

NORTH CAROLINA AGRICULTURAL RESEARCH SERVICE
NORTH CAROLINA STATE UNIVERSITY
RALEIGH, NORTH CAROLINA

NOTICE OF RELEASE OF NC EBR-1 EARLY BLIGHT RESISTANT TOMATO

The North Carolina Agricultural Research Service announces the release of a new fresh market tomato breeding line, NC EBR-1.

NC EBR-1 is an inbred line in the F₆ generation (Fig. 1). It was derived from PI 126445, a selection of Lycopersicon hirsutum previously reported resistant to early blight (Alternaria solani) and identified in field plots at Fletcher, N.C. in 1976 as highly resistant to early blight. The F₁ of 'Walter' x PI 126445, inoculated in the greenhouse, was highly resistant to early blight. Three backcrosses were made to NC 50-7 and resistant selections saved from progeny inoculated in the greenhouse after each backcross. An F₄ line identified as early blight resistant in a combination of field and greenhouse tests was crossed to 'Piedmont'. Advancement was made to the F₆ generation with selection in field plots for early blight resistance and improved horticultural characteristics.

The early blight resistance level of NC EBR-1, although less than PI 126445 and early generation lines, appears sufficient to be useful in additional breeding. NC EBR-1 had foliar resistance to early blight similar to C1943 and 71B2 in field studies in 1983, 1984, and 1985. In F₁ hybrids of NC EBR-1 crossed with early blight susceptible lines, resistance was intermediate to NC EBR-1 and the susceptible parents. Expression of resistance in the F₁ of NC EBR-1 offers an advantage over C1943 and 71B2, which have foliar resistance controlled by recessive genes. In addition to early blight resistance, NC EBR-1 has the I and I-2 genes for resistance to races 1 and 2 of Fusarium oxysporum f. sp. lycopersici (fusarium wilt) and the Ve gene for resistance to race 1 of Verticillium dahliae (verticillium wilt).

Vine type of NC EBR-1 is very strong determinate. Foliage is heavy, similar to NC 50-7 and 'Piedmont', but darker green in color. Maturity is later than 'Flora-Dade' and similar to 'Piedmont'.

Fruit of NC EBR-1 are deep oblate to globe in shape, are symmetrical, and have very smooth shoulders. Fruit pedicels are jointed. Shoulder color of green fruit is uniform (u gene). Fruit have very smooth blossom scars and excellent crack resistance. Fruit size is slightly smaller than 'Flora-Dade'. Fruit are firm and have shown good external and internal color. Total fruit yield of NC EBR-1 was lower than 'Flora-Dade' in a replicated trial in 1984. Percent of fruit in U.S. Combination Grade for NC EBR-1 was much higher than for 'Flora-Dade' resulting in higher yield of U.S. Combination Grade fruit for NC EBR-1 than for 'Flora-Dade'.

NC EBR-1 is being released as an early blight resistant breeding line which may offer advantages over the resistance sources C1943 and 71B2. NC EBR-1 is not sufficiently advanced in horticultural characteristics to be used as a variety.

Breeder seed will be maintained by the North Carolina Agricultural Research Service. Small samples can be obtained from Dr. R.G. Gardner, Mountain Horticultural Crops Research Station and Extension Center, 2016 Fanning Bridge Road, Fletcher, NC 28732-9628. Proposed release date is June 30, 1986.

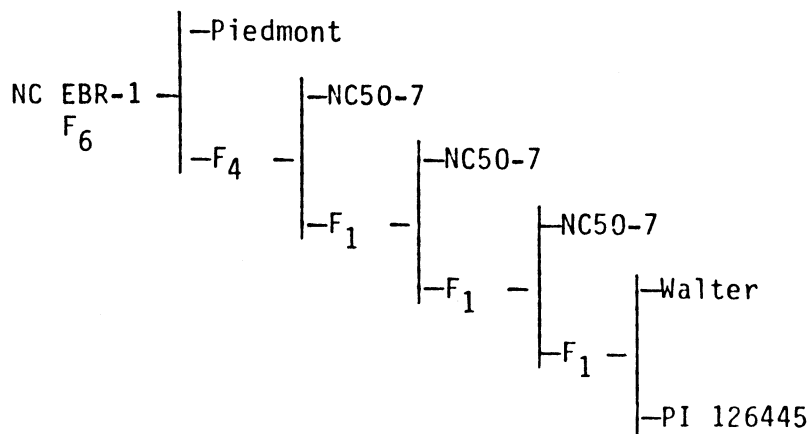


Fig. 1. Pedigree of NC EBR-1 early blight resistant tomato breeding line.

Director, North Carolina Agricultural
Research Service, Raleigh, N.C.

Date