

**North Carolina Agricultural Research Service  
North Carolina State University  
Raleigh, North Carolina**


**Notice of Release of NC 58S, NC 127S, and NC 132S Tomato Breeding Lines**

The NCARS announces the release of NC 58S, NC 127S, and 132S tomato spotted wilt virus resistant (TSWV) fresh-market tomato breeding lines.

NC 58S, NC 127S, and NC 132S are inbred sister lines developed from selfing the F<sub>1</sub> hybrid 'Amelia'. A population of 196 F<sub>2</sub> plants of 'Amelia' was grown in the greenhouse in fall of 2000. Tissue from each of these plants was tested by Dr. Mikel Stevens of Brigham Young Univ. for a molecular marker tightly linked to the *Sw-5* gene for resistance to tomato spotted wilt virus (TSWV). From the plants identified as homozygous for the *Sw-5* gene based on the molecular marker test, 30 plants were selected in the greenhouse for the most desirable plant and fruit traits. F<sub>3</sub> generation plants from selfing the 30 F<sub>2</sub> plants were tested in the field in the spring of 2001 in coastal South Carolina under conditions of heavy TSWV infection at two grower locations to verify resistance of the lines. During the summer of 2001, selections were made from the lines at Fletcher, NC, based on horticultural traits. Selfing and selection was continued in the greenhouse and field through 2002. In 2003 experimental hybrids were tested in coastal SC and at Fletcher, NC. Repeated molecular marker testing of the lines and field testing of the lines and their hybrids under naturally occurring infection at Fletcher and in coastal SC has verified homozygosity for the *Sw-5* gene in NC 58S, NC 127S, and NC 132S. A sister line, NC 123S, was previously released from the NC tomato breeding program and is used as a parent in the TSWV resistant hybrid 'Crista'.

Experimental hybrids made with NC 58S, NC 127S, and NC 132S have been promising in field trials conducted at Fletcher, in coastal SC and in piedmont and eastern NC. All three lines were tested in replicated trials at Fletcher in 2003 and 2004 and have generally been equivalent to 'Mountain Spring' in total yield, U.S. Combination grade yield, and percent U.S. Combination grade. They have been consistently smaller in fruit size than 'Mountain Spring' in all trials. The three lines are determinate in growth habit. NC 58S and NC 132S have adaxial leaf curl associated with the *n* (nippled) gene for pinpoint blossom end scar. NC 127S has normal flat leaf foliage and normal, stellate blossom end scar. Fruit of all three lines have the jointed fruit pedicel and uniform light green color (*u* gene) of immature fruit. Ripe fruit of all the lines is firm and resistant to fruit cracking. In addition to the *Sw-5* gene, all three lines have the *Ve* gene for verticillium wilt resistance and the *I* and *I-2* genes for resistance to races 1 and 2 of fusarium wilt. NC 132S has the *Mi* gene for root knot nematode resistance.

Breeder seed will be maintained by the North Carolina Agricultural Research Service. A signed tomato seed transfer agreement, which can be downloaded at the website listed below, is required for recipients of seed of the three lines. Additional information and pictures of the lines are available at the following web site: <http://www.ces.ncsu.edu/fletcher/programs/tomato/>.

  
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Director, North Carolina Agricultural  
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Date