

Lupinus bicolor - New Crop Summary & Recommendations

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Series: New Floricultural Crops: Formulation of Production Schedules for Wild, Non-domesticated Species

Part of the requirements for
Horticultural Science 5051: Plant Production II
University of Minnesota

Lupinus bicolor

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Taxonomy

- Scientific Name:
Lupinus bicolor Lindl.
- Synonyms:
None listed/found
- Common Name:
Miniature lupine
- Family:
Fabaceae (alt. Leguminosae)

Geographic Distribution

- Continents:
North America
- Countries:
United States, Canada and Mexico
- States/Regions:
AZ, CA, OR & WA; British Columbia; Baja Norte
- Latitudinal Ranges:
Northern hemisphere
- Altitude:
Below 3000 feet
- Climactic Conditions:
Dry and warmer areas
- Tendency to Naturalize/ Become Invasiveness:
Native of western US, but is not a noxious plant at this time.

U.S. Distribution

Native Habitat

- Habitat:
Dry and sandy ground
- Plant Community:
Dunes, river gravel, stony deserts, and open grasslands

Taxonomic Description

- Plant habit:
Annual, herbaceous
- Root System:
Branching root system

- Type of Underground Structures:
Roots
- Leaves:
Alternate, deciduous, palmate, with 5-12 leaflets

Taxonomic Description

- Flower:
Pea-like, elongated spikes, usually blue, but can be pinkish-purple and scented. Sepals(5) are unequal and joined to form a tubular 2-lipped calyx. Petals(5) are unequal with 2 outer wings covering inner parts
- Season of Bloom:
Spring through Summer

Taxonomic Description

- Uses by Indigenous People:
Some species were cultivated for fodder and for protein (although some wild types maybe toxic).
- Other Uses:
Planted for their rare blue colored flowers.
- Additional Notes:
Pods are usually milky with numerous seeds.

Varieties and Cultivars

- Subspecies *Lupinus bicolor* Lindl. ssp. *bicolor* -- miniature lupine
- Subspecies *Lupinus bicolor* Lindl. ssp. *marginatus* D. Dunn -- miniature lupine
- Subspecies *Lupinus bicolor* Lindl. ssp. *microphyllus* (S. Wats.) D. Dunn -- miniature lupine
- Subspecies *Lupinus bicolor* Lindl. ssp. *pipersmithii* (Heller) D. Dunn -- miniature lupine
- Subspecies *Lupinus bicolor* Lindl. ssp. *tridentatus* (Eastw. ex C.P. Sm.) D. Dunn -- miniature lupine
- Variety *Lupinus bicolor* Lindl. ssp. *tridentatus* (Eastw. ex C.P. Sm.) D. Dunn var. *rostratus* (Eastw.) Jepson -- miniature lupine
- Variety *Lupinus bicolor* Lindl. ssp. *tridentatus* (Eastw. ex C.P. Sm.) D. Dunn var. *tridentatus* Eastw. ex C.P. Sm. -- miniature lupine
- Subspecies *Lupinus bicolor* Lindl. ssp. *umbellatus* (Greene) D. Dunn -- miniature lupine
- Variety *Lupinus bicolor* Lindl. ssp. *umbellatus* (Greene) D. Dunn var. *trifidus* (Torr. ex S. Wats.) C.P. Sm. -- miniature lupine
- Variety *Lupinus bicolor* Lindl. ssp. *umbellatus* (Greene) D. Dunn var. *umbellatus* (Greene) C.P. Sm -- miniature lupine

Seed Propagation Method

- Growing Area Preparation/
Annual Practices for Perennial Crops:
Fully Controlled Greenhouse.

Sowing Method: Direct Seeding.

Seeds are sown in containers containing potting soil.

Seeds are sown on September 1st.

- Establishment Phase: Seeds germinate 45 days after sowing.
Seedlings are transplanted 45 days after germination to individual containers containing standard potting mix of peat moss, fir bark, perlite, and sand.

Product Specifications

- The ideal type would have the bright blue flower color, since that is what makes the Miniature lupine so unique.
- This would be a great marketable trait to sell to consumers.

Market Niche

- Target Sales Date:
Like most bedding plants- around Mother's Day
- Potential Holiday:
The blue color would be good for Memorial Day, Father's Day, and 4th of July.
- Programmability:
In greenhouse settings it is very flexible in crop scheduling.
- Competitive Crops:
Other native looking crops & other flower spiked plants
- Story About Crop:
Bred for their blue flower color.
- Potential for Being a Major Crop:
May have cold hardiness as a limitation, but the unique blue color could be a selling factor.
- Initial Limitations:
Really likes dry & sandy conditions and takes a couple months to germinate (slow production)
- Already Identifiable to Growers & Consumers:
To growers and some western consumers, but not as identifiable to easterners
- How Soon Availability:
A few native seed collectors are collecting seed, but more work must be done before it is a regularly cultivated crop.

Anticipated Cultural Requirements

- Winter Hardiness:
Zones 8/9
- Heat/Drought Tolerance:
Relatively high tolerance
- Temperature:
Upper 70s to mid 80s
- Lighting:

- Adequate full sun
- Nutrition:
Usually not much fertilizer is needed
- Soil:
Dry sandy soil
- Plant Growth Reg:
No recommendations
- Container Size:
Eventually into 1 gallon containers
- Diseases:
None found
- Pesticides:
N/A

Production Schedule

- Sowing Method: Direct Seeding. Seeds are sown in containers containing potting soil. Seeds are sown on September 1st.
- Seeds germinate 45 days after sowing at about a 40% germination rate.
- Seedlings are transplanted 45 days after germination to individual containers containing standard potting mix

And...?

Needs Assessment for Genetic Improvement

- *Lupinus bicolor* (Leguminosae) is a primarily selfing species while *Lupinus nanus* outcrosses at intermediate rates.
- The significant effects of inbreeding on these mating system traits may indicate the presence of directional dominance at the loci underlying these characters. The consequences of these direct effects of inbreeding on reproductive traits for plants growing in natural populations may include nonadaptive changes in the outcrossing rate between generations.

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