

Pepper variety trial in Cochise county, 1993.

L.J. Clark, R.E. Call and N.F. Oebker

Abstract

A variety trial including 12 long green chile varieties, 6 jalapeño varieties and 3 paprika varieties was implemented in Cochise county in 1993. Alpha was the top yielding green chile with a yield of 23.8 tons per acre and Fresno lead the jalapeño varieties with a yield over 30 ton per acre. Conquistador variety of paprika appeared to have a slight advantage over the other varieties in its class. A characterization of the fruit from the varieties tested are given in this paper.

Introduction

Chile production in the state of Arizona brought in a revenue of around seven million dollars in 1992 with a good portion of this taking place in Cochise county. The climate and soils are ideal for the production of excellent quality fruit. Interest is increasing in the crop because disease and insect problems have made production more difficult in parts of New Mexico and the processors are hunting for more acres to fill their plants. With this interest, a study was implemented to look at varieties of long green chile, jalapeño and paprika.

Methods and Materials

A chile field north of Dragoon road in Cochise county farmed by Ed Curry was selected for this study. To avoid the problems that were seen at the other sites where a hand planter was used, the farmers John Deere planter which was mounted on a sled, was used. To avoid contamination from plot to plot, the seed hoppers were removed and the seed was hand dribbled into the planting tube from previously weighed out envelopes. After planting, water was run down the furrows to wet the beds for germination. The following list includes the major inputs to the experiment:

Previous crop: fallow

Soil type: Sandy clay loam

Planting date: 14 April 1993 Rate: 5 lbs/ac

Herbicide: Devrinol

Fertilizer: 350 lbs/ac 16-20-0 pre-plant, 200 lbs/ac of N throughout the season

Insecticide: None

Fungicide: one application of Cu bearing fungicide

Irrigation: Furrow irrigation, approximately 3.5 acre feet

Harvest date: 20 September for green chile, 27 September for jalapeño and paprika

Heat units (86/55°F) in Bonita from 14 Apr to 20 Sep: 2643

In spite of our best efforts, the stand was a bit spotty, so at harvest time, one or two of the better plants in the plot were picked by hand. The plant heights and linear row spacing were measured from the plants that were picked. After all fruit were picked, they were taken in plastic bags to the end of the field where they

were sorted into red and green marketable fruit and cull, with each portion being weighed separately. The green fruit were then taken to the laboratory where they were classified into length categories and measured for width and flesh thickness.

Results and Discussion

Data from the green chile variety trial are found in Table 1. Because of the method of harvest, yields shown in the table may be higher than you would find in a full field situation, but, the relative positions of the varieties with respect to yield should be valid. Both marketable red and green fruit were included in the yield assuming that under normal conditions the harvest could be initiated earlier for a green chile contract. Alpha was the top yielding variety with 23.8 tons per acre. It had low % culls, fruit shorter than most other varieties but few < 5 inches in length. Flesh thickness and fruit width were very near the normal for the trial.

The "% Grn" column can be considered a measure of the variety's maturity, the lower the value the earlier the maturity. Joe E. Parker had the lowest % Grn value in this trial indicating that it is the earliest maturing variety. This was not corroborated in the trials in Graham and Greenlee counties (see references 1 and 2). The middle 5 columns in Table 1 show the length distribution of the green fruit picked. Flesh thickness and fruit width are important to many of the processors. These parameters are shown in columns 10 and 11. Curry AZ20 looked particularly good on the flesh thickness and fruit width areas, it was fleshier and wider than all the rest. It also showed well in fruit length and yield.

Along with the variety testing, a seed enhancement study was made. Seed from a single lot of NM 64 was split into two batches by PetoSeed. One batch was untreated while the other batch was put through an enhancement process to improve seed emergence. Even though most parameters were not statistically different, the enhanced seed plots appeared to yield slightly more harvestable fruit, matured slightly faster, appeared to be slightly longer, with slightly thicker and wider fruit. The evidence is not conclusive, but compels one to look at it again.

Another important factor to consider is the heat of the fruit. Values obtained from three taste testers are averaged in Table 1a. In the cases marked with an asterisk (*) the three judges were in full agreement, those not marked indicates differing opinions and an average value was reported.

Data on the six jalapeño varieties is found in Table 2. The format of the table is much like that of Table 1, with similar explanations. Fresno, the highest yielding variety is a very different cultivar. The plant is very showy, displaying its fruit above the plant. The fruit are also not the typical jalapeño shape, the fruit have shoulders on the fruit much like a miniature green chile. It can also be noted that the average fruit weight is 3 to 5 times that of the other varieties. Yields of some varieties were very high and one must be reminded that the plants selected for harvest were the best plants in the plot. Mitle, the hybrid jalapeño, was taller than the other cultivars, had good flesh thickness and fruit characteristics, but was exceeded in yield by two of the other varieties. Tam #1 appeared to be the earliest maturing variety and Jalapeño M the latest maturing variety.

The comparison of paprika varieties are shown in Table 3. Little data was taken on these varieties because they were harvested out of season. They should have been harvested red instead of green. A small sample of the green paprika peppers were allowed to turn red and dry after picking and it was found that they were reduced to one sixth of their original weight. This would put the harvest weights at around 2 tons per acre. The Conquistador variety appeared to have a slight edge in yield, height and plant population.

Acknowledgements

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References

1. Clark, Lee J. 1994. Chile pepper variety trial in Greenlee county, 1993. Vegetable Report of the College of Agriculture, The University of Arizona, Tucson, AZ. (In this publication.)
2. Clark, Lee J. 1994. Chile pepper variety trial in Graham county, 1993. Vegetable Report of the College of Agriculture, The University of Arizona, Tucson, AZ. (In this publication.)

Table 1. Yield and other agronomic parameters for green chile varieties grown on the Curry farm in Cochise county, 1993.

Variety	Yield T/A	% Grn	% Cull	% 8"	% 7"	% 6"	% 5"	% <5"	Fls Thk	Frt Wdt	Pl Ht	Pl Pop
Alpha	23.8	77.4	3.2	0.0	19.8	41.8	36.8	1.7	3.88	1.58	24	9781
Joe E. Parker	22.8	60.9	3.8	1.9	32.3	30.9	27.3	7.6	4.63	1.66	24	10360
Curry AZ20	22.8	79.8	7.4	9.2	36.9	25.2	24.2	4.5	5.13	1.73	22	10678
NM 64 Enhanced	22.1	67.0	14.2	3.5	13.8	37.2	36.2	9.2	3.38	1.51	24	11256
Curry #10	21.8	78.5	7.8	12.3	26.9	28.4	26.9	5.4	4.13	1.65	25	11259
NM 64	21.7	72.9	3.2	3.8	20.2	34.1	27.8	14.1	3.17	1.44	23	12342
Sonora	20.8	81.9	2.7	6.6	34.0	46.5	12.1	0.7	4.25	1.56	24	10393
Big Jim	20.7	76.4	9.1	6.6	34.4	12.5	35.7	10.8	4.00	1.67	25	12435
Sandia	17.9	72.0	3.7	4.8	14.2	31.1	36.6	13.2	3.00	1.51	27	10151
Curry #9	17.1	82.5	10.5	22.7	11.5	31.1	21.9	9.3	4.17	1.67	22	11434
Curry #8	16.8	71.9	9.0	0.0	8.1	38.1	21.9	9.3	3.68	1.58	26	10304
R. Nacky	15.0	81.9	5.6	4.1	40.9	26.7	22.9	5.5	4.17	1.60	23	9982
Average	20.26	75.2	6.69	6.31	24.4	32.3	28.4	8.62	3.94	1.59	24	10864
LSD(05)	8.84	26.6	8.68	16.4	27.5	20.6	26.5	15.2	0.88	0.23	6.3	2602

Yld T/A = Yield of marketable red and green chili in tons/acre.

% Grn = Percent of the marketable fruit was green.

% Cull = Percent of the total harvest that was not marketable (mainly because of blossom-end rot).

% 8" = Percent of the green fruit that were approximately 8 inches in length.

% 7" = Percent of the green fruit that were approximately 7 inches in length.

% 6" = Percent of the green fruit that were approximately 6 inches in length.

% 5" = Percent of the green fruit that were approximately 5 inches in length.

% <5" = Percent of the green fruit that were less than 5 inches in length.

Fls Thk = Thickness of the flesh near the top of the fruit in millimeters.

Fruit Wdt = Width of the fruit at its widest point, in inches.

Plant Ht = Plant height in inches.

Plant pop = Plant populations estimated from linear space occupied by the few harvested plants.

Table 1a. Heat ratings for the green chile varieties grown on the Curry farm in Cochise county, 1993.

Variety	Heat rating of the fruit
Alpha	Mild*
Joe E. Parker	Medium
Curry AZ20	Mild*
NM 64 Enhanced	Mild*
Curry #10	Medium
NM 64	Mild
Sonora	Mild*
Big Jim	Medium hot
Sandia	Medium hot
Curry #9	Mild*
Curry #8	Medium
R. Nacky	Medium mild

* The asterisk indicates that all members of the taste panel were in agreement.

Table 2. Yield and other agronomic parameters for jalapeño varieties grown on the Curry farm in Cochise county, 1993.

Variety	Yld T/A	% Green	% Cull	FWt Grn	Fruit Width	Fruit Length	Flesh Thick	Plant Ht	Plant Population
Fresno	30.8 a	57.6 bc	0.04 a	0.20 a	1.63 a	2.31 c	3.00 c	19.0 b	8047 b
Tam Veracruz	28.1 a	69.2 ab	0.0 a	0.06 b	1.17 a	2.81 a	4.50 a	18.0 b	9596 b
Mitla	23.8 a	44.1 cd	0.0 a	0.06 b	1.14 a	2.42 bc	4.63 a	24.8 a	10466 b
Tam #1	18.5 a	23.9 d	0.0 a	0.05 b	1.09 a	2.19 c	4.01 ab	18.0 b	9266 b
Early	18.3 a	33.8 cd	0.89 a	0.06 b	1.19 a	1.91 d	3.75 b	13.0 c	13266 a
Jalapeño M	17.7 a	87.8 a	0.0 a	0.04 b	1.02 a	2.62 ab	3.50 bc	17.3 b	10166 b
LSD (05)	12.59	23.68	1.102	0.121	0.189	0.259	0.692	4.236	2635.97

Yld T/A = Yield of marketable red and green chili in tons/acre.

% Grn = Percent of the marketable fruit that was green.

% Cull = Percent of the total harvest that was not marketable.

FWt Grn = Average green fruit weight in pounds.

Fruit Width = Width of the fruit at its widest point, in inches.

Fruit Length = Average fruit length in inches.

Flesh Thick = Thickness of the flesh near the top of the fruit in millimeters.

Plant Ht = Plant height in inches.

Plant pop = Plant populations estimated from linear space occupied by the few harvested plants.

Table 3. Yield and other agronomic parameters for paprika varieties grown on the Curry farm in Cochise county, 1993.

Variety	Yield T/A of green fruit	Plant Height	Plant Population
Conquistador	13.8 a	25.0 a	10178 a
B 18	12.5 a	24.3 a	8970 a
Sweet	12.2 a	22.3 a	9333 a
LSD (05)	9.29	11.51	4906.8