage (podding stage).
- Looking for more information on the Desi chickpea variety CDC Cory (imazamox tolerance). There are no seed growers listed in the 2021 seed guide. Does this mean this variety has not been adopted and why?
 - Very good comment! Seems to me the majority of growers are more interested and focused only on Kabuli cultivars. Desi-type is always perceived as lower value with limited markets. However, quite the opposite, there are always markets in North America for Desi to fill in local demand for Desi flour, etc., though the market is smaller than the market for Kabuli chickpea. CDC Cory is a good variety, high yielding, and good for Ascochyta resistance, plus it is tolerant to imi herbicide that would help farmers control broad leaf post emergence, but it seems it is still not too attractive to growers.
- What are the attributes that has allowed CDC Frontier to outperform CDC Leader and CDC Orion in 2019 & 2020? Could it be tied to our current disease issues?
 - Very good observation! During the past two years in many locations of our regional trials, CDC Orion and CDC Leader had higher Ascochyta infection compared to CDC Frontier resulting in lower yield in those two years.
- What's the estimated chickpea acreage for 2021?
 - It is too early to estimate but my guesstimate could be slightly higher than 2020.

Greg Bartley

- Chickpeas are more indeterminate and growers need to use harvest aids in most years. What product do you see as the best choice based on market acceptance or reducing risk of residues?
 - Currently, the use of a contact product would be considered less risky compared to a systemic product in terms of market acceptance and reducing the risk of residues. It is critical that any product being applied is within the application timing found within the label directions.
- Is glyphosate a concern as much in the chickpea markets as it is in some other crop markets?
 - Glyphosate is under increased scrutiny within the global marketplace for all pulse crops, including chickpeas.
- With pesticide movement and/or reductions in the European Union and potential other countries – what is Canada doing to develop alternatives for pest management to help address future market constraints?
 - Canada has always supported an integrated pest management approach to pest problems, which consider both cultural and chemical methods in combination with each other. The previous presentation on intercropping is a great example of the innovation adopted by farmers to reduce disease pressure and potentially reduce their reliance on a specific tool. However, farmers still need access to innovative and effective crop protection tools within their IPM programs, and Pulse Canada is ensuring the regulatory environment is acceptable to foster this innovation.

Lana Shaw

- How is disease in the intercrop being measured?
 - For the Saskatchewan trials, we rate 10 plants per plot on a 1 to 9 scale for severity of Ascochyta. Michelle Hubbard would know more about the rating scale. Those 10 plant ratings are averaged for each plot for an overall rating. That is generally done twice (once in July and once in August). For the NDSU trials, they were rating on a percentage damage basis twice through the growing season. I picked out the dates where significant differences were showing up. I standardized the two rating methods into percentages for the purposes of comparison of the Saskatchewan and NDSU data.
- Does the flax affect chickpeas indeterminate growth habit if late season rains occur?
 - The flax does reduce but not eliminate late season growth while the flax is still growing. It doesn't really do this after the flax has started ripening. However, the soil is so dry that sometimes the chickpeas have already ripened to the point that September rains don't create much new growth.
 - Bill May has some cool whisker charts on this showing the evenness of maturation was better with the intercrop.
 - I've had this trial on some really stupid wet and cold harvest seasons. It's not fail-safe but it helps. IT really shows up in the green seed data.
- Are there any benefits to the flax crop when intercropped with chickpeas?
 - Probably some nitrogen scavenging from chickpea to flax. We don't know yet if there are any quality improvements. The residue is nicer to deal with than mono flax. Jeff Schoenau's project, which I didn't discuss in the presentation, is looking at nitrogen fixation in these intercrops. That information will be available sometime in the spring.

- Are there less weed issues with this type of intercropping?
 - Yes and no. (tricky answer) It does seem more competitive than chickpea monocrops. However, Sencor® isn't registered on flax, so Brassica weeds and perennials are arguably more of a problem with this intercrop compared to monocrop chickpeas.
- Any best practices showing up for fertility management with intercropping chickpea/flax?
 - The short answer is we don't know yet. That said:
 - It's a good idea to replace phosphate and other nutrients that you remove.
 - We aren't really getting a strong benefit to adding nitrogen to the intercrop. It usually increases flax yield a little, but often at the expense of chickpea yield.
 - Adding nitrogen doesn't seem to affect disease either way.
 - There was no significant effect of adding nitrogen for chickpea maturity. It may have added a day to maturity of the flax.
- What seeding rates do you recommend for a chickpea/flax intercrop?
 - Chickpeas: 3 to 3.5 live plants/ square foot. No I'm not going tell you bushels per acre because seed size varies.
 - Flax: 10 to 15 lb/ac if you are seeding at a reasonable depth into good moisture. 20 lb/ac if you're going deeper or seeding into dry dirt.
- What are your experiences with row configuration? Mixed-rows or alternating rows in the chickpeas/flax intercrops?
 - This is a bit of an open question / controversy among experienced farmers and researchers. The trend among chickpea flax farmers is to go alternative rows when they want to make the alterations to their equipment. It likely leads to some savings on seeding rate. It's also very photogenic. For some this allows different seeding depths also.

For mixed rows, it's really important that the flax rate isn't overly high because of competition. You can get away with a higher flax rate in the alternative rows. There isn't really a strong data set to say that alternative rows at 10 to 20 lb/ac of flax is better than mixed rows for disease. I just tell people to start with what they are able to do with their equipment because both methods work.

Ken Wall

- With scouting for disease in chickpeas, when do you start considering applications? Is it growth stage, or do you wait to see some lesions?
 - I would start scouting as soon as plants emerge. Typically consider applying a fungicide between 7-10 node stage, especially if conditions are right for infection or rainfall is forecast. The first application would be node stage and conditions for disease. If you prefer, call me at 306-750-7711 and we can chat further.
- Why in good growing conditions is it suggested to shorten the time between fungicide applications? (Ex. go from every 14 to 21 days down to 7-10 days)? Is this product specific?
 - Good growing conditions also means good conditions for potential infections of Ascochyta blight. If your first application was applied successfully and protected the plants adequately you may be ok. Scouting however is key if conditions are right for success. Regarding products, it is somewhat product specific. Products that are somewhat systemic will control Ascochyta longer. That is why I like using Miravis® Neo, or Dyax® or Priaxor® for the first app because they are somewhat more systemic than the group 11 in Delaro®. If strobilurins are needed for two apps I would definitely use Delaro® second as it may not have as strong a greening effect as some of the other group 11's. Regarding the group M products, I would definitely count on shortening the application interval if conditions were right for disease. Again, scouting is the key.

Agronomist Questions

- How can I achieve bigger seed size with my CDC Leaders or with chickpeas in general?
 - Jesse Bruce: Promoting early season pod-set will help provide the crop with as much time as possible to grow and mature prior to harvest. Sometimes some moderate stress early in the growing season can help with this.
- Thoughts on using nitrogen fertilizer at seeding time to manage maturity in chickpeas. Does anyone have any experience they would like to share on successes or failures?
 - Jesse Bruce: First off, it's important to know what your soil is starting off with. An accurate soil sample is a good place to start. Some research has shown the promotion of robust early season growth can encourage earlier pod set while being less favourable for excess vegetative production. There is evidence to show that in some circumstances, that inclusion of 25-50 pounds per acre (lb/ac) starter nitrogen while forgoing inoculation can reduce maturity by up to 14 days. These results are more likely to occur in cool, wet growing seasons, on virgin soil that does not already have a residual rhizobium population. If the growing season is hot and dry, it is less likely that these benefits will be realized. Because of chickpea's sensitivity to seed placed fertilizer, it is important to ensure adequate seed-fertilizer separation.