LHT24 Heat-tolerant Tomato Breeding Line

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LHT24 is a determinate, red-fruited, heat-tolerant tomato (*Lycopersicon esculentum* Mill) developed at the Citrus Research Station, Port Sulphur, La. It was released by the Louisiana Agricultural Experiment Station in 1991 primarily as a source of heat-tolerant germplasm. It should be useful to other breeders because of its ability to set fruit during periods of high temperature.

Origin

LHT24 is an inbred line in the F₁₀ generation. This tomato resulted from a cross between 'Fresh Market 9' and 'Tamu Salad-

ette' (Leeper, 1976; Leeper and Cox, 1986). Generations were advanced by the pedigree breeding method to the F₁ and then massed. It was tested in yield trials from the F₁ to F₁₀ generations (1989 to 1991) when average day/night temperatures were 30.7/23.8C, 31.9/23.4C, and 30.8/24.2C during the 3-year test period.

Descriptions

LHT24 has a determinate growth habit with light-green foliage. The plant is intermediate in size with adequate foliage cover for good fruit protection. Nonripe fruit are light green. Fruit are deep oblate to deep globe, and the jointed pedicel separates easily and cleanly

from the fruit. External fruit color develops to a uniform bright red. Ripe fruit are firm and have good holding ability on the plant. The stem scar is small, and the blossom end is flat with a stellate to linear pistil scar. Internal fruit color is fair to good, and the walls are of medium thickness.

In replicated trials conducted during Summer (May-September) 1989, 1990, and 1991 in Port Sulphur, LHT24 produced yields ranging from 1.43 to 2.33 kg/plant. 'Flora-Dade' produced 0.17 to 0.94 kg/plant in the same trials. Fruit weight ranged from 107 to 146 g compared with 156 to 172 g for 'Flora-Dade' (Table 1).

LHT24 is resistant to *Verticillium dahliae* Kleb. (verticillium wilt), race 1 of *Fusarium oxysporum* Schlechtend.:Fr. f. sp. *lycopersici* (Sacc.) W.C. Snyder & H.N. Hans (fusarium wilt), *Meloidogyne incognita* (Kofoid & White) chitwood (root knot nematode), *Stemphylium solani* G.F. Weber (gray leaf spot), and *Alternaria alternata* (Fr.:Fr.) Keissl. f. sp. *lycopersici* Grogan et al. (alternaria stem canker).

Availability

Seeds are available to breeders from H.Y.H., Red River Research Station, P.O. Box 8550, Bossier City, LA 71113-8550.

Literature Cited

- Leeper, P.W. 1976. Tamu Saladette, a new dual purpose, fresh market and/or processing tomato. Tomato Genet. Coop. Rpt. 27, Appendix 63.
Leeper, P.W. and E.L. Cox. 1986. 'Fresh Market 9' tomato. HortScience 21:156.

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Table 1. Marketable yield and fruit weight of LHT24 and 'Flora-Dade' tomatoes, 1989-91.

Entry	Marketable yield (kg/plant)			Fruit wt (g/fruit)		
	1989	1990	1991	1989	1990	1991
LHT24	1.43	1.81	2.33	107	114	146
'Flora-Dade'	0.17	0.30	0.94	172	170	156
LSD (0.05)	0.35	0.36	0.44	21.2	13.7	10.3