No. 7700027

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

SeedTec International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF seventeen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, [illegible]ORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VA[illegible] THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT [illegible]542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SAFFLOWER

'S-400'

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 *this* 31st *day of* August *in the year of our Lord one thousand nine hundred and* eighty-four.

Attest:

Kenneth H. Ev[illegible]

Commissioner
Plant Variety Protection Office
Livestock, Meat, Grain & Seed Divis[illegible]
Agricultural Marketing Service

John R Block

Secretary of Agriculture

INSTRUCTIONS

GENERAL: Send an original copy of the application, exhibits and $250.00 fee to U.S. Dept. of Agriculture, Agricultural Marketing Service, Grain Division, 6525 Belcrest Road, Hyattsville, Maryland 20782. (See Section 180.175 of the regulations and rules of practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

5 Insert the date the applicant determined that he had a new variety based on the definition in Section 41 (a) of the Act and decision is made to increase the seed.

13a First, give the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method. Second, give the details of subsequent stages of selection and multiplication. Third, indicate the type and frequency of variants during reproduction and multiplication and state how these variants may be identified. Fourth, provide evidence on stability.

13b First, give any special characteristics of the seed and of the plant as it passes through the seedling stage, flowering stage and the fruiting stage. Second, describe the mature plant and compare it with a similar commercial variety grown under the same conditions, and indicate the differences.

13c A supplemental form will be furnished by the PVPO to describe in detail a variety for each kind of seed.

13d Provide complete data indicative of novelty. Seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty may be submitted. Seeds submitted may be sterile.

13e Indicate whether applicant is the actual breeder, the employer of the breeder, the owner through purchase or inheritance, etc.

RECEIVED
DEC 27 1976
U.S. DEPT.
PVPO

7700027

EXHIBIT A

Origin and Breeding History of the Variety.

S-400 was developed from the multiple cross F8 [(N-6 x Gila) x Gila) x 414) x 414) x Frio) x Frio) x Frio] and then selfed 8 generations.

76 F8 progeny selections were bulked for the original seed increase. The selections were based on uniformity in height, maturity, oil percentage, fusarium resistance, and yellow flower color. This bulk was increased in isolation in 1973. A portion of this increase was again increased in bulk in 1974 and has since been maintained as breeders' seed stock. No significant variation has been observed in subsequent increases made from this seed stock.

EXHIBIT B

S-400 is pure yellow flower color whose florets also dry down to a yellow color. The type of oil it produces is predominately linoleic. Seedlings have very broad leaves and have very good seedling vigor. Heads are medium to large in size. Seed of S-400 usually has 3-5% hulless (blue color) seed. The leaf bracts around the head are not quite as long or as lanceolate as S-317.

1976 Data

FORM GR-470-22
(2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

FORM APPROVED. OMB NO. 40-R3712

EXHIBIT C
(Safflower)

OBJECTIVE DESCRIPTION OF VARIETY

SAFFLOWER *(CARTHAMUS TINCTORIUS)*

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)

Pacific Oilseeds Incorporated

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

FOR OFFICIAL USE ONLY

PVPO NUMBER 7700027

VARIETY NAME OR TEMPORARY DESIGNATION

S-400

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. MATURITY (From Emergence):

[1] Location: 1 = CALIFORNIA & ARIZONA 2 = MIDWEST

[1][3][0] NO. OF DAYS TO MATURITY

[ ][ ] NO. OF DAYS EARLIER THAN .... [ ]

[0][3] NO. OF DAYS LATER THAN ..... [2]

1 = GILA 2 = FRIO 3 = US-10

[3] Maturity Class: 1 = EARLY (less than 110 days) 2 = MEDIUM EARLY (110 to 120 days) 3 = MEDIUM LATE (121 to 130 days) 4 = LATE (more than 130 days)

2. PLANT HEIGHT AT MATURITY:

[0][7][4] CM. HEIGHT

[ ][ ] CM. SHORTER THAN ..... [ ]

[1][0] CM. TALLER THAN ..... [2]

1 = GILA 2 = FRIO 3 = US-10

3. FLOWER COLOR:

[0][4] Type:

	Fresh Flower	Wilted Flower
01 =	WHITE	GREYISH-WHITE
02 =	LIGHT YELLOW	GREYISH-WHITE
03 =	LIGHT-ORANGE BASE	ORANGE BASE
04 =	YELLOW	YELLOW (US-10)
05 =	YELLOW	LIGHT ORANGE BASE
06 =	YELLOW	ORANGE (Gila)
07 =	ORANGE	LIGHT RED
08 =	REDDISH ORANGE	DEEP RED
09 =	YELLOW BASE & TIPS OF LOBES ORANGE	ORANGE
10 =	PALE-YELLOW	PALE-YELLOW
11 =	OTHER (Specify)	

4. SPINES ON INVOLUCRAL BRACTS:

[2] 1 = ABSENT 2 = PRESENT

[3] Location: 1 = TIP ONLY 2 = TIP & FEW BASAL 3 = TIP & ALONG MARGINS 4 = MARGINS ONLY

[0][3] MM. LENGTH (A) [1][6] NUMBER (B) [0][4][8] SPINE INDEX (A x B)

[3] Spine Index Class: 1 = 0–20 2 = 21–40 3 = 41–60 4 = 61–80 5 = 81–100 6 = 101–120

5. HEADS (For Plant Populations of 593,000 Plants/Hectare):

[0][2][5] MM. DIAMETER (Primary Heads)

[1] Seed Shattering Percentage: 1 = 1–10 2 = 11–30 3 = OVER 30

6. SEED:

[1] Color: 1 = WHITE 2 = CREAM 3 = GRAY 4 = GRAY WITH WHITE TIP 5 = GRAY STRIPED 6 = PURPLE STRIPED 7 = BROWN STRIPED 8 = BROWN BLOTCH 9 = OTHER (Specify)

[3] Hull Type: 1 = NORMAL 2 = THIN-HULLED 3 = STRIPED 4 = REDUCED

[0][4] MM. WIDTH [0][8] MM. LENGTH [0][4][3] GRAMS PER 1000 SEED

7. SEEDLING VIGOR: (6 weeks after seeding at 2.5 cm. depth with ample moisture for germination; mean of 20 plants)

[1][6] NUMBER OF NODES [0][1][7] CM. TALL (Soil Surface to Tip)

EXHIBIT D

'S-400' PV# 7700027

'S-400' most closely resembles 'Frio' and 'S-296.' 'S-400' and 'S-296' are resistant to Fusarium root rot while 'Frio' is not. 'S-400' has a 3-4% higher seed oil content than 'Frio' and 1.5 to 2.0% higher than 'S-296.' 'S-400' has yellow flowers; whereas, 'Frio' and 'S-296' have yellow and orange flowers.

Pacific Oilseeds Inc

Oct 17, 1977 By Paul E Claassen

Date Name

Table 2

COMPARATIVE YIELD DATA OF S-317 AND S-400

WITH COMMERCIALLY GROWN VARIETIES OF OUR OWN IN 1976

	Test No. 1			Test No. 2			Test No. 3			Test No. 4 (Fusarium infested soil)		
Variety	Yield lbs/acre	Test weight	% oil NMR	Yield lbs/acre	Test weight	% oil NMR	Yield lbs/acre	Test weight	% oil NMR	Yield lbs/acre	Test weight	% oil NMR
S-317	3,204	42.9	42.0	3,914	42.4	43.3	3,937	42.9	44.6	2,791	42.8	43.6
S-400	3,588	42.2	44.4	3,406	42.2	44.6	3,679	42.2	44.5	2,915	42.2	45.0
S-296	3,416	42.4	43.3	3,497	42.5	43.0	3,501	42.7	43.0	2,443	42.2	43.6
S-208	3,058	43.1	43.0	3,759	42.7	43.8	3,676	42.9	43.8	0	-	-
S-304	3,122	40.7	41.5	3,558	40.3	42.2	3,862	40.4	42.4	0	-	-

replications in each test

47-27

TABLE 3

COMPARATIVE YIELD DATA S-400 and S-296 GROWN IN 1975

	S-400			S-296		
TEST LOCATION & NO.	Ave. Yield	T.W.	Oil%	Ave. Yield	T.W.	Oil%
75-8 River Garden Farms	2,947	40.6	46.0	2,683	40.8	44.5
75-86 River Garden Farms	3,361	40.4	46.0	3,038	40.5	43.8
75-81 River Garden Farms	3,395	39.7	46.0	3,232	39.8	44.5
75-50 River Garden Farms	3,436	39.8	46.4	3,620	40.5	45.0
75-4 Butte City	1,859	39.9	44.2	1,662	38.7	42.2
AVERAGE	3,000	40.0	46.0	2,887	40.1	44.0

Average of 5 replications in each test

7700027

EXHIBIT E

Pacific Oilseeds Incorporated, Woodland, California, believes it is the sole, original and first breeder of the S-400 variety of safflower for which it solicits a certificate of protection.

No. 7700027

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pacific Oilseeds Incorporated

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

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SAFFLOWER

'S-400'

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 *this* 11th *day of* May *in the year of our Lord one thousand nine hundred and* seventy-eight

Attest:

Acting
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Secretary of Agriculture

PVP# 7700027 S-400

FORM GR-470-22 (REVERSE)

8. COLD RESISTANCE AT DIFFERENT STAGES AND TEMPERATURES:

[ ] Rosette:
[ ] Bolting:
[ ] Flowering:

1 = −10° C. 2 = −5° C. 3 = 0° C. 4 = 5° C. 5 = 10° C.

9. DISEASE: (0 = Not Tested; 1 = Susceptible; 2 = Resistant)

1 RUST (Specify races) _____	2 PHYTOPHTHORA ROOT ROT	0 PYTHIUM ROOT ROT
2 FUSARIUM WILT	1 VERTICILLIUM WILT	0 CERCOSPORA LEAF SPOT
0 SCLEROTINA STEM ROT	0 ALTERNARIA LEAF SPOT	0 ALTERNARIA BUD ROT
0 BOTRYTIS HEAD ROT	0 RHIZOCTONIA BLIGHT	0 BACTERIAL BLIGHT
0 CUCUMBER MOSAIC	0 PHYLLODY	0 OTHER (Specify) _____

10. INSECT AND NEMATODE: (0 = Not Tested; 1 = Susceptible; 2 = Resistant)

1 GREEN PEACH APHID	0 LEAF-CURL PLUM APHID	0 BLACK BEAN APHID
1 WESTERN FLOWER THRIPS	1 LYGUS BUGS	0 STINKBUGS
0 ROOT-KNOT NEMATODE	[ ] OTHER (Specify) _____	

11. INDICATE A VARIETY THAT MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	VARIETY	CHARACTER	VARIETY
Frost Hardiness	Frio	Lodging	Frio
Seed Shattering	Frio	No. of Branches	Frio
Seedling Vigor	Frio		

12. GIVE THE FOLLOWING DATA FOR SUBMITTED AND A SIMILAR VARIETY *:

VARIETY	HULL (%)	PROTEIN (%)	OIL (%)	IODINE (%)	ACIDS SATURATED (%)	ACIDS UNSATURATED OLEIC (%)	ACIDS UNSATURATED LINOLEIC (%)
Submitted S-400	34.4	18.1	44.0	143.8 Wijs	9.2	12.6	77.0
Similar	38.0	16.5	39	144 Wijs	7.0	16.0	76.0
Name of Similar Variety	Frio	Frio	Frio	Frio	Frio	Frio	Frio

**Hull, protein, and oil percentages expressed for whole undecorticated seed; acids expressed as percentages of oil.*

REFERENCES

1. Knowles, P.F. & M.D. Miller. 1965. Safflower. Cal. Ag. Exp. Sta. Circ. 532. 51 p.
2. Weiss, E.A. 1971. Castor, Sesame, and Safflower. Barnes & Noble, Inc. N.Y. 901 p.

Nickerson's or any recognized color fan may be used to determine plant colors of described variety.

COMMENTS:

U.S. DEPARTMENT OF AGRICULTURE DEC 27 1976 RECEIVED

FORM GR-470
(12-15-72)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

FORM APPROVED
OMB NO. 40-R3712

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

1. VARIETY NAME OR TEMPORARY DESIGNATION S-400	2. KIND NAME Safflower	FOR OFFICIAL USE ONLY PV NUMBER 7700027
3. GENUS AND SPECIES NAME Carthamus tinctorius	4. FAMILY NAME *(Botanical)* Compositae	FILING DATE 1-18-77 TIME 9:00 A.M. P.M. FEE RECEIVED $250.00 BALANCE DUE $ —
	5. DATE OF DETERMINATION December 1, 1976	$250.00 $ 4-12-77 $250.00 $ 1-10-78
6. NAME OF APPLICANT(S) Pacific Oilseeds Incorporated	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)* P. O. Box 1008 Woodland, CA 95695	8. TELEPHONE AREA CODE AND NUMBER (916) 662-8623

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. STATE OF INCORPORATION	11. DATE OF INCORPORATION
Corporation	California	1954

12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers:

Dr. Carl E. Claassen
P. O. Box 1008
Woodland, CA 95695

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- [x] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [x] 13B. Exhibit B, Botanical Description of the Variety
- [x] 13C. Exhibit C, Objective Description of the Variety
- [x] 13D. Exhibit D, Data Indicative of Novelty
- [x] 13E. Exhibit E, Statement of the Basis of Applicant's Ownership

14A. Does the applicant(s) specify that seed of this variety be sold by variety name only as a class of certified seed? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [ ] YES [x] NO

14B. Does the applicant(s) specify that this variety be limited as to number of generations? [ ] YES [ ] NO

14C. If "Yes," to 14B, how many generations of production beyond breeder seed? [ ] FOUNDATION [ ] REGISTERED [ ] CERTIFIED

The applicant declares that a viable sample of basic seed of this variety will be deposited upon request before issuance of a certificate and will be replenished periodically in accordance with such regulations as may be applicable.

The undersigned applicant(s) of this sexually-reproduced novel plant variety believes that the variety is distinct, uniform, and stable as required in Section 41 and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant is informed that false representation herein can jeopardize protection and result in penalties.

Dec 1, 1976 — (DATE)

Carl E. Claassen — (SIGNATURE OF APPLICANT)

(DATE)

(SIGNATURE OF APPLICANT)