

Participatory Plant Breeding

June 2015 Newsletter



Planting farmer-selected oat populations in Carman, Manitoba.

The official start of summer is almost here and it is nice to see the fields starting to turn green! It has been a busy spring for the participatory plant breeding program. There are more farmer-breeders involved in the project this year than last, and field trials to evaluate farmer-selected potatoes, wheat and oat have been planted at four locations. This newsletter contains an update on 2015 PPB activities, information about making selections, and a brief look into a seed quality research project currently being conducted by the Natural Systems Agriculture research team at the University of Manitoba.

Participatory fall rye breeding

The PPB program is teaming up with Agriculture and Agri-Food Canada (AAFC) fall rye and winter triticale breeder Jamie Larsen to offer segregating populations of fall rye to farmers this fall. Both grain and forage type fall rye populations will be available. AAFC's fall rye breeding program is based out of Lethbridge, Alberta, but Jamie's populations are suited for a large geographic area and he currently tests his breeding lines in the Prairies and Southern Ontario. Fall rye is an open pollinated crop and pollination drift can become an issue if working with more than one population. For this reason, interested farmers could grow and select one grain and one forage type fall rye population at a time. If you are interested in learning more about PPB for fall rye or if you would like to participate please contact Anne at Anne.Kirk@umanitoba.ca or phone 204-474-6236.

Tips for making selections in wheat and oat populations

The purpose of making selections is to retain plants with desirable characteristics while removing those with negative characteristics. Selecting for the characteristics you want is important since the plants that you select to harvest seed from will produce the next generation of your population.

The first step in making selections is to decide which characteristics you would like to focus on, and then think about how you can select for those characteristics. A guide to making selections and tips for selecting for certain characteristics is available [here](#). In the next few weeks a video will be uploaded showing how selections are made in the field. An email with the link will be sent at that time.

Participatory potato breeding update

The six farmers involved in the participatory potato breeding program are now into their third year of selections. These farmers have selected 3-15 clones to evaluate from their original population of 500 mini-tubers. These clones are also being grown and evaluated on an organic farm in Farnham, QC and at the AAFC Potato Research Centre in Fredericton, NB. The clones are being evaluated for early season vigour, resistance to leaf blight, Colorado potato beetle, and scab, maturity, tuber size, and tuber appearance. At the end of this growing season the data collected on-farm and at the two research sites will be compiled. The farmers growing these clones can use this information to decide which clones to focus on in the next growing season.



Planting farmer-selected clones in a replicated experiment on an organic farmer near Farnham, Quebec.

Research update – Organic seed quality

Whether you save or purchase seed planting high quality seed is important. Seed quality is most often associated with germination and purity, but seed vigour, presence of seed borne diseases, and seed size should also be taken into consideration. This winter the Natural Systems Agriculture research team started a seed quality project to address some research questions pertaining to quality of organically produced seed.

Seed size is the main parameter related to early vigour, an especially important trait for organic farmers looking to get a head start on weeds. Seed lots were collected from organic farmers across the prairies and sieved to determine seed size.

The three wheat samples tested had similar seed sizes, with 54-65% of the seed being larger than the 2.58 mm slotted screen (sieve size 6.5/64”). The oat and barley samples showed more variability. The percentage of the sample comprised of large, medium, and small seeds varied depending on the location where the seed was grown and the variety (Figures 1 and 2).

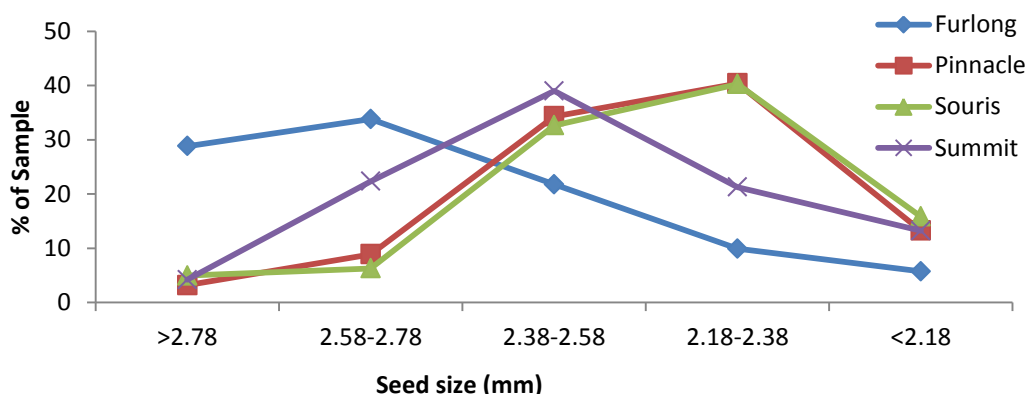


Figure 1. Four varieties of farmer grown oat seed sieved to determine the percentage of the sample comprised of small, medium, and large seeds. Seeds were sieved with slotted screens ranging from 1.98 mm (5/64”) to 2.78 mm (7/64”).

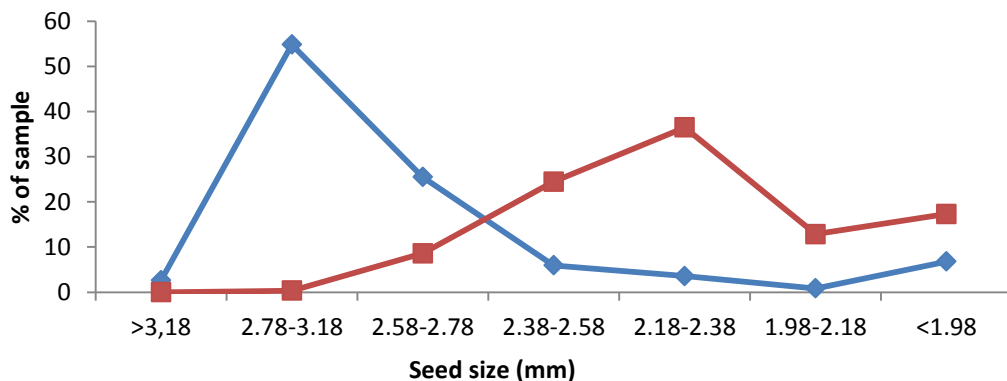


Figure 2. Newdale barley seed lots grown by two different farmers. Seed was sieved to determine the percentage of the sample comprised of small, medium, and large seeds. Seeds were sieved with slotted screens ranging from 1.98 mm (5/64”) to 3.18 mm (8/64”).

The sieved seed lots were planted this spring to investigate the effect of seed size on seeding vigour, weed competition, and yield. Small, medium, and large sized seeds from each seed lot were planted at depths of 1 and 2.5”.

Having more information about how seed size effects early season vigour, weed competitiveness, and ultimately yield potential will help producers when making decisions at seeding time. Additional research projects are planned to evaluate the effect of crop rotation on seed quality and the effect of seeding rate on seed size distribution.

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



Small, medium, and large seeded barley planted at two depths in Carman, Manitoba.

Anne Kirk will be visiting farmers and attending field days in Ontario July 5-9 and in Atlantic Canada August 19-25. Martin Entz will be visiting farmers in Quebec July 27-31 and in British Columbia in August, dates to be determined. We are really looking forward to meeting new and returning farmer-breeders during our travels this summer!

Please let me know if you have any questions or comments about the participatory plant breeding program.

Thank you for your participation and commitment to producing quality seeds!

Anne Kirk