We hope that this newsletter finds you well and that you had a good growing season. Thank you to all of the farmer breeders for your work on the participatory plant breeding project this year, your hard work is contributing to the development of locally adapted seeds. This project wouldn’t be a success without the participation of farmers from across the country.

This newsletter contains information on sending samples to the University of Manitoba, a description of how your samples will be threshed and cleaned, and an update on PPB activities. This newsletter is also an opportunity to share information about other research projects currently being conducted by the Natural Systems Agriculture research team at the University of Manitoba. This issue contains an update on a research project evaluating soybean varieties for suitability to short season growing conditions under organic management.

Sending in wheat and oat samples

If you haven’t done so already, please make arrangements with Anne to send your samples to the University of Manitoba for threshing and cleaning.

When your samples are boxed up and ready to be sent in, send me an email with the weight and dimensions of your box and I will send you a Canada Post shipping label. Once the shipping label is taped to your box it can be dropped off at your post office.
What happens to your wheat and oat selections when they are sent to the U of M for processing?

The wheat and oat selections are threshed, cleaned, weighed, and then packaged to send back to the farmer that selected that population. Each sample is threshed with a belt thresher, and then put through a blower to remove chaff.

The next step is to put the wheat and oats through sieves to remove small and broken kernels, as well as any weed seeds that may have made it into the sample. Sieving typically removes about 20% of the cleaned sample. Oats are put through slotted sieves, and the sample sent back for planting is typically comprised of seeds that are large enough to stay above the 5/64” screen. Wheat is put through round sieves, and the sample sent back for planting is typically comprised of seeds that are large enough to stay above the 5.5/64” screen.

The final sample is weighed and the thousand kernel weight is determined so that seeding rate can be calculated. Cleaned samples are stored until March when they are sent back to the farmers that selected them.

Seed cleaning equipment (left – right): belt thresher, blower to remove chaff, sieves to remove small and broken kernels

Update on PPB activities

A total of 51 farmers from 8 provinces participated in wheat, oat, and potato breeding activities this growing season. Wheat populations that had been selected by farmers in Manitoba and Saskatchewan in 2011-2013 were evaluated for a second year at the University of Manitoba’s research farm in Carman, Manitoba and on an organic farm near Brandon, MB. Oat populations that had been selected by farmers in Alberta, Saskatchewan, and Manitoba in 2012-2014 were also evaluated at the research farm in Carman, MB. These oat populations will be evaluated again in 2016. 2015 is the third year of the participatory potato breeding project, and in addition to evaluating the clones on six farms, they were also evaluated at the AAFC Potato Research Centre in Fredericton, and on an organic farm in Quebec. Results from all of these trials will be available this winter.
Organic farmers in the Prairies have the opportunity to take advantage of organic soybean demand at $31.30/bu (food grade) and $25.17/bu (feed grade) (September 2015 prices gathered by MAFRD). Despite high demand and stable prices, organic soybean production in Manitoba is dismal. In 2013, only 4% of soybeans grown in Manitoba were non-genetically modified (GM). Assuming that not all farmers who are growing non-GM soybeans are certified organic, there is certainly untapped potential for growth. The lack of soybean production on organic farms in shorter season growing areas is due to a myriad of challenges. Two challenges are variety choices and organic performance data. Non-GM varieties that mature early enough for short season growing areas are in short supply. In the 2014 Seed Manitoba Guide, 5 non-GM registered varieties were showcased for distribution, and meanwhile over 52 registered GM varieties were available to growers.

To increase technical knowledge, gain growers’ inputs, and increase performance data for organic producers, we sourced 12 non-GM soybean varieties from Ontario, Quebec, North Dakota, and Manitoba ranging in maturity from 99 to 120 days to maturity. The varieties were tested at the Ian Morrison Research Farm in Carman, as well as at 5 organic farms across southern Manitoba in 2014. Seeding rates and weed control were executed as per common organic soybean production methods. The sub-section of each plot was kept “weed-free” to compare relative weed-competitiveness.

Soybean yield was comparable to conventional yields at certain sites. However, an early killing frost at one site reduced yield in some varieties dramatically. The killing frost exemplifies the need for earlier maturing non-GM variety options. While 2015 data is still in process, 2014 data shows that varieties such as SK0007 (short season), Toma (mid season), and Jari (mid season) are strong candidates for organic growers in shorter season growing areas. While the latest maturing varieties performed the best, they are not recommended due to killing frost risk. This research will contribute to the knowledge base of organic growers by providing performance data, analyzing what traits are important to them, and variety exposure.

![2014 Non-GM Soybean Yield in Manitoba (averaged across all sites)](chart)

Varieties that do not have the same letter are significantly different from each other.
Soybean varieties SK007 (top) and Jari (bottom) at emergence, early July, late July, and early August.

For project updates and information on other research projects visit the Natural Systems Agriculture website at: [http://www.umanitoba.ca/outreach/naturalagriculture/](http://www.umanitoba.ca/outreach/naturalagriculture/)

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.

Anne Kirk and Martin Entz

Contact Anne at 204-474-6236 or Anne.Kirk@umanitoba.ca
Contact Martin at 204-474-6077 or M.Entz@umanitoba.ca