

2021 Premiere Pulse Virtual Series: Faba Bean Questions for Panelists

Faba Bean Varieties - Laurie Friesen

- Have there been any variety trials done regarding extreme heat in July/August >30 degrees and is there a recommendation for a variety that would work better?
 - There have been trials conducted in southern Saskatchewan by the Crop Development Centre which indicated that faba bean could be grown in these areas and produce low - average yield. Temperatures did exceed 30 degrees Celsius (°C) for several days at both sites. However, in the same year, much higher yields were achieved in more northern locations where temperatures stayed below 30°C and rainfall was significantly higher. Screening of breeding lines has been conducted under drought conditions to better understand the genetic control of traits related to drought adaptation and to select for this trait. At this point, there has not been enough work done in the hotter/drier regions to be able to make comparisons between varieties.

- Why are breeders not more focused on shorter season faba beans? Huge opportunity for target growing area to expand acres, yet nothing in the short term pipeline
 - Breeding efforts have certainly had maturity as a key target however this is often a difficult trait to balance with yield. Early maturity often penalizes yield so incremental improvements in maturity happen very slowly in order to maintain a competitive yield. There may also be a bit of a lag as the industry has pivoted to transition completely to low vicine/convicine (LVC) varieties. Incorporating the LVC trait adds another layer to the breeding efforts. However, this is changing rapidly as experimental lines and newly registered lines show promise for improved yield combined with decent maturity. The work to develop shorter season varieties is ongoing and SPG has funded research at the Crop Development Centre to develop germplasm with earlier maturity.

- Faba beans tend to have about half of their flowers actually fertilize and produce pods. So about half of the flowers are not used and reduce the plants efficiency. So is there any work on increasing the flower fertilization to enhancing yield?
 - We have funded a small project looking at pollinators in faba beans and found that there are a number of different bees and wild pollinators that can be found within the fields, but we have not looked at the actual impact on flower pollination. Growers have noted improved flower set in some fields adjacent to where bee hives are located but this is only anecdotally for Western Canada. Other parts of the world have found addition of bees can increase flower set where the fields have low levels of native pollinators.
 - Faba beans are known worldwide to only set about 25% of their flowers but trying to maximize that flower set could help us to improve consistency in yields. Environment does seem to impact pod set (i.e., hot temperature and/or drier conditions). Genotype may also play a role as it may influence the level of dependence on insect pollinators.

- I plan to add a small amount of faba beans to my rotation - which variety would you recommend (small seed size please)?
 - For small seed size you would be looking at a white-flowered, low tannin variety. In terms of seed availability for 2021, Snowbird would probably be the best choice (TKW 448). Another option is CDC 219-16 which shows slightly higher yield in regional variety trials although it matures slightly later (2 days) than Snowbird. It has a smaller seed size with a TKW = 328. I'm just not sure there will be any certified seed available this spring. There is lots of seed in production however it is mostly Foundation and Registered. There is limited certified seed available of DL Tesoro which has good yield however the seed size is a bit larger at 511 g/1000 and maturity is also 6 days later than Snowbird.

Market Development Speakers (Hailey, Brad, Kyle)

- What are the key characteristics you look for in terms of quality when buying faba beans (seed size, colour, protein, etc.)? What is number one and any suggestions for growers on things to watch for?
 - Hailey: We look for size and colour - for our processing we want larger fava bean size and minimal lygus bug damage and under 15% moisture
 - Brad: The key characteristics for quality right now are lack of frost damage and high protein. Elemental sulphur will help with the protein and getting the beans seeded as early as possible is important to minimize frost damage. Farmers can gain a few days of maturity by blackening their soil as much as possible in the spring. Faba beans can be seeded into very cold soil but they won't do anything until it starts to warm up.
- Where are buyers at with pre-harvest product use on faba beans? Is glyphosate or diquat a concern?
 - Hailey: Reglone can be used as a pre-harvest desiccant when 80% or more, on average, of the pods have turned black. We do not want glyphosate being used.
 - Brad: Right now most markets are fine with glyphosate or Reglone. As we move ahead I don't doubt that glyphosate will be a problem for most buyers in the fractionation food world. Diquat will likely be fine.
- What do you feel is our real potential for faba acres in Western Canada and biggest hurdle?
 - Hailey: I have felt that export markets are always very volatile, and it can be very hard to compete against other countries like Australia when they have a good crop. We feel the food ingredient / plant-based protein market has the biggest potential and offers consistency. The biggest hurdle is varieties -> yield and quality. We have an opportunity to be part of the protein market but we need to keep pushing to get better varieties and focus on agronomics so we can meet demand as it increases in the next 2 - 5 years.
 - Brad: I believe that there is real potential for faba acres to increase to at least 1,000,000 acres. This will be mainly for fractionation. It is all dependent on how good a variety Fabelle is as well as the other low v/c varieties that may come out soon as well.

Faba Bean Diseases – Syama Chatterton

- Is there any genetic resistance available for chocolate spot? Stemphyllium?
 - Cultivars available in Canada don't appear to have differing levels of resistance to chocolate spot, and would all be considered moderately susceptible. Because Stemphyllium is a fairly new player on the scene, cultivar resistance hasn't been assessed as yet.

Faba Bean Agronomy – Kara Annand & Lyle Cowell

- What do you feel is the economic threshold to spray for aphids and lygus bugs?
 - **Aphids**
 - Kara: if there are high numbers - 50+/per plant during flowering then I would likely spray at this point.
 - Lyle: Numbers need to be very high to consider spraying for aphids, and if numbers are very high then beneficial insects almost always surge and control the issue for you. In addition aphids tend to be found in 'clumps' of reproduction - hundreds on one plant, not many on others. I have not yet recommended spraying a crop for aphids.
 - **Lygus Bugs**
 - Kara: If growing a food variety (FB9-4, Fabelles) I would likely lean toward spraying if seeing 5 lygus in a 180 degree sweep at pod fill
 - Lyle: I am not aware of a threshold, but we do need to keep a better eye on lygus bugs - I don't think we understand the full effect of this insect yet. They definitely cause quality damage for food grade faba beans. We need to know better if they cause yield loss and if their feeding has any potential to lead to secondary disease infection.
- What diseases and other agronomic traits are shared between soybeans and faba beans? What would the tightest recommended crop rotation between the two? 4 years?
 - Kara
 - I am not certain on the first question
 - I would stick with a 4-year rotation
 - Lyle
 - I do not think there is any significant cross over of disease between faba and soybeans. Perhaps we need to drop 'beans' from faba as they are quite different species!
 - In terms of agronomy, faba bean have more in common with pea than soybean. Both faba bean and pea can be treated similar in terms of weed control, both require similar inoculant species (and different from soybean), both require care in seeding and a relatively high seeding rate, both can be seeded early and can withstand more spring frost than soybean, and faba bean and pea are both 'C3' cool season crops, unlike soybean which is a 'C4' warm season crop. Overall, other than a long growing season and dependence on very good moisture conditions in late summer, soy and faba bean do not share many agronomy traits. In terms of rotation, a 4-year rotation should be maintained. Faba bean is less at risk to root diseases than pea but there remains significant leaf disease risks.

- Can you review the pre-harvest application staging again? What do you look for?

Lyle: I really don't have anything to add to below.....these are essentially label recommendations we need to follow, and I would continue to advise farmers to consult with buyers before applying a desiccant.

- **Glyphosate Application:**
 - Bottom pods: Black in colour - seeds are brown and firm
 - Middle pods: Pods are leathery, turning brown/black - seeds are somewhat hard to split
 - Top pods: Pods are still green but leathery - seeds are splittable - but no juice left inside
- **Reglone Application:**
 - Bottom & Middle pods: Black in colour - seeds are brown and firm
 - Top pods: Pods are leathery, turning brown/black - seeds are somewhat hard to split
- Have you seen any problems with cutworms?
 - Kara: Yes I have had some cutworms in my faba beans. The larger root and plant does make it harder for the cutworms to chew versus canola, however if pressure is high enough they can be a concern. Typically I would use chlorpyrifos if I had to spray - however I do realize that the product is being discontinued for use in Canada.
 - Lyle: Yes, some cutworm species will feed on faba beans, and I have seen significant damage. This becomes a bigger problem as faba beans are not seeded at a very high density so missing plants can lead to big holes in the stand. Keep an eye on fields - watch for bare areas on 'warm' parts of a field, watch for feeding ravens and other birds, and spray if required. There are several effective insecticides - application as soon as you see damage, with lots of water volume and preferably in the evening will be most successful.

Faba Beans in Feeding Rations

- Is there a contact for information regarding feeding faba beans to beef cattle, or cutting and drying whole faba or swath grazing faba to cattle?
 - Based on recent work by Dr. Victor Guevara, a PhD student with Dr. Yu at the University of Saskatchewan, there is good feeding value of whole plant faba bean silage from late pod stage. His research found that faba bean at late pod stage has better feeding value than at earlier stages and frost damage can reduce the nutritive value when whole plants are used as feed. When milk production of dairy cattle was evaluated the whole plant faba bean silage improved the production performance without affecting the ruminal fermentation and the intake. Thus he suggests faba bean silage at late pod stage can be "considered as a high value ingredient for dairy cows in western Canada."