

No.

9900354



# THE UNITED STATES OF AMERICA

**TO ALL TO WHOM THESE PRESENTS SHALL COME:**  
North Carolina Agricultural Research Service Dr. R. G. Gardner  
(breeder)

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 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 TWENTY 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, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

TOMATO

'NC 2y'

*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 twenty-ninth day of February, in the year of our Lord two thousand*

Attest:

*Ann Marie Ish*

Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Don Glickman*  
Secretary of Agriculture



REPRODUCE LOCALLY. Include form number and date on all reproductions

Form Approved - OMB No. 0581-0056

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

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. 2428)

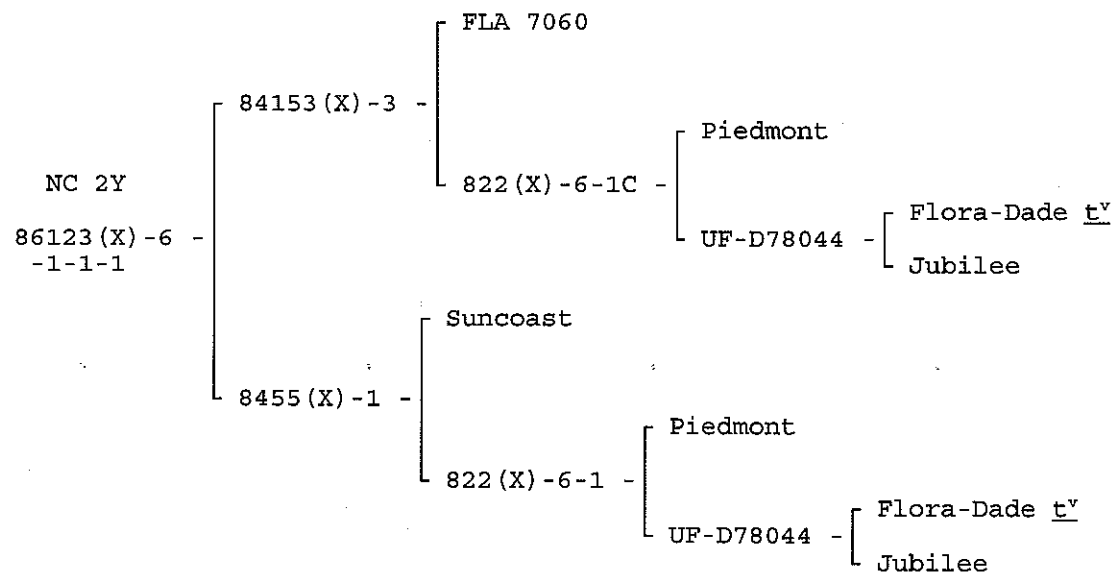
**APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE**  
(Instructions and information collection burden statement on reverse)

1 NAME OF OWNER North Carolina Agricultural Research Service Dr. R.G. Gardner (Breeder)		2 TEMPORARY DESIGNATION OR EXPERIMENTAL NAME 36123(X)-6-1-1-1	3 VARIETY NAME NC 2y
4 ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) North Carolina State University Box 7643 Raleigh, NC 27695-7643		5 TELEPHONE (include area code) 919-515-2717 828-684-3562	FOR OFFICIAL USE ONLY PVPO NUMBER 9900354
		6 FAX (include area code) 828-684-8715	
7 IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) State Governmental Agency	8 IF INCORPORATED, GIVE STATE OF INCORPORATION	9 DATE OF INCORPORATION July 14, 1999	
10 NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION (First person listed will receive all papers) Dr. Eric Young Assistant Director, NCARS 100 Patterson Hall, Box 7643 Raleigh NC 27695-7643			FILING AND EXAMINATION FEES: \$ 2450 <sup>00</sup> DATE 3-12-99 CERTIFICATION FEE: \$ 300 DATE 1-31-00
11 TELEPHONE (include area code) 919 515 2717	12 FAX (include area code) 919 515 7745	13 E_MAIL eric-young@ncsu.edu	14 CROP KIND (Common Name) Tomato
15 GENUS AND SPECIES NAME OF CROP Lycopersicon esculentum	16 FAMILY NAME (Botanical) Solanacea	17 IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <span style="float:right">w/k 12/6/99</span>	
18 CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input type="checkbox"/> 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) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)		19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? See Section 83(a) of the Plant Variety Protection Act <input type="checkbox"/> YES (If "yes", answer items 20 and 21 below) <input checked="" type="checkbox"/> NO (If "no," go to item 22)	
		20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
		21 IF "YES" TO ITEM 20, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
22 HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRY? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		23 IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.) <span style="float:right">w/k 12/6/99</span>	
24. The owners 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 owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(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. Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF OWNER <i>Johnny C. Wynne</i>		SIGNATURE OF OWNER <i>Randolph G. Gardner</i>	
NAME (Please print or type) Johnny C. Wynne		NAME (Please print or type) Randolph G. Gardner	
CAPACITY OR TITLE Director, NC Agri Res Service	DATE 3/9/99	CAPACITY OR TITLE Professor of Horticulture (Plant Breeder)	DATE

9900354

Tomato  
NC 2y

14A. Exhibit A.  
Pedigree:



NC 2y, an inbred line in the F<sub>7</sub> generation, was developed using the pedigree breeding system. The objective in the breeding program was to develop a large, deep globe-shaped gray wall resistant tomato line similar in fruit size and shape to the tomatoes FLA 7060 PVP and 'Suncoast' but having the tangerine gene (t) for yellow-orange fruit color. It has pedigree in common with 'Mountain Gold' PVP with crosses made to FLA 7060 PVP and 'Suncoast' to obtain the large-fruited, deep globe trait. Single plant selections were made in the F<sub>2</sub> through F<sub>5</sub> generations for gray wall resistance in combination with the t gene and large, deep globe shape characteristic of FLA 7060 PVP in field plots at Fletcher, NC. A bulk of the F<sub>6</sub> generation was harvested to produce the F<sub>7</sub> generation.

NC 2y appeared uniform and stable in the F<sub>4</sub> through F<sub>7</sub> generations in research station field and greenhouse trials and seed increase plantings. No variant or off-type plants were observed.

**Exhibit B. Novelty statement**

NC 2y is most similar to the tomato variety 'Mountain Gold' PVP. It differs from 'Mountain Gold' PVP in having a high level of resistance to gray wall (Table 1). 'Mountain Gold' PVP has shown moderate to severe gray wall symptoms in some trials, whereas NC 2y has not exhibited gray wall symptoms in any trials.

NC 2y also differs from 'Mountain Gold' PVP in having a large, deep globe shaped fruit characteristic of FLA 7060 PVP with fruit size significantly larger than 'Mountain Gold' PVP (Table 2).

U.S. DEPARTMENT OF AGRICULTURE  
 AGRICULTURAL MARKETING SERVICE  
 LIVESTOCK, MEAT, GRAIN AND SEED DIVISION  
 PLANT VARIETY PROTECTION OFFICE  
 BELTSVILLE, MARYLAND 20705

EXHIBIT C  
 (Tomato)

9900354

OBJECTIVE DESCRIPTION OF VARIETY  
 TOMATO (*Lycopersicon esculentum* Mill.)

NAME OF APPLICANT(S) North Carolina Agricultural Research Service Dr. R.G. Gardner (Breeder)	TEMPORARY DESIGNATION NC 86123(X)-6-1-1 -1-Bk	VARIETY NAME NC 2y
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) North Carolina State University Box 7643 Raleigh, NC 27695-7643	FOR OFFICIAL USE ONLY	
	PVPO NUMBER	

Choose responses for the following characters which best fit your variety. Complete this form as fully as possible for best characterization of the variety. When a single quantitative value is requested (e.g., fruit weight), your answer should be the mean of an adequate-sized, unbiased sample of plants. Use leading zeroes when necessary (e.g., 09 or 081, etc.). The applicant variety should be compared with at least one well-known standard check variety of the same type (see list of recommended check varieties below), and grown in the same trials. The characters on this form should be described from plants grown under normal conditions of culture for the variety. Indicate by a check whether trial data are from greenhouse \_\_\_\_\_ or field \_\_\_\_\_ plantings. Trials direct-seeded \_\_\_\_\_ or transplanted \_\_\_\_\_; staked \_\_\_\_\_ or unstaked \_\_\_\_\_. Give locations and dates of seeding and transplanting here: \_\_\_\_\_  
 Fletcher, NC seeding dates: 4/20, 5/28/92; 4/19, 5/27/93; 4/19, 5/26/94; 4/18, 5/27/95; 4/18, 5/28/96  
 Transplant dates: 6/5, 6/30/92; 6/1, 7/1/93; 5/27, 6/30/94; 6/2, 6/30/95; 5/31, 7/2/96

COMPARISONS SHOULD BE MADE TO ONE OR MORE CHECK VARIETIES IN THE FOLLOWING LIST, IF AT ALL POSSIBLE. ENTER THE NUMBER OF THE CHECK IN BOXES WHERE IDENTITY OF CHECK IS REQUESTED.

1 = Ace 55 VF	7 = Homestead 24	13 = Red Rock	19 = VF 134
2 = Campbell 37	8 = Marglobe	14 = Roma VF	20 = US 28
3 = Chico III	9 = Murietta	15 = Rutgers	21 = VF 145 B 7879
4 = Flora Dade	10 = New Yorker	16 = Sunray	22 = Other (Specify) <u>Mountain Gold PVP</u>
5 = Florida MH-1	11 = Ohio MR-13	17 = Tropic	
6 = Heinz 1350	12 = Red Cherry Large	18 = UC 82	

## 1. SEEDLING:

Anthocyanin in hypocotyl of 2-15 cm. seedling: 1 = Absent 2 = Present  Habit of 3-4 week old seedling: 1 = Normal 2 = Compact

## 2. MATURE PLANT (at maximum vegetative development):

Cm. Height

Growth: 1 = Indeterminate 2 = Determinate

Form: 1 = Lax, open 2 = Normal 3 = Compact 4 = Dwarf 5 = Brachytic

Size of canopy (compared to others of similar type): 1 = Small 2 = Medium 3 = Large

Habit: 1 = Sprawling (decumbent) 2 = Semi-erect 3 = Erect ('Dwarf Champion')

## 3. STEM:

Branching: 1 = Sparse ('Brehm's Solid Red', 'Fireball') 2 = Intermediate ('Westover') 3 = Profuse ('UC 82')

Branching at cotyledonary or first leafy node: 1 = Present 2 = Absent

No. of nodes below the first inflorescence: 1 = 1-4 2 = 4-7 3 = 7-10 4 = 10 or more

No. of nodes between early (1st - 2nd, 2nd - 3rd) inflorescences.  No. of nodes between later-developing inflorescences.

Pubescence on younger stems: 1 = Smooth (no long hairs) 2 = Sparsely hairy (scattered long hairs) 3 = Moderately hairy 4 = Densely hairy or wooly

## 4. LEAF (mature leaf beneath the 3rd inflorescence):

Type: 1 = Tomato 2 = Potato ('Trip-L-Crop')  Morphology (choose illustration on pg. 5 of this form that is most similar)

Margins of major leaflets: 1 = Nearly entire 2 = Shallowly toothed or scalloped 3 = Deeply toothed or cut, esp. towards base

Marginal rolling or wiltiness: 1 = Absent 2 = Slight 3 = Moderate 4 = Strong

Onset of leaflet rolling: 1 = Early-season 2 = Mid-season 3 = Late season

4. LEAF (mature leaf beneath the 3rd inflorescence -- continued):

- 1 Surface of major leaflets: 1 = Smooth 2 = Rugose (bumpy or veiny)  
 2 Pubescence: 1 = Smooth (no long hairs) 2 = Normal 3 = Hirsute 4 = Woolly

5. INFLORESCENCE (make observations on 3rd inflorescence):

- 1 Type: 1 = Simple 2 = Forked (2 major axes) 3 = Compound (much branched)  
 0 5 Number of flowers in inflorescence, average  
 2 Leafy or "running" inflorescences: 1 = Absent 2 = Occasional 3 = Frequent

6. FLOWER:

- 1 Calyx: 1 = Normal, lobes awl-shaped 2 = Macrocalyx, lobes large, leaflike 3 = Fleshy  
 1 Calyx-lobes: 1 = Shorter than corolla 2 = Approx. equalling corolla 3 = Distinctly longer than corolla  
 1 Corolla color: 1 = Yellow 2 = Old gold 3 = White or tan  
 2 Style pubescence: 1 = Absent 2 = Sparse 3 = Dense  
 1 Anthers: 1 = All fused into tube 2 = Separating into 2 or more groups at anthesis  
 1 Fasciation (1st flower of 2nd or 3rd inflorescence): 1 = Absent 2 = Occasionally present 3 = Frequently present

7. FRUIT (3rd fruit of 2nd or 3rd cluster): For the first 5 characters below, match your variety with the most similar illustration on pg. 5 of this form.

- 4 Typical fruit shape: 1 Shape of transverse section: 2 Shape of stem end:  
 2 Shape of blossom end: 1 Shape of pistil scar:

- 1 Abscission layer: 1 = Present (pedicellate) 2 = Absent (jointless) 1 Point of detachment of fruit at harvest: 1 = At pedicel joint 2 = At calyx attachment

1 0	mm length of pedicel (from joint to calyx attachment)		
0 8 0	mm length of mature fruit (stem axis)	0 6 1	mm length, check var. no. 2 2
0 8 8	mm diameter of fruit at widest point	0 7 9	mm diameter, check var. no. 2 2
3 7 7	g weight of mature fruit	3 2 0	g weight, check var. no. 2 2

- 3 No. of locules: 1 = Two 2 = Three and four 3 = Five or more  
 1 Fruit surface: 1 = Smooth 2 = Slightly rough 3 = Moderately rough or ribbed  
 1 Fruit base color (mature-green stage): 1 = Light green ('Lana', 'VF145-F5') 2 = Light gray-green ('Westover')  
 3 = Apple or medium green ('Heinz 1439 VF') 4 = Yellow green 5 = Dark green  
 1 Fruit pattern (mature-green stage): 1 = Uniform green 2 = Green-shouldered 3 = Radial stripes on sides of fruit  
 Shoulder color if different from base: 1 = Dark green 2 = Grey green 3 = Yellow green  
 3 Fruit color, full-ripe: 1 = White 2 = Yellow 3 = Orange 4 = Pink 5 = Red  
 6 = Brownish 7 = Greenish 8 = Other (Specify)  
 4 Flesh color, full-ripe: 1 = Yellow 2 = Pink 3 = Red/Crimson 4 = Orange 5 = Other (Specify)  
 1 Flesh color: 1 = Uniform 2 = With lighter and darker areas in walls  
 2 Locular gel color of table-ripe fruit: 1 = Green 2 = Yellow 3 = Red  
 2 Ripening: 1 = Blossom-to-stem end 2 = Uniform

7. FRUIT (3rd fruit of 2nd or 3rd cluster): Continued

<input type="checkbox"/> 2	Ripening:	1 = Inside out	2 = Uniformly	3 = Outside in	<input type="checkbox"/> 2	Stem scar size:	1 = Small ('Roma')	2 = Medium ('Rutgers')	3 = Large
<input type="checkbox"/> 2	Epidermis color:	1 = Colorless	2 = Yellow						
<input type="checkbox"/> 1	Epidermis:	1 = Normal	2 = Easy-peel		<input type="checkbox"/> 1	Core:	1 = Coreless (absent or smaller than 6x6 mm)	2 = Present	
<input type="checkbox"/> 2	Epidermis texture:	1 = Tender	2 = Average	3 = Tough					
<input type="checkbox"/> 3	Thickness of pericarp		<input type="checkbox"/> 3	Thickness of pericarp, check var. no.	<input type="checkbox"/> 2	<input type="checkbox"/> 2			
		1 = Under 3 mm	2 = 3-6 mm	3 = 6-9 mm	4 = Over 9 mm				

8. RESISTANCE TO FRUIT DISORDERS (Use code: 0 = Unknown, 1 = Susceptible, 2 = Resistant)

<input type="checkbox"/> 2	Blossom end rot	<input type="checkbox"/> 2	Catface	<input type="checkbox"/> 2	Fruit pox	<input type="checkbox"/> 2	Zippering
<input type="checkbox"/> 2	Blotchy ripening	<input type="checkbox"/> 2	Cracking, concentric	<input type="checkbox"/> 2	Gold fleck	<input type="checkbox"/>	Other (Specify)
<input type="checkbox"/> 2	Bursting	<input type="checkbox"/> 1	Cracking, radial	<input type="checkbox"/> 2	Graywall		

9. DISEASE AND PEST REACTION (Use code: 0 = Not tested, 1 = Susceptible, 2 = Resistant). NOTE: If claim of novelty is based wholly or in substantial part upon disease resistance, trial data should be appended. These should specify the method of testing, the reaction of the application variety, and reaction of well-known check varieties grown in the trial (identified by name).

VIRAL DISEASES:

<input type="checkbox"/> 0	Cucumber mosaic	<input type="checkbox"/> 0	Tobacco mosaic, Race 0	<input type="checkbox"/> 0	Tobacco mosaic, Race 2 <sup>2</sup>
<input type="checkbox"/> 0	Curly top	<input type="checkbox"/> 0	Tobacco mosaic, Race 1	<input type="checkbox"/> 0	Tomato spotted wilt
<input type="checkbox"/> 0	Potato-Y virus	<input type="checkbox"/> 0	Tobacco mosaic, Race 2	<input type="checkbox"/> 0	Tomato yellows
<input type="checkbox"/>	Other virus (Specify)				

BACTERIAL DISEASES:

<input type="checkbox"/> 0	Bacterial canker ( <i>Corynebacterium michiganense</i> )	<input type="checkbox"/> 0	Bacterial spot ( <i>Xanthomonas vesicatorium</i> )
<input type="checkbox"/> 0	Bacterial soft rot ( <i>Erwinia carotovora</i> )	<input type="checkbox"/> 0	Bacterial wilt, ( <i>Pseudomonas solanacearum</i> )
<input type="checkbox"/> 0	Bacterial speck ( <i>Pseudomonas tomato</i> )	<input type="checkbox"/>	Other bacterial disease (Specify)

FUNGAL DISEASES:

<input type="checkbox"/> 0	Anthracnose ( <i>Colletotrichum</i> spp.)	<input type="checkbox"/> 0	Leaf mold, Race 1 ( <i>Cladosporium fulvum</i> )
<input type="checkbox"/> 0	Brown root rot or corky root, ( <i>Pyrenochaeta lycopersici</i> )	<input type="checkbox"/> 0	Leaf mold, Race 2
<input type="checkbox"/> 0	Collar rot or stem canker, ( <i>Alternaria solani</i> )	<input type="checkbox"/> 0	Leaf mold, Race 3
<input type="checkbox"/> 0	Early blight defoliation, ( <i>Alternaria solani</i> )	<input type="checkbox"/>	Leaf mold, other races (Specify)
<input type="checkbox"/> 2	Fusarium wilt, Race 1, ( <i>F. oxysporum f. lycopersici</i> )	<input type="checkbox"/> 0	Nailhead spot ( <i>Alternaria tomato</i> )
<input type="checkbox"/>	Fusarium wilt, Race 2	<input type="checkbox"/> 0	Septoria leafspot ( <i>S. lycopersici</i> )
<input type="checkbox"/> 0	Fusarium wilt, Race 3	<input type="checkbox"/> 0	Target leafspot ( <i>Corynespora casicola</i> )
<input type="checkbox"/> 0	Gray leaf spot ( <i>Stemphylium</i> spp.)	<input type="checkbox"/> 1	Verticillium wilt, Race 1 ( <i>V. albo-atrum</i> )
<input type="checkbox"/> 0	Late blight, Race 0, ( <i>Phytophthora infestans</i> )	<input type="checkbox"/> 0	Verticillium wilt, Race 2
<input type="checkbox"/> 0	Late blight, Race 1	<input type="checkbox"/>	Other fungal disease
		<input type="checkbox"/>	Other fungal disease

INSECTS AND PESTS:

<input type="checkbox"/> 0	Colorado potato beetle ( <i>Leptinotarsa decemlineata</i> )	<input type="checkbox"/> 0	Tomato hornworm ( <i>Manduca quinquemaculata</i> )
<input type="checkbox"/> 0	Southern root knot nematode ( <i>Meloidogyne incognita</i> )	<input type="checkbox"/> 0	Tomato fruitworm ( <i>Heliothis zea</i> )
<input type="checkbox"/> 0	Spider mites ( <i>Tetranychus</i> spp.)	<input type="checkbox"/> 0	Whitefly ( <i>Trialeurodes vaporariorum</i> )
<input type="checkbox"/> 0	Sugar beet army worm ( <i>Spodoptera exigua</i> )	<input type="checkbox"/>	Other (Specify) _____
<input type="checkbox"/> 0	Tobacco flea beetle ( <i>Epitrix hirtipennis</i> )		

POLLUTANTS:

<input type="checkbox"/>	Ozone	<input type="checkbox"/>	Sulfur dioxide	<input type="checkbox"/>	Other (Specify) _____
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10. CHEMISTRY AND COMPOSITION OF FULL-RIPE FRUITS: Suggested test methods may be found in "Tomato Products," 5th ed., National Canners Assn. Bull. 27-L. Please specify test methods or give a reference to methods used. Fill in table below with values for the new variety and for at least one well-known check variety of similar type grown in the same trial. Specify names or numbers of check varieties.

	SUBMITTED VARIETY	Check Variety	Check Variety	Check Variety
pH				
Titrateable acidity, as % citric				
Total solids (dry matter, seeds and skin removed)				
Soluble solids, as °Brix				

11. PHENOLOGY: Express length of developmental stages either as calendar days or as heat units (growing degree days), in degrees Celsius. If heat units are used, indicate the base temperature used in their calculation here \_\_\_\_\_ °C. See paper by Warnock under "References" for method. Give comparative data for at least one check variety; identify checks by name or by number from table on page 1.

	APPLICATION VARIETY	Check variety <u>Mountain Gold</u>	Check variety <u>Flora-Dade</u>	Check variety
Seeding to 50% flower (1 open flower on 50% of plants)	61 days	61	66	
Seed to once-over harvest (if applicable)				

<input checked="" type="checkbox"/> 2	Fructing season:	1 = Long ('Marglobe')	2 = Medium ('Westover')	3 = Short, concentrated ('VF 145')
		4 = Very concentrated ('UC 82')		
<input type="checkbox"/>	Relative maturity in areas tested:	1 = Early	2 = Medium early	3 = Medium
		4 = Medium late	5 = Late	6 = Variable (if relative maturity is known to differ by location or environment, please explain on separate sheet).

12. ADAPTATION: If more than one category applies, list all in rank order.

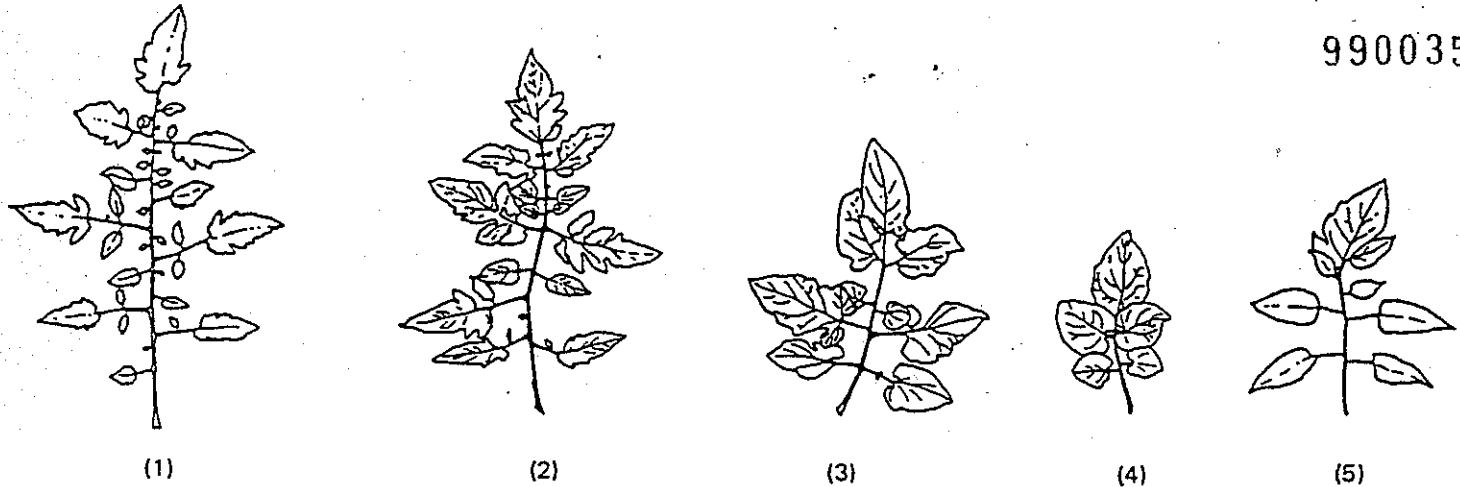
<input type="checkbox"/> 1	Culture:	1 = Field	2 = Greenhouse
<input type="checkbox"/> 5 <input type="checkbox"/> 2 <input type="checkbox"/> 1	Principal use(s):	1 = Home garden	2 = Fresh market
		3 = Whole-pack canning	4 = Concentrated products
		5 = Other (Specify) <u>Parent in F<sub>1</sub> hybrid</u>	
<input type="checkbox"/> 1	Machine harvest:	1 = Not adapted	2 = Adapted
<input type="checkbox"/> 3	Regions to which adaptation has been demonstrated:	1 = Northeast	2 = Mid Atlantic
		3 = Southeast	4 = Florida
		5 = Great Plains	6 = South-central
		7 = Intermountain West	8 = Northwest
		9 = California: Sacramento and Upper San Joaquin Valley	
		10 = California: Coastal areas	11 = California: Southern San Joaquin Valley & deserts



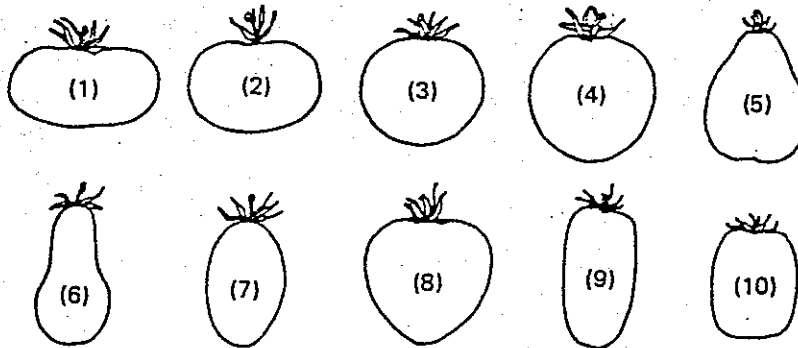
ILLUSTRATIONS OF TOMATO LEAF AND FRUIT CHARACTERISTICS

9900354

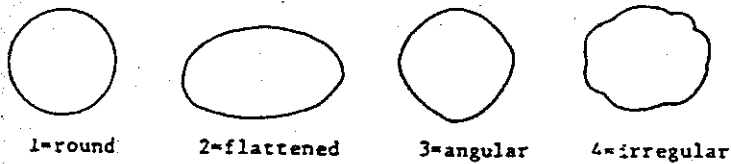
4. LEAF: Morphology:



7. FRUIT: Typical fruit shape:



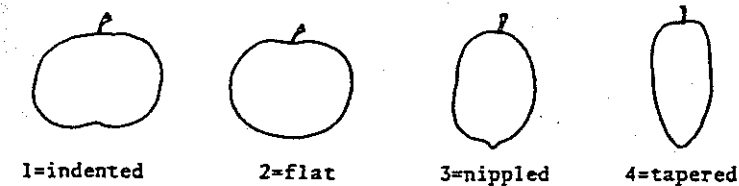
Shape of transverse section:



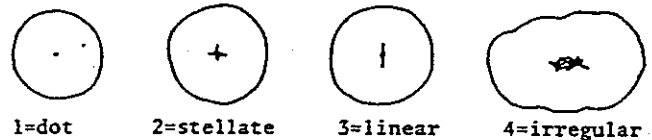
Shape of stem end:



Shape of blossom end:



Shape of pistil scar:



REFERENCES

Anonymous, 1976. All About Tomatoes. Ortho Books, Chevron Chemical Co., San Francisco. In three volumes: Midwest/Northeast Edition, West Edition, and South Edition

Ware, G.W. & J. P. McCollum, 1968. Producing Vegetable Crops. The Interstate Printer & Publishers, Inc., Danville, Illinois. Chapter 30, pp. 451-473, "Tomatoes".

Warnock, S.J. 1978. Using Tomato Heat Units. Leaflet No. 6, Campbell Institute for Agricultural Research, Camden, NJ. 10 p.

Webb, R.E., T. H. Barksdale, & A. K. Stoner, 1973, "Tomatoes", pp. 344-361, in: Nelson, R.R. (Ed.), Breeding Plants for Disease Resistance. Pennsylvania State University Press, University Park.

Young, P.A. & J.W. MacArthur, 1947. Horticultural characters of tomatoes. Bull. Texas Agric. Exper. Station No. 698.

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Table. 1. Percent of Tomato Fruit Harvest Weight with Graywall. Fletcher, NC.<sup>a</sup>

	Early trial 8/23/94	Late Trial 9/27/94
Mountain Gold	26	25
Carolina Gold	0	0
NC 1y	0	0
NC 2y	0	0

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1996 Early Trial			
	Harvest Date		
	8/14	8/21	8/28
Mountain Gold	23	25	25
Carolina Gold	0	0	0
NC 1y	0	0	0
NC 2y	0	0	0

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1996 Late Trial						
	Harvest Date					
	9/11	9/18	9/25	10/3	10/9	10/16
Mountain Gold	19	33	44	10	22	3
Carolina Gold	0	0	0	0	0	0
NC 1y	0	0	0	0	0	0
NC 2y	0	0	0	0	0	0

<sup>a</sup>All data obtained from two replicates of 8 plants per rep grown in randomized complete block designs with fruit harvested vine-ripe.

Table 2. Average Tomato Fruit Wt. (oz/fruit) in stake grown, vine-ripe harvest trials at Fletcher, NC.

	Year <sup>a</sup>									<sup>b</sup> $\bar{X}$
	1992E	1992L	1993E	1993L	1994E	1994L	1995	1996E	1996L	
Mountain Gold	11.2	10.1	10.0	10.3	11.9	11.6	11.2	12.6	11.6	11.3
Carolina Gold	11.0	10.4	12.0	10.3	13.3	11.7	12.3	13.1	12.2	12.1
NC 1y			10.4	10.0	11.4	11.1	9.7	11.8	11.0	10.8
NC 2y			14.5	11.6	14.4	13.8	12.0	14.0	13.1	13.3
LSD (0.05)	NS	NS	1.0	1.1	1.5	1.4	1.2	1.2	1.8	0.7
LSD (0.01)										0.9

<sup>a</sup>Randomized complete block design with 2 replicates of 8 plants per rep for each trial. E = early season trial; L = late season trial.

<sup>b</sup>means for 1993-1996 trials.

REPRODUCE LOCALLY. Include form number and edition date on all reproductions.

FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE**EXHIBIT E**  
**STATEMENT OF THE BASIS OF OWNERSHIP**

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).

1. NAME OF APPLICANT(S) North Carolina Agricultural Research Service Dr. R.G. Gardner (Breeder)		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER 86123(X)-6-1-1-1	3. VARIETY NAME NC 2y
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) North Carolina State University Box 7643 Raleigh, NC 27695-7643		5. TELEPHONE (include area code) 828-684-3562	6. FAX (include area code) 828-684-8715
		7. PVPO NUMBER 9900354	
8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain.			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
9. Is the applicant (individual or company) a U.S. national or U.S. based company? If no, give name of country			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
10. Is the applicant the original owner? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If no, please answer one of the following:			
a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)? <input type="checkbox"/> YES <input type="checkbox"/> NO If no, give name of country			
b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company? <input type="checkbox"/> YES <input type="checkbox"/> NO If no, give name of country			

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

NC 2y was developed by Dr. R.G. Gardner, Professor of Horticultural Science and plant breeder with the NC Ag. Research Service, NC State University, 2016 Fanning Bridge Road, Fletcher, NC 28732-9244. Phone: (828) 684-3562 FAX: (828) 684-8715  
email: rgardner@fletcher.ces.state.nc.us

## 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 owner, both the original owner and the applicant must meet one of the above criteria.

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

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