

# PARTICIPATORY PLANT BREEDING

## Fall 2018 Newsletter

On behalf of *The Bauta Family Initiative on Canadian Seed Security*, we hope everyone had a successful harvest this season. Since Michelle Carkner is on maternity leave, our team of Regional Coordinators have taken over this season's PPB Newsletter. We hope you enjoy the read, and invite you to contact us with any questions about the PPB Program. Please find the contact information for your Regional Coordinator [here](#).

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## UPDATES FROM THE 2017 PPB PROGRAM SEASON

### Common Garden Field Trials



*Before her maternity leave, Michelle shared slides via email with farmer-breeders about this field trial work. Those slides are available [here](#) for your reference.*

In 2017, we conducted six field trials comparing farmer-selected wheat, oat, and potato populations against registered check varieties. Wheat and oat trials were held in Carman and Somerset, Manitoba, by the University of Manitoba, and potato trials took place in Victoriaville, Quebec, in partnership with CETAB+ (*Centre d'expertise et de transfert en agriculture biologique et de proximité*)— a local

partner dedicated to agricultural research and extension. All the trials took place on organic land in the 2017 growing season. Once compiled, data for wheat, oat and potatoes showed that farmer-selected materials in many cases out-yielded the conventional check varieties. Trial results demonstrated that farmers can select specific traits based on the needs of their farm and environment.

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## FUNDING UPDATE ON PPB FIELD CROPS PROGRAM

### **The Next Phase of the PPB Program**

From 2014-2017, the PPB Program for field crops across Canada was funded in part by Agriculture and Agri-food Canada's *Organic Science Cluster II*. In 2018, we received news that the next phase of this work will be approved for funding under the *Organic Science Cluster 3* from 2019 - 2022, allowing us to continue this work across Canada. This funding supports the characterization and evaluation of the wheat and oat populations selected by farmer-breeders from 2013-2018, as well as exploring the possible end-uses of this material (variety registration, on-farm regeneration, etc.), and developing best practices for future PPB work.

### **Recruiting New Farmers into the Program**

Our team, led by PPB Program Lead Researcher, Dr. Martin Entz, of the University of Manitoba, will continue to make and distribute crosses of wheat and oat populations to interested farmers, but will not be able to provide the full complement of support services that past participants have enjoyed. In the next phase, there won't be a PPB Coordinator position

(most recently held by Michelle Carkner). Instead, Dr. Entz will recruit graduate students to provide support to farmers while also receiving education about the philosophy and methods of PPB, helping establish a strong foundation for this work in Canada. Ongoing support from the University of Manitoba should include: distribution of crosses, reception of mature crops, threshing and cleaning seed, and sending seed back to farmers.

### **Supporting Farmer-Breeders whose Work is in Progress**

Farmers who have completed three seasons of selection on wheat or oats will have their populations included in common garden sites for characterization. This will be managed by Dr. Entz and his team at the University of Manitoba. These farmers are also free to use their materials on-farm; however, because they are not registered varieties, they cannot legally be sold as seed. In the New Year, we will be providing more detailed recommendations to farmers about how to proceed with materials, as well as options for registration. If you have other goals you would like to discuss for your materials, please contact your Regional Coordinator.

## Future Directions & National Priorities

We expect the PPB Program to shift over the next couple of years, from a centrally supported model, to one that is more regionally implemented, in order to build local capacity and collaborations. To facilitate this, USC Canada will hire a National Research Manager to support Regional Coordinators to oversee research recruitment, outreach, and support.

Alongside regional work, continued national work will include:

- Partnerships with seed banks for long-term access to materials.
- Continuing to build farmer capacity to lead PPB work.
- Developing comprehensive learning resources.

If you know of a farmer who might be interested in participating, please refer them to the Regional Coordinator for your province.

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## FIELD DAY UPDATES

### Organic Research Showcase, Prince Edward Island

In August, the PPB Field Crops Program was featured as part of an organic research field day hosted by the Atlantic Canadian Organic Regional Network (ACORN) in partnership with the PEI Certified



*Katherine Stanley in front of PPB oat selections from PEI and Quebec.*

Organic Producers' Co-op and Agriculture and Agrifood Canada.

Thirty farmers, researchers, and members of the public gathered at the AAFC Research Farm in Harrington, PEI, to hear from visiting University of Manitoba agronomist, Katherine Stanley. Katherine presented the philosophy and methods of the program, and outlined the importance of putting farmers in the driver's seat when it comes to organic research. Farmer-breeder Mark Bernard offered his perspective on the program, commenting that it's a lot of work, but very rewarding to see the plant lines evolve according to his selections.

[Click here](#) to read coverage of that field day by PEI magazine, Salty's.

## Participatory Plant Breeding for Potatoes, Ontario

BeetBox Co-operative Farm, in Ontario, joined the PPB Potato Program in 2018, receiving two tuber sets: an open-pollinated Adirondack Blue (a blue-skinned and blue-fleshed potato) and an Adirondack Blue crossed with Gundega (a high-yielding, waxy, Latvian variety).

In September, we hosted a farmer-researcher field day to harvest potatoes and practice on-farm selection. The potato harvest blew everyone away.

Oblong red-skinned potatoes with white flesh, tiny russet-skinned roasters with waxy yellow flesh, spherical purple-skins with white flesh... the diversity generated by these potatoes was tremendous.

We don't yet know what the BeetBox farmers will decide to ultimately select for in their potato. What counts is that they get to choose from all of this diversity. Plant breeding always starts with creating genetic variation, but under traditional plant breeding programs, farmers rarely get a chance to see the degree of diversity at the early stages of variety development. This experience showed us all how exciting that diversity can be.



*(1) Farmers Lise-Anne Léveillé, David Mazur-Goulet, and Jeremy Colbeck, run a 1-acre market garden for a 70-person CSA at BeetBox Farm. (2) One set of tubers that the farmers chose for its unique marketability was a yellow-skinned tuber with purplish-blue streaks on the outside and inside of the potato!*



(1) Participants viewing PPB populations. (2) Dr. Jennifer Mitchell Fetch.

## Plant Breeding for Low Input Systems Field Day, Alberta

From farm to plate, there are many actors involved in the journey that transforms seeds into the food we eat. Last August, we brought together breeders, researchers, farmers, grain buyer, bakers, and eaters to hear their unique perspectives and contributions.

Dr. Dean Spaner presented his wheat breeding program and several of the varieties that they have registered, including: Thorsby, Coleman, Go Early, Parata, Zealand, PT782, PT783, PT784, and PT785 (Tracker) with very good resistance to stripe and leaf rust, with high yields and early maturity.

Dr. Jennifer Mitchell Fetch spoke about her organic oat breeding project and the two registered varieties it has bred for organic conditions: AAC Oravena

(registered in 2014), and AAC Kongsore, registered this spring. Grain Millers has licensed both varieties and their representative, Eric DeBlick, spoke about the importance of working with farmers to source high quality organic grain.

Finally, we toured plots containing 23 wheat populations and 22 oat populations from PPB farmers from across Canada. The populations looked fantastic, highlighting farmers' important contributions to breeding programs. Dr. Martin Entz, lead researcher of the PPB Program, and Ward Middleton, organic farmer from Alberta, presented this work — a great opportunity to share this unique model with a new audience, and to understand its importance in the wider context of organic plant breeding in Canada.

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