Dry Bean Variety Report 2015/16

Donna Fleury, P.Ag. and Bruce Barker

Dry bean production in Saskatchewan occurs primarily in the irrigation area near Lake Diefenbaker but there are limited acres of dryland production. The majority of the dry beans produced are pinto beans followed by navy, black, and small red beans. Dry bean acreage has been fairly stable around 10,000 acres.

There are public dry bean plant breeding programs at the University of Saskatchewan’s Crop Development Centre (CDC), Agriculture and Agri-Food Canada’s Lethbridge/Morden (AAFC Lethbridge) location, and at the University of Guelph.

Dr. Parthiba Balasubramanian at AAFC Lethbridge focuses on developing cultivars of various dry bean market classes for irrigated production under both wide row (60 cm or higher) and narrow row (30 cm or less) spacing. The target regions are southern Alberta and irrigation districts in Saskatchewan which have approximately 100 to 105 frost-free days.

Variety development at AAFC Lethbridge focuses on pinto, great northern, red, black, yellow, cranberry, kidney, and navy dry bean market classes. They have released dry bean cultivars in the pinto, great northern, red, and black bean market classes which are currently grown in Alberta and Saskatchewan. New yellow bean and cranberry bean experimental lines are currently in the Cooperative Registration Trial for potential registration in 2016 and 2017, respectively. AAFC Lethbridge is also developing dry bean cultivars in the navy and kidney bean market classes for commercial production. Dry bean experimental lines are assessed for cooking and canning quality.

The two diseases of constraint to dry bean production are white mould and common bacterial blight (CBB). The white mould pathogen has a broad host range, whereas, the pathogen that causes CBB is seed-borne. Complete genetic resistance to the above two diseases is lacking in dry bean. One of the objectives of the AAFC program is to transfer resistance to these two diseases into dry bean cultivars.

At the CDC, Dr. Kirstin Bett is breeding dry bean for short season environments. The main breeding objectives include early maturity, improved pod clearance, and high yield combined with market acceptability within market classes. They continue to introgress resistance to common bacterial blight and anthracnose using molecular marker assisted selection and/or field screening techniques. The emphasis is on pinto, black, and yellow bean but includes other beans based on commercial interest. Genetic improvement of the culinary, physical, and nutritional quality traits that are specific to each market class of beans is ongoing. A minor component of the program involves research into the use of tepary bean for increasing abiotic stress tolerance in dry bean via interspecies hybridization.
Newest Commercially Available Variety

AAC Tundra (Great Northern Bean) - Developed at the Agriculture and Agri-Food Canada (AAFC) Research Centre, Lethbridge, Alberta. Commercial availability since 2015.

Key Features
- High yield potential combined with early maturity
- Upright, indeterminate bush growth habit with long vines (type Ilb)
- Large seed size
- Improved field resistance to white mould compared with the check cultivar AC Polaris
- Suitable for irrigated wide row production in Alberta and Saskatchewan

Future Varieties in Pedigree Seed Production

AAC Burdett (Pinto Bean) - Developed at the Agriculture and Agri-Food Canada (AAFC) Research Centre, Lethbridge, Alberta and registered in 2014

Key Features
- High yield potential combined with early maturity
- Upright, indeterminate bush growth habit
- Lodging resistance
- White mould avoidance
- Suitable for irrigated production in Alberta and Saskatchewan

AAC Whitehorse (Great Northern Bean) - Developed at the Agriculture and Agri-Food Canada (AAFC) Research Centre, Lethbridge, Alberta and registered in 2014

Key Features
- High yield potential combined with early maturity
- Upright, indeterminate bush growth habit
- Large seed size
- Partial field resistance to white mould
- Suitable for irrigated wide row production in Alberta and Saskatchewan

AAC Black Diamond 2 (Black Bean) - Developed at the Agriculture and Agri-Food Canada (AAFC) Research Centre, Lethbridge, AB and registered in 2014

Key Features
- High-yielding
- Upright, indeterminate bush growth habit with lodging resistance
- Shiny black seed coat
- Improved resistance to CBB caused by *Xanthomonas axonopodis* pv. *phaseoli*
- Suitable for irrigated production in Alberta and Saskatchewan