'Ohio OX38' Hybrid Processing Tomato

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Additional index words. *Lycopersicon esculentum*, vegetable breeding, hybrid, disease resistance, *Fusarium oxysporum* f. sp. *lycopersici*, *Verticillium dahliae*, canned peeled tomato (whole-pack)

'Ohio OX38' is a main-season processing tomato (*Lycopersicon esculentum* Mill.) hybrid adapted for machine harvest and bulk handling, suited for the production of peeled, coreless, whole-canned tomato (whole-pack), as well as juice and pureed products. Extensive test hectares have been grown in the midwestern United States. The cultivar has been well received by growers and processors and is already being grown extensively.

Origin

'Ohio OX38' is the F₁ hybrid resulting from the cross of inbred line O88119 and 'Ohio 8245' (Fig. 1). 'Ohio 8245' also is from the Ohio State Univ. tomato breeding program (Berry et al., 1991). O88119 is an F₂ selection from the cross of Ohio breeding lines B2905-1 and B2634-1; B2905-1 was derived from the cross 'Ohio 7870' x O-K1483-3. B2634-1 was derived from the cross 'H2653' x 'H722'. Fruit size, firmness, jointless pedicel (*j-2*), fruit set concentration, and ripening uniformity make 'Ohio OX38' suitable for machine harvest. Productivity and quality for whole-pack, color, and corelessness were derived from 'Ohio 8245' (Berry et al., 1991). 'Ohio OX38' has been evaluated in the midwestern United States, where its adaptability has been excellent (Berry et al., 1993, 1994).

Received for publication 8 Aug. 1994. Accepted for publication 20 Aug. 1994. Salaries and research support provided by state and federal funds appropriated to the Ohio Agricultural Research and Development Center, The Ohio State Univ. Journal article no. 86-94. The cost of publishing this paper was defrayed in part by the payment of page charges. Under postal regulations, this paper therefore must be hereby marked *advertisement* solely to indicate this fact.

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Description

'Ohio OX38' vines are medium in size, determinate (*sp*), and adapted to high plant population, transplant culture (single or double row). The vines are semi-prostrate and manageable for culture suited to once-over machine harvest. Foliage cover is excellent for ensuring good fruit quality, and at maturity, the vines are well layered and cover the row area uniformly. The average mean yields from replicated machine-harvested trials at Fremont, Ohio, with 'Ohio OX38' and major commercially used cultivars Peto 696, Ohio 7983, Ohio 8245, and O 88119, the female parent of 'Ohio OX38', indicated a trend for 'Ohio OX38' to outyield the other cultivars, but the differences were not always significant (Table 1) (Berry et al., 1993, 1994). Fruit of 'Ohio OX38' average 54 g, are ovate-plum-shaped, smooth with a small stem scar and core, and uniform in ripening (*u*). The cultivar readily responds to (2-chloroethyl)phosphonic acid (ethephon) application for hastening ripe fruit accumulation.

'Ohio OX38' is resistant to fusarium wilt caused by *Fusarium oxysporum* Schlecht f. sp. *lycopersici* (Sacc.) S. & H. (*I-1*) and verticillium wilt caused by *Verticillium dahliae* Kleb (*Ve-1*). It has excellent field tolerance to early blight (*Alternaria solani* spp.) and to anthracnose fruit rot (*Colletotrichum* spp.) Resistance to radial and concentric fruit cracking and the ability to store mature fruit on the vine for extended periods before harvest make possible high yields in once-over machine harvest.

Fig. 1. Pedigree of 'Ohio OX38' tomato.

Table 1. Mechanical harvest evaluation for yield of processing tomato cultivars at Fremont, Ohio.²

Cultivar	Yield (t·ha ⁻¹)	
	1992	1993
Ohio OX 38	70.3	80.4
Peto 696	63.4	65.4
Ohio 7983	48.2	60.3
Ohio 8245	51.3	58.0
O 88119	38.5	68.5
LSD _{0.05}	20.2	18.1

²Data for other experimental lines evaluated in these trials are not included in this table; 41 entries were evaluated in 1992 and 43 in 1993.

Data from experimental and extensive commercial trial plantings indicate that 'Ohio OX38' has suitable soluble solids content (SSC), titratable acidity, color, and vitamin C, allowing its use in a variety of tomato products. 'Ohio OX38' was compared with 'Peto 696', 'Ohio 7983', and 'Ohio 8245' for quality in 1992 (Berry et al., 1993); the corresponding SSC for raw juice was 3.8%, 4.0%, 4.0%, and 4.8%, respectively; and total acid content, expressed as citric, for the four cultivars tested was 0.28%, 0.28%, 0.29%, and 0.35%, respectively. The vitamin C contents were (in mg/100 g) 'Ohio OX38', 12; 'Peto 696', 15; 'Ohio 7983', 14; and 'Ohio 8245', 13.

'Ohio OX38' is suited for the production of whole-pack and diced tomatoes. Its jointless pedicel trait, small core, and excellent adaptability to lye peeling make it especially desirable for efficient processing without coring. It also lends itself to the manufacture of juice and sauce products, and use of this cultivar is increasing.

Availability

Commercial quantities of 'Ohio OX38' hybrid seed, through a licensing agreement by The Ohio State Univ., are only available from Terra International, Vegetable Division, Carmel, IN 46032. Small trial seed samples of the 'Ohio OX38' hybrid are available from the Dept. of Horticulture, Ohio State Univ., Wooster, OH 44691.

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