

OBJECTIVE DESCRIPTION OF VARIETY  
LUPIN (*Lupinus* spp.)

INSTRUCTIONS

Please read instructions carefully before completing the attached form. The Objective Description Form is a necessary part of an application for Plant Variety Protection (Breeder's Rights) in the United States of America. It is designed to guide the applicant in describing a variety in detail so that comparisons with other varieties in the same crop may be done in a meaningful way. To aid in this goal, data collectors and breeders from different locations should collect the data in a similar fashion. These instructions describe the way in which to take each measurement needed to complete this Form. It is possible that some traits are unobtainable for a certain variety, causing some blanks to be left empty. It is in your best interest to describe your variety as completely as possible to establish an adequate variety description.

The applicant's name and complete address should be at the top of the form. The country should be included since it is needed when mailing to some areas. The name of the variety is also entered at the top of the form. The Plant Variety Protection Office will assign a unique PVPO Number to each applicant and enter it below the variety name.

The variety that you choose for comparison should be the most similar one in terms of background and maturity. The comparison variety (ies) used should be grown in field trials with the application variety for 2-3 location/years (environments) in the region and season of best adaptability. The varietal and environmental data collected should remain available for an additional 3 years to resolve any questions concerning comparisons or descriptions of varieties. In general, measurements of quantitative traits should be taken **in one trial on 15-25 randomly selected plants or plant parts** to obtain averages and statistics that describe a typical field of the variety.

1. OVERALL PLANT HABIT
  - Name the variety to be used for comparisons. Describe the comparison variety in the right-hand column for all traits on form.
  - Name the location where data was collected to complete this form.
  - Identify the plant species. If it is a species not listed on the form, then name it in the space provided.
  - Indicate the plant growth habit, form, and branching pattern.
  - Indicate the season in which the variety flowers.
  - Measure the average number of days from planting seeds to mid-flowering during the season given above.
  - Measure the average plant height from ground level to tip of inflorescence in centimeters.
2. FOLIAGE
  - Report the presence or absence of anthocyanin in the main stalk below the primary inflorescence and leaf petiole.
  - Report the color of the leaves at mid-flowering.
  - Report leaf pubescence on the upper and lower surfaces of the leaves.
  - Report the leaflet shape.
  - Measure the width of leaves at their widest point in millimeters.
  - Measure the average length of leaves, including petiole, to end of terminal leaflet in millimeters.
  - Measure leaflet length from base to tip in millimeters.
3. INFLORESCENCE
  - Measure the length of the primary inflorescence at mid-flowering in millimeters
  - Report the prominence of the raceme.
  - Report the color of the inflorescence at mid-flowering. If individual florets are two-toned, describe in space provided.
  - Report the presence of anthocyanin in the primary inflorescence stalk.
4. SEED PODS
  - Report the color of young and mature (dry) seed pods.
  - Report the degree of pubescence on the mature pods.
  - Measure the average length and diameter of mature seed pods in millimeters.
5. SEEDS
  - Judge the following characteristics on DRY (at 12-13% grain moisture) seeds.
  - Measure the length, width, and thickness of seeds in millimeters
  - Measure the weight of 100 kernels taken from an unsized sample.
  - Report the shape of the seed circumference.
  - Report the shape of the seed sides.
  - Report the seed coat color.
  - Indicate the type of uniformity of the seeds.
  - Measure the percentage of oil and protein in the seeds. Indicate the method used to get this measurement in the Comments Section.
6. DISEASE/INSECT REACTION
  - Test as many disease and insect reactions as possible BEFORE applying for protection. Tests for disease and insect reactions should include a resistant check and a susceptible check for each disease or insect being tested. When using disease resistance to describe novelty, information on these checks should be included in the novelty statement in support of the novelty claim. Rate the application variety and the comparison variety on a scale of 1 (most susceptible) to 9 (most resistant) for each disease or insect reaction being reported. Give the scientific and common names of each disease/insect for completeness.
7. AGRONOMIC TRAITS
  - Report the percent of root lodging after anthesis.
  - Report the yield of the inbred per se. This cannot be used to establish novelty of this variety.

REPRODUCE LOCALLY. Include form number and date on all reproductions.

Form Approved OMB NO 0581-0055

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**U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY  
PLANT VARIETY PROTECTION OFFICE  
BELTSVILLE, MD 20705**

**Exhibit C**

**OBJECTIVE DESCRIPTION OF VARIETY  
Lupin (*Lupinus* spp.)**

|  |  |                              |
|--|--|------------------------------|
| <b>NAME OF APPLICANT (S)</b>   | <b>TEMPORARY OR EXPERIMENTAL DESIGNATION</b> | <b>VARIETY NAME</b>          |
| <b>ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country)</b> |  | <b>FOR OFFICIAL USE ONLY</b> |
|  |  | <b>PVPO NUMBER</b>           |

**PLEASE READ ALL INSTRUCTIONS CAREFULLY:**

In the spaces on the left, enter the appropriate numbers that describe the characteristics of the application variety. On the right, enter the appropriate numbers that describe the characteristics of the most similar comparison variety. Right justify whole numbers by adding leading zeros if necessary. The variety that you choose for comparison should be the most similar one in terms of overall morphology, background and maturity. The comparison variety should be grown in field trials **with** the application variety for 2-3 location/years (environments) **in the region and season of best adaptability**. At least one year of trials should be conducted within the United States of America. In general, measurements of quantitative traits should be taken **from one trial on 15-25 randomly selected plants or plant parts** to obtain averages and statistics that describe a typical field of the variety. (Form technical content last updated Feb. 1992.)

| Application Variety   | Comparison Variety  |
|---|---|
| <p><b>1. OVERALL PLANT HABIT:</b></p> <p>Data Collection Site _____</p> <p>___ Species: 1 = <i>L. albus</i> 2 = <i>L. angustifolius</i> 3 = <i>L. luteus</i> 4 = Other _____</p> <p>___ Growth Habit: 1 = Determinant 2 = Semi-determinant 3 = Indeterminate</p> <p>___ Growth Form: 1 = Upright 2 = Semi-prostrate 3 = Prostrate</p> <p>___ Branching Pattern: 1 = Single Stem 2 = Few Branches 3 = Many Branches</p> <p>___ Flowering Season: 1 = Spring Type 2 = Semi-winter Type 3 = Winter Type</p> <p>____ Days from Planting to Mid-flowering</p> <p>____ cm Plant Height from Ground to Inflorescence Tip</p>   | <p>Comparison Variety Name _____</p> <p>___ Species</p> <p>___ Growth Habit</p> <p>___ Growth Form</p> <p>___ Branching Pattern</p> <p>___ Flowering Season</p> <p>____ Days from Planting to Mid-flowering</p> <p>____ cm Plant Height</p> |
| <p><b>2. FOLIAGE:</b></p> <p>___ Main Stalk Anthocyanin: 1 = Absent 2 = Present</p> <p>___ Leaf Color: 1 = Light Green 2 = Medium Green 3 = Dark Green<br/>4 = Other (specify) _____</p> <p>___ Upper Surface Pubescence: 1 = Absent 2 = Light 3 = Heavy</p> <p>___ Lower Surface Pubescence: 1 = Absent 2 = Light 3 = Heavy</p> <p>___ Leaflet Shape: 1 = Elliptic 2 = Obovate 3 = Ovate 4 = Other _____</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>____ mm Leaf Width</p> <p>____ mm Leaf Length</p> <p>____ mm Leaflet Length</p> </div> <div style="text-align: center;">  <p>Elliptic</p> </div> <div style="text-align: center;">  <p>Obovate</p> <p>Ovate</p> </div> </div> | <p>___ Main Stalk Anthocyanin</p> <p>___ Leaf Color</p> <p>___ Upper Surface Pubescence</p> <p>___ Lower Surface Pubescence</p> <p>___ Leaflet Shape</p> <p>____ mm Leaf Width</p> <p>____ mm Leaf Length</p> <p>____ mm Leaflet Length</p> |

| Application Variety  | Comparison Variety   |                     |     |       |     |       |     |       |  |        |                     |     |       |     |       |     |       |
|--|--|---------------------|-----|-------|-----|-------|-----|-------|--|--------|---------------------|-----|-------|-----|-------|-----|-------|
| <p><b>3. INFLORESCENCE:</b></p> <p>___ ● ___ mm Length of Primary Inflorescence</p> <p>___ Raceme: 1 = Prominent 2 = Not Prominent</p> <p>___ Inflorescence Color: 1 = Pure White 2 = White with Anthocyanin 3 = Light Blue<br/>4 = Dark Blue 5 = Pink 6 = Other _____</p> <p>___ Inflorescence Stalk Anthocyanin: 1 = Absent 2 = Present</p>  | <p>___ ● ___ mm Length of Primary Inflorescence</p> <p>___ Raceme</p> <p>___ Inflorescence Color</p> <p>___ Inflorescence Stalk Anthocyanin</p>  |                     |     |       |     |       |     |       |  |        |                     |     |       |     |       |     |       |
| <p><b>4. SEED PODS:</b></p> <p>___ Young Pod Color: } 1 = Light Green 2 = Medium Green 3 = Dark Green<br/>4 = Blue Green 5 = Yellow 6 = Tan<br/>___ Mature Pod Color: } 7 = Brown 8 = Black 9 = Other _____</p> <p>___ Mature Pod Pubescence: 1 = Absent 2 = Light 3 = Heavy</p> <p>___ ● ___ mm Mature Pod Length</p> <p>___ ● ___ mm Mature Pod Diameter</p>   | <p>___ Young Pod Color</p> <p>___ Mature Pod Color</p> <p>___ Mature Pod Pubescence</p> <p>___ ● ___ mm Mature Pod Length</p> <p>___ ● ___ mm Mature Pod Diameter</p>  |                     |     |       |     |       |     |       |  |        |                     |     |       |     |       |     |       |
| <p><b>5. SEEDS:</b> (Measure Mature (Dry) Seeds)</p> <p>___ ● ___ mm Seed Length</p> <p>___ ● ___ mm Seed Width</p> <p>___ ● ___ mm Seed Thickness</p> <p>___ : ___ gm Weight per 100 Kernels (unsized sample)</p> <p>___ Seed Circumference Shape: 1 = Square 2 = Round 3 = Other _____</p> <p>___ Seed Side Appearance: 1 = Flat, smooth 2 = Flat, indented 3 = Convex<br/>4 = Other _____</p> <p>___ Seed Coat Color: 1 = White 2 = Cream 3 = Tan 4 = Brown 5 = Other _____</p> <p>___ Seed Uniformity: 1 = Very Uniform 2 = Uniform Shape 3 = Uniform Size<br/>4 = Uniform Color 5 = Very Variable</p> <p>___ ● ___ % Protein in seed</p> <p>___ ● ___ % Oil in seed</p> | <p>___ ● ___ mm Seed Length</p> <p>___ ● ___ mm Seed Width</p> <p>___ ● ___ mm Seed Thickness</p> <p>___ : ___ gm Weight</p> <p>___ Seed Circumference Shape</p> <p>___ Seed Side Appearance</p> <p>___ Seed Coat Color</p> <p>___ Seed Uniformity</p> <p>___ ● ___ % Protein in seed</p> <p>___ ● ___ % Oil in seed</p> |                     |     |       |     |       |     |       |  |        |                     |     |       |     |       |     |       |
| <p><b>6. DISEASE RESISTANCE</b> (Rate from 1 (most susceptible) to 9 (most resistant)):</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:10%;">Rating</th> <th style="width:80%;">Disease/Insect Name</th> </tr> </thead> <tbody> <tr> <td>___</td> <td>_____</td> </tr> <tr> <td>___</td> <td>_____</td> </tr> <tr> <td>___</td> <td>_____</td> </tr> </tbody> </table>   | Rating   | Disease/Insect Name | ___ | _____ | ___ | _____ | ___ | _____ | <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:10%;">Rating</th> <th style="width:80%;">Disease/Insect Name</th> </tr> </thead> <tbody> <tr> <td>___</td> <td>_____</td> </tr> <tr> <td>___</td> <td>_____</td> </tr> <tr> <td>___</td> <td>_____</td> </tr> </tbody> </table> | Rating | Disease/Insect Name | ___ | _____ | ___ | _____ | ___ | _____ |
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| ___  | _____  |                     |     |       |     |       |     |       |  |        |                     |     |       |     |       |     |       |
| ___  | _____  |                     |     |       |     |       |     |       |  |        |                     |     |       |     |       |     |       |
| ___  | _____  |                     |     |       |     |       |     |       |  |        |                     |     |       |     |       |     |       |
| Rating   | Disease/Insect Name  |                     |     |       |     |       |     |       |  |        |                     |     |       |     |       |     |       |
| ___  | _____  |                     |     |       |     |       |     |       |  |        |                     |     |       |     |       |     |       |
| ___  | _____  |                     |     |       |     |       |     |       |  |        |                     |     |       |     |       |     |       |
| ___  | _____  |                     |     |       |     |       |     |       |  |        |                     |     |       |     |       |     |       |
| <p><b>7. AGRONOMIC TRAITS:</b></p> <p>___ ● ___ % Post-anthesis Root Lodging</p> <p>___ ● ___ Kg/ha Yield of Inbred Per Se</p>   | <p>___ ● ___ % Post-anthesis Root Lodging</p> <p>___ ● ___ Kg/ha Yield of Inbred Per Se</p>  |                     |     |       |     |       |     |       |  |        |                     |     |       |     |       |     |       |
| <p><b>8. REFERENCES:</b></p> <p>IBGPR Secretariat Rome 1981 LUPIN DESCRIPTIONS.</p>  |  |                     |     |       |     |       |     |       |  |        |                     |     |       |     |       |     |       |
| <p><b>9.</b> Attach ONE photographic print of the application variety and the comparison variety described above, indicating the identity of each variety. This photograph should show flower heads of each variety at a magnification sufficient to identify most of the verbal descriptors given above. (Additional information and photographs in support of this application may be supplied as part of the Exhibits B or D.)</p>  |  |                     |     |       |     |       |     |       |  |        |                     |     |       |     |       |     |       |