

2011 AAFC Soybean Breeding for Manitoba

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The Agriculture and Agri-Food Canada (AAFC) soybean breeding program at Ottawa develops early maturing soybean varieties for short-season areas of Canada. We focus on specialty soybeans and on moving resistance to stresses into early maturing germplasm. Funding provided by MPGA through the Canadian Field Crop Research Alliance DIAP allows enhanced testing of germplasm and experimental lines in Manitoba.

In 2011 we grew trials at Morden and Portage. The early maturing material in the Ottawa AAFC program is well adapted to Manitoba and so our research focuses on early maturity in conventional material and on specialty soybean cultivar development. We also work to move genetic resistance to soybean aphid and diseases into our short season material. This material provides potential cultivars for Manitoba growers and parents for other breeders developing soybeans for Manitoba.

In the screening trials this year, there was a concentration on early high yielding conventional lines. These lines are generally yellow hilum to allow growers to participate in conventional oilseed markets or in the generic tofu market, so called dual purpose types. The specialty types being tested this year in these trials include high protein, tofu and high sucrose lines. High sucrose is useful for the soymilk market where the extra sucrose produces a slightly sweeter soymilk. High sucrose lines can also be used for the production of *kinako* in Japan. *Kinako* is roasted whole soybean flour which is used primarily for making desserts. The extra sucrose helps to caramelize the flour and provide a nutty sweet flavour. The market and characteristics required for *kinako* was shared by Japanese buyers during a recent Japan-Canada industry meeting hosted by the Canadian Soybean Council and the Canadian International Grains Institute.

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. Many of the lines in these trials were developed from crosses for cold tolerance. In a summary of cold tolerant vs. cold sensitive lines, we found that cold tolerant lines yielded about 8% more than cold sensitive lines even though we did not observe the small male-sterile pods typical of severe cold damage on the cold sensitive lines. Under severe cold stress, we would expect to see an even larger yield advantage. One line developed from crosses with parents with tolerance to iron deficiency chlorosis is in the second year of advanced testing.

Early maturing natto lines are also being tested in separate trials at Morden and Portage. Since these are small seeded lines, it is easier to manage the trial especially for harvesting if they are in separate trials. The natto lines are at both the screening and advanced levels. One natto line adapted to Manitoba was pre-released this year to allow for industry testing of the line before

an AAFC call for marketing proposals goes out, which is the procedure used by AAFC to release new varieties.

I want to recognize the many years that Al Sloan managed the soybean trials at Morden, thank him for his excellent work, and wish him well in retirement.