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): _____ Genus and Species: _____ Location Where Developed: _____	Name of Comparison: _____ Source of Comparison: _____
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)	___		
MATURITY	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	___		
PLANT		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
LEAVES		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	__ __ __.__		
INFLORESCENCE		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	__ __ __.__		
INDIVIDUAL FLORET		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. Synge. 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**.

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

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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