'Prairie Pastemaker' Processing Tomato Inbred

William L. Summers¹

Department of Horticulture, Iowa State University, Ames, IA 50011-1100

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Poor-yielding paste tomatoes have restricted industry growth and grower returns in the central United States. Yield losses have been traced to smaller and fewer fruit, poor color development when exposed to high temperatures, loss of foliage due to disease susceptibility, and fruit rot losses attributable to a number of pathogens. 'Prairie Pastemaker', an early to midseason, determinate, red-fruited, inbred processing tomato (*Lycopersicon esculentum* Mill.) developed at Iowa State Univ. Muscatine Island Horticultural Research Center, Fruitland, was created to overcome problems with yield and color development.

Origin

'Prairie Pastemaker' is an F₁₁ selection from a cross between 'Heinz 722' and 'Ontario 7710' (Kerr and Cook, 1983). In F₃, F₆, and F₁₁ seedling tests, 'Prairie Pastemaker' was resistant to several plant pathogens, including bacterial speck (Lawson and Summers, 1984). 'Prairie Pastemaker' was evaluated in trials as IA 11008.

Description

'Prairie Pastemaker' fruit are egg shaped, similar to 'Ontario 7710' (Fig. 1). Green fruit are uniformly light green (*u*) and have a glossy finish. Fruit pedicels are jointless (*j*²). Externally, fruit develop a bright-red pigmentation [*L* = 41.52, *a* = 27.95, and *b* = 11.35]; the internal color value was *L* = 45.79, *a* = 15.12, and *b* = 11.02. 'Prairie Pastemaker' juice has a pH of 4.34; soluble solids concentration of 4.25%; and color value of *L* = 28.79, *a* = 19.51, and *b* = 10.88.

'Prairie Pastemaker' fruit yields tended to be higher than those of the processing hybrids 'Brigade' in 1992 and 'Centurion' in 1993 and 1994 (Table 1). Mean fruit weight of 'Prairie

Pastemaker' varied inconsistently from that of 'Centurion' and 'Brigade'. 'Prairie Pastemaker' fruit mature 93 days after transplanting, requiring 1808 heat units at >10°C.

'Prairie Pastemaker' is a determinate (*sp*) cultivar that enables plants to be planted at a high density, 17.8 cm between plants in single rows or 25.4 cm between double rows on 1.5-m centers. The dark-green foliage provides sufficient shade to protect the fruit from discoloration due to solar injury.

Plants contain the *Ve*, *I*, and *Pto* genes that confer resistance to race 1 of *Verticillium albo-atrum* Reinke & Berth. (verticillium wilt), race 1 of *Fusarium oxysporum* f. sp. *lycopersici*

(Sacc.) Snyder and Hans. (fusarium wilt), and *Pseudomonas syringae* pv. *tomato* Okabe (bacterial speck), respectively.

Uses

'Prairie Pastemaker' is adapted to vine-ripe production within ground culture. It has performed well in research center trials across Iowa (Ames and Muscatine).

Availability

'Prairie Pastemaker' was released by the Iowa Agriculture and Home Economics Expt. Station on 8 Feb. 1995. Small seed samples of 'Prairie Pastemaker' are available from W.L.S., Iowa State Univ., Dept. of Horticulture, Room 251, Ames, IA 50011-1100 (e-mail: summers@iastate.edu).

Literature Cited

- Kerr, E.A. and F.I. Cook. 1983. Ontario 7710—A tomato breeding line with resistance to bacterial speck—*Pseudomonas syringae* pv. *tomato* (Okabe). Can. J. Plant Sci. 63:1107–1109.
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Fig. 1. Fruit of 'Prairie Pastemaker' processing tomato. The diameter of the fruit is 51 mm.

Table 1. Total marketable yield and fruit weight of 'Prairie Pastemaker' compared with commercial processing tomato lines in replicated vine-ripe trials at various Iowa locations.²

Cultivar	U.S. no. 1 + no. 2 fruit yield (t·ha ⁻¹)			Fruit wt (g/fruit)		
	1992	1993 ³	1994	1992	1993	1994
Prairie Pastemaker	116	28	137	100	84	84
Brigade, F ₁	107	29	129	88	79	98
Centurion, F ₁	56	22	70	73	75	79
LSD _{0.05}	20	20	16	13	26	10

²Trials were conducted at Ames and Muscatine.

³Rainfall classified as more than a once-in-200-year event.

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¹Associate Professor.