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PRELIMINARY STUDY OF LABOR USE IN THE HARVESTING OF CHILI PEPPERS - 1953.

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A PRELIMINARY STUDY OF LABOR USE IN THE HARVESTING OF CHILI PEPPERS IN VENTURA COUNTY 1953*

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The peppers were harvested by three procedures. (1) The fruit was picked and placed in a used carbide can and when the can was full it was emptied into a grain or similar type of cloth sack (37 lbs.). Usually the sacks are sewed before placing on truck. Since the sack picking was for roadways the sacks were not sewed but were emptied into 1,000 lb. wooden bins. (2) Peppers were picked in cans, carried across the rows and emptied into bins on trailers. (3) The fruit was picked as in the other two examples but fruit was emptied onto a cross the row conveyor belt (Likens Mfg. Co.) and this equipment carried peppers to the bins. The general data obtained will be found in Table 1. It seems possible in the last two methods that some greater efficiency can be obtained in the future with minor changes in labor arrangements.

Comparison of the three methods. The average for the first two cases of sack picking was 12.9 hours per ton. The third field was that of Alvarez which gave a better yield and had a greater percent of red peppers. The three fields give an average of 12.4 hours per ton. The bin method gives an average of 11.9 hours per ton and the Likens belt 9.6 hours per ton. The percentage gains for method 2 and 3 are given in Table 1.

TABLE 1. Labor Used in Harvesting Chili Peppers by Three Different Methods.

Grower and Date	Hours per ton pick	Hours per ton load	Tons Harvested	Lbs. per Manhour	Hours per ton	% Labor Gain Over I	% Labor Gain Over II
I. Peppers picked in cans (18.5 lbs.) and dumped in sack[1].							
A-10/27	12.63	0.45	2.192	153	13.08		
B-10/28	12.28	0.45	1.628	157	12.73		
C-10/30	10.91	0.45	2.202	176	11.36		
Average					12.4		
II. Peppers picked in cans (18.5 lbs.) and dumped into bins.							
D-10/27	12.08		12.586	166	12.08		
E-10/28	11.67		12.141	172	11.67		
Average					11.8	5.0	
III. Peppers picked in pails (11.7 lb.) and dumped on Likens Belt							
F-10/29	9.67		15.00	207	9.67		
G-10/29	9.64		13.48	207	9.64		
H-10/30	9.62		13.82	208	9.62		
Average					9.64	28.6	12.2

Pimiento Harvest -- A test was made one afternoon and the following data obtained: picking 5.5 hr. per ton; sacking 0.98 hr. per ton; sack sewing 0.66 hr. per ton; supervision 0.33 hr. per ton, or a total of 7.22 hr. per ton.

* This study was possible through the kind cooperation of Dick Underwood, Joe Alvarez and H. E. Philbrook of Oxnard.

1 To have sewed sacks would have required 0.66 hour additional.

Picking Period per Can or Pail. Table 2 gives the data regarding picking time and period required to carry the can to bin for dumping. The pails were filled more rapidly because they held less peppers and perhaps because the pails were used in connection with the Liken belt. A new piece of equipment can stimulate the pickers to work more rapidly for a short time. About the same percentage time was used in picking or 90 and 91.5 percent.

Relation of Distance from Bin to Carrying Time of Peppers. In the second method, the pickers removed fruits in rows varying distances from the bins which carried the peppers to the factory. Some data were obtained as to the time required by different workers to carry their peppers across the row to the bin. Since Table 2 shows it requires 5.45 min. to pick a can this was used as a base figure. Thus, in row one the picker required 5.45 plus 0.29 min. or a total of 5.74 min. In the same fashion the worker on row fourteen required 6.31 min. to pick and deliver a can of peppers and return to his row. Table 3 and Figure 1 show that as the distance increases a greater percent of time is spent in carrying the peppers to the bin. The time lost is small for each trip but could amount to considerable over a 9½ hour day. The difference in pounds per day between picker in row one and one in row fourteen is about 160 pounds of peppers per day.

TABLE 2. Chili Pepper Picking Time in Minutes and Dumping into Bins.

Total Picking Time			Time to Dump Cans in Bins		
No. of Observations	Total Time-Min.	Ave. Time-Min.	No. of Observations	Total Time-Min.	Ave. Time-Min.
		(Pickers used cans holding 18.5 lbs.)			
16	103.45	6.47	15	10.70	0.73
7	38.68	5.53	7	4.54	0.65
21	110.69	5.27			
7	39.25	5.61	7	4.54	0.65
19	98.59	5.19			
32	165.20	5.16	32	15.04	0.47
			135		0.63
			178		0.60
			129		0.77
Tot./Ave.					
102	555.86	5.45	401	247.84	0.62
		(Pickers used pails holding 11.7 lbs.)			
44	102.19	2.32	32	7.80	0.24
32	75.20	2.35	40	7.52	0.19
Tot./Ave.					
76	177.39	2.33	72	15.32	0.22

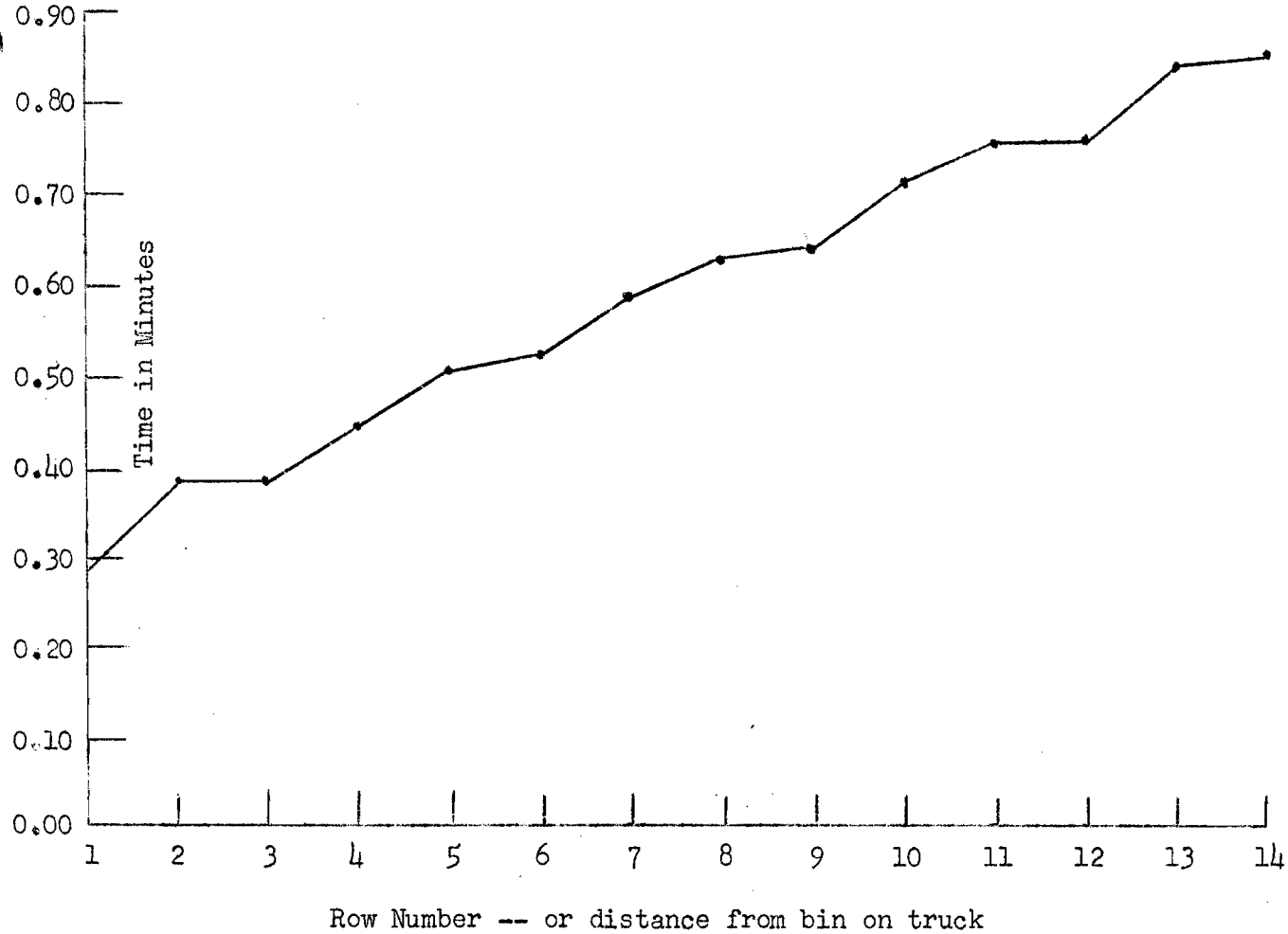
Summary of Table 2

	Picking Time	Carrying Time	Total	% Time Picking
18.5 pound cans	5.45	0.62	6.07	90.0
11.7 pound cans	2.33	0.22	2.55	91.5

TABLE 3. Time in minutes required to carry can of Chili peppers (18.5 lbs.) across rows to bin and return.

Row Number	Number Observations	Total Time Traveling	Average Time	Percent Time in Carrying 5.45 min. as base
1	18	5.28	0.29	5.3%
2	22	8.64	0.39	7.2
3	23	8.71	0.38	7.0
4	22	10.03	0.46	8.4
5	25	12.66	0.51	9.4
6	21	11.83	0.53	9.7
7	22	13.02	0.59	10.8
8	22	14.06	0.64	11.7
9	20	13.07	0.65	11.9
10	21	15.10	0.72	13.2
11	22	16.91	0.77	14.1
12	20	15.47	0.77	14.1
13	27	23.06	0.85	15.6
14	29	25.06	0.86	15.8
	314	192.90	0.61	11.2

FIGURE 1. Time in minutes required to carry 18½ lb. filled cans with peppers to bins and return -- row distance 42 inches.



Dumping Peppers from Pails on the Likens Belt. A comparison was made of time required to dump fruit on different areas of the Likens belt. Much of the belt near the bins had a narrow area where the pickers shook out the peppers onto the belt. The far end of the belt had no obstructions above. The data are found in Table 4 and shows a distinct advantage for the belt area without obstructions. In all fairness it must be acknowledged that the belt was not built specifically for peppers and it would be a simple matter to correct this difficulty.

TABLE 4. Time in minutes to dump 11.7 lb. pail on picking belt as to the location on the belt.

Open Belt at End of Equipment			Underframe or Limited Dumping Area			% Difference
No. of Observation	Total Time	Ave. Time	No. of Observation	Total Time	Ave. Time	
150	3.18	0.02	150	7.80	0.05	150

Other Miscellaneous Comments. In the case of transporting peppers in sacks, the man handling the sack does not work all the time when he serves only four pickers. We checked cases where the sacker worked 35.8%; 32.6%; 35.4%; and 45.9% of the time. This could be remedied by increasing the number of pickers per sacker.

Where the peppers were picked in cans and carried to the bins there was usually four men in and around the bins -- tractor driver, 2 men on the bins, and the boss. These four men worked 19%, 22.7%, and 27% of the time. It is probably possible to decrease in this number of men and handle the crop adequately. If it was possible for the pickers to empty their own cans it would probably increase efficiency. Lower trailers or steps on each side would make this possible. The pickers sometimes get on the tractor and moved the trailers with the bins ahead. If this was done sometimes it might be able to reduce the men not picking to one or two men. The pickers should be equally divided on either side of the trailer so walking distance is small. Perhaps 10 rows on either side is the limit.

Unfortunately, the Likens belt was not built for peppers so there was some peppers falling off the belt because of low sides. The belt should permit the rapid emptying of a container. If the conveyor had 6 or more bins per trailer it would make the belt more efficient and this would approach bulk loading. A belt as long as the Likens needs more pickers so as to reduce the number of non-productive manhours per ton of fruit. They should pick 3 to 5 rows beyond the belt and there is need for 1 or 2 persons to help the slow pickers keep up with the belt.

Perhaps the picking container could be improved. The sides need to be sloping to increase ease of emptying. Some light metal like aluminum might increase the weight of peppers which could be carried. The best size for greatest efficiency should be determined.

SUMMARY

This preliminary study points out that there are possibilities to reduce the labor required to harvest Chili peppers. Both the management of labor and the selection of equipment are factors which will affect the amount of labor required per ton.