2020 SERVES A DOUBLE WHAMMY

PANDEMIC AND PROVINCIAL STAFFING CUTS PUT PRESSURE ON PULSE RESEARCH

By Dr. Jenn Walker, APG Research Manager

Did you ever play the game upset the fruit basket? Essentially it's a souped-up version of musical chairs. Players sit in appropriately distanced chairs and choose a fruit. The person who is "it" calls out a fruit or two and those players scramble to find a new seat. At some point, when you really want to cause mass confusion and set the whole room into panic, "upset the fruit basket" is yelled. Chaos ensues as each person present runs to find a new place to sit.

This chaos and frantic scramble to grab that one last chair is a rather dramatic scene, but I think that it may be an accurate picture of the agricultural research environment we are currently experiencing. Not only are we navigating the protections and safeguards that a global pandemic has imposed on field and laboratory operations, we are listening intently for the final bell to toll on provincial pulse research staff. This means racing against the clock to get that one last set of data.

CONSIDERING all that's going on, how are Alberta Pulse Growers research investments being impacted?
Field seasons were effectively put on full stop in early March across Canada as COVID-19 took centre stage. With such high levels of uncertainty, it was challenging on all fronts to plan for the 2020 growing season. This is typically the time of year when reporting on the previous season occurs along with planning, adjustments and preparation for the upcoming planting season. All of this was put on hold as we all stayed home. Scientists experienced different levels of access to files and data based on the institution that they work for. Of utmost importance was, and is, the safety of people.

As protocols were built, personal protective equipment and sanitation measures were put into practice so that critical activities could resume. This focused on animal, insect and pathogen populations that required attention to survive. University and provincial government field crop projects were allowed at near normal capacity, with several extra precautions taken to ensure social distancing and safety of technicians, students and scientists. This created several challenges as different groups working in shared spaces needed to prioritize and coordinate work. At the University of Alberta, predicted timelines and deliverables for pulse projects continue to be revisited.

"The pandemic has had and will continue to have a definitive impact on our research," said Dr. Boyd Mori, Assistant Professor at the University of Alberta specializing in agricultural entomology. "Due to COVID, we have to operate with fewer people and/or split shifts in the laboratory, and less is accomplished each day. For field work, if we have more than two people travelling we have to use multiple vehicles. The pandemic's impact on interprovincial and international travel also has impacted our ability to complete field work in a timely manner, and to recruit new graduate students. These issues combined with different states of research (or lack of research) being conducted at collaborating institutes (e.g. other universities, AAFC, etc) has made for some interesting and trying times. I have already had to adjust timelines and deliverables and think I will probably have to adjust more in the future."

For provincial government research, extra vehicles were mandated to visit off-station sites to minimize human interaction. Pulse projects have been scaled back to account for the extra time required, which means that plots have been planted at Lethbridge, Lacombe, Brooks and Edmonton research stations but that some remote locations have been dropped. Efforts to continue with current agronomy projects were of high priority to Alberta Agriculture and Forestry (AF) staff. Plans and protocols were quickly mobilized to ensure minimal impacts.

"Pulse research in the Lacombe Pulse Agronomy program was not highly impacted as a result of COVID-19," said Robyne Bowness Davidson,

AF Pulse Crop Research Scientist. "I feel we were leaders in the research industry by proceeding with about 80% of our research mandate for the 2020 season. Unfortunately, we did lose that 20%, which was disappointing. In order to follow government protocols and keep everyone safe, we did have to reduce staff in order to accommodate less people. Numerous personnel traveling in a vehicle to an off-site location did not meet the pandemic safety standards, nor did larger groups of people in our workspaces. A decision by Agriculture and Agri-Food Canada (AAFC) to extremely limit research activities this season also impacted our program and that decision will have a lasting impact for years to come. Fortunately, the nature of our work allowed us to be primarily outside. For indoor tasks, the implementation of high levels of sanitation, social distancing and the wearing of masks effectively kept everyone safe while allowing us to continue working."

Federal scientists were impacted to a greater degree. Field work was originally limited to essential operations – rotation studies and very early generation breeding trials. Project leads have worked hard to minimize the impacts to the larger project objectives, however the reduced sites may affect the strength of data sets. Over the course of the summer, AAFC stations have worked with managers to determine safe back to work plans. AAFC labs are still closed at most locations as of press time, and scientists are not allowed to work off-station. While samples are being collected, most are going into storage until they can be processed.

Dr. Syama Chatterton, Plant Pathologist at the AAFC Lethbridge Research Station, explained the challenges of the 2020 growing season including that only critical lab services to maintain germplasm and cultures was allowed, and field trials that had a multi-year component or were essential to maintain breeding continuity were prioritized.

Regular interactions like this in past years are now not proper protocol unless masks are worn and distancing is enforced.

"Under these restrictions, I was able to run up to 30% of planned research activities with a focus on Aphanomyces root rot - these included evaluating performance of peas after various Brassica and other potential biofumigant cover crops; frequency of pea versus other pulse crops in rotation; and evaluation of pea germplasm lines for partial resistance to Fusarium and Aphanomyces root rot," Chatterton explained.

"Root samples from these trials were processed by co-op students working from home, and they are currently sitting in -80ºC storage, anxiously awaiting our return to the lab so that the pathogen DNA analysis can be run," she continued. "I partnered with Alberta Agriculture staff who performed pea and lentil root rot surveys, and they are also storing root samples for the pathogen DNA analysis. So even with the COVID-19 restrictions, we were able to gather a reasonable

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amount of data this year. Results will be delayed as we work through the backlog of samples when we return to the lab. It was also a difficult growing season to be out of the field because wet conditions in a lot of areas created very high disease pressure (a pathologist's dream!), and I really missed being out there and seeing firsthand what was happening in fields."

Plots that were planned for remote locations were cancelled. While scientists have made huge efforts to do what they are able, significant impacts to progress of most research projects is being realized. Alberta Pulse Growers (APG) is invested in several AAFC-led projects. We will work together with them to ensure that the priorities of farmers are still addressed.

The APG field scale research project known as Plot to Field was able to continue without interruption during this pandemic season. Ten sites were successfully planted throughout the province despite the challenging weather conditions experienced this spring. This year's research question will complete the investigation into phosphorus fertilization. Two additional projects are also located on the same sites. APG Research Officer Dr. Jagroop Gill Kahlon and I are working with AAFC scientists in Saskatoon and Lethbridge to look at pea leaf weevil control and then soil microbiology and the impact of current practises on the health of the soil biological community.

CONSIDERING that we may (will) be left without our foundational pulse scientists in Alberta due to changes in the provincial government's engagement in research, how will our research priorities be addressed?

The provincial government has clearly determined that its role in agricultural research is as a funder and not as a doer. Consultation sessions held across the province early in the year collected a variety of perspectives. Several key provincial staff have been let go over the past several months. Darcy Driedger, Director, Crop Diversification Centre South, Cropping Systems Section stationed at CDC South, was one of APG's key contacts for research in the province. Mark Olson, branch head based out of Stony Plain, was a critical resource for pulse growers across the province. Alberta Agriculture scientists and technical staff have been living in limbo since December, when it became apparent that significant changes were coming. Information on staffing cuts seems to be a moving target. The latest

Robyne Bowness Davidson sharing knowledge at a 2018 Lacombe Field Day.

"I really missed being out there and seeing firsthand what was happening in fields."

-Dr. Syama Chatterton

Last year, researchers and farmers came together in fields to assess progress on Plot to Field work. The fields were basically empty this year.

information indicates that field-based projects will be successfully harvested prior to major reductions in personnel. Robyne Bowness Davidson is a name well known to pulse growers across the province. Bowness Davidson has roots in pathology and more recently has focused on research that has expanded knowledge about lentil agronomy. Currently, she is working to address challenges with faba bean production. Bowness Davidson works closely with APG staff to develop projects that are scientifically sound, relevant to farmers and impactful to a growing industry. She shares this perspective on the province's decision to "get out of the business of research."

"The recent Government of Alberta cuts and looming cuts to agricultural research, now targeted for October 15, 2020, have been extremely stressful for us," Bowness Davidson said. "We have lost some great people and leaders with a great deal of knowledge and experience. Those of us working in pulse research are passionate about the work we do and the industry we support. The uncertainty surrounding the potential loss of our identity has been difficult. A hard look at how budgets are being spent is never a bad thing, and a process that identifies priorities that serve the agricultural industry was likely overdue."

"I fully support an 'industry led' research model where farmers, commissions and stakeholder needs are being met," she said. "However, I am very concerned with how those needs will be met going forward and how pulse research in Alberta will proceed. Many of the people that the department has lost, and will lose, were/are very tightly connected with the industry. The universities, AAFC, the Agricultural Research and Extension Council of Alberta groups and private companies will of course continue to be involved in Alberta research activities, but I see a large gap being left behind if we lose our high-level provincial research programs. The government recently set up the new 'Results Driven Agriculture Research (RDAR)' entity and has dedicated a large sum of money to it. What that will look like and how money will be allocated is still being determined. I sincerely hope they get it right. We can't afford to lose any more of our diminishing research capacity and expertise."

Read more about RDAR later in this issue of *Pulse Crop News.*

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APG staff have been working diligently to keep the lines of communication open between AF managers in order to build strategy to deal with impending changes. Current projects are at significant risk of not meeting the deliverables that APG and other commissions are providing funding for. Crop research is reliant on multiple growing seasons and locations to provide data sets that can be analyzed. Scientists looking to publish results may be left with nothing to show for their last several seasons of work. Also at risk is the repository of information that has been curated by the province. Years of research project summaries and results are held within provincial vaults. I am working with others to build a plan that ensures the transfer of materials to secure important resources for access by farmers and agronomists.

Despite the impact that all these changes and uncertainties have had on research this year, there is a resiliency that exists amongst farmers, scientists and industry. Over the course of the last several months, the profile of plant-based protein has become front and centre. This drive to improve and expand the growing, selling and using of pulse crops requires foundational work in genetics; agronomy research to support farmers dealing with variable environments; environmental health and sustainability research to better quantify and hone land stewardship.

We need clarification and understanding of how pulse-based ingredients can be incorporated in a variety of foods, as well as learn more about the unique and impactful role consumption of pulses can have in human and animal diets. The path forward is through a comprehensive and connected research community.

2020 has been an interesting year. One that feels an awful lot like we are scrambling to find an invisible chair after someone called "Upset the fruit basket!" BUT there are still chairs, and perhaps even some of the missing ones will be replaced. We are privileged to work in an industry the world has deemed essential. We have the privilege of a world-class research team to support us as we grow. We continue to work with partners across the value chain to address gaps in knowledge and advance the pulse industry. It just may look a bit different than it did before.

For summaries of several current research projects funded by Alberta pulse farmers check out the 2020 Research issue of *Pulse Crop News* or search the database of projects at https://albertapulse.com/growing-pulses/research/.

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