Defoliation levels were assigned at random to the subplots within each whole plot (row). Each subplot consisted of 12 plants in the spring crop of 1978, 22 plants in the fall crop of 1978 and 17 plants in the spring crop of 1979. Each subplot, except for the control group, was defoliated only once, and the plants in each row in a block were done on different dates. Defoliation levels investigated were total (= 100%), 20%, 40%, 60%, and 80% starting from the top of the plant (= 20% upper or 20U, 40% upper or 40U, etc.) or 20%, 40%, 60%, and 80% starting from ground level (= 20% lower level or 20L, 40% lower or 40L, etc.)

Yield data were analyzed and comparisons with the control were made as a two-sided test using the Dunnett's procedure (31).

Experiment 1: spring crop 1978. The tomato seeds were planted on November 3, 1977. Beginning November 10, 1977, pesticides were applied twice weekly by a high volume, low concentrate boom sprayer. The insecticide permethrin was used at alternate rates of .056 kg ai/ha and .112 kg ai/ha. The fungicide applied simultaneously with the insecticide was either chlorothalonil at a rate of 1.58 kg ai/ha or mancozeb at a rate of 1.34 kg ai/ha. Form-a-Turf® was applied at a rate of 7.02 l/ha when bacterial diseases threatened as occurred during the bacterial speck epidemic of early 1978 (24).

The times of defoliation were 30 days after planting, 40 days after planting, and so on with 10 day intervals up to and including 100 days after planting. The levels of defoliation were 100%, 80U, 80L, 60U, 60L, 40U, 40L, 20U, and 20L.

Harvesting was done between February 14, 1978, and March 23, 1978.

Experiment 2: fall crop 1978. The tomato seeds were planted on September 13, 1978. A mixture of permethrin at a rate of .112 kg ai/ha and either chlorothalonil at 1.68 kg ai/ha or mancozeb at 1.34 kg ai/ha was applied weekly, and Form-a-Turf® on demand as in Experiment 1.

The times of defoliation were 30 days after planting, 40 days after planting and so on with 10 day intervals up to and including 80 days after planting. The levels of defoliation were 100%, 80U, 80L, and 60U.

Fruit was harvested between December 8, 1978, and December 28, 1978.

Experiment 3: spring crop 1979. The tomato seeds were planted on December 28, 1978. Pesticide applications were made at the same schedule and rates as in Experiment 2. Due to the poor stand of the crop only a limited area of the field could be used. The number of defoliations, therefore, had to be limited. The times of defoliation