

# GUIDELINES FOR TESTING AND SUPPORT FOR REGISTRATION OF SWEET LUPIN CULTIVARS

2011

Prairie Recommending Committee for Pulse and Special Crops (PRCPSC)

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## Table of Contents

1. Introduction	3
2. Cultivar Testing	
A. Field Trials	3
B. Security of Entries	3
C. Entrance requirements	3
D. Trial management	4
i) Years of testing	4
ii) Experimental design	4
iii) Data collection	4
iv) Data analysis	5
v) Field protocol	6
E. Private Tests	6
3. Support for Registration	6
4. Checks	7
5. Deadlines	7
6. Code of Ethics	7

## **1. Introduction**

The members of the Prairie Recommending Committee Pulse and Special Crops (PRCPSC) evaluate the merit of genotypes/cultivars using a pool of performance parameters collected over several years and multiple locations. Any sub set of these data cannot be considered a reliable indication of overall merit. The operational aspects of variety registration are performed by the PRCPSC with the cooperation of various research organizations across the prairies. The purpose of these trials is to collect agronomic performance data for consideration in the committee's decision regarding the support for registration of candidate cultivars. The PRCPSC evaluates field pea, lentil, bean and other special crops grown on the prairies. The Canadian Food Inspection Agency (CFIA) Variety Registration Office makes all final decisions on which crop varieties are registered federally.

## **2. Cultivar Testing**

### **A. Field Trials**

Testing locations are reviewed by the committee each year. Lupin tests are considered to be valid if the coefficient of variation for yield is 15.0 % or less. The committee may consider and/or seek field or laboratory data on disease reaction or quality parameters from private and/or foreign sources. Where the data are considered to be objective and unbiased in nature, and the committee is satisfied that the appropriate methods and procedures have been followed, the committee may consider acceptance and use of such data.

### **B. Security of Entries**

It is understood that breeding lines and non released varieties received from private or public sector plant breeders, will be released only under conditions specified by the breeder or Canadian breeder agent.

### **C. Entrance requirements**

Sponsors are to inform test coordinator of their intention to enter the first or second year entries in the Western Co-operative Registration Test for Lupin. Provide the name of the entry, name of sponsor, name of breeding institution to test coordinator. Sponsors to deliver 5 kg of seed to the test coordinator. A germination test and 1000 kwt (kernel weight) must accompany the seed. Normally, a maximum of five entries per sponsoring company or institution will be accepted in any one year. Fees are currently **\$560 per entry** per year, payable in Canadian funds to the University of Saskatchewan. **All fees must be received by January 1** in the year of testing. **First year entries will be tested by the sponsor for alkaloids prior to planting.**

Supplementary descriptive information on each entry should accompany the seed. Sweet lupin type, relative maturity, alkaloid level, 1000 kwt, and disease reaction information should be included. Any special or unusual characteristic that would have a bearing on testing procedure should be reported. The testing system will be adapted, wherever feasible, to accommodate "special" attributes.

The committee does not guarantee that any test will be considered valid for registration purposes. Factors beyond the control of the committee and the cooperators, may significantly

influence the quality of trials. Fees for tests deemed invalid because of mismanagement on the part of the cooperator will be returned. If it is the opinion of the committee that factors beyond the control of the cooperator resulted in a test being invalid, no funds will be returned.

Check cultivars are designated by the committee. Checks, ideally, will be eligible for recommendation for production in Western Canada and exhibit above average performance. The list of checks will contain varieties of appropriate lupin types that cover the full range of maturities available. The checks designated in the year that a candidate is first entered in the test will be used in making decisions regarding support for registration of that candidate. The list of designated check cultivars is reviewed annually, and revised as needed, keeping in mind the committee's goal to encourage improved performance.

Data from the individual tests are collected and analyzed by trial cooperators. **The raw data along with the analyzed results are submitted to the coordinator of the lupin registration test by October 30th of each year.** The coordinator summarizes the data and makes appropriate comparisons for support for registration purposes. In addition, the 2 year means are calculated for recommendation purposes. The Lupin Registration Trial report is to be distributed by January 15.

#### **D. Trial management**

The tests will be organized and composed as follows:

**i) Years of Testing:** Western Canada Lupin Co-op is based on a minimum of two years of testing and 6 station years of data.

**ii) Experimental Design:** Randomized Complete Block Design (4) replications.

**Sites:** Total of four sites across SK and AB with a minimum of three sites per year (see (i) above).

**Number of entries:** Plot plan including randomization sent with entries before seeding.

**Plots size:** Send seeder/plot dimensions to Co-op Trial Coordinator **by March 30.**

**Entries:** Five kgs of each entry sent to Co-op Trial Coordinator **by March 30.**

**Background site information:** a) Soil test information and b) Precipitation.

**iii) Data collection:**

**Emergence:** uniform plant emergence in each replicate. Make note of entries with low plant densities (plants/m<sup>2</sup>).

**Plant height:** in (cm) prior to harvest.

**Maturity\*:** at time of desiccation (early, medium and late) or at harvest.

**Seed yield:** in grams/plot (please send harvested plot size and in kg/ha).

**Seed weight:** 1000 kwt in grams. 100 seeds, weight in grams X 10.  
(1) measurement per replicate.

**Alkaloid\*\* content (%):**

\*Maturity on lupin because of the crop's indeterminacy is somewhat difficult to determine. Seeds from pods on main stem should show full seed coat color change. Pods on side branches have majority of seeds in pods exhibiting seed coat color change. Observe threshed grain sample for % immature green seeds in assisting in determining relative maturity.

\*\* In Europe, commercially available lupin used for humans and livestock are called "sweet" or low alkaloid types at 0.01%-0.03%, compared to "bitter" types at 0.8-0.9%. In Western Canada, alkaloid levels in lupin have yet to be tested, and therefore, there are no guidelines at present for registration with the exception that all first year entries will be tested by the sponsor for alkaloids prior to planting.

**iv) Data Analysis:**

Only data with acceptable C.V.'s (less than 15.1 %) will be included in the final report.

**v) Field Protocol:**

**Seeding rate:** A target plant population of 10 plants/ft<sup>2</sup> or 108 plants/m<sup>2</sup>

**Seeding depth:** 1.25 cm – 2.5 cm deep

**Inoculation:** Lupin (Rhizobium Lupinus or Bradyrhizobium ) peat or granular inoculant @ 6 kg/ha supplied with seed entries.

**Fertilizer application:** Apply 12-51-0 fertilizer up to 30 kg/ha with seed or if higher rates are required or extreme dry soil conditions, apply as a side band.

**Herbicides:**

Pre-harvest **glyphosate** the year before is preferred for site preparation. If pre-harvest application of **glyphosate** has not been done, then a pre-seed burndown with **glyphosate** is recommended.

Pre-emergent (Fall application only):

Treflan (trifluralin products), Edge Products(ethalfluralin), Sencor (metribuzin) + Edge or Sencor + Treflan) (minor use research work in Alberta under way)

Post-emergent: **apply at 3 –5 node stage**

Sencor (metribuzin) split application **at lentil rate**, based on organic matter level.

Poast (sethoxydim)

#### **E. Private Tests**

Private company test data will be considered in support for registration of private entries, provided they have met all the conditions stated above under **2. Cultivar Testing**. A maximum of two private trials may be accepted per company in any given year. If more than one trial is conducted by a company, the two sites must represent different environments.

### **3. Support for Registration**

In order for an entry to be eligible for registration, an entry must;

- a) be entered for a minimum of two years. Data from a minimum of 6 valid tests over the two year period must be available. These tests may be achieved by combining public and private test data.
- b) have disease reaction satisfactory to the PRCPSC
- c) have an alkaloid test data , based on public and/or private laboratory analysis.

The principle of merit is used by the members of the PRCPSC in their decision regarding the support of a candidate cultivar for registration. The candidate cultivar must demonstrate merit when compared to the check and other registered cultivars. A candidate has merit when, considering all traits including agronomic performance, disease reaction and end-use suitability, the overall performance is equal to or better than the check cultivars with which the candidate has been compared to during the two years of testing. It is recognized that certain criteria are important for certain regions or market classes and that minor deficiencies in certain parameters may be outweighed by advantages in others.

A candidate cultivar may be supported for registration based on its performance in a particular region of Canada and need not excel across all test locations. Once a candidate cultivar has been supported for registration, both the sponsor and the secretary of the PRCPSC shall submit the data summaries, along with copies of letters of support from the PRCPSC to the Canadian Food Inspection Agency-Variety Registration Office, Agriculture and Agri-Food Canada, Ottawa.

Fees established by the coordinator, together with cooperators will be charged for the inclusion of all entries into the Cooperative Test. This fee will be ratified annually by the PRCPSC.

Cultivars having special attributes considered by the Committee to be of significant benefit to the industry, but not meeting all of the standards currently followed by Committee, may be considered for support.

The Committee's support of a cultivar lasts for two years. If the committee's support has lapsed and the variety sponsor still wishes to pursue variety registration, the sponsor must request a renewal of support from the committee. Under special circumstances, support for an

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

#### **4. Checks:**

The designated variety will be “Arabella” for 2011 first and second year entries.

#### **5. Deadlines:**

**March 15:** Due date for sponsors to inform test coordinator of their intention to enter the first or second year entries in the Lupin Co-operative Registration Test. Provide the name of the entry, name of sponsor, name of breeding institution to test coordinator.

**March 30:** Due date for sponsors to deliver 5 kg of seed to test coordinator. A germination test and 1000 kwt (kernel weight) must accompany the seed. Seeds should be delivered to:

Bunyamin Taran  
C/o: Jaret Horner  
Department of Plant Sciences/Crop Development Centre  
University of Saskatchewan  
2101 108 Street West  
Saskatoon, SK, S7N 5A8  
Canada  
Ph: (306) 966-1216

**October 30:** Due date for site co-operators to provide all agronomic and yield data to test coordinator.

**January 15:** Due date for test coordinator to send report to all sponsors.

#### **6. 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.