



May 17, 2021

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 2 Plum'.

'NC 2 Plum' resulted from selfing NC 13326, the F₁ hybrid of NC 714 x RG-PtoR and selection from a large F₂ population. NC 714 is a large-fruited tomato breeding line with desirable horticultural traits developed from NC State tomato breeding program. RG-PtoR is an old plum tomato variety with Bacterial speck resistance (*Pto* gene). Dr. Greg Martin provided seeds of RG-PtoR from Boyce Thompson Institute (BTI), Ithaca, NY, to make crosses with NC-adapted breeding lines and introgress the *Pro* gene. The *crimson* gene into 'NC 2 Plum' was derived from the NC 714 as well as RG-PtoR. The objective of breeding NC 2 Plum was to incorporate Bacterial speck resistance (*Pto* gene) into the desirable horticultural background and develop a plum tomato breeding line. Crosses were made in the spring of 2013, and F₁ was selfed to produce F₂ seeds. Single plant selections were made for large fruit size, yield, and other desirable horticultural traits in the F₂ through F₅ generations derived from selfing NC 13326. The F₆ generation seeds were bulked to produce the F₇ generation inbred line proposed for release as 'NC 2 Plum'. No segregation was found beyond F₄ generation grown in 2016 plot.

The plant growth habit of 'NC 2 Plum' is vigorous, determinate with attractive, heavy foliage cover. Fruits are large, smooth, blocky square in shape, and have jointed pedicels. Immature fruits are uniform light green (*u* gene). Ripe fruits are firm and develop bright red exterior and interior color due to the *crimson* gene. Disease resistances include verticillium wilt (*Ve* gene), fusarium wilt races 1 and 2 of (*I* and *I-2* genes), and Bacterial speck resistance (*Pto* gene).

NC 2 Plum was one of the best yielding lines when averaged over two replications in the summer of 2020. The average marketable yield of 46.6 ton/ha and a total yield of 54.6 ton/ha was significantly higher than the control lines. It is very exciting performance of the breeding line. The average fruit weight of 130 grams over the two replications was significantly higher than control. Fruits are cylindrical and very smooth. Considering its superior yield, large fruit size and good combining ability, it is being used as a parent in additional crosses. 'NC 2 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 Bacterial speck resistance genes (*Pto* gene) when used as a parent in F₁ hybrids. 'NC 2 Plum' is the first line developed for release from the NCSU tomato breeding program that combines the Bacterial speck resistance into the desirable horticultural background along with excellent yield potential. It is intended for crossing with other lines having the recessive *crimson* gene so the hybrids will have *crimson* and express improved red color in the hybrid.

To acquire seed of NC 2 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 Fisher
Assistant Director, North Carolina Agricultural Research Service

Cc: Steve Lommel
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