

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

Notice of Release of NC EBR-8 Tomato Breeding Line

NC EBR-8 is a fresh market plum tomato breeding line, possessing a unique combination of fruit characteristics and disease resistances which make it highly desirable as a parent in producing F₁ fresh market plum tomato hybrids. It was developed to incorporate the single dominant *I-3* gene for race 3 fusarium wilt, along with the recessive crimson gene (*og*), into a suitable background for use as a parent in producing F₁ hybrids with fusarium wilt race 3 resistance and crimson fruit color. NC EBR-8 (see pedigree in Figure 1) resulted from a cross of the large fruited breeding line Fla. 7547, which carries the *I-3* gene along with the *og* gene x NC EBR-6, an early blight resistant plum tomato line with the *og* gene and highly desirable fruit characteristics. NC EBR-6 is a parent in 'Plum Dandy,' an earlier F₁ hybrid released from the NC State University Tomato Breeding Program. Segregating lines from the above cross were selected for the *I-3* gene using seedling disease screens in a growth chamber with resistance verified in fields infested with fusarium wilt race 3. In addition to the *I-3* gene, NC EBR-8 carries the *I* and *I-2* genes for resistance to races 1 and 2 of fusarium wilt, the *Ve* gene for resistance to verticillium wilt, and moderate resistance to early blight. NC EBR-8 showed good combining ability in experimental F₁ hybrid crosses and was first available in 2002 as the male parent for the F₁ hybrid 'Plum Crimson.'

Lycopene, the red pigment in tomato, is an antioxidant which has been shown to improve human health by helping prevent certain types of cancer and heart disease. NC EBR-8 has the single recessive crimson gene, *og*, which improves the red color and significantly increases lycopene content. Fusarium wilt race 3, a growing problem worldwide, is not controlled by soil fumigation. Thus genetic resistance is the only means of controlling it in infested fields. Fortunately, the *I-3* gene is very effective in controlling fusarium wilt race 3.

NC EBR-8 is a determinate line that produces vigorous plants with dark green foliage. Fruit pedicels are jointed. Ovate fruit (L/D of 1.4:1) are highly resistant to cracking and weather check. Fruit, with two or three locules, develop a deep red interior color because of the presence of the *og* gene. Immature fruit are glossy and uniformly green (*u*). In two replicated experiments at Mills River, NC, in 2001, total and marketable yields of NC EBR-8 did not differ from 'Plum Crimson.' Average fruit size of NC EBR-8 was less than that of 'Plum Crimson' (108 g vs 128 g, respectively).

Photographs of NC EBR-8 may be viewed at the NC State University Fresh Market Tomato Breeding Program website at: www.ces.ncsu.edu/fletcher/programs/tomato/. Seed of NC EBR-8 have been transferred to other breeders through Tomato Seed Transfer Agreements for experimental breeding and testing of potential new hybrids using NC EBR-8 as a parent. 'Plum Crimson,' which contains NC EBR-8 as one of its parents, is exclusively licensed to Harris Moran Seed Co. for production and sales.

Breeders seed of NC EBR-8 are available by contacting Dr. Randy Gardner or Dr. Dilip Panthee, Mountain Horticultural Crops Research and Extension Center, 455 Research Drive, Mills River, NC 28759 or by telephone: 828.684.3562; fax: 828.684.8715; email addresses: randy_gardner@ncsu.edu or dilip_panthee@ncsu.edu. A fully executed tomato seed transfer agreement with NC State University's Office of Technology Transfer will be required to acquire seed of NCEBR-8.


Director, North Carolina Agricultural Research Service

10-16-09
Date

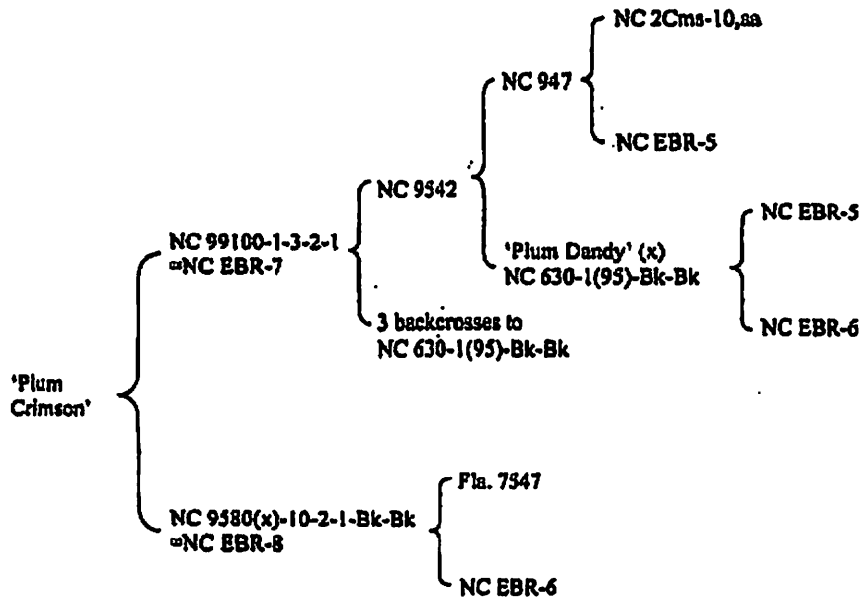


Fig. 1. Pedigrees of 'Plum Crimson' F₁ hybrid tomato and its parent lines, NC EBR-7 and NC EBR-8.