NC STATE UNIVERSITY

College of Agriculture and Life Sciences
North Carolina Agricultural Research Service
Office of the Director
cals.ncsu.edu/research/

Campus Box 7643
201 Patterson Hall
Raleigh, NC 27695-7643
P: 919.515-2717

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TO: Interested Tomato Seed Companies

The North Carolina Agricultural Research Service (NCARS) is pleased to announce the development and release of a new tomato breeding line, 'NC 4 Plum'.

'NC 4 Plum' resulted from selfing NC 13272, the F_1 hybrid of NC1CELBR x Ontario 7710, and selecting a large F2 population. NC1CELBR is a large-fruited tomato breeding line with desirable horticultural traits and resistance to late blight (*Ph-2* and *Ph-3* genes) developed from NC State tomato breeding program. Ontario 7710 is a processing tomato breeding line resistant to Bacterial speck developed in Canada. This line's seeds were obtained from the commercial sources to make crosses with NC tomato breeding line and were used as a source of Bacterial speck resistance (*Pto* gene). The objective of breeding NC 4 Plum was to incorporate Bacterial speck resistance (*Pto* gene) into the desirable horticultural background of tomato and combine with other disease resistances including late blight resistance (*Ph-2* and *Ph-3* genes) and develop plum breeding line. Single plant selections were made for large fruit size, yield, and other desirable horticultural traits in the F_2 through F_5 generations derived from selfing NC 13272. Seed of the F_6 generation were bulked to produce the F_7 generation inbred line proposed for release as 'NC 4 Plum'. No segregation was found beyond F_4 generation grown in 2016 plot.

The plant growth habit of 'NC 4 Plum' is vigorous, determinate with attractive, heavy foliage cover. Fruits are slightly round in shape and have jointed pedicels. Immature fruits are uniform light green (*u* gene). Ripe fruits are firm. Disease resistances include verticillium wilt (*Ve* gene), fusarium wilt races 1 and 2 of (*I* and *I-2* genes), late blight (*Ph-2* and *Ph-3* genes), and Bacterial speck (*Pto* gene).

The average marketable yield of 22.2 ton/ha and total yield of 29.0 ton/ha of NC 4 Plum was not significantly different from control breeding lines. However, its fruit size (136.3 grams per fruit) was significantly larger than controls. Considering its acceptable yield, large fruit size, disease resistance package and good combining ability, it is being used as a parent in other crosses. 'NC 4 Plum' is not intended for use as a cultivar but solely as a parent for its contribution of excellent fruit size, and other desirable horticultural traits and disease resistance genes when used as a parent in F_1 hybrids. 'NC 4 Plum' is the first line developed for release from the NCSU tomato breeding program that combines the Bacterial speck resistance and late blight resistance into the desirable horticultural background. It is intended for crossing with other lines having the recessive *crimson* gene so the hybrids will have an improved red color.

To acquire seed of NC 4 Plum for non-exclusive, non-transferrable research and breeding purposes, a fully executed tomato seed transfer agreement is required with NC State University's Office of Research Commercialization. Please contact Dr. Dilip Panthee (Dilip_Panthee@ncsu.edu).

If you have further questions about this breeding line after reviewing the attached materials, please contact me by email: loren_fisher@ncsu.edu or by phone at 919-515-4059.

I look forward to hearing from you.

Sincerely yours,

Loren P. Fisher

Loren Fisher

Assistant Director, North Carolina Agricultural Research Service

Cc: Steve Lommel
Rob Whitehead
Dilip Panthee