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

EXHIBIT C

**OBJECTIVE DESCRIPTION OF VARIETY
 GENERAL FORM FOR ANY SPECIES**

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

This is a general form for use when a form for a specific genus and species is not available. Applications of this type are made in species in which few varieties, if any, are commonly known. For that reason, a form cannot be drafted because the span of the variation of most characteristics is not known. In this case, the varieties are described according to the classical Linnaean way. Using a dictionary of botanical terms and this form, describe the characteristics of the application variety on the left side of the form and describe the most similar comparison variety on the right side of the form. Be as specific as possible. Include photographic prints of the varieties.

1. QUALITATIVE TRAITS

Crop Kind (Common Name): _____	Name of Comparison: _____
Genus and Species: _____	Source of Comparison: _____
Location Where Developed: _____	
Preferred Growing Conditions (light, moisture, soil type, pot/bedding/ground cover, etc.):	Growing Conditions:
Propagation Method (seed/tuber/cuttings/etc.; inbred/hybrid/open pollinated/etc.; annual/perennial/etc.):	Propagation Method:
Whole Plant Habit (herbaceous/woody; upright/prostrate; thorns; tendrils; etc.):	Plant Habit:
Leaf Shape (simple/compound; arrangement on stem; whole leaf shape; leaf margin; leaf base; leaf apex; leaf attachment; leaf venation; pubescence; waxiness; glands; fragrance; etc.):	Leaf Shape:
Application Variety Data	Comparison Variety Data

1. QUALITATIVE TRAITS (continued)

Application Variety Data	Comparison Variety Data
Flowers (inflorescence type; floret shape; bud; sepals; petals; stigma; stamen; pollen; etc.)	Flowers:
Fruits (type; surface features; attachment; seeds; etc.)	Fruits and Seeds:

2. QUANTITATIVE TRAITS

		Trait	Average (Mean)	Standard Deviation	Sample Size	Trait	Average (Mean)	Standard Deviation	Sample Size
		Number of Chromosomes (1N)	----			Number of Chromosomes (1N)	----		
M A T U R I T Y	From Direct Seeding	Days from emergence to first flower	----			Days from emergence to first flower	----		
		Days from emergence to 50% of plants in flower	----			Days from emergence to 50% of plants in flower	----		
		Days from first flower to last flower	----			Days from first flower to last flower	----		
	From Trans-Planting	Days from transplant to first flower	----			Days from transplant to first flower	----		
		Days from transplant to 50% of plants in flower	----			Days from transplant to 50% of plants in flower	----		
		Days from first flower to last flower	----			Days from first flower to last flower	----		
	From Pack Trials	Days from emergence to first flower	----			Days from emergence to first flower	----		
		Days from emergence to 50% of plants in flower	----			Days from emergence to 50% of plants in flower	----		
		Days from first flower to last flower	----			Days from first flower to last flower	----		
P L A N T		mm Plant Height at Maturity	-----			mm Plant Height at Maturity	-----		
		mm Plant Width (Spread) at Maturity	-----			mm Plant Width (Spread) at Maturity	-----		
		Number of Stems Arising from Base of Plant	----			Number of Stems Arising from Base of Plant	----		
		mm Main Stem Length	----			mm Main Stem Length	----		
		mm Main Stem Diameter at Mid-point	-----			mm Main Stem Diameter at Mid-point	-----		
		Number of Branches (arising from lower half of main stem)	----			Number of Branches (arising from lower half of main stem)	----		
		Branch Angle from Main Stem	----			Branch Angle from Main Stem	----		
Application Variety Data						Comparison Variety Data			

2. QUANTITATIVE TRAITS (continued)

Application Variety Data					Comparison Variety Data			
	Trait	Average (Mean)	Standard Deviation	Sample Size	Trait	Average (Mean)	Standard Deviation	Sample Size
L E A V E S	Leaf Angle from Main Stem	----			Leaf Angle from Main Stem	----		
	mm Width of Leaf	-----			mm Width of Leaf	-----		
	mm Length of Leaf Including Petiole	-----			mm Length of Leaf Including Petiole	-----		
	mm Thickness of Leaf	-----			mm Thickness of Leaf	-----		
	mm Length of Petiole	-----			mm Length of Petiole	-----		
	mm Width of Leaflet	-----			mm Width of Leaflet	-----		
	mm Length of Leaflet	-----			mm Length of Leaflet	-----		
I N F L O R E S C E N C E	mm Inflorescence Height from Ground	-----			mm Inflorescence Height from Ground	-----		
	mm Inflorescence Width (Diameter)	-----			mm Inflorescence Width (Diameter)	-----		
	mm Depth of Head or Inflorescence	-----			mm Depth of Head or Inflorescence	-----		
	Number of Florets Per Inflorescence	----			Number of Florets Per Inflorescence	----		
	mm Length of Peduncle	-----			mm Length of Peduncle	-----		
I N D I V I D U A L F L O R E T	Number of Sepals per Floret	---			Number of Sepals per Floret	---		
	Number of Petals per Floret	---			Number of Petals per Floret	---		
	Number of Anthers per Floret	---			Number of Anthers per Floret	---		
	Number of Stigmas per Floret	---			Number of Stigmas per Floret	---		
	mm Floret Diameter	-----			mm Floret Diameter	-----		
	mm Eye Diameter	-----			mm Eye Diameter	-----		
	mm Petal Length (ray flower if Compositae)	-----			mm Petal Length (ray flower if Compositae)	-----		
	mm Petal Width (ray flower if Compositae)	-----			mm Petal Width (ray flower if Compositae)	-----		
	mm Disk Flower Length (Compositae only)	-----			mm Disk Flower Length (Compositae only)	-----		
	mm Disk Flower Width (Compositae only)	-----			mm Disk Flower Width (Compositae only)	-----		
	mm Sepal Length	-----			mm Sepal Length	-----		
	mm Sepal Width	-----			mm Sepal Width	-----		
Application Variety Data					Comparison Variety Data			

2. QUANTITATIVE TRAITS (continued)

Application Variety Data					Comparison Variety Data			
	Trait	Average (Mean)	Standard Deviation	Sample Size	Trait	Average (Mean)	Standard Deviation	Sample Size
INDIVIDUAL FRUIT	mm Fruit Length	-----			mm Fruit Length	-----		
	mm Fruit Width	-----			mm Fruit Width	-----		
	mm Fruit Thickness	-----			mm Fruit Thickness	-----		
	gm Fruit Weight	-----			gm Fruit Weight	-----		
	mm Fruit Rind or Skin Thickness	-----			mm Fruit Rind or Skin Thickness	-----		
	mm Fruit Flesh Thickness	-----			mm Fruit Flesh Thickness	-----		
	Number of Locules (Cavities) per Fruit	---			Number of Locules (Cavities) per Fruit	---		
	mm Cavity Width	-----			mm Cavity Width	-----		
	mm Cavity Length	-----			mm Cavity Length	-----		
	Number of Seeds per Fruit	---			Number of Seeds per Fruit	---		
SEEDS	mg Weight per 1000 Seeds	-----			mg Weight per 1000 Seeds	-----		
	mm Seed Length	-----			mm Seed Length	-----		
	mm Seed Width	-----			mm Seed Width	-----		
	mm Seed Thickness	-----			mm Seed Thickness	-----		
OTHER								

3. PLANT COLORS

	Color Verbal Name	Color Chart Code	Name of Color Chart		Color Verbal Name	Color Chart Code	Name of Color Chart
Example	Light Blue	106C	RHS				
Hypocotyl Color				Hypocotyl Color			
Cotyledon Color				Cotyledon Color			
Brace Root Color				Brace Root Color			
Main Stem Color, Mature				Main Stem Color, Mature			
Leaf or Leaflet Color, Dorsal				Leaf or Leaflet Color, Dorsal			
Leaf or Leaflet Color, Ventral				Leaf or Leaflet Color, Ventral			
Leaf or Leaflet Venation Color				Leaf or Leaflet Venation Color			
Leaf Color, Other (describe location or placement)				Leaf Color, Other (describe location or placement)			
Application Variety Data				Comparison Variety Data			

3. PLANT COLORS (continued)

Application Variety Data				Comparison Variety Data			
	Color Verbal Name	Color Chart Code	Name of Color Chart		Color Verbal Name	Color Chart Code	Name of Color Chart
Petiole Color				Petiole Color			
Tendril Color				Tendril Color			
Thorn Color				Thorn Color			
Bud (Unopened Flower) Color				Bud (Unopened Flower) Color			
Stigma Color				Stigma Color			
Style Color				Style Color			
Ovary (Immature Flower) Color				Ovary (Immature Flower) Color			
Pollen Color				Pollen Color			
Anther Color				Anther Color			
Filament Color				Filament Color			
Petal Color, Main				Petal Color, Main			
Petal Color, Edges (Picotee)				Petal Color, Edges (Picotee)			
Petal Color, Blotches				Petal Color, Blotches			
Petal Color, Streaks				Petal Color, Streaks			
Petal Color, Spots				Petal Color, Spots			
Petal Color, Veins				Petal Color, Veins			
Petal Color, Eye				Petal Color, Eye			
Petal Color, Throat				Petal Color, Throat			
Petal Color, Disk Flowers (Compositae only)				Petal Color, Disk Flowers (Compositae only)			
Floral Color, Other (describe location or placement)				Floral Color, Other (describe location or placement)			
Sepal Color				Sepal Color			
Mature Fruit Color, Skin				Mature Fruit Color, Skin			
Mature Fruit Color, Flesh				Mature Fruit Color, Flesh			
Fruit Color, Other (describe location or placement)				Fruit Color, Other (describe location or placement)			
Seed Coat Color				Seed Coat Color			
Seed Embryo Color				Seed Embryo Color			
Seed Structure Color, Other (describe location or placement)				Seed Structure Color, Other (describe location or placement)			
Application Variety Data				Comparison Variety Data			

Note: Common Color Charts: RHS = Royal Horticultural Society Colour Chart
Munsell = Munsell Book of Color
HCC = Horticultural Colour Chart
BCC = British Colour Council Dictionary of Colour Standards

4. DISEASE, INSECT AND ENVIRONMENT RESISTANCE

(Rate from 1 (most susceptible) to 9 (most resistant))

Application Variety Data	Comparison Variety Data
___ Powdery Mildew	___ Powdery Mildew
___ Other (Specify) _____	___ Other (Specify) _____
___ Aphids	___ Aphids
___ Other (Specify) _____	___ Other (Specify) _____
___ Heat	___ Heat
___ Cold	___ Cold
___ Lodging	___ Lodging
___ Wind	___ Wind
___ Other (Specify) _____	___ Other (Specify) _____

REFERENCES:

- Bailey, L.H. 1971. *Manual of Cultivated Plants*. MacMillan. New York, N.Y.
 Hay, R., P.M. Syngé. 1991. *The Colour Dictionary of Garden Plants with House and Greenhouse Plants*. Bloomsbury Books, London.
Munsell Color Chart for Plant Tissues. Macbeth. P.O. Box 230 Newburgh, N.Y. 12551-0230
The Wise Garden Encyclopedia. 1990. HarperCollins Publishers. New York, N.Y.

COMMENTS (Attach photographic prints; Continue in Exhibit D)

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 plant variety in detail so that comparisons with other varieties may be done in a meaningful way. It is in the applicant's best interest to describe the application 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 application and enter it below the variety name.

The "General Form for Any Species" was designed to allow the applicant the most freedom in describing the variety in a way that is most appropriate to the crop and the needs of the Plant Variety Protection Office. A good botanical dictionary or key should be used to provide the most specific terms to describe qualitative plant characteristics (SECTION 1) in the classical Linnaean (botanical) way. For example, when describing leaf margins, the applicant should use terms such as entire, crenate, dentate, incised, serrate, sinuate, spinose, or undulate. Similarly, flowers should be described as actinomorphic, zygomorphic, monoecious, dioecious, etc.

Choose one variety to use as a comparison variety throughout the Objective Description Form. **Describe the comparison variety in the right-hand column for all traits.** The variety that you choose should be the most similar one in terms of background and morphology. It should be the same one used in Exhibit B to describe the novelty of the application variety. The comparison variety should be grown in trials **with** the application variety for 2 – 3 location/years (environments) **in the region of best adaptability.** The varietal and environmental data collection should remain available for an additional 3 years to resolve any questions concerning comparisons or descriptions of varieties.

In general, measurements of quantitative traits (SECTION 2) should be taken **in one trial on 15-25 randomly selected plants** or plant parts to obtain averages and statistics that describe a typical planting of the variety. For each of the measurable traits, **report the mean, the number of plants measured, and the standard deviation.**

$$\text{Standard Deviation} = \sqrt{\frac{\sum (X - \bar{X})^2}{(N - 1)}}$$

The color descriptions (SECTION 3) must include the verbal color name and color codes from the "Munsell Color Chart" or other published color chart. An example of this is given on the top of the section. The color chart code is a more objective method for describing colors, however, verbal descriptions are used in seed catalogs and other literature references from which the databases are created. The verbal color continues to be necessary in distinguishing new varieties from all varieties of prior existence.

Test as many disease and insect reactions (SECTION 4) as possible before applying for protection, especially the most common diseases or insect pests for the crop.

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- 1) mail: U.S. Department of Agriculture Office of the Assistant Secretary for Civil Rights 1400 Independence Avenue, SW Washington, D.C. 20250-9410;
- 2) fax: (202) 690-7442; or
- 3) email: program.intake@usda.gov.

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