We hope this newsletter finds you well and that your harvest season is going or has gone well. We recognize that harvest conditions ranged from dry to very wet - and even snowy. Weather in 2017 was indeed variable across the country.

As we always do, we thank you, the farmer-breeders, for your hard work and dedication to the program. It wouldn’t be possible without your expertise, passion, and interest.

In this newsletter, you will find information on how to send samples to the University of Manitoba, an update on general PPB program activities that took place this summer, and season reports from other PPB farmers across Canada.

### Sending samples to the University of Manitoba

If you haven’t done so already, please e-mail and make arrangements with Michelle to send your wheat and oat samples to the University of Manitoba for threshing and cleaning.

When your samples are clearly labelled, boxed up and ready to be sent in, please email me (Michelle) the dimensions of your box (L x W x H, cm) and weight (kg) and I will send you the shipping label. When the shipping label is taped to your box, you can drop it off at your local post office.
Updates for the Participatory Plant Breeding Program from the 2017 Season

‘Common Garden’ Field Trials

This year, we conducted six field trials comparing farmer selected wheat, oat, and potato populations against registered checks. In Carman, MB, 1 wheat and 2 oat trials took place, in Somerset, MB, wheat and oat trials were held, and a potato trial took place in Victoriaville, Quebec in partnership with CETAB+ (Centre d’expertise et de transfer en agriculture biologique et de proximité). All the trials took place on organic land.

We look forward to sharing the results of these experiments in the upcoming months as we are waiting for grain to be cleaned and data to be processed. Here are some pictures from the past season.

Wheat trial in Carman, MB, ready for a field day at the end of July.

Oat trial in Carman, MB, ready for a field day at the end of July.
Potato trial in Victoriaville, Quebec at the end of July.

PPB Farm Visits 2017

This year, Martin and Michelle were able to visit farmers in the Peace River regions of Alberta and British Columbia, southern Ontario and the Ottawa region, across many regions in Quebec, and southern Saskatchewan. Thanks to all the farmers who took the time to meet with us, welcomed us to your farm, and showed exceptional hospitality.

Updates from PPB farmers across Canada from the 2017 Season

Matthew Ramsay, Kensington, Prince Edward Island

It was a dry season in our county this year despite other areas of Prince Edward Island receiving normal rainfall. We received 30% of the average rainfall for July and August which put significant pressure on all crops including our plant breeding plots.

Changing rainfall patterns are resulting in smaller, localized storm cells. Our local climate lab has confirmed that weather patterns in general have been changing since 2000 so for this reason among others we have been altering our conventional rotation in addition to transitioning more land to a 5 year organic rotation. Whereas previously, we would use clover, timothy, and ryegrass for soil building we are now moving to sorghum/sudangrass to buffer against drought and build organic matter. This past summer when most forage fields were brown from stress our sudangrass was growing 6-12 inches per week. Additionally, our organic hemp also appears to be more resistant to drought conditions but we don’t yet have any final yield numbers for this season.

Generally speaking, our primary focus has turned to soil building to improve productivity for all crops. In addition to more consistency in biomass production for soil organisms, we have been using mustard and buckwheat to diversify our rotations and mitigate soil borne insect and disease pressure and have started more widespread cover cropping in our conventional rotation.
In summation, we are in the field more, so the challenge becomes maximizing crop diversity while minimizing tillage and keeping costs in check. Moving forward, we will be equipping ourselves for controlled traffic and zone tillage. We also have some trials underway on intercropping cereals and potatoes. We hope we can adapt and innovate fast enough to keep pace with markets and weather.

**Terry Mierau, Neubergthal, Manitoba**

If you've got a few minutes, I've a story to tell. This story has, frankly, helped me better understand what it is that Monique and I have been "up to" for the last 15 growing seasons, and maybe it will help others understand as well.

For the past 5 growing seasons we have been involved in what's called farmer participatory plant breeding, and this story is about breeding potatoes. Basically, PPB is a collaboration between scientists and farmers to crossbreed two varieties of, in this case, potato (the scientist's job), and then spend years selecting the offspring of that cross with the desired features (the farmer's job). Yesterday we harvested the potatoes that we have been selecting for the past 5 seasons.

For 10,000 years (give or take), farmers did this work of selecting plants for various traits like flavour, vigor, and yield based on the place they grew, the environmental factors, and the production style. In the last century, however, we've seen a slow but steady change on two important levels. First, farmers have allowed government, then universities, and finally corporations to control plant breeding. Second, plant breeding has increasingly become tied to the use of crop inputs like pesticides and chemical fertilizers. Together, this has left a massive gap in the progress of breeding plants to perform without chemical fertilizers and pesticides.

People like Martin Entz and Gary Martens, and organizations like USC Canada and the Bauta Initiative recognized that gap and have set out to empower farmers to breed plants that pick up that tradition of improving varieties based on place and people. Without chemicals.

And so, here is our potato. Bred by us, for us, on this farm, and for this farm. It is specific to this place.

We've named it: Clark's Progress. Clark Phillips was a friend of ours from New Brunswick who very well understood the gap that existed in plant varieties for organic conditions. He also understood how a good potato tastes! Clark and his partner Susan Tyler taught and inspired Monique and I for many years and on many levels. Clark passed away in 2012, but he would have immediately seen the progress that this kind of plant breeding, and specifically this potato, represents. And so that's the name. Clark's Progress.

It has better disease resistance, better yields, and better flavor than any of the established varieties we are growing. But don't misunderstand: I'm not saying we are amazing plant breeders. I'm saying that farmers are amazing plant breeders. Always have been, and always will be because they are best situated (on the land) to make the best decisions on which selections to take forward to the next growing season.
Stewart Wells, Swift Current, Saskatchewan

“I’m supposed to have 45 years of farming experience, but I don’t. I have 1 years’ experience 45 times.” Truer words were never spoken for our farm in 2017.

In southwest Saskatchewan, a little over two hours by car from the Alberta border, our climate is classed as semi-arid. We should receive 13 to 15 inches of moisture per year (including snow). This year was much, much drier, however, and we did not receive any meaningful rain during the entire growing season. Our biggest rainfall during the summer was 3/10s—which had evaporated within minutes.

So how could our crop—including our three wheat plots—have turned out to be average?

For the rest of the story, we have to go back to the summer of 2016. During that growing season we were drenched by 26 inches of rain. (Some places not too far away actually watched as 48 inches of rain fell from the sky.) So our soils were absolutely saturated going into the winter of 2016 and the spring of 2017.

This meant excellent seeding conditions in April and May, and the crops (red spring wheat, lentils, and fall rye) got off to a very good start. Given all the rain in 2016 we just sat back and waited for the timely rains that we knew would come. We waited, and we waited, and we waited, and finally we said “Aw, let’s just go combining.”

During the summer there were lots of warm days, but only a couple of days when it was above 30 C and windy, and it cooled off most nights. In the end everyone was surprised to watch how the crops hung on.

After harvest, the media sprouted lots of stories explaining how farmers had been saved by newer crop varieties that were drought resistant. I’m sure that varieties have been improving over the years, and that is naturally the main reason that Terry and I like participating in the Bauta Seed initiative work, but I think the media over-inflated that story a bit.

As the sunny and dry summer wore on I kept watching our pasture grass which is mainly “prairie wool”, and that grass stayed green well into late August without having been anywhere near a human-made research station or laboratory.

So, our plots are harvested for 2017 and the seed sent to Winnipeg. Now we prepare for our 46th year of experience, which thankfully has started with almost 3 inches of rain at the beginning of October.

From Penny Lane Organic Farms, Terry and I wish everyone the best for the rest of 2017 and into next year.
Sabrina Westra and Dr. Jacob Marfo - Mackenzie Applied Research Association, Fort Vermilion, Alberta

The 2017 growing season here at the Mackenzie Applied Research Association (MARA) in Fort Vermilion, went well. It started off dry due to low snow cover during the winter, but we had some rain showers in late May and throughout June. In the past, we have found that producers are extremely busy when it comes time to make positive selections in their PPB program plots in late August or September and they have trouble selecting the number of panicles required for the project. This year we had producers show us the selections they wanted to make and then our team helped with hand harvesting.

At our research station, MARA is always working to improve the health of the soil. This year, MARA made extra effort to keep all our soil covered during the growing season. Normally, we leave strips of bare soil on the field to separate our research projects, however this year we seeded a pea or a pea and tillage radish cover crop in these spaces. The cover crops not only added nitrogen back to the soil, but helped mitigate the compaction caused by driving equipment through these areas. We also had a few small pieces of land which were not being used for either our small or field scale projects. For these areas, we seeded pollinator mixes provided by the Operation Pollinator project (an initiative from Syngenta and the Soil Conservation Council of Canada). These mixes consisted of legumes (alsike clover, birdsfoot trefoil, red clover, and sweet clover), some timothy grass, and phacelia, which is a nutrient rich annual plant favored by many pollinators. The pollinator mix established very well, and attracted both a large number and wide variety of pollinators. We were proud to have made a few small changes this year which we believe has resulted in both healthier soils and greater biodiversity overall at our research site.

MARA has land specifically designated for organic test plots and we currently have room for new projects. **If there are any organizations in need of a site for organic agriculture research, please let us know.**

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Thank you for your participation in the on-farm breeding program!

If you have any questions about this program or would like to become involved please let us know.

Michelle Carkner and Martin Entz

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