



Photo 1. Tomato plants clipped to 3 to 4 inches above soil surface in maturity control tests at Davis.



Photo 2. Treatment 1, cutting at first flower cluster stage—plants 9 to 10 inches high.

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Clipping Tomato Plants Uniformity Control for

Tests reported here indicate that mechanical clipping of tomato plants may be used satisfactorily to spread harvest dates and obtain plant uniformity. The delay in harvest may be 7 to 14 days depending upon the physiological age of the plants at time of clipping. The first-flower-cluster clipping gave a 7-day delay whereas clipping at the second- and third-flower-cluster stage gave a 14-day delay. A later clipping treatment—when fruits had first begun to form (pea size)—was found to be too late and reduced yields. It is important that an irrigation be made immediately following the clipping. The new growth is rapid, producing a more vigorous and somewhat larger plant.

THE EFFECT OF MECHANICAL CLIPPING, or topping, of canning tomato plants grown for mechanical harvesting has been studied at Davis for the past three years. It was believed that the delayed maturity resulting from this technique might assist growers in scheduling plantings for mechanical harvesting. The topping procedure was not to take the place of carefully scheduled plantings, but rather to assist some growers with problems of early uneven growth, early flower set, and overplanted schedules. The importance of scheduling planting dates was discussed in CALIFORNIA AGRICULTURE, Vol. 19, April 1965, p. 14.

Trials

Trials were repeated during the 1966 tomato season to develop more precise in-

formation about the results of mechanical cutting on plant uniformity and harvest delay. The tomato variety used was VF 145-B (7879). The plots were direct-seeded on April 7 in single rows on 4½-ft beds. Germination was on April 18 and plants were thinned May 4, leaving two to three plants per clump, 9 inches apart.

Timing

The treatments were designed to determine proper timing of the cutting with reference to the physiological age of the plant and thus to be able to achieve the desired delay and uniformity of fruit maturity. The plots were replicated four times. The tops of plants were cut down to a height of 3 to 4 inches above the soil surface (photo 1). Treatments, as listed in the table, were: (1) cutting at first

flower cluster, before opening, when the plants were 9 to 10 inches high (photo 2); (2) cutting between second and third open flower cluster, when the plants were 14 to 16 inches high (photo 3); and (3) no cutting—control. Treatment 2 followed treatment 1 by ten days. To determine the effect of cutting on maturity, one-half of the plots were harvested on August 16 and the other half one week later, on August 23. The maturity percentages at each harvest are shown in the table.

An analysis of variance of the data for the first harvest (8/16/66) shows the difference between treatments in percentages of both red and green fruit to be highly significant. The difference in percentages of red and green fruit between treatments 1 and 3 in the second harvest



Photo 3. Treatment 2, cutting between second and third open flower cluster stage—plants 14 to 16 inches high.



Photo 4. Recovery of clipped plants and delayed maturity effects are visible in this test field.

Aids Maturity and Mechanical Harvesting

(8/23/66) was not significant, but the difference between these treatments and treatment 2 was significant.

The percentage of red fruit increased from 65% at the rate of 3 to 4% per day whereas the increase from 28% red fruit was at the rate of 4 to 5% per day. No significant differences in pH and soluble solids were found between treatments. The red fruit was well colored and the pink fruit was less than fairly well colored, according to California grading standards for canning tomatoes.

Yield

Weight of plants and fruit yield at the second harvest averaged:

Treatment	Total weight per plant		Fruit yield per acre	
	lbs	tons	tons	tons
1. 9 to 10 inches at cutting	3.0	36		
2. 14 to 16 inches at cutting	2.2	31		
3. Control (not topped)	2.6	37		

(The relationships between total weight per plant for each treatment and fruit yield in tons per acre was not significant.)

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EFFECT OF MECHANICAL CUTTING ON MATURITY OF THE VF 145-B 7879 TOMATO: FIRST AND SECOND HARVESTS

Plant height at mechanical topping inches	Maturity at harvest		
	red	pink	green
	%	%	%
First harvest—8-16-66			
1. 9 to 10*	65	24	11
2. 14 to 16**	28	23	49
3. Control (not topped)	84	12	4
Second harvest—8-23-66			
1. 9 to 10	89	7	4
2. 14 to 16	61	24	15
3. Control (not topped)	93	4	3

* First cutting was at first flower cluster (before open).
 ** Second cutting was between second and third open flower cluster, 10 days after first cutting.

Typical rotary chopper (right photo) being used in test fields for clipping tomato plants for mechanical harvesting. First bloom and open blossom stages of tomato plants (photo below) identify stages discussed in clipping trials for maturity control.

