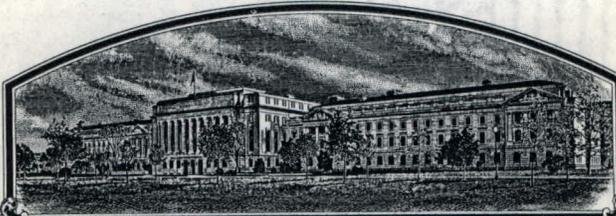


No.

9200046



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME;

**Gen-Tec Seeds, Limited**

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 *eighteen* 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, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS PROVIDED BY LAW, AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS PROVIDED BY LAW BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BEAN

'Vista'

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 30th day of June in the year of our Lord one thousand nine hundred and ninety-two.

Attest:

*Kenneth H. Swan*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Edward Madigan*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

# APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

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).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)  Gen-Tec Seeds, Limited		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. GTS 0286	3. VARIETY NAME Vista <sup>AAA</sup> 27 April 1992												
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP)  Box 98 Woodslee, Ontario Canada NOR 1V0		5. PHONE (Include area code) 519-975-2557  FAX 519-975-2557	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="2">FOR OFFICIAL USE ONLY</th> </tr> <tr> <td colspan="2">PVPO NUMBER</td> </tr> <tr> <td colspan="2" style="text-align: center; font-size: 1.2em;">9200046</td> </tr> <tr> <td style="width:10%; text-align: center;">F I L I N G</td> <td style="width:90%;">                             Date                              Dec. 19, 1991                              Time  <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.                         </td> </tr> <tr> <td style="text-align: center;">F E E S</td> <td>                             Filing and Examination Fee:                              \$ 2150.<sup>00</sup>                              Date                              Dec. 11, 1991                         </td> </tr> <tr> <td style="text-align: center;">R E C E I V E D</td> <td>                             Certificate Fee:                              \$ 250.<sup>00</sup>                              Date                              May 27, 1992                         </td> </tr> </table>	FOR OFFICIAL USE ONLY		PVPO NUMBER		9200046		F I L I N G	Date Dec. 19, 1991 Time <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.	F E E S	Filing and Examination Fee: \$ 2150. <sup>00</sup> Date Dec. 11, 1991	R E C E I V E D	Certificate Fee: \$ 250. <sup>00</sup> Date May 27, 1992
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R E C E I V E D	Certificate Fee: \$ 250. <sup>00</sup> Date May 27, 1992														
6. GENUS AND SPECIES NAME  Phaseolus vulgaris	7. FAMILY NAME (Botanical)  Leguminosae	9. DATE OF DETERMINATION  1985													
8. CROP KIND NAME (Common Name)  Navy bean, White bean, Pea bean		10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.)  Corporation													
11. IF INCORPORATED, GIVE STATE OF INCORPORATION  Ontario, Canada	12. DATE OF INCORPORATION  Dec. 29, 1980														
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS  Dr. J. W. Aylesworth Box 98 Woodslee, Ontario, Canada NOR 1V0															

PHONE (Include area code):

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

a.  Exhibit A, Origin and Breeding History of the Variety.

b.  Exhibit B, Novelty Statement.

c.  Exhibit C, Objective Description of Variety.

d.  Exhibit D, Additional Description of Variety.

e.  Exhibit E, Statement of the Basis of Applicant's Ownership.

f.  Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office Dec. 12, 1991 (via courier)

g.  Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. 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) of the Plant Variety Protection Act.)  
 YES (If "YES," answer items 16 and 17 below)       NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?  
 YES       NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?  
 FOUNDATION       REGISTERED       CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?  
 YES (If "YES," through  Plant Variety Protection Act       Patent Act. Give date: \_\_\_\_\_.)  
 NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?  
 YES (If "YES," give names of countries and dates)      Canada - May, 1990  
 NO      U.S.A. - Feb. 26, 1991

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) 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(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT [Owner(s)] 	CAPACITY OR TITLE President, Research Director	DATE Dec. 10, 1991
SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE

## INSTRUCTIONS

**GENERAL:** To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed Exhibits A,B,C,E; (3) at least 2,500 viable untreated seeds; (4) check, drawn on a U.S. bank, payable to "Treasurer of the United States" in the amount of \$2,150 (\$250 filing fee and \$1,900 examination fee). (See section 180.175 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for 30 days, then returned to the applicant as unfiled. Mail application and other requirements to: Plant Variety Protection Office, AMS, USDA, Rm. 500, NAL Building, 10301 Baltimore Blvd., Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the Application are self-explanatory unless noted below. Corrections on the Application form and Exhibits must be initialed and dated. DO NOT use masking materials to make corrections. If a Certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$250 for issuance of the Certificate.

**Plant Variety Protection Office**  
**Telephone: 301/344-2518**

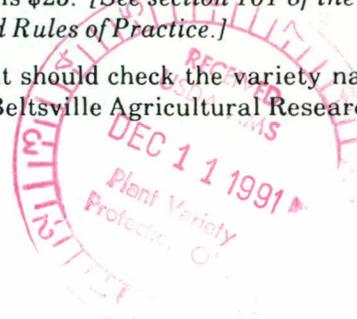
### ITEM

9. Give the date when there has been at least a tentative determination that the variety has been sexually reproduced with recognized characteristics, whether or not the novelty of those characteristics has been determined. [See section 41(d) of the Plant Variety Protection Act (Act).]
- 14a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability. (See sections 41 and 52 of the Act.)
- 14b. Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons which clearly indicate novelty.
- 14c. Exhibit C forms are available from the PVPO; specify crop kind. Fill in the Exhibit C (Objective Description of Variety form) to describe your variety.
- 14d. Optional additional characteristics and/or photographs: Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 14e. Section 52(4) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. The applicant may be the actual breeder, the employer of the breeder, the owner through purchase or inheritance, etc.
15. If "Yes" is specified (*seed of this variety be sold by variety name only as a class of certified seed*), the applicant may **NOT** reverse this affirmative decision after the variety has either been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified the applicant may change the choice. (See section 180.16 of the Regulations and Rules of Practice.)
19. See sections 41 (i, j) and 42 of the Act and section 180.7 of the Regulations and Rules of Practice for eligibility requirements.

### NOTES:

It is the responsibility of the applicant/owner to keep the PVPO informed of any change of address or change of ownership or assignment during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment is \$25. [See section 101 of the Act, and sections 180.130, 180.131, 180.132, and 180.175(h) of the Regulations and Rules of Practice.]

To avoid conflict with other variety names in use, the applicant should check the variety names proposed by contacting: Seed Branch, AMS, USDA, Rm. 213, Building 306, Beltsville Agricultural Research Center -- East, Beltsville, MD 20705. Telephone: 301/344-2089.



## EXHIBIT A - ORIGIN AND BREEDING HISTORY

GTS 0286 was developed using the pedigree method of breeding and single seed descent. Screening for disease resistance was done in the growth room and greenhouse. Selection was based on maturity, plant structure, yield, lodging resistance, anthracnose resistance and seed quality.

Parentage: C 20 /3/ GTS 0181-1 / Seafarer

C 20 = a high yielding, upright type IIa navy bean variety developed by Campbell Soup Company, Napoleon, Ohio and Michigan State University, East Lansing, Michigan.

GTS 0181-1 = a high yielding navy bean breeding line developed by Gen-Tec Seeds Limited, Woodslee, Ontario - a sister line of Crestwood - used as donor of "Are" gene which confers resistance to the alpha, beta, gamma and delta races of bean anthracnose.

Seafarer = an early maturing navy bean variety developed by M.S.U.

- 1981 Original cross, GTS 0181-1 / Seafarer, made in the growth room during the summer.
- 1981-82  $F_1$  of original cross was crossed with C 20 and was followed by three backcrosses to C 20 during the fall and winter of 1981-82 and the summer of 1982. Only backcross progeny which carried the "Are" gene were used for each subsequent backcross.
- 1982-83 Twenty  $BC_3F_1$  plants which carried the "Are" gene were selected and 200 sub-lines of these were advanced to  $BC_3F_3$  in the greenhouse.
- 1983 200  $BC_3F_3$  lines were grown in the field and 20 promising lines which were homozygous for the "Are" gene were selected. 200 sub-lines of these selections were advanced to  $BC_3F_5$  in the greenhouse using single seed descent.
- 1984 200  $BC_3F_5$  lines were grown in field - 20 lines were selected and checked for homozygous "Are" gene and advanced to  $BC_3F_7$  in the greenhouse.
- 1985 20  $BC_3F_6$  lines yield tested in preliminary trials at Woodslee and Parkhill, Ontario. 20  $BC_3F_7$  lines advanced in plant-progeny rows in field to  $BC_3F_8$ . Five lines selected for advanced yield trials.
- 1986 Five  $BC_3F_8$  lines in yield tests at Woodslee and Parkhill, Ontario. One line selected as basic seed for GTS 0286. GTS 0286 was checked for homozygous "Are" gene and 100 sub-lines of this selection were advanced to  $BC_3F_9$  in the greenhouse as basis for breeder seed.
- 1987 Yield tests at Parkhill and in Ontario Field Bean Trials.
- 1988 to 1990 Yield tests in Ontario, Minnesota, North Dakota and Michigan (Table 1) Production of breeder and foundation seed in Idaho.

No variants were observed in GTS 0286 in yield trials of the  $BC_3F_8$  to  $BC_3F_{12}$  generations and in the breeder seed plot. For this reason we believe that GTS 0286 is uniform and stable.

EXHIBIT B - NOVELTY STATEMENT

To our knowledge GTS 0286 most nearly resembles Mayflower and C 20. Differences include, but are not necessarily restricted to, the following:

GTS 0286 compared to Mayflower and C 20

1. GTS 0286 is higher in yield than Mayflower.
2. GTS 0286 is three days earlier than C 20.
3. GTS 0286 is shorter in plant height than C 20.
4. GTS 0286 is resistant to the alpha race of bean anthracnose (Colletotrichum lindemuthianum) whereas Mayflower and C 20 are susceptible to the alpha race of bean anthracnose.

**OBJECTIVE DESCRIPTION OF VARIETY**  
 Dry Edible Bean (*Phaseolus vulgaris* L.)

NAME OF APPLICANT(S) Gen-Tec Seeds, Limited	EXPERIMENTAL NAME GTS 0286	VARIETY NAME
ADDRESS (Street and No. or R.F.D. No., City, State, ZIP) Box 98 Woodslee, Ontario, Canada NOR 1V0		FOR OFFICIAL USE ONLY PVPO NO. 9200046

Provide data for all characters unless indicated as "optional." Place numbers in the boxes for the characters or numerical values which best describe this variety. Measured data should be the mean of an appropriate number of well spaced (15-20 cm) plants. The Royal Horticulture Society or any recognized color standard may be used to determine plant color. Designate the color system used below.

COLOR SYSTEM USED None	LOCATION OF THE TEST(S) TO EVALUATE THIS VARIETY Woodslee, Ont., Can. Also tests in Minn. ND and Mich.
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<b>1. MARKET CLASS</b>  <table style="width:100%;"> <tr> <td style="width:10%; text-align: center;"><input type="text" value="1"/></td> <td style="width:40%;"><b>CLASS</b></td> <td style="width:50%;"><b>CHECK</b></td> </tr> <tr> <td></td> <td>1 = Navy (Pea)</td> <td>Seafarer</td> </tr> <tr> <td></td> <td>2 = Small White</td> <td>Aurora</td> </tr> <tr> <td></td> <td>3 = Black</td> <td>Midnight</td> </tr> <tr> <td></td> <td>4 = Pinto</td> <td>UI-114</td> </tr> <tr> <td></td> <td>5 = Great Northern</td> <td>UI-59</td> </tr> <tr> <td></td> <td>6 = Small Red</td> <td>NW-59</td> </tr> <tr> <td></td> <td>7 = Pink</td> <td>Viva</td> </tr> <tr> <td></td> <td>8 = Cranberry</td> <td>UI-50</td> </tr> <tr> <td></td> <td>9 = Dark Red Kidney</td> <td>Montcalm</td> </tr> <tr> <td></td> <td>10 = Light Red Kidney</td> <td>Redkloud</td> </tr> <tr> <td></td> <td>11 = Yellow Eye</td> <td>Steuben</td> </tr> <tr> <td></td> <td>12 = Other (specify)</td> <td></td> </tr> </table>	<input type="text" value="1"/>	<b>CLASS</b>	<b>CHECK</b>		1 = Navy (Pea)	Seafarer		2 = Small White	Aurora		3 = Black	Midnight		4 = Pinto	UI-114		5 = Great Northern	UI-59		6 = Small Red	NW-59		7 = Pink	Viva		8 = Cranberry	UI-50		9 = Dark Red Kidney	Montcalm		10 = Light Red Kidney	Redkloud		11 = Yellow Eye	Steuben		12 = Other (specify)		<b>2. MATURITY</b>  <table style="width:100%;"> <tr> <td style="width:10%; text-align: center;"><input type="text" value="3"/></td> <td style="width:90%;">1 = Early (80-90 days); 2 = Medium (90-100 days); 3 = Late (&gt;100 days)</td> </tr> <tr> <td style="text-align: center;"><input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="2"/></td> <td>Days from planting to harvest maturity</td> </tr> <tr> <td style="text-align: center;"><input type="text" value=""/> <input type="text" value=""/> <input type="text" value=""/></td> <td>Heat units from planting to harvest maturity (optional). Specify base temperature used: _____</td> </tr> <tr> <td style="text-align: center;"><input type="text" value=""/> <input type="text" value="8"/> <input type="text" value="7"/></td> <td>Days from planting to harvest maturity of check variety (use check appropriate to market class shown in item 1)</td> </tr> </table>	<input type="text" value="3"/>	1 = Early (80-90 days); 2 = Medium (90-100 days); 3 = Late (>100 days)	<input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="2"/>	Days from planting to harvest maturity	<input type="text" value=""/> <input type="text" value=""/> <input type="text" value=""/>	Heat units from planting to harvest maturity (optional). Specify base temperature used: _____	<input type="text" value=""/> <input type="text" value="8"/> <input type="text" value="7"/>	Days from planting to harvest maturity of check variety (use check appropriate to market class shown in item 1)
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**3. PLANT HABIT**

<input type="text" value="3"/>	<b>TYPE</b>	
	1 = Ia Bush-determinate, strong and erect stem and branches	<input type="text" value="8"/> <input type="text" value="1"/>
	2 = Ib Bush-determinate, weak stem and branches	
	3 = IIa Erect growth habit-indeterminate, guides (runners) short or not developed	<input type="text" value="4"/> <input type="text" value="7"/>
	4 = IIb Erect growth habit-indeterminate, guides medium to long, with no ability to climb	
	5 = IIIa Vine-indeterminate, short guides with no ability to climb	<input type="text" value="2"/>
	6 = IIIb Vine-indeterminate, long guides with ability to climb	
	7 = IVa Indeterminate climbing, pods distributed throughout the plant	<input type="text" value="1"/>
	8 = IVb Indeterminate climbing, pods concentrated on the upper part of the plant	<input type="text" value="1"/>

Average height of mature plant, in cm. (includes guide)  
 Average height of check variety, in cm. (use same check as above)  
 Pod Position: 1 = Low (lower pods touching soil surface)  
 2 = High (lower pods not touching soil surface)  
 3 = Scattered (not concentrated high or low)  
 Adaptability to machine harvest: 1 = Adapted 2 = Not Adapted  
 Lodging resistance: 1 = Good 2 = Fair 3 = Poor

**4. LEAFLET MORPHOLOGY** (Use terminal leaflet of a fully expanded trifoliolate)

<input type="text" value="1"/>	1 = Smooth; 2 = Wrinkled	<input type="text" value="1"/>	1 = Dull; 2 = Glossy; 3 = Semiglossy; 4 = Variable
<input type="text" value="1"/>	<b>SHAPE:</b>	<input type="text" value="1"/>	<b>APEX OF LEAFLET:</b>
	1 = Ovate		1 = Acute
	2 = Lanceolate		2 = Acuminate
	3 = Deltoid		3 = Cuspidate
	4 = Cordate		4 = Obtuse
	5 = Rhomboid		4 = Obtuse
<input type="text" value="1"/>	<b>BASE OF LEAFLET:</b>		3 = Cordate
	1 = Obtuse		4 = Cuneate
	2 = Oblique		5 = Attenuate

4

5. FLOWER COLOR AND DAYS TO BLOOM

1 COLOR OF STANDARD: 1 = White; 2 = Cream; 3 = Pink; 4 = Blue; 5 = Purple

1 COLOR OF KEEL: 1 = White; 2 = Cream; 3 = Pink; 4 = Blue; 5 = Purple

1 COLOR OF WINGS: 1 = White; 2 = Cream; 3 = Pink; 4 = Blue; 5 = Purple

4  3 Days to 50% bloom

9200046

6. POD MORPHOLOGY (Green pod morphology optional)

Green Mature

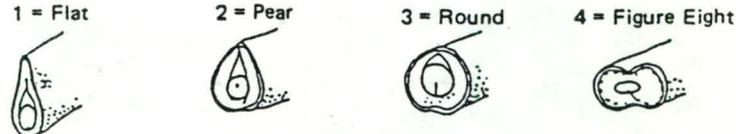
1 COLOR PATTERN: 1 = Solid; 2 = Striped; 3 = Blotched; 4 = Mottled; 5 = Other \_\_\_\_\_

7 PRIMARY COLOR: 1 = Purple; 2 = Red; 3 = Green; 4 = Yellow; 5 = Tan; 6 = Brown; 7 = Other beige

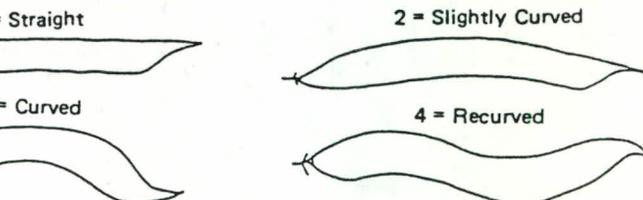
1 COLOR MODIFIER: 1 = Light; 2 = Light Medium; 3 = Medium; 4 = Medium Dark; 5 = Dark

SECONDARY COLOR: 1 = Purple; 2 = Red; 3 = Green; 4 = Yellow; 5 = Tan; 6 = Brown; 7 = Other \_\_\_\_\_

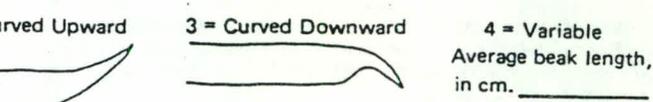
3 CROSS SECTION SHAPE: 1 = Flat 2 = Pear 3 = Round 4 = Figure Eight



2 POD CURVATURE: 1 = Straight 2 = Slightly Curved 3 = Curved 4 = Reurved



3 POD BEAK ORIENTATION: 1 = Straight 2 = Curved Upward 3 = Curved Downward 4 = Variable Average beak length, in cm. \_\_\_\_\_



2 CONSTRICTIONS: 1 = None; 2 = Slight; 3 = Deep

4  7 Average number of seeds per pod

7. SEED COLOR

2 1 = Shiny; 2 = Dull; 3 = Semishiny; 4 = Variable

1 1 = Monochrome; 2 = Polychrome

1 PRIMARY COLOR: 1 = White; 2 = Yellow; 3 = Buff; 4 = Tan; 5 = Brown; 6 = Pink; 7 = Red; 8 = Purple; 9 = Blue; 10 = Black; 11 = Other \_\_\_\_\_

SECONDARY COLOR: 1 = White; 2 = Yellow; 3 = Buff; 4 = Tan; 5 = Brown; 6 = Pink; 7 = Red; 8 = Purple; 9 = Blue; 10 = Black; 11 = Other \_\_\_\_\_

1 COLOR PATTERN: 1 = Solid; 2 = Splashed; 3 = Mottled; 4 = Striped; 5 = Flecked; 6 = Dotted

1 HILAR RING: 1 = Absent; 2 = Present

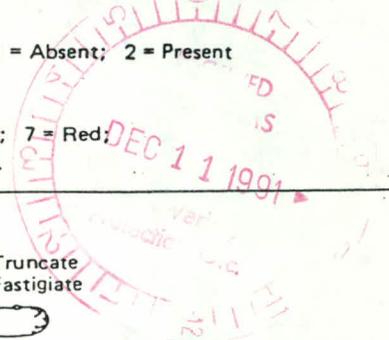
HILAR RING COLOR: 1 = White; 2 = Yellow; 3 = Buff; 4 = Tan; 5 = Brown; 6 = Pink; 7 = Red; 8 = Purple; 9 = Blue; 10 = Black; 11 = Other \_\_\_\_\_

8. SEED SHAPE AND WEIGHT

2 SHAPE OF SEED TAKEN FROM MIDDLE OF POD: 1 = Round 2 = Oval 3 = Cuboid 4 = Kidney 5 = Truncate Fastigiate



2  0 Dry seed weight in g/100g seeds (adjusted to 12% moisture)



9. ANTHOCYANIN PIGMENTATION

1 = ABSENT  
2 = PRESENT

<input checked="" type="checkbox"/> Flowers	<input checked="" type="checkbox"/> Stems	<input checked="" type="checkbox"/> Pods	<input checked="" type="checkbox"/> Seeds
<input checked="" type="checkbox"/> Leaves	<input checked="" type="checkbox"/> Petioles	<input checked="" type="checkbox"/> Peduncles	<input checked="" type="checkbox"/> Nodes

9200046

10. KNOWN DISEASE REACTION

DISEASES - COMMON NAME: Anthracnose, Rust, Powdery mildew, Fusarium root rot, Pythium root rot, Rhizoctonia root rot, Pythium wilt, Sclerotinia white mold, Angular leaf spot, Bacterial wilt, Halo blight, Fuscous blight, Common bacterial blight, Red node virus, Pod mottle virus, Bean common mosaic virus, Bean yellow mosaic virus, Curly top virus, Bacterial brown spot, Bean southern mosaic virus, Other (specify) Necrotic strain of BCMV

REACTION: 1 = Susceptible; 2 = Resistant; 3 = Tolerant; 4 = Avoidance

(Give the common name (CN), scientific name (SN), and race(s), where applicable)

DISEASE: CN Bean common mosaic virus; SN Marmor phaseoli; Race(s) 1 and 15

DISEASE: CN Anthracnose; SN Colletotrichum lindemuthianum; Race(s) alpha, beta, gamma, delta

DISEASE: CN Fuscous blight; SN Xanthomonas phaseoli var. fuscans; Race(s) \_\_\_\_\_

DISEASE: CN Common bacterial blight; SN Xanthomonas phaseoli; Race(s) \_\_\_\_\_

DISEASE: CN Bean common mosaic virus; SN \_\_\_\_\_; Race(s) Necrotic strain

DISEASE: CN \_\_\_\_\_; SN \_\_\_\_\_; Race(s) \_\_\_\_\_

11. KNOWN INSECT/NEMATODE RESISTANCE

PESTS - COMMON NAME: Aphids, Bean pod weevil, Bruchid beetle, Corn earworm, Flea beetle, Leaf hopper, Lesion nematode, Lygus, Mexican bean beetle, Root knot nematode, Corn seed maggot, Spider mites, Thrips, Weevils, Western bean cutworm, Other (specify) \_\_\_\_\_

REACTION: 1 = Susceptible; 2 = Resistant; 3 = Tolerant; 4 = Avoidance

(Give the common name (CN), scientific name (SN), and biotype, where applicable)

PEST: CN \_\_\_\_\_; SN \_\_\_\_\_; Biotype \_\_\_\_\_

PEST: CN \_\_\_\_\_; SN \_\_\_\_\_; Biotype \_\_\_\_\_

PEST: CN \_\_\_\_\_; SN \_\_\_\_\_; Biotype \_\_\_\_\_

12. KNOWN PHYSIOLOGICAL STRESS REACTION

1 = Susceptible; 2 = Resistant; 3 = Tolerant; 4 = Avoidance

Heat  Cold  Drought  Air Pollution

Nutrient toxicity or deficiency (specify nutrient) \_\_\_\_\_

Other \_\_\_\_\_

13. COMMENTS

Field observations indicate that GTS 0286 may be tolerant to white mold (Sclerotinia sclerotiorum), possibly due to avoidance because of its upright structure.

6

## EXHIBIT D - ADDITIONAL DESCRIPTION OF VARIETY

GTS 0286 is a full season, high yielding navy bean variety suitable for direct combining and adapted to the bean growing areas of Ontario, Michigan, Minnesota and North Dakota. It has good lodging resistance but, on highly fertile soils and under very favorable growing conditions, it tends to lean over forming a tunnel effect between the rows. However, after maturity the plants become erect again and this trait does not prevent direct combining. GTS 0286 has shown uniform ripening in the field and little or no subsequent regrowth even when the plants have been stressed during the growing season.

In sensory evaluations at the Agriculture Canada Research Station, Harrow, Ontario GTS 0286 was rated as satisfactory and similar to OAC Seaforth in cooking quality.

GTS 0286 carries the "I" gene for resistance to bean common mosaic virus (BCMV) and is susceptible to necrotic strains of BCMV which causes blackroot disease. Despite this susceptibility we have seen no blackroot infection in GTS 0286 in all the trials in Ontario, Michigan, Minnesota and North Dakota.

Table 1. Agronomic performance of GTS 0286 and check varieties in tests in Ontario, Michigan, Minnesota and North Dakota, 1987 - 1990. <sup>1</sup>

Test Locations

	OFBT 87	Parkhill 87	OFBT 88	Parkhill 88	Min/Dak 89	OFBT 89	Woodslee 89	OFBT 90	Min/Dak 90	Mich. 90	Weighted averages	
<u>YIELD-lbs/acre</u>												
GTS 0286	2775	3658	2097	2844	4087	2526	2570	2398	2243	3050	2541	2968
Mayflower			1830		3052	2484			2152	2918	2371	
C 20		3323		2876	3577				2252	3086		2949
Crestwood	2572	3118	2000	3044	3455	2534	2028	2187	2080			
OAC Seaforth	2177		1727			1687		1861				
Seafarer <sup>2</sup>										2246		
Seaside		2379	1602	1757	3125		1568		1974			
No. test sites	7	1	8	1	1	9	1	6	3	6		
Av. CV%	10.3	8.9	11.2	14.2	10.6	10.9	10.2	10.5	11.3	-		
<u>MATURITY-days</u>												
GTS 0286	101	106	109		107	98	102	104		99	102	101
Mayflower			108		107	98	102			98	102	
C 20		112			110					101		104
Crestwood	102	109	102		104	99	100	104				
OAC Seaforth	89		96			89	92	89				
Seafarer										87		
Seaside		97	96		96		91					
<u>SEED WT. gms/100</u>												
GTS 0286	21.1		20.2		20.5	20.1		20.0	17.9		19.8	19.3
Mayflower			19.7		20.7	20.8			17.7		19.9	
C 20					20.3				18.9			19.3
Crestwood	22.5		19.9		21.7	22.2		21.6	19.1			
OAC Seaforth	21.6		20.3			21.2		20.9				
Seafarer												
Seaside			20.4		20.2				19.9			

PVP Application - GTS 0286

8

Notes re. Table 1.

1. OFBT = Ontario Field Bean Trials made by Agriculture Canada, Harrow, Ontario, Ontario Ministry of Agriculture, Ridgetown and Centralia, Ontario and the University of Guelph, Guelph, Ontario.

Parkhill and Woodslee tests were made by Gen-Tec Seeds Ltd., Woodslee, Ont.

Min/Dak tests were made in Minnesota and North Dakota by Agri Sales, Inc., Saginaw, Michigan.

Michigan Tests were made by the Michigan State University and Michigan Bean Commission, Saginaw, Michigan.

All tests contained four replications.

2. Seafarer is no longer used as a check variety in the Ontario and Min/Dak tests. OAC Seaforth is two days later in maturity and slightly lower in yield than Seafarer. Seaside is similar to Seafarer in maturity and yield.

Table 2. Morphologic Characteristics of GTS 0286 and check varieties in tests at Woodslee, Ontario, 1987 - 1989.<sup>1</sup>

Variety	Days to 50% flower	Characteristic <sup>2</sup>						
		Pod length cm.	Number of pods	Number of seeds/ pod	Plant height cm. <sup>3</sup>	Number of branches/ plant	Number nodes on main stem	Spur length mm.
GTS 0286	43.0	8.5	57.1	4.73	81	5.63	12.5	5.7
C 20	45.4	8.9	57.6	4.84	85	5.15	11.5	6.3
Crestwood	42.1		45.6	5.94	78	4.10	11.7	-
Seaside	40.0	8.0	44.7	4.54	47	4.35	8.4	5.6
CV%	2.19	2.61	8.33	4.27	6.83	8.05	5.82	4.98
LSD	.05	0.69	0.34	6.09	0.29	5.05	0.79	0.53
	.01	0.91	0.46	8.23	0.39	6.83	1.07	0.72

1. All data were obtained in 1989 except "Days to 50% flower" which was taken from one trial in each of 1987 and 1988.
2. Measurements were made on five plants from each of four replications.
3. Plant height includes vine or runner.

Table 3. Disease reaction of GTS 0286 and check varieties.<sup>1</sup>

Variety	BCMV		Anthracnose races			
	Race 1	Race 15	Alpha	Beta	Gamma	Delta
GTS 0286	R	R	R	R	R	R
Mayflower	R	R	S	R	R	R
C 20	R	R	S	R	R	R
Crestwood	R	R	R	R	R	R
OAC Seaforth	R	R	R	R	R	R
Seafarer	R	R	R	R	R	S

R = resistant; S = susceptible

1. Disease tests made by Dr. M. Tu, Agriculture Canada, Research Station, Harrow, Ontario and Dr. F. Saettler, Michigan State University, East Lansing, Michigan.

Table 4. Cooking quality evaluation of GTS 0286 and check varieties.<sup>1</sup>

Variety	Total score <sup>2</sup>			Average
	1988	1989	1990	
GTS 0286	7.7	8.1	9.5	8.4
Mayflower	7.2			
OAC Seaforth	7.7	9.4	8.6	8.6
CV% (30 to 36 entries)	15.5	14.9	16.4	

1. The bean samples for cooking quality were taken from Ontario Official Bean Trials in three locations in each year. A composite sample of four replications per test was taken for each entry.
2. Eight panelists gave a sensory evaluation for appearance, flavor and texture of blanched beans canned in a tomato sauce. Scoring was 1 to 5 for each attribute (1 = poor; 5 = excellent). Panelists were used as replications.

EXHIBIT E - STATEMENT OF THE BASIS OF APPLICANT'S OWNERSHIP

GTS 0286 was developed by Dr. J. W. Aylesworth and Dr. Maria Tu, plant breeders for Gen-Tec Seeds Limited. By agreement between employees and Gen-Tec Seeds Limited, all rights to any invention, discovery or development made by an employee of Gen-Tec Seeds Limited are assigned to the Company. No rights to such invention, discovery or development are retained by the employee.