

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

EXHIBIT C
OBJECTIVE DESCRIPTION OF VARIETY

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995. Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426). OMB Collection #0581-0055

NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
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Soybean
 (*Glycine max* (L.) Merr.)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.81 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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Instructions:

- Data for quantitative plant characters should be based on a minimum of 100 plants.
 - Comparative data should be determined from varieties entered in the same trial.
 - Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used
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- The Morphology section of the Objective Description must be filled out completely. Missing information may be requested by the Plant Variety Protection Office. Significant omissions could delay or inhibit certificate of protection issuance.

Location:

Breeding Location	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)
Trial Location	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)
Area(s) of Adaptation		

Morphology:

I. SEED:

1. _____ Seed Shape:

1. Spherical (L/W, L/T, and T/W ratios ≤ 1.2)
2. Spherical-Flattened (L/W ratios > 1.2 ; L/T ratios ≤ 1.2)
3. Elongate (L/W ratios > 1.2 ; T/W ratios ≤ 1.2)
4. Elongate-Flattened (L/T ratios ≥ 1.2 ; L/W ratios ≥ 1.2)



2. _____ Seed Coat Color:

- | | | |
|-----------|---------------------------|----------|
| 1. Yellow | 2. Green | 3. Brown |
| 4. Black | 5. Other (Please Specify) | |

3. _____ Seed Coat Luster:

- | | |
|---------|----------|
| 1. Dull | 2. Shiny |
|---------|----------|

4. _____ Seed Size (grams/100 seeds, please round to nearest decimal (00.0))

5. _____ Seed: Hilum Color:

- | | | |
|---------------------------|--------------------|----------|
| 1. Buff | 2. Yellow | 3. Brown |
| 4. Gray | 5. Imperfect Black | 6. Black |
| 7. Other (Please Specify) | | |

6. _____ Seed: Ground Color of Testa (Excluding Hilum):

- | | | |
|----------------|-----------------|---------------|
| 1. Yellow | 2. Yellow Green | 3. Green |
| 4. Light Brown | 5. Medium Brown | 6. Dark Brown |
| 7. Black | | |

7. _____ Seed: Cotyledon Color:

- | | |
|-----------|----------|
| 1. Yellow | 2. Green |
|-----------|----------|

8. _____ Seed Protein Peroxidase Activity:

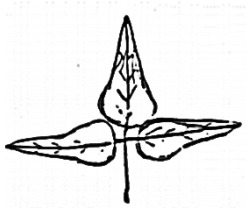
- | | |
|--------|---------|
| 1. Low | 2. High |
|--------|---------|

II. LEAF:

9. _____ Leaf: Hypocotyl Color:

1. Green ('Evans' or 'Davis')
2. Green with Bronze Band below Cotyledons ('Woodworth' or 'Tracy')
3. Light Purple below Cotyledons ('Beeson' or 'Pickett 71')
4. Dark Purple extending to Unifoliate Leaves ('Hodgson', 'Coker', or 'Hampton 266A')

10. _____ Leaf: Shape:



1. Lanceolate
4. Other (Specify)



2. Oval



3. Ovate

11. _____ Leaf: Size of Lateral Leaflet:

1. Small
2. Medium
3. Large

12. _____ Leaf: Color:

1. Light Green
2. Medium Green
3. Dark Green

13. _____ Leaf: Blistering:

1. Absent or Very Weak
2. Weak
3. Medium
4. Strong
5. Very Strong

III. FLOWER:

14. _____ Flower: Color:

1. White
2. Purple
3. White with Purple Throat

IV. POD:

15. _____ Pod: Color:

1. Tan
2. Brown
3. Black

16. _____ Pod: Pubescence Color:

1. Gray
2. Brown
3. Light Brown

V. PLANT:

17. _____ Plant: Type:

1. Slender

2. Intermediate

3. Bushy

18. _____ Plant: Height (cm)

19. _____ Plant: Height:

1. Short

2. Short to Medium

3. Medium

4. Medium to Tall

5. Tall

20. _____ Plant: Growth Type:



1. Determinate

2. Semi-Determinate



4. Indeterminate

21. _____ Plant: Growth Habit:



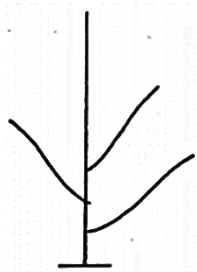
1. Erect



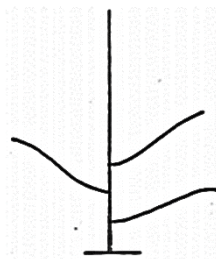
2. Erect to Semi-Erect



3. Semi-Erect



4. Semi-Erect to Horizontal



5. Horizontal

VI. MATURITY:

22. _____ Maturity: Group:

- | | | |
|---------|----------|---------|
| 1. 000 | 2. 00 | 3. 0 |
| 4. I | 5. II | 6. III |
| 7. IV | 8. V | 9. VI |
| 10. VII | 11. VIII | 12. IX |
| 13. X | 14. XI | 15. XII |

23. _____ Maturity Subgroup:

- | | | |
|----------|----------|----------|
| 1. One | 2. Two | 3. Three |
| 4. Four | 5. Five | 6. Six |
| 7. Seven | 8. Eight | 9. Nine |

[PLEASE ENTER ADDITIONAL VARIETY TRAITS ON NEXT PAGE]

VII. DISEASE REACTIONS:

Bacterial:

(1 = Not Tested, 2 = Susceptible, 3 = Resistant, 4 = Tolerant)

1. _____ Bacterial Pustule (*Xanthomonas campestris* pv. *glycines* (Nakano) Dye)
2. _____ Bacterial Blight (*Pseudomonas syringae* pv. *glycinea* (Coerper) Young, Dye, & Wilkie)
3. _____ Wildfire Blight (*Pseudomonas syringae* pv. *tabaci* (Wolf & Foster) Young, Dye, & Wilkie)

Fungal:

(1 = Not Tested, 2 = Susceptible, 3 = Resistant, 4 = Tolerant)

1. _____ Brown Spot (*Septoria glycines* Hemmi)
2. _____ Frogeye Leaf Spot (*Cercospora sojina* Hara)
3. _____ Frogeye Leaf Spot (*Cercospora sojina* Hara) Race 1
4. _____ Frogeye Leaf Spot (*Cercospora sojina* Hara) Race 2
5. _____ Frogeye Leaf Spot (*Cercospora sojina* Hara) Race 3
6. _____ Frogeye Leaf Spot (*Cercospora sojina* Hara) Race 4
7. _____ Frogeye Leaf Spot (*Cercospora sojina* Hara) Race 5
8. _____ Frogeye Leaf Spot (*Cercospora sojina* Hara) Race 6
9. _____ Frogeye Leaf Spot (*Cercospora sojina* Hara) Race 7
10. _____ Frogeye Leaf Spot (*Cercospora sojina* Hara) Other (Specify)
11. _____ Target Spot (*Corynespora cassiicola* (Berk. & Curt.) Wei)
12. _____ Downy Mildew (*Peronospora trifoliorum* var. *manchurica* (Naum.) Syd. Ex Gäum)
13. _____ Powdery Mildew (*Microsphaera diffusa* Cke. & Pk.)
14. _____ Brown Stem Rot (*Phialophora gregata* (Allington & Chamberlain) W. Gams.)
15. _____ Stem Canker (*Diaporthe phaseolorum* (Cke. & Ell.) Sacc. var. *caulivora* Athow & Caldwell)
16. _____ Pod and Stem Blight (*Diaporthe phaseolorum* (Cke. & Ell.) (Sacc. var. *sojiae* (Lehman) Wehm.)
17. _____ Purple Seed Stain (*Cercospora kikuchii* (T. Matsu. & Tomoyasu) Gardener)
18. _____ Rhizoctonia Root Rot (*Rhizoctonia solani* Kühn)
19. _____ Asian Soybean Rust (*Phakospora pachyrhizi* Syd. (a.k.a. *Phakospora pachyrhizia* Syd.))
20. _____ Other rust (Please specify)

VII. DISEASE REACTIONS: (continued)

Phytophthora Root Rot (Specify the gene(s) coding for the reaction)

(1 = Absent, 2 = Present)

- | | |
|-------------------------------------|--|
| 1. _____ <i>Rps1</i> (Williams) | 9. _____ <i>Rps3-a</i> (PI 171.442) |
| 2. _____ <i>Rps1-a</i> (Mukden) | 10. _____ <i>Rps3-b</i> (PI 172.901) |
| 3. _____ <i>Rps1-b</i> (Sanga) | 11. _____ <i>Rps3-c</i> (PI 340.046) |
| 4. _____ <i>Rps1-c</i> (Arksoy) | 12. _____ <i>Rps4</i> (PI 86.050) |
| 5. _____ <i>Rps1-d</i> (PI 103.091) | 13. _____ <i>Rps5</i> (PI 91.160) |
| 6. _____ <i>Rps1-e</i> (PI 172.907) | 14. _____ <i>Rps6</i> (Altona) |
| 7. _____ <i>Rps1-k</i> (Kingwa) | 15. _____ <i>Rps7</i> (Harosoy) |
| 8. _____ <i>Rps2</i> (CNS) | 16. _____ <i>Rps?</i> (Nezumisaya, OX939, OX940) |

Phytophthora Root Rot Races: (*Phytophthora sojae* (Kaufmann & Gerdemann))

(1 = Not Tested, 2 = Susceptible, 3 = Resistant, 4 = Tolerant)

- | | | |
|-------------------|-------------------|-------------------|
| 1. _____ Race 1 | 16. _____ Race 16 | 31. _____ Race 31 |
| 2. _____ Race 2 | 17. _____ Race 17 | 32. _____ Race 32 |
| 3. _____ Race 3 | 18. _____ Race 18 | 33. _____ Race 33 |
| 4. _____ Race 4 | 19. _____ Race 19 | 34. _____ Race 34 |
| 5. _____ Race 5 | 20. _____ Race 20 | 35. _____ Race 35 |
| 6. _____ Race 6 | 21. _____ Race 21 | 36. _____ Race 36 |
| 7. _____ Race 7 | 22. _____ Race 22 | 37. _____ Race 37 |
| 8. _____ Race 8 | 23. _____ Race 23 | 38. _____ Race 38 |
| 9. _____ Race 9 | 24. _____ Race 24 | 39. _____ Race 39 |
| 10. _____ Race 10 | 25. _____ Race 25 | 40. _____ Race 40 |
| 11. _____ Race 11 | 26. _____ Race 26 | 41. _____ Race 41 |
| 12. _____ Race 12 | 27. _____ Race 27 | 42. _____ Race 42 |
| 13. _____ Race 13 | 28. _____ Race 28 | 43. _____ Race 43 |
| 14. _____ Race 14 | 29. _____ Race 29 | 44. _____ Race 44 |
| 15. _____ Race 15 | 30. _____ Race 30 | 45. _____ Race 45 |

46. Any Other Races Test (Please Specify):

VII. DISEASE REACTIONS: (continued)

Other Diseases:

(1 = Not Tested, 2 = Susceptible, 3 = Resistant, 4 = Tolerant)

1. _____ Bud Blight (Tobacco Ringspot Virus)
2. _____ Yellow Mosaic (Bean Yellow Mosaic Virus)
3. _____ Cowpea Mosaic (Cowpea Chlorotic Virus)
4. _____ Pod Mottle (Bean Pod Mottle Virus)
5. _____ Seed Mottle (Soybean Mosaic Virus)
6. _____ Sudden Death Syndrome (*Fusarium solani f.dp. glycines*)
7. _____ Soybean Cyst Nematode (*Heterodera glycines* Ichinohe) Race 1
8. _____ Soybean Cyst Nematode (*Heterodera glycines* Ichinohe) Race 2
9. _____ Soybean Cyst Nematode (*Heterodera glycines* Ichinohe) Race 3
10. _____ Soybean Cyst Nematode (*Heterodera glycines* Ichinohe) Race 4
11. _____ Soybean Cyst Nematode (*Heterodera glycines* Ichinohe) Race 5
12. _____ Soybean Cyst Nematode (*Heterodera glycines* Ichinohe) Race 6
13. _____ Soybean Cyst Nematode (*Heterodera glycines* Ichinohe) Race 9
14. _____ Soybean Cyst Nematode (*Heterodera glycines* Ichinohe) Race 14
15. _____ Soybean Cyst Nematode (*Heterodera glycines* Ichinohe) Other Races (Specify):
16. _____ Lance Nematode (*Hoplolaimus columbus* Sher)
17. _____ Southern Root Knot Nematode (*Meliodogyne incognita* (Kofoid & White) Chitwood)
18. _____ Northern Root Knot Nematode (*Meliodogyne hapla* Chitwood)
19. _____ Peanut Root Knot Nematode (*Meliodogyne arenaria* (Neal) Chitwood)
20. _____ Reniform Nematode (*Rotylenchus reniformis* Linwood & Olivera)
21. _____ Javanese Nematode (*Meliodogyne javanica* (Treb) Chitwood)
22. _____ Important: Other Nematodes tested (Please specify)

VIII. PHYSIOLOGICAL RESPONSES:

(1 = Not Tested, 2 = Susceptible, 3 = Resistant, 4 = Tolerant)

1. _____ Iron Chlorosis on Calcareous Soil
2. _____ Phosphorus
3. _____ Boron
4. _____ Aluminum
5. _____ Salt
6. _____ Drought
7. _____ Important: Other (Please specify)

IX. INSECT REACTIONS:

(1 = Not Tested, 2 = Susceptible, 3 = Resistant, 4 = Tolerant)

1. _____ Mexican Bean Beetle (*Epilachna varivestis* Mulsant)
2. _____ Soybean Aphid (*Aphis glycines* Matsamura)
3. _____ Potato Leaf Hopper (*Empoasca fabae* (Harris))
4. _____ Important: Other (Please specify)

X. HERBICIDE REACTIONS:

(1 = Not Tested, 2 = Susceptible, 3 = Resistant, 4 = Tolerant)

1. _____ Metribuzin
2. _____ Bentazone
3. _____ Sulfonylurea
4. _____ Glyphosate
5. _____ Glufosinate
6. _____ Pendimethalin
7. _____ Dicamba
8. _____ Important: Other (Please specify)

XI. SEED COMPOSITIONS

1. _____ % Protein content
2. _____ % Oil content
3. _____ % Oleic acid
4. _____ % Linoleic acid
5. _____ % Linolenic acid
6. _____ % Palmitic acid
7. _____ % Other fatty acids (Specify):

Disease Resistance:

Insect Resistance:

Comments:

For more information and guidance:
UPOV GUIDELINES FOR THE CONDUCT OF TESTS FOR DISTINCTNESS, UNIFORMITY AND STABILITY TG/080
<https://www.upov.int/edocs/tgdocs/en/tg080.pdf>