

AAFC Soybean Breeding for Manitoba – 2010

Annual Report
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The Agriculture and Agri-Food Canada (AAFC) soybean breeding program at Ottawa develops short-season soybean cultivars for areas in Canada requiring early maturing soybeans with a focus on specialty soybeans for food, feed and tolerance to stresses found in short-season areas. Funding provided by MPGA allows enhanced testing of germplasm and experimental lines in Manitoba. In 2010 we grew eight trials at Morden and two trials at Portage. The early maturing material in the Ottawa AAFC program is well adapted to Manitoba and so our research focuses on early maturity in special quality white hilum (SQWH) as well as on specialty high protein and natto soybean cultivar development; and moving genetic resistance to soybean aphid and other pests including rust and other diseases into our short season material.

The 2010 growing season in Manitoba approached a more normal level than in the past couple of years. There were periods of excess moisture and most locations were never in a moisture deficit position, but with the consistent warmth and available moisture the soybean plants progressed normally throughout the growing season. A couple of very warm weeks in late September and early October were a bonus and helped bring the plants to maturity prior to any damaging frost.

In the screening trials, there is a concentration on early high yielding lines. Several lines developed from aphid resistance crosses are being tested. Cadmium accumulation can be a problem in some soil types and natural variation is present for low cadmium accumulation and a number of lines from low cadmium accumulating parents are being tested. In an effort to broaden diversity and look for new sources of yield genes, lines derived from crosses between Chinese and Canadian parents are being tested. There are also a range of tofu and natto lines being tested. We also tested a series of lines developed from cold tolerant and cold sensitive parents. This project looks for cold damage during flowering time where severely cold damaged plants will have barren nodes as a result of cool night temperatures when flowers opened at those nodes. This material is also being tested by the Crop Development Center in Saskatchewan. A survey of these trials found only isolated plants showing severe cold damage but no plots with widespread damage. We will need to see yield results before making conclusions about the role of cold damage in 2010.

In the most advanced trials, grown at both Morden and Portage, we have promising yellow hilum lines targeted to the non-GMO market similar to OAC Prudence. One line was developed from crosses with parents with tolerance to iron deficiency chlorosis. A triple lipoxygenase null

line which can be used to produce tofu with a reduced “beany” flavour is being tested. Early maturing natto lines are also being tested in a separate trial.