



Variety Registration Office

Objective Description Form
Sunflower
<i>Helianthus annuus L.</i>
Version Date: 2010/08

(Publié aussi en français)

Completed forms are to be returned to:

Variety Registration Office
Canadian Food Inspection Agency
59 Camelot Drive
Ottawa, Ontario K1A 0Y9
Facsimile: (613) 773-7144
VRO-BEV@inspection.gc.ca

A. ABOUT THE OBJECTIVE DESCRIPTION FORM

This objective description form is designed as an aid for the identification of sunflower varieties to provide sufficient information for pedigreed seed crop inspection and variety verification purposes. Companion documents include the "Variety Registration Application Form" and the "Procedures for the Registration of Crop Varieties in Canada," both of which are available on the CFIA Variety Registration Office homepage at <http://www.inspection.gc.ca/english/plaveg/variet/vartoce.shtml>.

This objective description form lists characteristics to be used as the basis for developing the description of sunflower varieties. It is recommended that the form be completed in as much detail as possible to ensure that an accurate description of the variety be on record. Uniformity and stability must be sufficient to ensure that the genetic purity of the variety has not been compromised during the development of the variety or during the seed multiplication process. However, accurate information on variability within the variety is essential for distinguishing between variants and off-types during the seed multiplication process.

Information on this document may be accessible or protected as required under the provisions of the *Access to Information Act*. Information that could cause you or your organization injury if released is protected from disclosure as defined in Section 20 of the *Access to Information Act*. Please indicate clearly traits that are considered to be confidential. Note that sufficient information must be considered public to facilitate crop inspection and certification.

B. CHARACTERISTICS

The candidate variety **must** be described for all characteristics designated on the form with a pound symbol (#).

A rating system of 1-9 provides a scale for describing most characteristics in this form. To rate characteristics, select a value that best corresponds to the state indicated. Characteristics may be rated with intermediate values where the characteristic grades gradually from one extreme to another. For example, where the descriptors for a characteristic are described as: small (3), medium (5), large (7); other values of 1, 2, 4, 6, 8 or 9 may be selected.

Each characteristic on this form has been arranged in a tabular format allowing the candidate variety (CV) and up to four reference varieties (R1 to R4) to be described. In the case of hybrid crops, the hybrid and parents can be described using CV, R1, and R2 respectively. Please note that the mandatory traits do not apply to the inbred line descriptions for hybrid varieties. Information on reference varieties is useful but **not** mandatory for variety registration. Any reference varieties used must be registered for sale in Canada.

C. LEGEND

(#) Characteristics that must always be included when completing the objective description form, except when the state of expression of a preceding characteristic renders this impossible.

(+) Indicates an illustration or method for this trait is in the appendix.

CV Candidate variety

R1 - R4 Reference or check varieties (note: for hybrids use CV for hybrid and you may use R1, R2 for parental line descriptions. The mandatory traits (#) only apply to the hybrid)

R1 _____

R3 _____

R2 _____

R4 _____

D. SUNFLOWER OBJECTIVE DESCRIPTION

1.0 CLASSIFICATION

(#)

1.1 Type:

- oilseed
- confectionary
- bird feed

1.2 Proposed variety denomination (name): _____

2.0 PLANT CHARACTERISTICS

2.1 Root type: 1 = tap, 3 = rhizome, 5 = tuber

CV	R1	R2	R3	R4

2.2 Anthocyanin colouration of hypocotyl: 1 = weak, 3 = medium, 5 = strong

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2.3 Cotyledon size: 1 = small, 3 = medium, 5 = large

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2.4 Cotyledon shape: 1 = elliptical, 3 = oval, 5 = extended, 7 = rounded

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2.5 Plant height: 1 = short 3 = medium, 5 = tall

(#)

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2.6 Pubescence at top of stem: 1 = low, 3 = medium, 5 = high

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2.7 Branching: 1 = absent, 3 = present

(#)

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2.8 Branching type: 1 = basal, 3 = top, 5 = full

(#)

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2.9 Days to maturity: 50% maturity, give location _____

(#)

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4.0 FLOWER CHARACTERISTICS

4.1 Days to flower: 50% flowering, give location _____
(#)

CV	R1	R2	R3	R4

4.2 Flower Heads: number

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4.3 Flower Head, Angle at maturity: (0°, 45°, 90°, 135°, 180°, and 225°)

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4.4 Flower Head size: 1 = small, 3 = medium, 5 = large

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4.5 Flower Heads shape: 1 = concave, 3 = flat, 5 = convex, 7 = misshapen
(#)

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4.6 Flower Head bracts, pubescence: 1 = absent, 3 = sparse, 5 = intermediate dense

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4.7 Flower Head bracts, shape: 1 = convergent, 3 = parallel edges, 5 = rounded, 7 = curly

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4.8 Flower Head bracts, size: 1 = small, 3 = medium, 5 = large

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4.9 Ray flowers, number: 1 = few, 3 = medium, 5 = many

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4.10 Ray flowers, shape: 1 = elongated, 3 = ovoid, 5 = rounded

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4.11 Ray flowers, colour: 1 = ivory, 3 = yellow, 5 = orange, 7 = red, 9 = purple

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4.12 Disk flowers, colour: 1 = yellow, 3 = red, 5 = purple

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4.13 Disk flowers, anthocyanin colouration of stigma: 1=absent, 9=present

CV	R1	R2	R3	R4

4.14 Disk flowers pollen colour: 1 = white, 3 = yellow, 5 = orange

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4.15 Pappi: 1 = absent, 9 = present

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4.16 Pappi colour: 1 = green, 9 = rust-red

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5.0 SEED CHARACTERISTICS

5.1 Seed size: 1 = small, 3 = medium, 5 = large

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5.2 Seed shape: 1 = elongated, 3 = ovoid elongated, 5 = ovoid wide, 7 = rounded

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5.3 Seed colour: 1 = white, 3 = grey, 5 = brown, 7 = black, 9 = anthocyanin

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5.4 Seed weight: per 1,000 seeds
(#)

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5.5 Seed pericarp thickness: 1 = thin, 3 = medium, 5 = thick

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5.6 Seed stripes: 1 = absent, 3 = present
(#)

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5.7 Seed stripes colour: 1 = white, 3 = grey, 5 = violet grey
(#)

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5.8 Seed stripes position: 1 = marginal, 3 = lateral, 5 = both

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5.9 Seed mottling: 1 = absent, 3 = present

CV	R1	R2	R3	R4

6.0 STRESS SUSCEPTIBILITY

1=very low susceptibility
 5=moderate susceptibility
 9=highly susceptible

3=low susceptibility
 7=higher susceptibility

		CV	R1	R2	R3	R4
6.1	Low temperature					
6.2	High temperature					
6.3	Drought					
6.4	High Soil Moisture					
6.5	Salinity					
6.6	Soil pH					

7.0 REACTION TO DISEASES AND PESTS

Please supply data to substantiate claims of moderate to high resistance.

0 - Not tested

1 - Resistant

3 - Moderately resistant

5 - Moderately susceptible

7 - Susceptible

9 - Highly susceptible

		CV	R1	R2	R3	R4
7.1	Leaf Mottle (Verticillium wilt) <i>Verticillium dahliae</i> Kleb.					
7.2	Phialophora Yellow <i>Phialophora asteria</i> (Dowson) Burgei & Isaac f. sp. <i>helianthi</i> Tirilly & Moreau					
7.3	Black Stem <i>Phoma macdonaldii</i> Boerema					
7.4	Phomopsis Stem Canker <i>Diaporthe helianthi</i> M. Muntanola-Cvetkovic, M. Mihaljcevic-Cvetkovic, M. Mihaljcevic, & M. Petrov					
7.5	Downy mildew <i>Plasmopara halstedii</i> (Farl.) Berl. & De Tomi					
7.6	Powdery Mildew <i>Erysiphe cichoracearum</i> DC.					

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7.7	Leaf Spots <i>Alternaria helianthi</i> (Hansf.) Tubaki & Nishihara <i>A. helianthinificiens</i> E. Simmons, I. Walcz, & Roberts <i>A. zinniae</i> M.B. Ellis <i>Septoria helianthi</i> Ellis & Kellerm					
7.8	Rust <i>Puccinia helianthi</i> Schwein					
7.9	Sclerotinia wilt, Basal Stem Rot, and Head Rot <i>Sclerotinia sclerotiorum</i> (Lib.) de Bary					
7.10	Other Head Rots Botrytis head rot (Grey Mould) – <i>Botrytis cinerea</i> Pers.:Fr Rhizopus head rot – <i>Rhizopus</i> spp.					
7.11	Other (specify):					

8.0 REACTIONS TO PESTICIDES:

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For the purpose of this section, only list the reactions to chemicals for which there is variability among cultivars. Please supply data to substantiate claims of tolerance or resistance.

8.1 Tolerance to herbicide (specify chemical(s) and reaction(s))

8.2 Tolerance to fungicide (specify chemical(s) and reaction(s))

8.3 Tolerance to other (specify chemical(s) and reaction(s))

Unless otherwise stated in Section 10.0, a tolerant variety will be assumed to consist of tolerant plants. All non-tolerant plants will be considered off-types and the Canadian Seed Growers Association and the Association of Official Seed Certifying Agencies standards for maximum allowable levels of off-types/other varieties will apply.

9.0 QUALITY CHARACTERISTICS

9.1 Seed protein content: percentage (%) of dehulled, whole seed

(#)

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9.2 Seed Oil: percentage (%) of dehulled, whole seed

(#)

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10.0 Describe any deviant plants, including both off-types and variants observed during seed increase of the candidate variety. Applicants may be requested to supply information on the parental lines to justify the inclusion of variants as part of the variety. Where applicable, please provide information regarding the magnitude of the difference from the norm of the variety, for example, 10cm taller than the norm.

(#) a) Description of variants within variety and allowable frequency of each variant in each class of pedigreed seed:

b) Description of the any off-types observed during seed multiplication

11.0 Indicate which characteristics are most useful in distinguishing the described candidate variety from others. Use the objective description key numbers.

12.0 Describe other characteristics of the candidate variety that aid in its identification (e.g. electrophoresis data, DNA varietal fingerprinting data (i.e. AFLP's, RFLP=s, SSR's, SNP's, etc.). Please attach data and corresponding protocols.

APPENDIX**ILLUSTRATIONS AND NOTES****8.0 Reaction to Pesticides**

In order for claims of pesticide tolerance to be made, data must be submitted to support these claims. Although there is no minimum amount of data required for the purposes of variety registration, for the purposes of the pesticide registration or for the variety to be listed on a pesticide label, the requirements of the *Pest Control Products Act* must be met.

Under the *Pest Control Products Act*, if an applicant submits data to demonstrate tolerance to a specific herbicide, this data cannot be extrapolated to all chemicals within that class of compounds.

Similarly, data can only be submitted as it relates to the intended use, i.e. data submitted on tolerance of the plants under sprayed conditions cannot be extrapolated to tolerance to residual herbicides.