

Requirements for Registration of a Dry Bean Cultivar for Production in Western Canada

Updated March 2015

1. Introduction

In order for a dry bean (field bean) cultivar to be registered by the Canadian Food Inspection Agency (CFIA), a recommendation of support for registration must be obtained from the Prairie Recommending Committee for Pulse and Special Crops (PRCPSC). To obtain that recommendation, the candidate cultivar must be evaluated and meet the standards in one of the four Prairie Dry Bean Cooperative Registration Trials.

The four Prairie Dry Bean Cooperative Registration Trials include (see **Appendix A**):

1. **Short Season Wide Row Irrigated Dry Bean Cooperative Registration Trial (SSWRI)**
2. **Short Season Narrow Row Dry Bean Cooperative Registration Trial (SSNR)**
3. **Long Season Wide Row Dry Bean Cooperative Registration Trial (LSWR)**
4. **Long Season Narrow Row Dry Bean Cooperative Registration Trial (LSNR)**

In the **wide row** trials, entries are grown at conventional plant densities and row widths (e.g. 60 to 75 cm) whereas in the **narrow row** trials, entries are grown at high population densities in narrow rows (e.g. 18 - 30 cm). Procedures for all four sets are identical unless specified. In order to be evaluated in these trials, the sponsor of the candidate cultivar must obtain permission from the respective trials coordinator to enter the candidate into the trials.

2. Entrance Requirements

The maximum number of entries per sponsoring company or institution is reviewed annually by the co-operators. At present, **no fees** are charged for entries in the official cooperative registration trials. The potential need for fees may change in the future and will be discussed at the Bean Workers Meeting of PRCPSC.

Preliminary data from field trials are required prior to entry into the Prairie Dry Bean Cooperative Registration Trials. Supplementary descriptive information such as bean type, relative maturity, seed weight and disease reaction should accompany the application form. Any special attributes that require unusual testing procedures should be reported to the trial coordinator in order to adjust testing methods wherever feasible.

Lines may be entered in the trials by a Canadian public institution or through a private sector Canadian breeder, sponsor or breeder's agent. Lines entered from outside Canada, require prior communication by the authorized individual in the 'breeding company' to the respective trials coordinator. **Requests for entering dry bean lines in the trials from a sponsor or a company that does not own the lines must be accompanied by a written consent from the developer (breeder).** Lines tested and deemed to have merit will be eligible for registration in Canada. Sponsor can withdraw their entries after first year in the cooperative registration trials.

Basic requirements for the three cooperative trials include:

1. Short Season Wide Row Irrigated Dry Bean Cooperative Registration Trial
 - Market classes may include pinto, great northern, black, pink, red, yellow, navy, cranberry and kidney (dark red, light red and white) bean.
2. Short Season Narrow Row Bean Cooperative Registration Trial
 - All entries for these trials **must** be upright or have a narrow profile.
 - Market classes may include pinto, great northern, navy, black, pink, small red, yellow and others.
3. Long Season Wide Row Bean Cooperative Registration Trial
 - Market classes may include navy, pinto, black, kidney (white, light red and dark red), cranberry, pink, small red, great northern and manteca.
4. Long Season Narrow Row Bean Cooperative Registration Trial
 - All entries for these trials **must** be upright or have a narrow profile.
 - Market classes may include navy, pinto, black, kidney (white, light red and dark red), cranberry, pink, small red, great northern and manteca.

Disease-free seeds are required **each** year. Amounts of seed to send to the respective coordinators are:

1. Short Season Wide Row Irrigated Dry Bean Cooperative Registration Trial (4 sites): **7,000 untreated seeds** per entry (includes 1,700 untreated seeds for White Mould testing and 120 untreated seeds for Anthracnose testing)
2. Short Season Narrow Row Dry Bean Cooperative Registration Trial (8 sites): **9,500 untreated seeds** per entry (includes 1,700 untreated seeds for White Mould testing and 120 untreated seeds for Anthracnose testing)
3. Long Season Wide Row Dry Bean Cooperative Registration Trial (4 sites): **10,000 untreated seeds** per entry (includes 1,700 untreated seeds for White Mould testing and 120 untreated seeds for Anthracnose testing)
4. Long Season Narrow Row Dry Bean Cooperative Registration Trial (4 sites): **10,000 untreated seeds** per entry (includes 1,700 untreated seeds for White Mould testing and 120 untreated seeds for Anthracnose testing)

Firm list of entries to reach coordinators by the **third Friday of March**.

Untreated seeds must be received by the co-ordinator by the **third Friday of April**.

A germination of **85%** will be assumed unless other information is provided by the seed supplier.

3. Trial Management

The Prairie Dry Bean Cooperative Registration Trials are conducted by co-operators at various locations across the southern Canadian Prairies. Lattice or randomized complete block designs are used for the trials. All trials are replicated three or four times. Data presentation, where possible, will use a Nested model (by market class or group of similarly-sized market classes). Plots have a minimum of two rows with 60-75 cm between rows (wide row trials) or four rows with 18-30 cm between rows (narrow row trials). Minimum row length is 3.7 m. Assuming a germination of 85%, the co-operator adjusts the number of seeds needed per row in order to achieve a population density of 20 to 25 plants m⁻² (wide row) or 35 to 45 plants m⁻² (narrow row). Individual trial management is left to the co-operator who must notify the co-ordinator on whether the trial was directly harvested or was pulled and then threshed. Efforts are made to have narrow row trials **directly** combined (or swathed and combined) and wide row trials **undercut**. Entries in both long season wide row and long season narrow row trials are direct combined.

Check cultivars are chosen by the coordinators in consultation with the cooperators (**Appendix B**). One or more check cultivars per market class of dry bean may be used. Checks are registered cultivars and ideally exhibit above average performance. If no cultivars are registered in a given class, the best cultivars available, to the opinion of the coordinators and cooperators, is used for comparison. Checks designated in the year that a candidate is first entered in the trials will be recommended for use in making decisions regarding support for registration of that candidate. The list of designated check cultivars is reviewed annually, and revised as needed with the objective of encouraging improved performance.

The coordinator is responsible for randomization and supplying field sheets electronically and the appropriate amount of untreated seeds per entry and the necessary documentation to all co-operators by **May 10.**

Agronomic and quality data collected at each location include (essential data are marked with an *): days to flowering, ***days to maturity**, plant height (cm), canopy height, ***pod clearance** (% of total pods above 5 cm above ground in narrow row trials), shattering (1 = no shattering to 5 = 100% shattered), ***lodging** (1 = upright to 5 = flat), ***seed yield** (g/plot), ***seed weight** (mg). At one site, overseen by the respective coordinator, seed quality (1 = good to 5 = poor) based on seed coat color and hilum color may be recorded. ***Growth habit** (using the Shree Singh scale from I = determinate bush, II = indeterminate bush and III = indeterminate prostrate) will be recorded for one replication at a location. Disease data in the trials will be recorded as these may be relevant in a particular year and site.

White mould screening in a disease nursery, in replicated trials, may be carried out by AAFC-Lethbridge for entries in the SSWRI and SSNR trials, and by AAFC-Morden for entries in the LSWR and LSNR trials. The experimental design of the disease nursery is the same as the field trials with 4 to 6 replications. Dry bean genotypes are grown with narrow row spacing of 18 to 30 cm with irrigation in order to promote disease development. Plot area is also inoculated with sclerotia prior to planting. Disease incidence (percentage of infected plants) and severity (1 =

healthy plants to 4 = lower part of main stem infected or dead plants) data will be provided by **December 15** to the respective trial coordinators for inclusion in the cooperative registration trial reports.

Anthrachnose screening (indoors) may be carried out by Dr. Robert Conner (AAFC-Morden) during the year, using the most common races of anthracnose. Anthracnose severity (0 = no symptoms on seedlings to 9 = 81% discolouration of the veins on the underside of the inoculated leaves scale) data will be provided by **December 15** to the respective trial coordinators for inclusion in the cooperative registration trial reports.

Quality data – percent hard seeds (after soaking and cooking), hydration coefficient (after soaking and blanching), percentage drained weight, appearance, clumping, texture and seed colour (before and after processing) of second and/or third year dry bean entries may be determined and data provided to the respective trial coordinators at least two weeks prior to the meeting for inclusion in the request for support for registration.

Data from individual trials will be submitted to the relevant trial coordinators by **December 15**. Information on the seeding and harvest date, number and length of rows (seeded and harvested), spacing between rows and plots, rate of seeding, area harvested, and fertilizers and herbicides applied are required. The coordinators analyse and summarize the data. Registration trials may be **inspected** for general adherence to good agronomic practice, during the growing-season by the coordinators or cooperators, aside from those conducting the specific trial(s). A trial is non-valid, if the coefficient of variation for yield is greater than 18%, or if deemed visually unacceptable by the cooperator conducting the trial or a coordinator or cooperator inspecting the trial. Only valid data are included in the summaries. The summaries and comparisons are distributed to members of the PRCPSC and candidate sponsor or breeder by the **end of January** in advance of the annual meeting in February.

4. Security of Entries

Breeding lines and cultivars not registered in Canada received from private or public sector plant breeders will be released only under conditions specified by the breeder or Canadian Breeder agent. The professional code of ethics as developed by the Cultivar Registration Committee will be strictly followed by all individuals involved in co-op testing and the cultivar registration process. **A copy of the Code of Ethics is attached (Appendix C).**

5. Support for Registration

A written summary of the data and the request for support for registration must be **sent via e-mail to the Chair and Secretary of the PRCPSC at least one week prior** to the annual meeting of the PRCPSC or according to the deadlines set by the PRCPSC, for support of registration to be considered at that meeting.

The PRCPSC makes recommendations for registration. Decisions on supporting cultivars for registration are made in February of each year by a majority vote in the PRCPSC. Decisions are based on results from the Prairie Dry Bean Cooperative Registration Trials.

In order to be eligible for support for registration,

1. An entry must be entered in one of the Prairie Dry Bean Cooperative Registration trials for at least two years,
2. Private data may be considered on a case-by-case basis. However, appropriate check cultivars must be used for comparing candidate cultivars. Please see Appendix B for a list of check cultivars by market class,
3. Data from a minimum of eight locations over two years is needed in order to be eligible for support for registration,
4. All valid data must be included in the sponsor's request for support for registration document, and
5. Agronomic, disease and/or quality trait(s) performances must be equal to or superior to the designated check cultivar(s) of similar class, type and maturity.

Under special circumstances, support for interim registration may be given for individual entries, where the circumstances would appear to merit these restrictions. Normally, support for full, unconditional registration is granted.

Once a candidate has been supported for registration, the sponsor may submit the data summaries, along with copies of letters of support from the PRCPSC, to the

Variety Registration Office
Canadian Food Inspection Agency
59 Camelot Drive
Ottawa, ON, K1A 0Y9

Telephone: (613) 773-7143
Facsimile: (613) 773-7144

Appendix A: Prairie Dry Bean Cooperative Registration Trials: Coordinators and Trial Locations

<p>Short Season Wide Row Irrigated Dr. Parthiba Balasubramanian Agriculture and Agri-Food Canada Lethbridge Research Centre 5403 – 1st Avenue South, P.O. Box 3000 Lethbridge, AB T1J 4B1</p>	<p>Tel: (403) 317-2275 Fax: (403) 382-3156 E-mail: parthiba.balasubramanian@agr.gc.ca</p>
<p>Short Season Narrow Row Dr. Kirstin Bett Crop Development Centre University of Saskatchewan 51 Campus Drive Saskatoon, SK S7N 5A8</p>	<p>Tel: (306) 966-4947 Fax: (306) 966-5015 E-mail: kirstin.bett@usask.ca</p>
<p>Long Season Wide Row and Long Season Narrow Row Dr. Anfu Hou AAFC – Morden Research Centre Unit 100 – 101 Route 100 Morden, MB R6M 1Y5</p>	<p>Tel: (204) 822-7228 Fax: (204) 822-7207 E-mail: anfu.hou@agr.gc.ca</p>

Trial Locations: Trial locations are reviewed annually by the co-operators. All entries of one of the cooperative registration trials are grown at all locations. Trials may be inspected (see Section 3. Trial Management).

Proposed test sites:

1. Short Season Wide Row Irrigated:
 - Alberta: Bow Island, Lethbridge and Vauxhall
 - Saskatchewan: Outlook

2. Short Season Narrow Row:
 - Alberta: Lethbridge
 - Saskatchewan: Outlook, Rosthern, Saskatoon, Canora
 - Manitoba: TBA

3. Long Season Wide Row and
4. Long Season Narrow Row:
 - Manitoba: Morden, Winkler, Carman and Portage-la-Prairie

Appendix B: Dry Bean Check Cultivars (for 2015)

Table of check cultivars for the Dry Bean Cooperative Registration Trials on the Prairies

Market class	Cooperative Registration Trial			
	SSWRI	SSNR	LSWR	LSNR
Navy	-	Envoy	Envoy T9903	Envoy T9903 T9905
Pinto	AC Island CDC WM-2	CDC Pintium AC Island CDC WM-2	Maverick Windbreaker CDC WM-2	Maverick Windbreaker CDC WM-2
Black	AC Black Diamond	CDC Jet	CDC Jet Eclipse	CDC Jet Eclipse
Great Northern	AAC Tundra Resolute	Resolute	Beryl	Beryl
Small Red	AC Redbond	AC Redbond	AC Earlired	AC Earlired
Pink	Viva	Viva	Viva	Viva
DRK	-	-	ROG802	ROG802
LRK	OAC Lyrik		Pink Panther	Pink Panther
WK	-	-	GTS 402	GTS 402
Cranberry	Red Rider	-	Etna	Etna
Yellow	CDC Sol	CDC Sol	CDC Sol	CDC Sol

SSWRI – Short Season Wide Row Irrigated Bean Cooperative Registration Trial

SSNR – Short Season Narrow Row Bean Cooperative Registration Trial

LSWR – Long Season Wide Row Bean Cooperative Registration Trial

LSNR – Long Season Narrow Row Bean Cooperative Registration Trial

Appendix C: Code of Ethics

The mutual interests of all engaged in cultivar development and evaluation are served by a climate which engenders the greatest freedom of communication and exchange of breeding material, while at the same time providing adequate safeguards to the originator of any material.

It is the desire of all breeding institutions to receive credit for their discoveries and to recognize the discoveries of other institutions, both privately and publicly funded. For this reason, it is recommended that breeders, institutions, and companies conducting cultivar trials for registration purposes in Canada subscribe to the following code of ethics:

General

In case of conflict between this code and any provincial or federal legislation such as plant breeders' rights, the legislation would prevail.

Written Permission not Required

Material registered and/or commercially available as a cultivar in any country, may be used without the permission of the breeder, as parental material for making crosses or for induction of mutations, for the purpose of creating other cultivars.

Written Permission Required

Material not registered and/or commercially available as a cultivar in any country may only be used as parental material in a breeding program with the written permission of the breeder.

When the repeated use of a cultivar is required for the production of seed of another cultivar, the written permission of the breeder must be obtained. This does not preclude the use of a registered cultivar as a recurrent parent in a backcross breeding program.

Selection within a normally self-pollinated cultivar for the purposes of creating a new cultivar may only be done with the written permission of the breeder.

The isolation of parental lines that are present as mixtures in hybrids and any use of them may only be made with the written permission of the breeder.

Material not registered and/or commercially available as a cultivar in any country, may not be distributed for purposes other than registration tests without the written permission of the breeder.

Seed multiplication of any unregistered cultivar, for purposes other than for the production of seed stocks for registration trials, may only be made with written permission of the breeder.