

2013 Canola Discovery Forum Highlights

Objective

The 2013 Canola Discovery Forum will highlight research and industry opportunities for profitable and sustainable canola production. The forum's purpose is to discover ideas and increase partnerships between industry and research.

Summary of key presentations and discussions:

- 1. "Plant One to Get One"** The goal is to improve seed survival, and work toward a time when every canola seed put in the ground germinates and emerges. Factors that have the greatest influence on seed survival are still unknown. Moisture and soil temperature will be factors, and as results from a 2011-12 grower survey show, top yielders tend to seed slower and shallower than low yielders. (See the attached slides from the presentation.)
- 2. Is the impact of herbicide resistant weeds underestimated?** Studies from 2001-03 and 2007-11 show increased herbicide resistance. Cleavers, to give an important example for canola growers, shifted from 0% to 16-23% resistant. Canada now has four known glyphosate-resistant weeds, including kochia on the Prairies. Steps to mitigate selection pressure for resistant weeds include diverse rotations, higher seeding rates, varied seeding dates, shallow seeding, narrow row spacing, adequate fertility, insect and disease protection, and sanitation/contamination issues between fields to promote yield, profitability and sustainability. Equipment that destroys weed seed presents an alternative for weed management, but it may not be practical.
- 3. Improve nitrogen use efficiency.** Nitrogen is the most common nutrient applied, is the highest cost per acre, and can cause adverse environmental effects. Top growers pay more attention to the 4Rs of fertilizer application, including the right rate for EACH field. (See the attached slides.) Other approaches discussed at the forum include breeding crops for nitrogen use efficiency, using variable rate application (VRT) and inoculating seed with nitrogen fixing bacteria.
- 4. Give growers more information about the disease resistance traits in each variety.** With clubroot and blackleg resistance traits divided into groups, for example, growers could rotate among varieties with different traits as a tool to keep new pathotype races from gaining dominance. Australia does this. More regional deployment of genetics could improve blackleg management and extend the useful life of resistance traits.
- 5. Growers need more help with sclerotinia spray decision.** Work continues on forecasting models to accurately predict disease severity and best spray times.
- 6. Quick response to new insects.** If a new insect threat appears suddenly, such as swede midge or pollen beetle, growers would benefit from proven management practices and from a quick minor use registration to manage the insect. A funding model that has money in place for quick responses to new pests and cyclical pests would benefit growers and the research community.

7. Rotation decisions consider economic and pest risks. Economics are likely to drive shorter crop rotations. Therefore, pest monitoring surveys should have more program funding. Proactive pest research will develop a list of pests and their risk of becoming established in Western Canada, an emergency use pesticide registration pipeline, and an action plan for potential threats. A sustainable crop rotation may require the canola industry to look at a whole rotation research in partnership with other crops.

8. 90% of yield losses are still weather related. Seed companies are challenged to develop tools that can mitigate weather effects. Decisions when to seed, fertilize, irrigate, scout, spray and harvest are all related to the weather. With data, there is an opportunity to create hyper-local and short-term forecasting resulting in customized monitoring and modeling.

9. Canola Performance Trials valued. With third-party CPT data, growers can look at results for multiple sites and over multiple years to find varieties that are consistent across the board. CPTs will continue for 2014.

10. Biotech could improve economic and environmental sustainability. Biotechnology could be used to develop varieties with improved tolerance to excess water and drought, nitrogen fixation and fertilizer efficiency, and reduced pesticide use. Nitrogen fixation and self-pollinating plants are already in the pipeline. Use of antisense RNA and transcription factors are other areas that need to be investigated in canola. To access these new traits, Canadian canola growers first need international regulatory frameworks to allow new technologies to reach global markets. Consumer awareness may drive acceptance. There is an opportunity for us to show consumers that GM technology is a success story.

11. There is a need for a common definition of sustainability. With this, Canadian canola growers can make improvements, measure these improvements and communicate them to consumers.

12. Consumers want more information. Should the canola industry participate responsively and proactively in the conversations (on GMOs for example) that are already happening among consumers? One way to engage is to talk about the health benefits of canola, using GF1 results showing canola oil's benefits for cardiovascular health and diabetes. Another is to talk about the strong beneficial relationship between canola growers and beekeepers, and to talk about sustainability of producing more per acre so that the world can be fed on the existing land base without taking down forests.

13. "Big Data" presents an opportunity to reduce costs and increase productivity. VRT is just one example. Improved understanding of machinery settings could also increase seed survival and reduce harvest losses. Smarter machinery is coming. Eventually, combines will be able to set themselves to reduce losses.

14. There needs to be more "discovery" through research. AAFC research, for example, currently depends upon targeted funding from industry. This is good because projects are relevant to agriculture, but it has the potential to stifle creativity. There needs to be a balance between meeting priorities (high value research) and creative exploration (high risk research). There may be a need to consider other funding sources?

15. Communication/tech transfer falls short. A lot of research has been done, but it is not being communicated effectively. Ideas need to be communicated to growers to improve uptake of BMPs. Communication would also benefit from risk vs. reward metrics and probabilities of success/failure in reaching yield potential with various practices.