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Origin and Release of Greenhouse Tomato Line Missouri 765 and Tuckcross Hybrid 756P

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The Missouri Agricultural Experiment Station announces the release of greenhouse tomato breeding line 765, primarily as a parental line for pink-fruited hybrids. Tuckcross 756P, a pink-fruited three-way hybrid bred for greenhouse forcing, utilizes line 765 as a parent.

Line 765

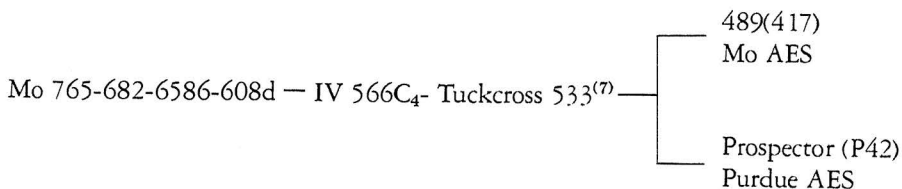
Description

Line 765 has good horticultural type and is well adapted for the greenhouse environment at latitudes of 36-44°N. The fruits are pink, 168-224 grams in weight, globe shaped, and very smooth on shoulders and outline. The following fruit quality attributes were recorded in 1971: pH, 4.32; soluble solids (as % Brix), 4.71 percent; and citric acid equivalent, 0.2651 percent.

Plants of line 765 are indeterminate with sparse, open foliage and possess field immunity to *Fusarium oxysporium* f. *Lycopersici* (Sacc.) Snyder and Hansen. The leaves also possess tolerance to common races of *Cladosporium fulvum*; this resistance was contributed by the cultivar "Prospector" from the Purdue Agricultural Experiment Station (5)

Pedigree and Breeding

Line 765 is an F₆ selection of Missouri line 417⁽⁶⁾ X Prospector⁽⁵⁾.



Throughout the segregating period, heavy selection pressure was exerted for smooth, pink, globe-shaped fruits; high yield potential; tolerance to *Fusarium* wilt, *Cladosporium* leaf mold and fruit blotchiness. Although fruit of line 765 have shown moderate susceptibility to blotchy ripening associated with TMV (8), both incidence and severity of blotching can be reduced by selective hybridization.

The Missouri Agricultural Experiment Station also announces the release of Tuckcross Hybrid 756P, a pink-fruited cultivar suited for commercial greenhouse production.

Tuckcross 756P

Tuckcross 756P is a large, pink-fruited hybrid tomato of good horticultural type that is adapted for greenhouse culture in the northern United States and Canada. As a triple-cross hybrid, it was critically compared with related single crosses in 1971 (9). Since 1971 it has been evaluated in numerous experiment station trials and commercial greenhouses, performing admirably in all cases (2,3).

Origin

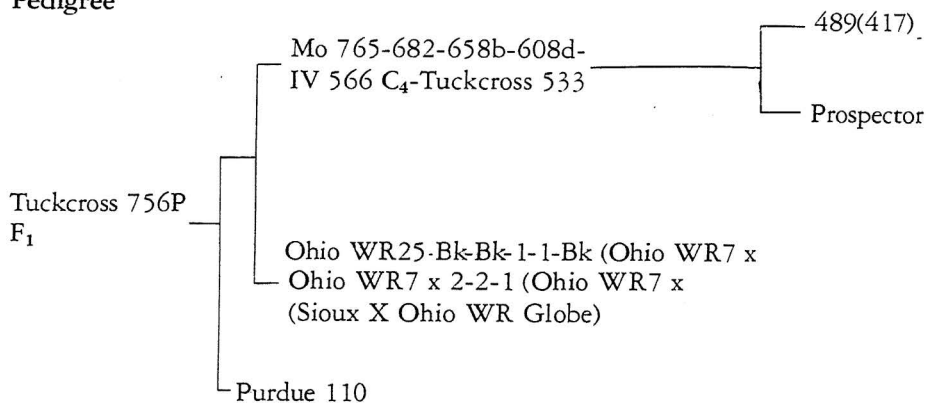
Tuckcross 756P is a result of crossing the F₁ hybrid of Missouri 756 and Ohio WR25 with Purdue 110. Ohio WR25 is a commercially grown greenhouse cultivar (1). Missouri 756 is the breeding line previously described in this publication and Purdue 110 is an unreleased breeding line (4).

Description

Tuckcross 756P is a vigorous, early hybrid well adapted for commercial greenhouse forcing conditions. Fruit of Tuckcross 756P are pink, globe-shaped and about 238 grams in weight (Table 1). In addition, fruits show good tolerance to both radial and concentric fruit cracking.

Plants of Tuckcross 756P are indeterminate in growth habit and exhibit a sparse and open habit of foliage, consistent with that of other superior greenhouse forcing cultivars. Tuckcross 756P carries field resistance to *Fusarium oxysporium* f. *Lycopersici* (Sacc.) Snyder and Hansen. It also displays tolerance for the common races of *Cladosporium fulvum*. Resistance to *Fusarium* is a common trait of all of the parental lines involved (1,4,9); whereas tolerance toward *Cladosporium* can be attributed to Missouri 765 and Purdue 110 (4) both of which were selected for resistance to this disorder.

Pedigree



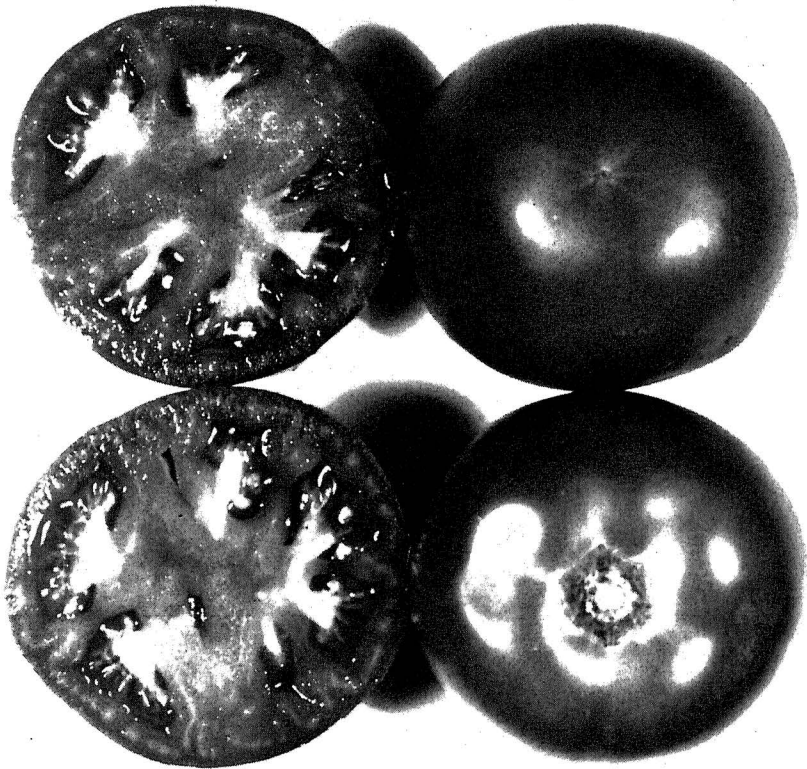


Figure 1. Internal and external fruit characteristics of Tuckcross Hybrid 756P.

Table 1. Comparative yield, maturity and fruit characteristics of Tuckcross 756P and parental lines. Columbia, Missouri.

| <i>Cultivar</i> | <i>Yield</i> (Kg/plant) | <i>Maturity</i> (% early yield) ^y | <i>Fruit Weight</i> (g/fruit) | <i>Soluble Solids</i> (% Brix) | <i>pH</i> | <i>Titrateable Acidity</i> (% Citric Acid Equivalent) |
|-----------------|----------------------------|---|----------------------------------|-----------------------------------|-----------|--|
| Purdue 110 | 9.27 b ^z | 35.99 c | 229.47 b | 4.7710a | 4.36a | 0.2688 b |
| Missouri 765 | 11.93a | 37.82 bc | 226.06 b | 4.7110a | 4.32ab | 0.2651a |
| Ohio WR 25 | 11.72a | 46.76abc | 291.95a | 4.8710a | 4.29 b | 0.3010 b |
| Tuckcross 756 | 12.20a | 48.52ab | 238.84 b | 4.8370a | 4.27 b | 0.2949a |

y Yield of first 3 harvests divided by total yield of 7 harvests.

z Mean separation in columns by Duncan's multiple range test, 5% level.

The superiority of Tuckcross 756P over existing cultivars lies in its earliness (Table 1) and consistent ability to produce high yields of fine quality, pink-fruited tomatoes (2,3,9). This, coupled with its resistance to two of the more troublesome diseases of greenhouse forcing tomatoes, make Tuckcross 756P a worthy addition to the cultivars currently available.

Small quantities of seed are available upon request from V. N. Lambeth, Dept. of Horticulture, University of Missouri, Columbia, Missouri 65211.

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