

# Production Practices for Pimiento Pepper -

## Fertilizer Rates, Plant Spacings, and Varietal Strains



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# Production Practices for Pimiento Pepper— Fertilizer Rates, Plant Spacings, and Varietal Strains

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PIMIENTO PEPPER acreage in Alabama was very low prior to 1950. However, interest in this crop increased considerably after 1950 and by 1961 an estimated acreage of 8,000 was grown (1). Since 1961 the acreage has stabilized between 6,500 to 7,000 acres most of which is in the Sandstone Plateaus and eastern Piedmont soil areas. Almost all production is under a contract arrangement with processors. In 1971 more than 1,200 Alabama families grew pimiento pepper for processing on 6,757 acres, earning an average of \$1,341 per family (6). Alabama ranks first in the nation in pimiento pepper production.

Only a few experiments on spacing and fertilization of pimientos have been reported. Experiments in Georgia during the period 1943-1953 resulted in a suggested spacing of 2½ to 3 feet in rows 3½ to 4 feet wide (2,4,5). Dempsey and Brantley (5) suggested that 600 to 800 pounds of a 4-8-8 grade fertilizer be applied in the row before planting and 150 to 200 pounds of 14-0-14 grade fertilizer be sidedressed twice. This rate of fertilization would provide approximately 70 to 90 pounds N per acre.

Research conducted more recently in Mississippi using spacings of 15, 21, 27, and 33 inches in 40-inch rows indicated that 21 inches was the best spacing (8). In 1971, Hammett, Crockett, Albriton, and Waggoner (9) suggested the use of 90 to 120 pounds N per acre with the higher rate for irrigation and for sandy soils. If a soil test were not made to determine P and K needs, they

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suggested about 40 pounds of P and 75 pounds of K (90 pounds each of  $P_2O_5$  and  $K_2O$ ).

Alabama growers usually space plants 24 to 30 inches in rows 42 to 48 inches wide. The fertilizer rate suggested for Alabama growers prior to 1972 was 160 pounds of N with P and K applied according to soil test results. In 1972 the nitrogen rate for soil test recommendations was changed to 100 pounds of N per acre (3). Results reported in this publication support the 100-pound recommendation.

Objectives of this study were to determine the effects of different rates of fertilizer and spacing of plants on production of pimiento pepper.

### EXPERIMENTAL PROCEDURES

These experiments were conducted at the North Alabama Horticulture Substation at Cullman on a Hartsells soil and at the Piedmont Substation at Camp Hill on a Cecil Soil. Soil samples were taken at each location and analyzed by the Auburn University Soil Testing Laboratory, Table 1. A randomized block design with four replications was used through all experiments.

At Cullman, the fertilizer treatments before setting plants consisted of 40-35-67, 80-70-133, and 120-105-200 (N-P-K) per acre

TABLE 1. SOIL TEST VALUES OF FERTILIZER RATES EXPERIMENT

Locations	Years	Fertilizer <sup>1</sup> areas	Soil test values and ratings of area in which fertilizer rates were applied <sup>2</sup>				
			pH	Ca <i>Lb.</i>	P <i>Lb.</i>	K <i>Lb.</i>	Mg <i>Lb.</i>
North Alabama Horticulture Substation, Cullman	1969	Low rate	6.5	1,008-(H)	140-(H)	236-(H)	96-(H)
		Med. rate	6.4	944-(H)	150-(H)	242-(H)	108-(H)
		High rate	6.3	944-(H)	145-(H)	246-(H)	90-(H)
	1972	Low rate	6.3	762-(H)	179-(H)	238-(H)	86-(H)
		Med. rate	6.2	718-(H)	198-(H)	272-(H)	75-(H)
		High rate	6.0	674-(H)	219-(VH)	335-(H)	69-(H)
Piedmont Substation, Camp Hill	1969	All rates <sup>3</sup>	5.2		28-(L)	212-(H)	90-(H)
	1971		6.0	736-(H)	31-(L)	269-(H)	120-(H)

<sup>1</sup> In 1969, before fertilizer had been applied, soil samples were taken from the areas which were to receive the different fertilizer rates. In March of 1972 the samples were taken after 3 years of fertilizer rate application.

<sup>2</sup> Fertility level: Low (L), Medium (M), High (H), and Very High (VH).

<sup>3</sup> Plantings at the Piedmont Substation were made on a different area each year, therefore, the sample was a composite of entire test area.

which is equivalent to 800, 1,600, and 2,400 pounds per acre of a 5-10-10 grade ( $N-P_2O_5-K_2O$ ), respectively. All fertilizer, except 300 pounds, was applied broadcast and incorporated with the soil, and the remaining 300 pounds per acre applied in the row before planting. Nitrogen at rates of 40, 80, and 120 pounds per acre, respectively was applied in two equal sidedress applications; the first 5 to 6 weeks and the second 10 to 12 weeks after plants were set. Three plant spacings of 12, 18, and 24 inches in the row were used at each rate of fertilizer. Rows were 44 inches wide.

The Truhart strains, King Pharr and Pomona, and the Bighart strains, SL (Smooth Leaf) and KL (Keel Leaf) were used at this location. The Bighart strains were recently released by the Auburn University Agricultural Experiment Station (7).

This study was started in 1969 and continued through 1971. Results for 1970 at Cullman are not combined with the 1969 and 1971 results because of a poor stand in one of the treatments; the data for 1970 are given in Appendix Table to show that the yield trend was similar to that obtained in the other 2 years. Supplemental irrigation was used when moisture was deficient.

Data obtained consisted of marketable yields, pod size, number of marketable pods per plant, and per cent of plants lodged.

At Camp Hill, the fertilizer rates, method of application, and spacing treatments were the same as at Cullman. A 1-3-2 ratio of fertilizer rather than 1-2-2 was used because of low soil test P. The row width was 42 inches.

One strain of pimiento pepper was used in the study each year; Bighart SL in 1969 and Truhart-King Pharr in 1971. Because of a long drought period in 1970, and the unavailability of irrigation, a stand of pepper was not obtained.

Data obtained at this location consisted of marketable and non-marketable yields.

In this publication the early marketable yields at both locations have been reported separately to give an indication of what might be expected with a once over mechanical harvest.

## RESULTS

Average yields for both locations for 1969 and 1971 are given in Figures 1, and 2, and Tables 2, 3, and 4. Pod sizes are given in Table 5, number of pods per plant in Table 6, and per cent lodging in Table 7.

TABLE 2. TOTAL MARKETABLE YIELDS OF DIFFERENT VARIETAL STRAINS OF PIMIENTO PEPPER FROM RATES OF FERTILIZER WITH DIFFERENT SPACINGS OF PLANTS, NORTH ALABAMA HORTICULTURE SUBSTATION, 1969 AND 1971

Treatments				Total marketable yields per acre (2-year average)					
Fertilizer per acre			Side <sup>3</sup> N	Spacing in row	Tru- hart- King Pharr	Big- hart SL	Big- hart KL	Tru- hart- Pomona	Av.
At planting <sup>1</sup>									
N	P	K	N	In.	Tons	Tons	Tons	Tons	Tons
<b>(800 lb. 5-10-10)</b>									
40	35	67	40	12	7.59	9.04	8.58	8.65	8.47
40	35	67	40	18	8.17	8.95	7.60	7.49	8.05
40	35	67	40	24	6.85	6.45	6.17	6.55	6.50
<b>(1,600 lb. 5-10-10)</b>									
80	70	133	80	12	6.84	8.00	8.46	8.12	7.86
80	70	133	80	18	6.99	7.57	7.85	6.66	7.27
80	70	133	80	24	6.58	7.14	6.98	6.78	6.87
<b>(2,400 lb. 5-10-10)</b>									
120	105	200	120	12	6.93	7.49	7.48	6.98	7.22
120	105	200	120	18	7.13	7.20	6.82	6.60	6.94
120	105	200	120	24	5.95	5.74	6.10	5.87	5.90
Av. yields					7.00	7.51	7.34	7.07	7.24
LSD at .05 level between spacing within a fertilizer									N.S.
LSD at .05 level between varieties									N.S.
Average yields for 3 spacings by fertilizer rates									
40	35	67	40	3 spacings	7.54	8.15	7.45	7.56	7.67
80	70	133	80	3 spacings	6.81	7.57	7.76	7.19	7.33
120	140	200	120	3 spacings	6.67	6.81	6.80	6.46	6.68
LSD at .05 level between fertilizers									0.44
LSD at .05 level between fertilizers within a variety									0.87
Average yields for 3 fertilizer rates by spacing									
3 fertilizer rates				12	7.12	8.18	8.17	7.92	7.85
3 fertilizer rates				18	7.43	7.91	7.43	6.92	7.42
3 fertilizer rates				24	6.46	6.44	6.41	6.38	6.42
LSD at .05 level between spacings									0.34
LSD at .05 level between spacings within a variety									0.67

<sup>1</sup> Fertilizer at planting was applied broadcast and incorporated into the soil with the exception of 300 pounds per acre which was applied in the row.

<sup>2</sup> The N sidedress was applied in 2 equal applications; the first application was made 5 to 6 weeks and the second 10 to 12 weeks after planting.

**Fertilizer Rates.** At Cullman marketable yields for the average of all spacings from the low rate of fertilizer (80 N, 35 P, and 67 K), were as high or higher than yields from the medium rate (160 N, 70 P, and 133 K) and, with the exception of Bighart KL, were greater than yields produced from the high rate of fertilizer (240 N, 105 P, and 200 K), Table 2.

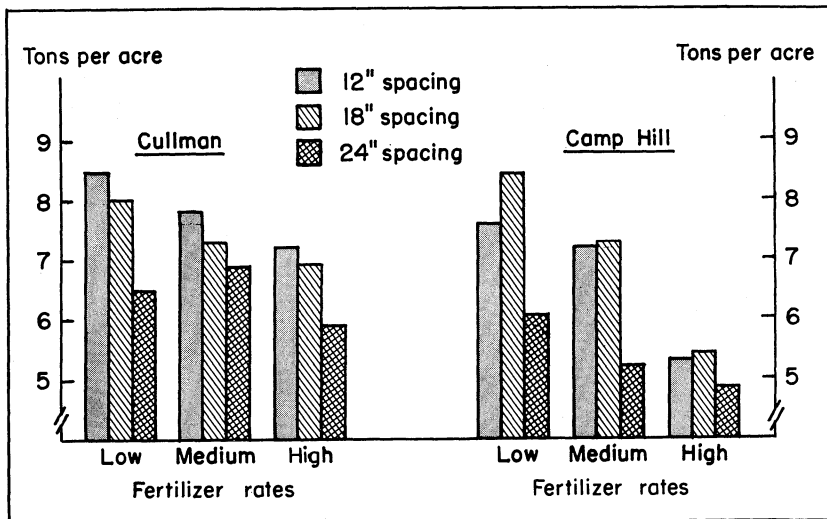


FIG. 1. Average marketable yields of pimiento pepper from low, medium, and high rates of fertilizer at three spacings at Cullman and Camp Hill.

The early yields are reported in Table 3 to indicate yields that could be expected at a once-over mechanical harvest. The effect of fertilizer rate on the early yields was more pronounced than that on the total yield. When averaged across all strains and spacings, there was a stepwise reduction as the fertilizer rates were increased from low to medium or to high. Both Bighart strains produced higher early yields than the Truhart strains.

At Camp Hill, the results for total marketable yield was similar to those at Cullman, Table 4. Increasing the rate of complete fertilizer resulted in a decrease in yield of pimientos. The reduction was greatest at the higher rate of fertilizer. Compared to the results at Cullman the early yield was less affected by fertilizer rates.

**Plant Spacing.** At Cullman the 12-inch spacing generally gave the highest yields with only a small reduction for the 18-inch spacing, Table 2 and Figure 2. When averaged across all fertilizer rates the Bighart KL gave a stepwise reduction as spacings were changed from 12 to 18 to 24 inches. Likewise, when averaged across all fertilizer rates and varietal strains there was a stepwise reduction in yield for the 12-to 18-to 24-inch spacings. The effect of spacing on early yield was similar to that for total yields, Table

3. The 24-inch spacing gave the lowest yields for all strains. At the 18-inch spacing the yield of Bighart KL and the average yields across all strains were reduced compared to that at 12 inches.

TABLE 3. EARLY MARKETABLE YIELDS OF DIFFERENT VARIETAL STRAINS OF PIMENTO PEPPER FROM RATES OF FERTILIZER WITH DIFFERENT SPACINGS OF PLANTS, NORTH ALABAMA HORTICULTURE SUBSTATION, 1969 AND 1971

Treatments					Early marketable yields per acre (2-year average)				
Fertilizer per acre				Spacing in row	Tru- hart- King Pharr	Big- hart SL	Big- hart KL	Tru- hart- Pomona	Av.
At planting <sup>1</sup>			Side <sup>2</sup>						
N	P	K	N	In.	Tons	Tons	Tons	Tons	Tons
Lb.	Lb.	Lb.	Lb.	In.	Tons	Tons	Tons	Tons	Tons
<b>(800 lb. 5-10-10)</b>									
40	35	67	40	12	2.70	3.47	3.54	3.06	3.19
40	35	67	40	18	2.56	3.84	2.19	2.54	2.78
40	35	67	40	24	1.75	2.10	1.95	1.87	1.92
<b>(1,600 lb. 5-10-10)</b>									
80	70	133	80	12	1.98	2.76	3.07	2.45	2.57
80	70	133	80	18	1.57	2.91	2.66	2.10	2.31
80	70	133	80	24	1.67	2.24	2.11	2.21	2.09
<b>(2,400 lb. 5-10-10)</b>									
120	105	200	120	12	1.38	2.30	3.07	1.86	2.15
120	105	200	120	18	1.54	2.13	2.82	1.79	2.07
120	105	200	120	24	0.97	1.41	1.76	0.96	1.27
Av. yields					1.79	2.57	2.57	2.09	2.26
LSD at .05 level between spacing within a fertilizer									0.34
LSD at .05 level between varieties							0.42		
Average yields for 3 spacings by fertilizer rates									
40	35	67	40	3 spacings	2.34	3.14	2.56	2.49	2.63
80	70	133	80	3 spacings	1.74	2.64	2.62	2.26	2.31
120	105	200	120	3 spacings	1.30	1.95	2.55	1.53	1.83
LSD at .05 level between fertilizers									0.28
LSD at .05 level between fertilizers within a variety							0.58		
Average yields for 3 fertilizer rates by spacing									
All fert. rates				12	2.02	2.85	3.23	2.46	2.64
All fert. rates				18	1.89	2.96	2.56	2.14	2.39
All fert. rates				24	1.46	1.92	1.94	1.68	1.75
LSD at .05 level between spacings									0.24
LSD at .05 level between spacings within a variety							0.40		

<sup>1</sup> Fertilizer at planting was applied broadcast and incorporated into the soil with the exception of 300 pounds per acre which was applied in the row.

<sup>2</sup> The N sidedress was applied in 2 equal applications; the first application was made 5 to 6 weeks and the second 10 to 12 weeks after planting.



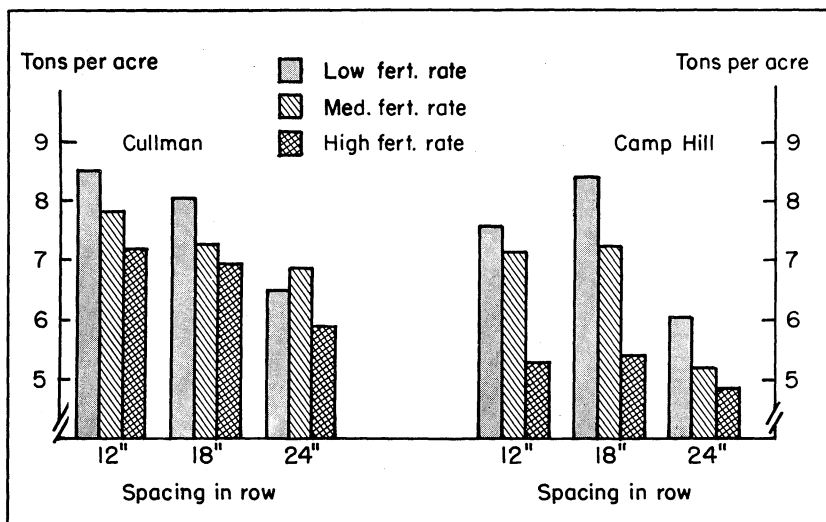


FIG. 2. Average marketable yields of pimiento pepper from 12-, 18-, and 24-inch spacing at three fertilizer rates at Cullman and Camp Hill.

At Camp Hill the yields for 12- and 18-inch spacings were similar but there was a reduction in yield at the 24-inch spacing, Table 4 and Figure 2. There was little effect of spacing on early yields at this location.

**Pod Size and Number per Plant.** At Cullman the average pod size for each strain at the low fertilizer rate was consistently larger than pod size from either the medium or high rate of fertilizer, Table 5. For all strains the pod size was consistently smaller at the 12-inch spacing with little or no difference in size between the 18- and 24-inch spacings.

Average pod size varied between strains. To produce one pound of fruit required 7.8 pods for Truhart-Pomona, 7.1 for Truhart-King Pharr, 6.0 for Bighart SL, and 5.0 pods for Bighart KL.

Rates of fertilizer had some effect on number of pods per plant for some of the strains. The high rate of fertilizer reduced the number of pods per plant 14.1 per cent for Truhart-Pomona, 7.3 per cent for Bighart SL and 7.0 per cent for the average of all varieties, Table 6. Spacing between plants also affected the number of pods per plant. The number of pods increased from 8.8 for the 12-inch spacing to 11.3 for 18-inch and to 13.6 pods per

TABLE 4. YIELDS OF PIMIENTO PEPPER FROM RATES OF FERTILIZER WITH DIFFERENT SPACINGS OF PLANTS, PIEDMONT SUBSTATION, 1969 AND 1971

Treatments					Yields per acre (2-year average)		
Fertilizer per acre				Spacing in row	Marketable		Non- marketable
At planting <sup>1</sup>			Side <sup>2</sup> N		Early	Total	
N	P	K					
Lb.	Lb.	Lb.	Lb.	In.	Tons	Tons	Tons
<b>(800 lb. 5-10-10)</b>							
40	53	67	40	12	2.28	7.59	1.66
40	53	67	40	18	2.22	8.46	1.72
40	53	67	40	24	1.75	6.04	1.08
<b>(1,600 lb. 5-10-10)</b>							
80	106	133	80	12	2.34	7.20	2.02
80	106	133	80	18	1.86	7.25	1.99
80	106	133	80	24	1.55	5.22	1.51
<b>(2,400 lb. 5-10-10)</b>							
120	159	200	120	12	1.40	5.32	1.28
120	159	200	120	18	1.53	5.45	1.58
120	159	200	120	24	1.31	4.87	1.11
Av. yields					1.80	6.38	1.55
Average yields for 3 spacings by fertilizer rates							
40	53	67	40	3 spacings	2.08	7.36	1.49
80	106	133	80	3 spacings	1.92	6.56	1.84
120	159	200	120	3 spacings	1.41	5.21	1.32
LSD at .05 level					N.S.	1.30	N.S.
Average yield for 3 fertilizer rates by spacings							
3 fertilizer rates				12	2.01	6.70	1.65
3 fertilizer rates				18	1.87	7.05	1.76
3 fertilizer rates				24	1.53	5.38	1.23
LSD at .05 level					N.S.	1.00	N.S.

<sup>1</sup> Fertilizer at planting was applied broadcast and incorporated into the soil with the exception of 300 pounds per acre which was applied in the row.

<sup>2</sup> The N sidedress was applied in 2 equal applications; the first application was made 5 to 6 weeks and the second 10 to 12 weeks after planting.

plant for the 24-inch spacing. The number of pods per plant for each strain was related to pod size for that strain. The strains with small size pods had the largest number of pods per plant and those with the large pods had the smallest number of pods.

**Plant Lodging.** At Cullman more plants lodged in 1970 than in 1971. Strains with the largest pods generally had the highest

TABLE 5. MARKETABLE POD SIZE BY VARIETAL STRAINS OF PIMIENTO PEPPER FROM RATES OF FERTILIZER WITH DIFFERENT SPACINGS OF PLANTS, NORTH ALABAMA HORTICULTURAL SUBSTATION, 1969 AND 1971

Treatments				Pod size (2-year average)					
Fertilizer per acre			Side <sup>2</sup>	Spacing in row	Truhart-King Pharr	Bighart SL	Bighart KL	Truhart Pomona	Av.
At planting <sup>1</sup>		N							
N	P	K	N	In.	Lb.	Lb.	Lb.	Lb.	Lb.
<b>(800 lb. 5-10-10)</b>									
40	35	67	40	12	.142	.167	.201	.130	.160
40	35	67	40	18	.151	.188	.215	.138	.173
40	35	67	40	24	.152	.174	.207	.123	.164
<b>(1,600 lb. 5-10-10)</b>									
80	70	133	80	12	.137	.154	.195	.128	.154
80	70	133	80	18	.138	.167	.189	.128	.156
80	70	133	80	24	.149	.162	.212	.133	.164
<b>(2,400 lb. 5-10-10)</b>									
120	105	200	120	12	.129	.151	.190	.125	.149
120	105	200	120	18	.142	.160	.190	.127	.155
120	105	200	120	24	.137	.172	.205	.121	.159
Av. size per pod					.142	.166	.200	.128	.159
Average pod size for 3 spacings by fertilizer rates									
40	35	67	40	3 spacings	.148	.176	.208	.130	.166
80	70	133	80	3 spacings	.141	.161	.198	.130	.158
120	105	200	120	3 spacings	.136	.161	.195	.124	.154
Average pod size for 3 fertilizer rates by spacings									
3 fertilizer rates				12	.136	.157	.195	.128	.154
3 fertilizer rates				18	.144	.172	.198	.131	.161
3 fertilizer rates				24	.146	.169	.208	.126	.162

<sup>1</sup> Fertilizer at planting was applied broadcast and incorporated into the soil with the exception of 300 pounds per acre which was applied in the row.

<sup>2</sup> The N sidedress was applied in 2 equal applications; the first application was made 5 to 6 weeks and the second 10 to 12 weeks after planting.

percentage of lodged plants. Bighart KL with the largest pods had the greatest percentage of lodged plants both years followed by Bighart SL in 1970, Table 7. With exception of Truhart-King Pharr and Bighart KL in 1970 there was a consistent increase in percentages of plants lodged as the fertilizer rate was increased from low to medium or from low to high. With exception of Bighart KL in 1970 and at the medium and high rates of fertilizer in 1971, there was a consistent increase in percentage of plants lodged as plant spacings were increased from 12 to 18 or 12 to 24 inches in row. The Bighart KL has a smaller plant type than the other strains. The combination of a small plant

TABLE 6. AVERAGE NUMBER MARKETABLE PODS PER PLANT BY VARIETAL STRAINS OF PIMIENTO PEPPER FROM RATES OF FERTILIZER WITH DIFFERENT SPACINGS OF PLANTS, NORTH ALABAMA HORTICULTURAL SUBSTATION, 1969 AND 1971

Treatments					Marketable pods per plant (2-year average)				
Fertilizer per acre			Side <sup>2</sup> N	Spacing in row	Tru- hart- King Pharr	Big- hart SL	Big- hart KL	Tru- hart Pomona	Av.
At planting <sup>1</sup>									
N	P	K							
<i>Lb.</i>	<i>Lb.</i>	<i>Lb.</i>	<i>Lb.</i>	<i>In.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>
<b>(800 lb. 5-10-10)</b>									
40	35	67	40	12	9.0	8.9	7.3	11.2	9.1
40	35	67	40	18	12.7	11.6	8.5	13.5	11.6
40	35	67	40	24	14.7	12.5	9.8	17.9	13.7
<b>(1,600 lb. 5-10-10)</b>									
80	70	133	80	12	9.0	9.2	7.2	10.1	8.9
80	70	133	80	18	12.2	10.6	10.0	13.1	11.5
80	70	133	80	24	14.9	14.6	10.7	16.9	14.3
<b>(2,400 lb. 5-10-10)</b>									
120	105	200	120	12	9.4	8.7	6.6	8.9	8.4
120	105	200	120	18	12.5	10.5	8.4	12.0	10.9
120	105	200	120	24	14.2	11.4	9.8	15.6	12.8
Av. pods per plant					12.0	10.9	8.7	13.2	11.2
Average number of pods per plant for 3 spacings by fertilizer rates									
40	35	67	40	3 spacings	12.1	11.0	8.5	14.2	11.5
80	70	133	80	3 spacings	12.0	11.4	9.3	13.4	11.5
120	105	200	120	3 spacings	12.0	10.2	8.3	12.2	10.7
Average number of pods per plant for 3 fertilizer rates by spacings									
3 fertilizer rates				12	9.1	8.9	7.0	10.1	8.8
3 fertilizer rates				18	12.5	10.9	9.0	12.9	11.3
3 fertilizer rates				24	14.6	12.8	10.1	16.8	13.6

<sup>1</sup> Fertilizer at planting was applied broadcast and incorporated into the soil with the exception of 300 pounds per acre which was applied in the row.

<sup>2</sup> The N sidedress was applied in 2 equal applications; the first application was made 5 to 6 weeks and the second 10 to 12 weeks after planting.

and larger pods probably accounts for the greater amount of lodging in this strain.

## DISCUSSION

In this study it is shown that high rates of fertilizer may reduce yields of pimiento. Yields were highest when the low rate of fertilizer, 80 N-35 P-67 K was applied. Applications of higher rates of fertilizer resulted in reduced yields. Since most of the fertilizer was broadcast there was no visible fertilizer injury to

TABLE 7. PERCENTAGE OF PLANTS THAT LODGED BY VARIETAL STRAINS OF PIMIENTO PEPPER FROM RATES OF FERTILIZER WITH DIFFERENT SPACINGS OF PLANTS, NORTH ALABAMA HORTICULTURE SUBSTATION, 1970 AND 1971

Treatments					Plants lodged							
Fertilizer per acre				Spacing in row	Truhart- King Pharr		Bighart SL		Bighart KL		Truhart Pomona	
At planting <sup>1</sup>			Side <sup>2</sup> N		1970	1971	1970	1971	1970	1971	1970	1971
N	P	K	N	In.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
<b>(800 lb. 5-10-10)</b>												
40	35	67	40	12	30	0	45	6	93	31	4	4
40	35	67	40	18	27	6	80	16	100	69	25	0
40	35	67	40	24	44	0	78	22	100	83	11	27
<b>(1,600 lb. 5-10-10)</b>												
80	70	133	80	12	35	7	54	13	83	77	0	13
80	70	133	80	18	55	13	76	28	100	81	9	10
80	70	133	80	24	22	26	72	33	93	75	35	13
<b>(2,400 lb. 5-10-10)</b>												
120	105	200	120	12	20	2	71	13	88	97	11	11
120	105	200	120	18	26	10	83	33	100	94	26	22
120	105	200	120	24	33	13	71	29	100	96	33	26
Average per cent of plants lodged for 3 spacings by fertilizer rates												
40	35	67	40	3 spacings	33	2	65	13	97	55	13	8
80	70	133	80	3 spacings	38	13	66	22	92	77	13	12
120	105	200	120	3 spacings	27	7	75	23	94	89	22	18
Average per cent of plants lodged for 3 fertilizer rates by spacings												
3 fertilizer rates				12	28	3	56	11	88	68	5	9
3 fertilizer rates				18	37	10	80	26	100	81	20	11
3 fertilizer rates				24	33	13	74	28	98	76	26	22

<sup>1</sup> Fertilizer at planting was applied broadcast and incorporated into the soil with the exception of 300 pounds per acre which was applied in the row.

<sup>2</sup> The N sidedress was applied in 2 equal applications; the first application was made 5 to 6 weeks and the second 10 to 12 weeks after planting.

the plants from the higher rates. In fact the higher rates of fertilizer resulted in a larger more vigorous looking plant. Apparently, the higher rates of fertilizer resulted in more vegetative growth at the expense of fruit set and pod growth.

There were no marked differences in total marketable yields among the strains. In tests conducted by Greenleaf and Harris (7) it was shown that after flaming and coring of the pods there was a trimmed recovery of 59.4 per cent for Bighart strains for processing as compared to 53.0 per cent for the Truhart strains. This is a 12 per cent average gain of trimmed product for Bighart over the Truhart strains. If this 12 per cent increase were added

to the yields in Table 2 there would be a significant yield increase for the Bighart strains.

At Cullman, 12-inch spacing gave higher yields than the 18-inch spacing. The overall average difference was .43 ton of marketable pods which would be worth \$47 at current market prices. It would take 3,000 more plants per acre for the 12-inch spacing as compared to the number required for the 18-inch spacing. Extra plants cost of \$7 per 1,000 would be \$21. This leaves \$26 less the extra cost of transplanting and harvesting and handling .43 tons of pepper. The hand harvesting time for the 12-inch spacing will be increased considerably since pods are smaller and the number of pods to be picked would be increased about 18 per cent. Apparently little, if any increase in net profit would be realized for the closer spacing as compared to 18-inch spacing. If mechanical harvesting becomes a reality so that cost for plants, because of direct seeding, and cost for picking the increased number of small pods would not be a factor then the 12-inch spacing should be satisfactory.

With pimientto pepper as with other crops the trend in harvesting is toward mechanization. Early harvest yields are shown in Table 3 to give some idea as to what may be expected from these strains if they were mechanically harvested in a once over operation. At the 12-inch spacings the Bighart strains consistently produced greater early yields than Truhart-King Pharr or Truhart-Pomona. The close spacing, 12 inches, for Bighart KL gave higher yields than the 18-inch spacing for the average of all fertilizer rates. Both Bighart strains for the average of all fertilizer rates consistently produced higher early yields than either of the Truhart strains at all 3 spacings. From the data it would appear that the Bighart strains would produce higher yields for mechanical harvest. The fact that total yields, in spite of greater early yields, are no greater for the Bighart strains than for the Truhart strains, might be attributed to greater lodging in the Bighart strains. Most lodging occurred late in the harvest period when the mature pods were on the end of branches further from the main stems. Heavier pods produced on Bighart are probably responsible for the higher percentage of lodging when compared to the Truhart strains.

## SUMMARY

Field experiments to study the effects of different rates of a complete fertilizer and different spacings in the row on yield of marketable grade pimiento peppers were conducted with four varietal strains for 3 years at Cullman and with one strain for 2 years at Camp Hill. The following results were obtained:

The low rate of fertilizer produced yields as high as those produced with higher fertilizer rates at both locations. This rate was 40 N-35 P-67 K (40 N-80  $P_2O_5$ -80  $K_2O$ ) at Cullman and 40 N-53 P-67 K (40 N-120  $P_2O_5$ -80  $K_2O$ ) at Camp Hill applied before planting plus 40 pounds of N as sidedress applications.

At Cullman, where supplemental irrigation was used, the 12-inch spacing gave highest yield, however, when extra cost of plants and hand harvesting of extra yield were considered, the 18-inch spacing appeared to give the best financial return. At Camp Hill, without irrigation, the yield from 18-inch spacing was as high as that from the 12-inch spacing.

Pod size was consistently larger from the low fertilizer rate.

At the 12-inch spacing pod size was consistently smaller than at either 18- or 24-inch spacing.

Number of pods per plant was increased as spacing between plants was increased.

There was an increase in number of plants that lodged when either the fertilizer rate was increased or when the spacing between plants was increased.

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APPENDIX TABLE. MARKETABLE YIELDS OF DIFFERENT VARIETAL STRAINS OF PIMIENTO PEPPER FROM RATES OF FERTILIZER WITH DIFFERENT SPACINGS OF PLANTS, NORTH ALABAMA HORTICULTURE SUBSTATION, 1970

Treatments					Marketable yields per acre and percent stand									
Fertilizer per acre			Side <sup>2</sup> N	Spacing in row	Truhart-King Pharr		Bighart SL		Bighart KL		Truhart-Pomona		Av.	
At planting <sup>1</sup>					Yield	Stand	Yield	Stand	Yield	Stand	Yield	Stand		
N	P	K		In.	Tons	Pct.	Tons	Pct.	Tons	Pct.	Tons	Pct.	Tons	
<b>(800 lb. 5-10-0)</b>														
40	35	67	40	12	7.38	93	4.61	75	4.40	78	5.43	69	5.46	
40	35	67	40	18	8.20	92	4.93	96	3.27	100	4.23	83	5.16	
40	35	67	40	24	3.53	100	3.98	100	3.89	94	4.36	100	3.94	
<b>(1,600 lb. 5-10-10)</b>														
80	70		80	12	6.61	72	4.81	72	6.07	67	6.31	67	5.95	
80	70	133	80	18	4.29	92	4.45	88	5.77	96	4.86	92	4.85	
80	70	133	80	24	3.89	100	4.27	100	4.72	83	3.54	94	4.11	
<b>(2,400 lb. 5-10-10)</b>														
120	105		120	12	4.67	69	4.02	67	4.34	67	4.82	78	4.46	
120	105	200	120	18	4.66	96	4.90	100	4.06	87	2.69	79	4.08	
120	105	200	120	24	3.99	100	2.84	94	2.94	100	4.06	100	3.46	
Av. yields					5.25		4.32		4.38		4.48		4.61	
Average yields for 3 spacings by fertilizer rates														
40	35	67	40	3 spacings	6.37	92	4.51	90	3.85	91	4.67	84	4.85	
80	70	133	80	3 spacings	4.93	88	4.51	87	5.52	82	4.90	84	4.97	
120	105	200	120	3 spacings	4.44	88	3.92	87	3.78	85	3.86	86	4.00	
Average yields for 3 fertilizer rates by spacings														
				12	6.22	75	4.48	71	4.94	71	5.52	71	5.29	
				18	5.72	93	4.76	95	4.37	94	3.93	85	4.70	
				24	3.80	100	3.70	98	3.85	92	3.99	98	3.84	

<sup>1</sup> Fertilizer at planting was applied broadcast and incorporated into the soil with the exception of 300 pounds per acre which was applied in the row.

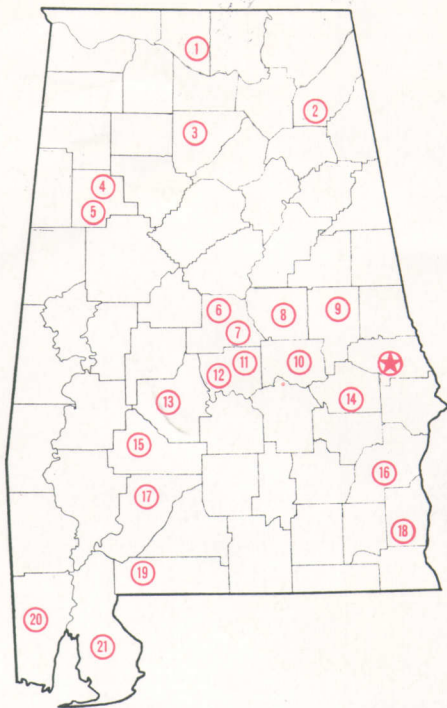
<sup>2</sup> The N sidedress was applied in 2 equal applications; the first application was made 5 to 6 weeks and the second 10 to 12 weeks after planting.





## AGRICULTURAL EXPERIMENT STATION SYSTEM OF ALABAMA'S LAND-GRANT UNIVERSITY

With an agricultural research unit in every major soil area, Auburn University serves the needs of field crop, live-stock, forestry, and horticultural producers in each region in Alabama. Every citizen of the State has a stake in this research program, since any advantage from new and more economical ways of producing and handling farm products directly benefits the consuming public.



### Research Unit Identification

★ Main Agricultural Experiment Station, Auburn.

1. Tennessee Valley Substation, Belle Mina.
2. Sand Mountain Substation, Crossville.
3. North Alabama Horticulture Substation, Cullman.
4. Upper Coastal Plain Substation, Winfield.
5. Forestry Unit, Fayette County.
6. Thorsby Foundation Seed Stocks Farm, Thorsby.
7. Chilton Area Horticulture Substation, Clanton.
8. Forestry Unit, Coosa County.
9. Piedmont Substation, Camp Hill.
10. Plant Breeding Unit, Tallassee.
11. Forestry Unit, Autauga County.
12. Prattville Experiment Field, Prattville.
13. Black Belt Substation, Marion Junction.
14. Tuskegee Experiment Field, Tuskegee.
15. Lower Coastal Plain Substation, Camden.
16. Forestry Unit, Barbour County.
17. Monroeville Experiment Field, Monroeville.
18. Wiregrass Substation, Headland.
19. Brewton Experiment Field, Brewton.
20. Ornamental Horticulture Field Station, Spring Hill.
21. Gulf Coast Substation, Fairhope.