SAVE this form to your desktop or computer.
Enter required information and upon completion, return to nvrb@aosca.org
by clicking this gray bar Submit by e-mail **and sending the resulting email.**
*** if unable to submit your application, please contact the AOSCA office for assistance.**

Please print a copy of the completed application for your records.

ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES
VARIETY REVIEW BOARD
APPLICATION - PART B – 2019

This application – Part B – must be submitted along with Part A
(Note: You may submit ONE Part A application for multiple Part B applications)

SUNFLOWER (*Helianthus annuus* L.)

All information provided on this application shall be maintained in complete confidence by the Association of Official Seed Certifying Agencies (AOSCA), its staff, and individual members of the AOSCA Variety Review Board. Each member of the Review Board will be required to sign a statement to this effect prior to receipt of any applications for review. Upon completion of the review process, reviewers will be required to destroy or delete all applications in their possession. One copy of each application will be maintained on file in the AOSCA office.

Instructions:

1. **This application consists of multiple sections (designated below as A - J). Applicants are to insert appropriate content after each section heading. Where necessary, attach well-constructed tables as a separate attachment in Microsoft Word format.**
2. **The applicant must DESCRIBE and DOCUMENT, in this application, the characteristics of the variety or line which confer its distinctiveness.**
3. **Insert your text into the appropriate cells or table rows. See sample form on the AOSCA web site for guidance.**

Applicant Name: _____ Date _____

A. Variety Name _____ or temporary designation _____

USAGE: Please check market usage type.
○ 1. OIL ○ 2. NON-OIL (confectionary)

Varietal form: ○ MAINTAINER (B line) ○ RESTORER ○ OPEN-POLLINATED
If varietal form is a MAINTAINER (B line), provide name of its CMS (A) line: _____

B. Origin and breeding history of the variety (insert after each category of information)

1. Provide the variety's pedigree, including public and private varieties and/or lines. Discuss breeding methods and selection criteria used: Include a brief description of any special or unique traits attributed to the variety. Include oil fatty acid type. If resistance to certain herbicide is claimed, identify the event as part of the pedigree information. List the herbicide by technical name, not brand name. If the line has genetic traits governed by specific genes also identify the event as part of the pedigree information.

2. Provide details of subsequent stages of selection and multiplication.

3. Cytoplasmic designation – state the source of sterile cytoplasm, if applicable; *e.g.*, cms PET1 [*H. petiolaris* (French)] would designate the original source of sterile cytoplasm:

4. State the location(s) and year(s) from which data used in this application were collected:

C. Objective description of the variety (describe the B line of A-B pairs)

Instructions: Enter numbers or text in field cells that best describe the traits or characters that are typical of plants of this variety. Enter period (.) when indicating decimal.

1. HYPOCOTYL: anthocyanin coloration

○ absent = 1

○ present = 9

2. HYPOCOTYL: anthocyanin coloration density

○ weak = 3

○ medium = 5

○ strong = 7

3. LEAF SIZE

○ small = 3

○ medium = 5

○ large = 7

4. LEAF COLOR

- ○ light green = 3
- ○ medium green = 5
- ○ dark green = 7

5. LEAF BLISTERING

- ○ absent or very weak = 1
- ○ weak = 3
- ○ medium = 5
- ○ strong = 7
- ○ very strong = 9

Stage: E4 - Bud 3 to 5 cm, before flowering

Place: 2/3 height of plant

6. LEAF: SERRATION

- ○ isolated or very fine = 1
- ○ fine = 3
- ○ medium = 5
- ○ coarse = 7
- ○ very coarse = 9

7. LEAF: SHAPE OF CROSS SECTION

- ○ strongly concave = 1
- ○ weakly concave = 3
- ○ flat = 5
- ○ weakly convex = 7
- ○ strongly convex = 9

8. LEAF: SHAPE of DISTAL PART

_____ lanceolate = 1

_____ lanceolate to narrow triangular = 2

_____ narrow triangular = 3

_____ narrow triangular to broad triangular = 4

_____ broad triangular = 5

_____ broad triangular to acuminate = 6

_____ broad triangular to rounded = 7

_____ acuminate = 8

_____ rounded = 9

9. LEAF AURICLES

_____ none or very small = 1

_____ small = 3

_____ medium = 5

_____ large = 7

_____ very large = 9

10. LEAF WINGS

_____ absent or very weak = 1

_____ weakly expressed = 2

_____ strongly expressed = 3

11. LEAF: ANGLE OF LOWEST LATERAL VEINS

_____ acute = 1

_____ right angle or nearly right angle = 2

_____ obtuse = 3

12. LEAF: ATTITUDE (HEIGHT OF TIP OF BLADE COMPARED TO INSERTION OF PETIOLE)

○ low = 3

○ medium = 5

○ high = 7

13. STEM: HAIRINESS AT THE TOP

○ absent or very weak = 1

○ weak = 3

○ medium = 5

○ strong = 7

○ very strong = 9

14. TIME OF FLOWERING

a. UPOV

○ very early = 1

○ early = 3

○ medium = 5

○ late = 7

○ very late = 9

b. Comparison to standard reference

[ ] days ○ earlier than ○ same as ○ later than

[0] Comparison variety number

15. RAY FLORET: DENSITY

○ absent = 1

○ sparse = 3

○ medium = 5

○ dense = 7

16. RAY FLORET: SHAPE

_____ fusiform = 1

_____ narrow ovate = 2

_____ broad ovate = 3

_____ rounded = 4

_____ other (or fused disk-like) = 5

17. RAY FLORET: DISPOSITION

_____ flat = 1

_____ longitudinal recurved = 2

_____ undulated = 3

_____ strongly recurved to back of head = 4

18. RAY FLORET: LENGTH

_____ short = 3

_____ medium = 5

_____ long = 7

19. RAY FLORET: COLOR

_____ yellowish white = 1

_____ light yellow = 2

_____ medium yellow = 3

_____ orange yellow = 4

_____ orange = 5

_____ purple = 6

_____ reddish brown = 7

_____ multicolored = 8

20. DISK FLOWER: COLOR

_____ yellow = 1

_____ orange = 2

_____ purple = 3

21. DISK FLOWER: ANTHOCYANIN COLORATION OF STIGMA

_____ absent = 1

_____ present = 9

22. DISK FLOWER: ANTHOCYANIN COLORATION OF STIGMA

_____ weak = 3

_____ medium = 5

_____ strong = 7

23. DISK FLOWER: POLLEN PRODUCTION

_____ absent = 1

_____ present = 9

24. BRACT: SHAPE

_____ clearly elongated = 1

_____ neither clearly elongated nor rounded = 2

_____ rounded = 3

25. BRACT: LENGTH OF TIP

_____ very short = 1

_____ short = 3

_____ medium = 5

_____ long = 7

_____ very long = 9

26. BRACT: GREEN COLOR OF OUTER SIDE

- ○ light = 3
- ○ medium = 5
- ○ dark = 7

27. BRACT: ATTITUDE IN RELATION TO HEAD

- ○ not embracing or very slightly = 1
- ○ slightly embracing = 2
- ○ strongly embracing = 3

28. PLANT: NATURAL HEIGHT
a. UPOV

- ○ very short = 1
- ○ short = 3
- ○ medium = 5
- ○ tall = 7
- ○ very tall = 9

b. Comparison to standard reference

[ ] cm ○ shorter than ○ same as ○ taller than

[0] Comparison variety number

29. PLANT: BRANCHING

- ○ absent = 1
- ○ present = 9

30. PLANT: TYPE OF BRANCHING

- ○ only basal = 1
- ○ predominantly basal = 2
- ○ overall = 3
- ○ predominantly apical = 4
- ○ only apical = 5

31. PLANT: NATURAL POSITION OF CLOSEST LATERAL HEAD TO THE CENTRAL HEAD

_____ below = 1

_____ same level = 2

_____ above = 3

32. HEAD: ATTITUDE AT MATURITY

_____ horizontal = 1

_____ inclined = 2

_____ vertical = 3

_____ half-turned down with straight stem = 4

_____ half-turned down with curved stem = 5

_____ turned down with straight stem = 6

_____ turned down with slightly curved stem = 7

_____ turned down with strongly curved stem = 8

_____ overturned = 9

33. HEAD: SIZE

_____ small = 3

_____ medium = 5

_____ large = 7

34. HEAD: SHAPE OF GRAIN SIDE

_____ strongly concave = 1

_____ weakly concave = 2

_____ flat = 3

_____ weakly convex = 4

_____ strongly convex = 5

_____ deformed = 6

35a. SEED: SIZE

○ very small = 1

○ small = 3

○ medium = 5

○ large = 7

○ very large = 9

NOTE: For Items 35b, 35c, and 35d, the following standard reference or check lines must be used for comparisons: HA89 (for oil B lines) and RHA274 (for oil R lines); HA292 (for non-oil B lines) and RHA 294 (for non-oil R lines).

b.

_____ mm length

_____ mm ○ Shorter than ○ Same as ○ Longer than

0 Comparison variety number

c.

_____ gm/100 seed

_____ gm ○ Lighter than ○ Same as ○ Heavier than

0 Comparison variety number

d.

_____ % Held on 7.9 mm (20/64) round-hole screen

_____ % Units ○ Less than ○ Same as ○ More than

0 Comparison variety number

36. SEED: SHAPE

○ elongated = 1

○ ovoid elongated = 2

○ ovoid wide = 3

○ rounded = 4

37. SEED: THICKNESS

○ thin = 3

○ medium = 5

○ thick = 7

38. SEED: MAIN COLOR

_____ white = 1

_____ whitish grey = 2

_____ grey = 3

_____ light brown = 4

_____ medium brown = 5

_____ dark brown = 6

_____ black = 7

_____ purple = 8

39. SEED: STRIPES ON MARGIN

_____ none or very weakly expressed = 1

_____ weakly expressed = 2

_____ strongly expressed = 3

40. SEED: STRIPES BETWEEN MARGINS

_____ none or very weakly expressed = 1

_____ weakly expressed = 2

_____ strongly expressed = 3

41. SEED: COLOR OF STRIPES

_____ white = 1

_____ grey = 2

_____ brown = 3

_____ black = 4

42. SEED: SPOTS ON PERICARP

_____ absent = 1

_____ present = 9

Note: Items 43 and 44 are not UPOV descriptors, but they are required by AOSCA

43. PAPPI COLOR

_____ Green = 1

_____ Rust (rust) = 2

_____ purple = 3

_____ other = 4

44. POLLEN COLOR

_____ white = 1

_____ yellow = 2

_____ Orange = 3

_____ other = 4

D. Using well-constructed tables, provide evidence (data, graphs, charts, pictures, etc.) supporting the identity of the variety. If statements or claims are made concerning agronomic and/or performance characteristics, such as yields, reaction to insects or diseases, or other traits, the application must contain evidence to support such statements. Statistical analysis of data is encouraged.

1. **DISEASE, PARASITE, INSECT, AND HERBICIDE REACTIONS**:
(0 = Not tested; 1 = Susceptible – provide supporting evidence; 2 = Resistant - provide supporting evidence).
Include and identify susceptible and resistant check varieties in evidence.

☐ Rust (*Puccinia helianthi*) Provide races:	☐ Broomrape (*Orobanche cumana*) Provide races
☐ Verticillium wilt (*Verticillim dahliae*) Provide races:	☐ Sunflower moth (*Homoeosoma electellum*)
☐ Downy mildew (*Plasmopara halstedii*) Provide races:	☐ Banded sunflower moth (*Cochylis hospes*)
☐ Sclerotinia wilt (*Sclerotinia sclerotiorum*)	☐ European sunflower moth (*Homoeosoma nubulellum*)
☐ Phoma black stem (*Phoma macdonaldii*)	☐ Seed weevil (*Smicronyx fulvus or S. sordidus*)
☐ Phomopsis (*Phomopsis helianthi = Diaporthe helianthi*)	☐ Sunflower midge (*Contarinia schulzi*)
☐ White blister rust (*Albugo tragopogi*)	☐ Sunflower beetle (*Zygogramma exclamationis*)
☐ Charcoal rot, Stem rot (*Macrophomia phaseolina*)	☐ Other insects (specify)
☐ Other disease (specify)	☐ Imidazolinone
	☐ Tribenuron-methyl

2. **GIVE THE FOLLOWING OIL DATA FOR THE SUBMITTED VARIETY***

			FATTY ACIDS (provide for modified profiles)			
	HULL**	OIL (%)	OLEIC (%)	LINOLEIC (%)	PALMITIC (%)	STEARIC (%)
VARIETY Submitted						

* Hull and oil percentages expressed for whole undecorticated seed; acids expressed as percentages of oil. Individual fatty acid profile must be indicated for any line exhibiting modified fatty acids, i.e., oleic, stearic, saturated, etc. If the line is traditional high linoleic oil, only total oil content is required.
** Required for confectionary lines.

E. Describe the area of adaptation and primary market use of the variety:

F. Provide information to assist field inspectors, including expected variability (kind and frequency), variants, and prominent identifying characteristics of both plants and seed. **Please note!** Include in this section all field and laboratory information possible to assist field inspectors and seed technologists involved in the certification process. Unusual variations or explanatory descriptions from this section should also be included in Item I.

NOTE: The U.S. Federal Seed and most state seed laws do not allow the marketing of a variety with variants in excess of 5%. AOSCA suggests that applicants discuss this issue with the USDA Agriculture Marketing Service – Seed Regulatory and Testing Division, located in Gastonia, North Carolina.

G. Give procedures and entity responsible for maintaining stock seed classes. This information must be supplied in detail.

H. Provide additional restrictions, if any, with respect to geographic area of seed production or other factors affecting genetic purity.

I. Provide a one-page description of the variety, to be published by AOSCA, based on the information provided in this application, **using complete sentences in the template provided on the next page.** This is the only information about this variety that will be published by AOSCA for use in conducting field inspections. Confidential business information need not be revealed. Include the following points:

1. A brief statement of the origin and breeding history, including selection criteria and the identity of the developer. State the variety's predominant oil type. . **This section will be auto- filled with the information provided in items B1 and B2.**
2. State the area of probable adaptation and primary purpose for which the variety will be used. Report states and areas within states where the variety has been tested and proposed areas of recommendation and merchandising. . **This section will be auto filled with the information provided in item E.**
3. Provide information of value to field inspectors - morphological characteristics and other identifying characteristics: **The table will be auto filled based on the selections made by the applicant in Item C**.
4. Provide a statement relative to its disease, insect, and herbicide resistance/reaction. **This section needs to be filled out by the applicant.**
5. Name the party responsible for maintaining stock seed, procedures for maintaining seedstock and limitations specified by the breeder. State any licensing agreements that are associated with this variety that would affect certifying agency activities. **This section will be auto filled with the information provided in Item G.**
6. State when certified seed will first be offered for sale if this variety is recommended for certification by official certifying agencies. State whether certified seed production acreage can be published by AOSCA and certifying agencies. **This section needs to be filled out by the applicant**.
7. State whether application will be submitted for protection under the U.S. Plant Variety Protection Act and whether such application would elect the option that seed sold by variety name must be certified (Title V Certification Option). State whether AOSCA may provide descriptive information to the PVP database. **This section needs to be filled out by the applicant**.

When this form is complete, please remember to send it to AOSCA by clicking the gray bar below (or on Page 1) and sending the resulting email. Your data will be transmitted as an XML file.

Submit by e-mail

Sunflower

1.

2.

3. Flowering (relatively early, medium, or late?):
Height (relatively short, medium or tall?):
Branching Type:
Distal Leaf Shape:
Leaf Serration:
Leaf Attitude:
Leaf Blistering:
Leaf Color:
Ray Flower Color:
Ray Flowers:
Stigma Anthocyanin:
Pappi Color:
Disk Flower Color:
Head (neck) Attitude:
Pollen Color:
Seed Shape:
Head Shape:
Seed Thickness:
Seed Outer Pericarp Color:
Hypocotyl Anthocyanin:
Stripe Appearance: marginal: center: color:

State expected variants or other varietal information not described above (if none, state "none").

4.

5.

6.

7.

INFORMATION BELOW FOR AOSCA INTERNAL USE ONLY

Date this application was submitted: _____ Date recommended by the VRB: _____