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'Micro-Tina' and 'Micro-Gemma' Miniature Dwarf Tomatoes

J.W. Scott[1] and B.K. Harbaugh
Gulf Coast Research and Education Center, 5007 60th Street East, University of Florida, Bradenton, FL 34203

E.A. Baldwin
U.S. Department of Agriculture, Agricultural Research Service, Citrus and Subtropical Products Laboratory, P.O. Box 1909, Winter Haven, FL 33880

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'Micro-Tina' is a red-fruited, miniature dwarf tomato (*Lycopersicon esculentum* Mill.) cultivar of a type similar to 'Micro-Tom' (Scott and Harbaugh, 1989) but with sweeter flavor. 'Micro-Gemma' is a gold-fruited, miniature dwarf with superior flavor to that of 'Micro-Gold' (Scott and Harbaugh, 1995). These companion releases provide tomato cultivars that are genetically smaller (plant, fruit, leaves, and stems) than are normal dwarf cultivars. They can be grown in small pots, on window sills, or in small hanging baskets. They provide a well-proportioned plant ideally suited to commercial growing, shipping, and marketing because of their small size and light weight.

Origin

'Micro-Tina', tested as Fla. 7876, was increased in the F_{10} generation after a cross between 'Micro-Tom' x 'Sugar' (PI 270248). 'Micro-Tom' (Scott and Harbaugh, 1989) provided the miniature dwarf plant characteristics while 'Sugar' was the source of high fruit sweetness. 'Micro-Gemma', tested as Fla. 7878, was increased in the F_{10} generation after a cross between Fla. 7565, an inbred closely related to 'Micro-Gold' (Scott and Harbaugh, 1995), and 'Sugar' (PI 270248). Fla. 7565 provided the miniature dwarf plant characteristics while 'Sugar' was the source of high fruit sweetness. Selections for both cultivars emphasized sweet but tomato-like flavor, and, in the early generations, high soluble-solids refractometer readings.

Description

'Micro-Tina'. 'Micro-Tina' had a short, compact, dwarf habit similar to 'Micro-Tom' in greenhouse experiments conducted in 1998 (Table 1). However, observations over several seasons indicate that 'Micro-Tina' plants are slightly larger than 'Micro-Tom' plants, but are much smaller than other dwarf cultivars, such as 'Red Robin' or 'Yellow Canary', when grown without root-zone restriction. However, when grown in small containers in 1998, the height or width of 'Micro-Tina' did not always differ statistically from that of 'Red Robin' or 'Yellow Canary' (Table 1). As with the previously released miniature dwarf cultivars, all plant parts are genetically reduced, allowing for well-proportioned growth in small containers. Nonminiature dwarf cultivars are larger and plant size is restricted by constriction of the root zone in the small containers.

Pedicels are jointed and the fruit have uniform green (*u* gene) shoulders. They ripen to an attractive red color with a glossy exterior. Fruit are trilocular, resembling a miniature large fruit, as opposed to a cherry tomato fruit which is bilocular and has a larger locule : pericarp ratio. 'Micro-Tina' has fruit comparable in size to those of 'Micro-Tom' and

Table 1. Evaluation of plant and fruit characteristics of six tomato cultigens grown as single plants in pots (13 cm in diameter, 1 L)[z] or three plants in hanging pots (20 cm in diameter, 2.2 L)[y] under greenhouse conditions in Spring and Fall 1998[x], Bradenton, Fla.

	Plant		Fruit			
Cultigen	Ht (cm)	Width (cm)	Diam (mm)[w]	Wt (g)[w]	No. per container[v]	Time to color (d)[u]
Single plant per 13-cm pot, Spring						
Red-fruited						
Micro-Tina	11.2 b[t]	22.2 a	23.6 c	6.9 b	42 a	91 c
Micro-Tom	11.6 b	20.0 ab	23.2 c	7.9 b	39 a	100 ab
Red Robin	20.0 a	17.4 bc	26.7 b	14.5 a	29 bc	100 ab
Yellow-fruited						
Micro-Gemma	12.0 b	18.6 bc	22.2 cd	6.2 b	37 ab	98 b
Micro-Gold	12.8 b	22.0 a	21.1 d	7.7 b	36 abc	100 ab
Yellow Canary	19.6 a	16.0 c	29.3 a	14.7 a	28 c	103 a
Single plant per 13-cm pot, Fall						
Red-fruited						
Micro-Tina	23.2 bc	23.2 bc	21.8 c	5.5 c	45 a	71 d
Micro-Tom	18.8 c	24.4 bc	20.2 c	4.5 c	48 a	78 bc
Red Robin	25.0 b[v]	25.7 b	27.7 a	9.2 b	25 c	85 a
Yellow-fruited						
Micro-Gemma	19.2 c	22.4 bc	21.8 c	5.9 c	34 bc	75 c
Micro-Gold	25.2 b	21.2 c	21.9 c	6.1 c	35 b	81 b
Yellow Canary	31.4 a	28.9 a	24.1 b	12.3 a	33 bc	88 a
Three plants per 20-cm hanging pot, Spring						
Red-fruited						
Micro-Tina	13.3 d	35.0 a	24.9 bc	8.0 c	100 a	92 c
Micro-Tom	15.7 cd	30.8 ab	23.9 cd	7.1 c	92 a	99 b
Red Robin	22.0 ab	29.3 b	27.7 a	15.6 a	62 b	102 ab
Yellow-fruited						
Micro-Gemma	14.7 cd	29.8 ab	22.4 de	6.8 c	95 a	97 bc
Micro-Gold	19.0 bc	34.3 ab	21.4 e	8.3 c	64 b	101 ab
Yellow Canary	25.3 a	29.5 b	27.0 ab	12.1 b	59 b	105 a
Three plants per 20-cm hanging pot, Fall						
Red-fruited						
Micro-Tina	28.3 bc	42.1 ab	21.7 c	5.7 cd	86 a	70 c
Micro-Tom	24.7 c	46.3 a	21.5 c	7.9 abc	92 a	79 b
Red Robin	32.7 b	39.8 b	26.2 a	10.0 a	37 c	88 a
Yellow-fruited						
Micro-Gemma	27.3 bc	43.8 ab	21.2 c	6.8 bcd	65 b	78 b
Micro-Gold	40.7 a	40.1 b	23.9 b	5.4 d	63 b	82 b
Yellow Canary	34.0 b	43.7 ab	23.8 b	8.1 ab	56 b	87 a

[z]The experimental design was a randomized complete block with five replications, and a single plant was the experimental unit.
[y]The experimental design was a randomized complete block with three replications, and the experimental unit consisted of three plants.
[x]Seeding dates 9 Jan. (Spring) and 19 Aug. (Fall).
[w]Average for the first five fruit to ripen per plant.
[v]Number of green and ripe fruit ≈2 weeks after first fruit color.
[u]Days from seeding to first appearance of true fruit color.
[t]Mean separation within columns, containers, and seasons by Duncan's multiple range test; significant at $P \leq 0.05$.

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[1]To whom reprint requests should be addressed; e-mail: jwsc@gnv.ifas.ufl.edu

smaller than those of 'Red Robin' and 'Yellow Canary'. Fruit ripen earlier than for 'Micro-Tom' and the other cultivars tested (Table 1).

Fruit of 'Micro-Tina' are less acid and sweeter than those of 'Micro-Tom', according to an experienced taste panel (33 people) and objective measurements of acids and sugars (Table 2). Overall flavor did not differ statistically from that of 'Micro-Tom, but was better than that of 'Red Robin'. The taste panel rated 'Red Robin' as less acid, a feature supported by the measurement of citric acid. Our objective was to develop a miniature, red-fruited, dwarf tomato with sweeter flavor than 'Micro-Tom', and the data in Table 2 indicate that this objective was achieved.

'Micro-Tina' is resistant to fusarium wilt race 1 [*Fusarium oxysporum* Schlechtend. f.sp. *lycopersici* (Sacc.) Snyder and Hansen] (*I*) and gray leafspot (*Stemphyllium solani* Weber) (*Sm*). Fruit are highly tolerant to major fruit disorders such as blossom end rot, cracking, and graywall.

'*Micro-Gemma*'. Plant habit of 'Micro-Gemma' was similar to that of 'Micro-Tina' in Spring and Fall 1998 (Table 1). It tended to be smaller than 'Micro-Gold', especially in the Fall experiment (Table 1).

'Micro-Gemma' has a jointed pedicel and fruit have uniform green (*u*) shoulders. Fruit ripen to a gold color because of the yellow flesh allele (*r*) and the yellow epidermis color (*Y*). Internal fruit anatomy is similar to that of 'Micro-Tina'. Fruit size is similar to that of the other miniature dwarf cultivars and smaller than that of 'Red Robin' and 'Yellow Canary' (Table 1). It is not as early as 'Micro-Tina', but is similar in maturity to 'Micro-Tom' and 'Micro-Gold'.

Table 2. Experienced taste panel (33 people) evaluation of flavor components and chemical analysis of acids and sugars of dwarf tomato genotypes at Bradenton, Fla., in Spring 1998.

	Taste panel			Chemical analysis		
Genotype	Acidity	Sweetness	Overall flavor	Citric acid (%)	Soluble solids	Sucrose equivalents[z]
Red-fruited						
Micro-Tina	4.09 b[y]	5.69 a	5.56 a	0.48	5.3	6.08
Micro-Tom	4.97 a	4.31 b	4.72 ab	0.82	4.2	2.81
Red Robin	2.97 c	5.19 ab	4.16 b	0.37	4.2	3.66
Yellow-fruited						
Micro-Gemma	4.55 a	5.24	5.36	0.38	5.7	5.00
Micro-Gold	4.27 a	4.73	4.94	0.68	4.8	3.20
Yellow Canary	3.15 b	4.73	4.52	0.42	4.5	3.13
		NS	NS			

[z]A measure of relative sweetness based on sucrose where percentages of glucose and fructose were multiplied by 0.74 and 1.73, respectively (Koehler and Kays, 1991).
[y]Mean separation within columns and fruit colors by Duncan's multiple range test at $P \leq 0.05$.
[NS]Nonsignificant.

The experienced taste panel did not detect significant differences in sweetness or overall flavor among the three yellow-fruited cultivars tested (Table 2). However, chemical measurements indicated that 'Micro-Gemma' was higher in soluble solids and sucrose equivalents than 'Micro-Gold' and 'Yellow Canary'. In numerous field and greenhouse comparisons, the authors rated the flavor of 'Micro-Gemma' as better than that of 'Micro-Gold'. It has the same disease resistance as 'Micro-Tina'.

Seed availability

'Micro-Tina' and 'Micro-Gemma' are open-pollinated (pure line) releases. Distribution for commercial seed production purposes is handled through the Florida Foundation Seed Producers, P.O. Box 309, Greenwood, FL 32443. Small samples for research purposes are available from the senior author.

Literature Cited

Koehler, P.E. and S.J. Kays. 1991. Sweet potato flavor: Quantitative and qualitative assessment of optimum sweetness. J. Food Qual. 14:241–249.

Scott, J.W. and B.K. Harbaugh. 1989. Micro-Tom, a miniature dwarf tomato. Florida Agr. Expt. Sta. Circ. S-370.

Scott, J.W. and B.K. Harbaugh. 1995. 'Micro-Gold' miniature dwarf tomato. HortScience 30:643–644.