THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Syngenta Seeds, Inc.

Whereas, there has been presented to the
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREBY ATTACHED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASE MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THEREOF IS FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON THE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADDED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTIL THE SAID APPLICANT(S) AND THE HEIRS, HUEYS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF Viable SEEDS OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM USING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN MIXING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (44 STAT. 1942, AS AMENDED, 7 U.S.C. 231 ET SEQ.)

SOYBEAN

'S24-L2'

In testimony whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twentieth day of July, in the year two thousand two.

[Signature]

[Signature]

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture
APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

1. NAME OF APPLICANT(S) as it is to appear on the Certificate

Novartis Seeds, Inc.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER

X9824, M388505

3. VARIETY NAME

S24-L2

4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)

P.O. Box 959
Minneapolis, MN 55440

5. TELEPHONE (Include area code)

612-593-7333

6. FAX (Include area code)

612-593-7801

7. GENUS AND SPECIES NAME

Glycine max

8. FAMILY NAME (Botanical)

Leguminosae

9. CROP KIND NAME (Common name)

Soybean

10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name)

Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION

Delaware

12. DATE OF INCORPORATION

1976

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

John C. Thorne
Novartis Seeds, Inc.
P.O. Box 949
Washington, Iowa 52353

14. TELEPHONE (Include area code)

319-653-2181

15. FAX (Include area code)

319-653-4609

16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)

☐ Exhibit A: Origin and Breeding History of the Variety
☐ Exhibit B: Statement of Distinctiveness
☐ Exhibit C: Objective Description of the Variety
☐ Exhibit D: Additional Description of the Variety (Optional)
☐ Exhibit E: Statement of the Basis of the Applicant’s Ownership
☐ Exhibit F: Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in an approved public repository)
☐ Filing and Examination Fee ($2,450), made payable to “Treasurer of the United States” (Mail to PVPO)

17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act)

☐ YES (if “yes,” answer items 18 and 19 below)
☐ NO (if “no,” go to item 20)

18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?

☐ YES ☐ NO

19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?

☐ YES (if “yes,” gives names of countries and dates) ☐ NO

21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned applicant(s) is/are the owner(s) of this sexually reproduced or tuber propagated plant variety, and believes(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT (Owner(s))

John C. Thorne

CAPACITY OR TITLE

Director, Soybean Breeding

DATE

05-05-99
EXHIBIT A

Origin and Breeding History of S24-L2

In the summer of 1990 the Novartis Seeds, Inc. (formerly Northrup King Co.) breeding group at Washington, IA made the cross between an experimental line W508458 x ‘S 19-90’ from which the variety S24-L2 is derived. S 19-90 is a commercial cultivar marketed by Novartis Seeds, Inc. W508458 was derived from the cross B242 x S2596, both of which were commercial cultivars marketed by Novartis Seeds, Inc.

The F1 and F2 generations were grown at the Novartis Seeds, Inc., Research Center near Kekaha, Kauai, HI in the winter of 1990-91. The F3 generation was grown at Washington in the summer of 1991; the F4 and F5 in Kekaha in the winter of 1991-92, and the F6 at Washington in the summer of 1992. The F2 through F5 generations were advanced using a modified system of single seed descent. Single F6 plants were harvested in the fall of 1992 and threshed individually. The progeny from these plants were yield tested in a preliminary yield trial in the summer of 1993. One of these, designated M388505, was chosen for advancement. M388505 was tested in extensive replicated trials in southern Ontario and the northern United States from 1994 through 1998 and found to perform well compared to other mid Maturity Group 2 varieties. It was tested in the greenhouse at the Novartis Seeds, Inc. Research Center at Bay, AR, for resistance to Phytophthora sojae and found to have the Rps1-c gene for resistance. It was tested in the field for tolerance to white mold caused by Sclerotinia sclerotiorum and found to be tolerant. It was also found to have purple flowers, tawny pubescence, tan pod walls, and seed with yellow seed coats and brown hila (may contain up to 2% other hilum color). During 1998 it was tested under the experimental designation X9824, and based on its yield superiority and disease resistance, it was released in 1999 as S24-L2.

During the winter of 1995-96, 500 seeds of S24-L2 were planted in Kekaha. This increase was rogued for flower, pubescence, and pod color, and 200 single plants were harvested and threshed individually. The seed from each plant was confirmed to have brown hila, and the progeny planted at Washington as progeny rows in the summer of 1996. This increase was rogued carefully at flowering and maturity, and any rows with off-type plants were removed. Uniform rows conforming to the variety description were then bulk harvested to produce Pre-breed seed. The seed was planted near Washington in 1997 to produce Breeder Seed. This increase was rogued carefully at flowering and maturity and found to be uniform.

Foundation seed of S24-L2 was produced by Novartis Seeds, Inc. in the summer of 1998 and found to meet Novartis Seeds, Inc. standards for Foundation Seed. Fields were also inspected by the Iowa Crop Improvement Association.

S24-L2 is uniform and stable within a purity level of 99% (98% for hilum color). During the five years of testing and three years of seed increase, we have observed no variants. Any off-type plants removed from increase fields were assumed to have arisen from admixture or out-crossing. Varietal purity will be maintained using progeny rows as needed for the life of the variety.
Statement of Distinctness for the Variety S24-L2

Soybean variety S24-L2 is most like the variety S 24-92. It can be differentiated from S 24-92 on the basis of hilum color and resistance to *Phytophthora sojae*. S24-L2 has brown hilum color and the Rps1-c gene for resistance to Phytophthora while S 24-92 is susceptible to Phytophthora and has black hilum color.
Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g., 09).

1. SEED SHAPE:

2

1 = Spherical (L/W, L/T, and T/W ratios ≤ 1.2)  
2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio ≤ 1.2)  
3 = Elongate (L/T ratio > 1.2; T/W < 1.2)  
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

2. SEED COAT COLOR: (Mature Seed)

1. Yellow  2 = Green  3 = Brown  4 = Black  5 = Other (Specify)

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

Intermediate

1 = Dull (‘Corsoy 79’; ‘Braxton’)  2 = Shiny (‘Nesbary’; ‘Gasoy 17’)

4. SEED SIZE: (Mature Seed)

1 = 9 Grams per 100 seeds

5. HILUM COLOR: (Mature Seed)

1 = Buff  2 = Yellow  3 = Brown  4 = Gray  5 = Imperfect Black  6 = Black  7 = Other (Specify)

6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow  2 = Green

7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low  2 = High

8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1a)  2 = Type B (SP1b)

9. HYPOCHOTYL COLOR:

1 = Green only (‘Evans’; ‘Davis’)  2 = Green with bronze band below cotyledons (‘Woodworth’; ‘Tracy’)  
3 = Light Purple below cotyledons (‘Beeson’; ‘Pickett 71’)  
4 = Dark Purple extending to unifoliate leaves (‘Hodgson’; ‘Coker Hampton 266A’)

10. LEAFLET SHAPE:

1 = Lanceolate  2 = Oval  3 = Oval  4 = Other (Specify)
11. LEAFLET SIZE:

| 1 | Small ('Amsoy 71'; 'A5312') |
| 2 | Medium ('Corsoy 79'; 'Gasoy 17') |
| 3 | Large ('Crawford'; 'Tracy') |

12. LEAF COLOR:

| 1 | Light Green ('Weber'; 'York') |
| 2 | Medium Green ('Corsoy 79'; 'Braxton') |
| 3 | Dark Green ('Gnome'; 'Tracy') |

13. FLOWER COLOR:

| 1 | White |
| 2 | Purple |
| 3 | White with purple throat |

14. POD COLOR:

| 1 | Tan |
| 2 | Brown |
| 3 | Black |

15. PLANT PUBESCENCE COLOR:

| 1 | Gray |
| 2 | Brown (Tawny) |

16. PLANT TYPES:

| 1 | Slender ('Essex'; 'Amsoy 71') |
| 2 | Intermediate ('Amcor'; 'Braxton') |
| 3 | Bushy ('Gnome'; 'Govan') |

17. PLANT HABIT:

| 1 | Determinate ('Gnome'; 'Braxton') |
| 2 | Semi-Determinate ('Will') |
| 3 | Indeterminate ('Nebsoy'; 'Improved Pelican') |

18. 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 |

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

**BACTERIAL DISEASES:**
- [ ] Bacterial Pustule (Xanthomonas phaseoli var. sojensis)
- [ ] Bacterial Blight (Pseudomonas glycinea)
- [ ] Wildfire (Pseudomonas tabaci)

**FUNGAL DISEASES:**
- [ ] Brown Spot (Septoria glycines)
  - Race 1
  - Race 2
  - Race 3
  - Race 4
  - Race 5
  - Other (Specify)

- [ ] Frogeye Leaf Spot (Cercospora sojina)
- [ ] Target Spot (Corynespora cassiicola)
- [ ] Downy Mildew (Peronospora trifoliorum var. manshurica)
- [ ] Powdery Mildew (Microsphaera diffusa)
- [ ] Brown Stem Rot (Cephalosporium gregatum) Intermediate Tolerance
- [ ] Stem Canker (Diaporthe phaseolorum var. caulivora)
19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

- Pod and Stem Blight (Diaporthe phaseolorum var. sojae)
- Purple Seed Stain (Cercospora kikuchii)
- Rhizoctonia Root Rot (Rhizoctonia solani)
- Phytophthora Rot (Phytophthora megasperma var. sojae)
  - Race 1 2 Race 2 2 Race 3 1 Race 4 2 Race 5 2 Race 6 2 Race 7
  - Race 8 2 Race 9 Other (Specify)

VIRAL DISEASES:
- Bud Blight (Tobacco Ringspot Virus)
- Yellow Mosaic (Bean Yellow Mosaic Virus)
- Cowpea Mosaic (Cowpea Chlorotic Virus)
- Pod Mottle (Bean Pod Mottle Virus)
- Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

- Soybean Cyst Nematode (Heterodera glycines)
  - Race 1 1 Race 2 1 Race 3 1 Race 4 Other (Specify)
- Lance Nematode (Hoploaimus Columbii)
- Southern Root Knot Nematode (Meloidogyne incognita)
- Northern Root Knot Nematode (Meloidogyne Hapla)
- Peanut Root Knot Nematode (Meloidogyne arenaria)
- Reniform Nematode (Rotylenchulus reniformis)
- OTHER DISEASE NOT ON FORM (Specify):  

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- 1 Iron Chlorosis on Calcareous Soil
- Other (Specify)  

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- Mexican Bean Beetle (Epilachna varivestis)
- Potato Leaf Hopper (Empoasca fabae)
- Other (Specify)  

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>NAME OF VARIETY</th>
<th>CHARACTER</th>
<th>NAME OF VARIETY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant Shape</td>
<td>S24-92</td>
<td>Seed Coat Luster</td>
<td>S19-90</td>
</tr>
<tr>
<td>Leaf Shape</td>
<td>S24-92</td>
<td>Seed Size</td>
<td>S24-12</td>
</tr>
<tr>
<td>Leaf Color</td>
<td>S19-90</td>
<td>Seed Shape</td>
<td>S19-90</td>
</tr>
<tr>
<td>Leaf Size</td>
<td>S24-92</td>
<td>Seedling Pigmentation</td>
<td>S24-12</td>
</tr>
</tbody>
</table>
### 23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>NO. OF DAYS MATURITY</th>
<th>PLANT LODGING SCORE</th>
<th>CM PLANT HEIGHT</th>
<th>LEAFLET SIZE</th>
<th>SEED CONTENT</th>
<th>SEED SIZE G/100 SEEDS</th>
<th>NO. SEEDS/POD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submitted</td>
<td>263</td>
<td>2.7</td>
<td>79</td>
<td>6</td>
<td>10</td>
<td>42.0</td>
<td>20.8</td>
</tr>
<tr>
<td>S24-92</td>
<td>262</td>
<td>2.7</td>
<td>79</td>
<td>6</td>
<td>10</td>
<td>42.2</td>
<td>20.8</td>
</tr>
<tr>
<td><strong>Name of Similar Variety</strong></td>
<td><strong>262</strong></td>
<td><strong>2.7</strong></td>
<td><strong>79</strong></td>
<td><strong>6</strong></td>
<td><strong>10</strong></td>
<td><strong>42.2</strong></td>
<td><strong>20.8</strong></td>
</tr>
</tbody>
</table>

### PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

**STATEMENT OF THE BASIS OF OWNERSHIP**

<table>
<thead>
<tr>
<th>1. NAME OF APPLICANT(S)</th>
<th>2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER</th>
<th>3. VARIETY NAME</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)</th>
<th>5. TELEPHONE (Include area code)</th>
<th>6. FAX (Include area code)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.O. Box 959 Minneapolis, MN 55440</td>
<td>612-593-7333</td>
<td>612-593-7801</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. PPV NUMBER</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9900314 (ST: 3/03/2000)</td>
<td></td>
</tr>
</tbody>
</table>

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain. [ ] YES [ ] NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company? [ ] YES [ ] NO

10. Is the applicant the original breeder? If no, please answer the following:

   a. If original rights to variety were owned by individual(s):
      Is (are) the original breeder(s) a U.S. national(s)? If no, give name of country

   b. If original rights to variety were owned by a company:
      Is the original breeder(s) U.S. based company? If no, give name of country

   [ ] YES [ ] NO

11. Additional explanation on ownership (If needed, use reverse for extra space):

**PLEASE NOTE:**

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.

2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.

3. If the applicant is an owner who is not the original breeder, both the original breeder and the applicant must meet one of the above criteria.

The original breeder may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.