

Research Report:
Evaluation of Twenty Varieties of Cherry Tomatoes in
Fresno California: with and without Nematode Pressure – 1999

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Introduction

Fresno County is the leading producer of Cherry Tomatoes in California. In 1996, there were 144 acres of cherry tomatoes. The main variety for commercial production is BR124. It has been an excellent yielder for the last four to five years, and fruits have a long shelf life. It is, however, susceptible to root knot nematodes; and, where soil is infested, plants do poorly and yields are reduced.

Methods and Materials

A study was initiated to evaluate 20 cherry tomato varieties in two locations: one at the Kearney Research and Education Center in Parlier and the other on a grower's field where root knot nematodes were present. Transplants were set out on April 29 at Kearney and June 14 in the farmers' field.

Kearney Center

80" between beds
 18" between plants
 Four plants / treatment
 Three replications

Farmer (Nematode) Location

80" between beds
 18" between plants
 10-12 plants / block
 One replication
 Hanford fine sandy loam

Varieties: (20)

<u>Variety</u>	<u>Company</u>	<u>Variety</u>	<u>Company</u>
1. RFT 9970	Novartis	11. B 7410 B	BHN Research
2. RFT 6704	Novartis	12. BHN 151 A	BHN Research
3. RFT 8706	Novartis	13. BHN 268	BHN Research
4. PS 112	Petoseed	14. B 7411 B	BHN Research
5. Pepe	American Takii	15. Santa F ₁	Johnny's
6. Koko	American Takii	16. Sugar Snack	Johnny's
7. BR124 (Naomi)	Hazera	17. Sun Gold	Johnny's
8. FA 819(Camelia)	Hazera	18. Sun Cherry	Johnny's
9. Cascada	d. Palmer	19. Juliet	Burpee
10. Mini charm	d. Palmer	20. Gardener's Delight	Burpee

Results: Yield:

Kearney: Yields were taken from four plants approximately weekly for eight harvests. BR 124 continued to be the best producing variety in this trial and was statistically the best yielder. Juliet and RFT 9970 were the next best yields and significantly better than the rest. There were some notable differences in fruit size as well. The five largest fruits (by weight) were BHN 151, BHN 268, Juliet, FA 819, and PS 724 (26, 25.7, 23.4, 20, 20 grams respectively). The smallest fruits were also some of the sweetest: Minicharm, Pepe, Sugar Snack, Garden Delight, Sun Gold, and Santa (4.5, 5.7, 6.6, 7.2, 7.3, 8 grams). Minicharm fruits were a little larger than a pea.

Nematode Ground: Yields were taken from four plants approximately weekly, but for only six harvests. Plants in the nematode ground did not produce for eight weeks as in the previous trial.

All varieties had reduced yields in the nematode ground, some more than others. Several of the varieties had three nematodes or less (in 20 grams of roots): B7411, Koko, PS 112, but still had reduction in yield of 42%, 39%, 39%, respectively. Differences in yields may be attributable to soil differences, cultural and/or fertility practices. The highest yielding varieties in nematode ground were BHA 268 (was 11th), Juliet (was 2nd), B7410 (was 5th), RFT 6704 (was 6th), BR124 (was 1st), and FA 819 (was 9th).

(Numbers in parenthesis indicate previous rankings in Nematode-free ground.)

Brix: Kearney:

Sixteen fruits of each variety were pureed and a Brix measurement taken with a handheld refractometer. The sweetest (Brix) varieties were in the 8-9 range, and there did seem to be correlation between size (small) and sweetness. The sweetest at this location were Sugar Snack (9 Brix), Minicharm (9), Santa (9), Sun Gold (8), Sun Cherry (8), and Pepe (8).

Nematode Ground:

Brix readings in the nematode ground were generally the same or slightly higher (by .5° Brix). BHN 151 was still quite low (5.0) while Sun Gold increased to 10 Brix and Koko to 8 Brix. All others were within .5° Brix.

Flecking (Gold): Kearney:

100 fruits of each variety were collected at random and separated according to the degree of gold flecking on Sept. 14. There was no flecking observed on PS112, Sugar Snack, Minicharm, or Sun Gold. A light amount (1-4%) was found in RFT 7604, RFT 9970; and a moderate amount (5-7%) on BHN 268, RFT 8706, Koko, and Cascada. Varieties with significant flecking (>10%) were Juliet, Santa, B7411, and B7410.

Post Harvest Kearney:

Fruits were harvested and kept at room temperature in plastic bags for 48 hours. Below is a summary of fruit quality as evaluated for soft and mushy texture:

VV mushy: RFT 7604, Gardeners Delight

V mushy: BHN 15, Sun Cherry, RFT 9970

S. mushy: RFT 8706, Pepe, Sun Gold

Still very good: Santa, Juliet, Koko, BR124, PS112, FA819, BHN268, Sugar Snack, B7410, Cascada, B7411, and Minicharm

Discussion:

BR124 continued to be a very desirable variety. It is higher yielding, a good desirable size, fair Brix, and less gold flecking. There was, however, some moderate radial cracking (also in 112, Koko, BHN 208 and Juliet). Santa and Juliet are two varieties considered in the grape tomato group, however, we found the Juliet to be too large to be considered a grape tomato. It was the size of a small Roma tomato. The Santa was considered by many to be one of the best tasting (also Sunny Cherry). Santa was firm meaty, high Brix/low acid and a good size for eating whole.

From these two trials, it would appear that high-yielding varieties generally still have yields higher than other varieties even in soil infested with root knot nematodes. The four varieties (RFT 6704, Koko, B7411, PS112) with 0-3 root knot nematodes (probably resistant) in 20 grams of root gave total yields in the same general rank order as in clean ground.

	Yield – Means/Plot (Lbs.) – Two Locations			Root Knot Nematodes 20 Grams Roots	Nematode Yield as a % of Kearney	Kearney 16 Fruit Size (Grams)	Kearney Brix	Kearney Gold Fleck %	Post Harvest ³ Other Notes	
	Kearney ⁴	Farmer	Rank							
BR124	128	A	52	5 th	3,024	41	324	6.5	9	Lots cracking
Juliet	115	AB	61	2 nd	12	53	375	7.0	10.6	Cracking
RFT9970	115	AB	25	17 th	2152	22	132	6.0	4	V mushy
BHN151	111	ABC	33	10 th	5488	30	416	5.5	9	V mushy, Blossom end rot
B7410	106	ABCD	59	3 rd	25	56	286	7.0	12	
RFT6704	104	ABCDE	54	4 th	NPN ²	52	312	6.0	4	V V V mushy
B7411	101	ABCDEF	43	7 th	3	43	320	6.0	15	
Gardeners Delight	93	ABCDEFGF	29	14 th	18592	31	115	7.0	9	V V mushy
FA 819	90	ABCDEFGF	49	6 th	960	55	324	6.5	9	Cracking
Koko	87	BCDEFG	34	9 th	0	39	166	6.0	6	Cracking
BHA268	81	BCDEFG	66	1 st	9464	82	411	6.5	5.4	Cracking
RFT8206	79	BCDEFG	23	19 th	8736	29	144	7.5	6	S. mushy
Cascada	79	BCDEFG	27	16 th	296	34	179	6.5	5	Cracking
Sugar Snack	78	BCDEFG	33	11 th	14	42	105	9.0	0	
Pepe	77	BCDEFG	32	12 th	3368	42	91	8.0	8	S. mushy
Sun Gold	75	CDEFG	31	13 th	6	41	116	8.0	0	S. mushy
Mini Charm	68	DEFG	29	15 th	59	43	71 *	9.0	0	
Santa	67	EFG	34	8 th	33	51	128	9.0	11	
Sun Cherry	63	FG	16	20 th	12600	25	141	8.0	8	V mushy
PS112	60	G	23	18 th	3	38	235	6.0	0	Lots cracking

LSD @ 5% = 38.9

CV = 19.9

1. Root knot nematode analysis – 20 grams roots misted five days
2. NPN = No parasitic nematodes
3. Post harvest – unless otherwise noted – fruits were okay after two days storage in plastic bags
4. Treatment means with no letters in common are significantly different on Fisher's Protocol LSD test at $\alpha = 0.05$

* - Smallest