

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

Notice of Release of NC 946 Plum Tomato Inbred Line

NC 946 (inbred line in the F₈ generation) resulted from selfing NC 034, the F₁ hybrid of NC EBR-7 x a TSWV and fusarium wilt race 3 resistant selection derived from the tomato hybrid 'Amelia'. Selection in segregating generations was for fruit and plant type closely resembling NC EBR-7 plum tomato, which is a parent in the F₁ hybrid 'Plum Crimson'. Homozygosity for the *Sw-5* gene for TSWV resistance and the *I-3* gene for fusarium wilt race 3 resistance was determined by molecular marker testing and verified for TSWV resistance in field trials where TSWV was severe. In addition to the above disease resistances, NC 946 has resistance to verticillium wilt (*Ve* gene) and races 1 and 2 of fusarium wilt (*I*, and *I-2* genes). It has moderate resistance to early blight derived from NC EBR-7.

Plant and fruit type of NC 946 closely resemble those of NC EBR-7. Plant growth habit is determinate. Fruit are highly elongate in shape with 2-3 (mostly 3 locules), have the crimson (*ogc* gene) for increased lycopene, and have jointless pedicels (*j-2* gene). Immature fruit are uniform light green (*u* gene). Ripe fruit are medium in firmness and develop bright red exterior and interior color. Fruit are highly resistant to graywall and cracking.

In a replicated vine-ripe harvest trial in 2006, where TSWV was present, NC 946 had marketable grade yield lower than 'Plum Regal' F₁ hybrid but not significantly different from 'Plum Crimson' and NC 30P, a sister line to NC 946. Percent marketable grade for NC 946 was lower than that for 'Plum Regal' but did not differ from 'Plum Crimson' or NC 30P. Fruit size for NC 946 averaged 3.8 oz./fruit but was not significantly lower than other entries in trial. NC 946 is late in maturity compared to the other entries in trial. NC 946 is the first plum tomato line with combined resistances to TSWV and fusarium wilt race 3 resistance to be released from the NC tomato breeding program. NC 30P was recently released as a parent of 'Plum Regal'. It has TSWV resistance but lacks Fusarium race 3 resistance.

NC 946 has been crossed with other plum tomato lines in the NC tomato breeding program and has shown good combining ability for fruit type and yield. Pollen and seed of NC 946 have been transferred to other breeders through MTA's, and F₁ hybrids are being tested.



Director, North Carolina Agricultural Research Service



Date