

Nitrogen on Cantaloupes

fertilization tends to increase fruit size and reduce culls but does not affect mosaic infection and yield

F. W. Zink and G. N. Davis

Heavy nitrogen fertilization of cantaloupes does not lessen the severity of infection caused by the mosaic virus, nor does it increase the yield of marketable fruit. It increases cantaloupe size and reduces the number of culled fruit.

According to 1950 fertilization experiments at El Centro, the most satisfactory nitrogen fertilization program employs 60 pounds of nitrogen per acre, with half of it used as preplanting application, and the remainder when the runners start. No increase in the number of fruits set, total soluble solids of the fruits, or retardation in the rate of maturity was apparent by the use of more than 60 pounds of nitrogen per acre.

The variety used in the tests was the Powdery Mildew Resistant Cantaloupe No. 6. The seed was planted on February 19. The six experimental treatments—with four replications—were applied as follows:

Treatment No.	Fertilizer material	No. of applications	Date of application				Total pounds nitrogen acre*
			1	2	3	4	
1	None						60
2	Amm. Nitrate	1	2/19				60
3	Amm. nitrate	2	2/19	3/20			120
4	Amm. nitrate	4	2/19	3/20	4/10	5/10	180
5	Amm. nitrate	4	2/19	3/20	4/10	5/10	180
6	Nitric acid	4	2/19	3/20	4/10	5/10	60

* Total pounds divided equally between applications.

All plots received a preplanting application of 200 pounds treble superphosphate per acre. The ammonium nitrate was applied with a fertilizer drill, the nitric acid was supplied in the irrigation water.

Effect on Mosaic

Symptoms of the mosaic virus were first noticed on March 17. By the end of the month the field appeared 100% infested. The virus symptoms were severe in all treatments. Treatment one and six had the most pronounced symptoms and never recovered from the shock of the infection. By mid-June the plants in these two treatments had lost more than 50% of their foliage.

There were no visible differences between treatments two, three, four, and five. All recovered slowly from the initial shock of the virus. At the end of the sea-

son these vines were stunted, and new growth showed leaf distortion and moderate chlorosis.

Analysis of the harvest records indicates significant differences between treatments affecting marketability.

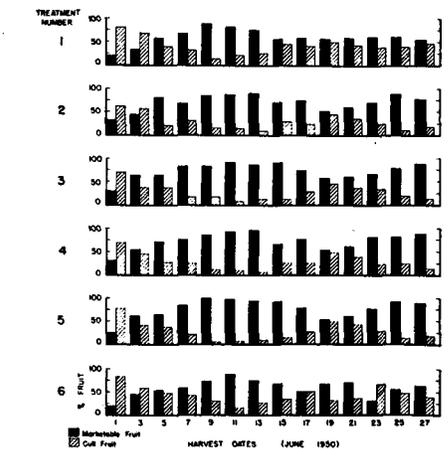
Treatments three, four and five produced significantly more marketable fruit than treatments one or six. The marketable yield per acre was 99.2 crates on the check plots, and ranged from 110.2 crates on treatment two, to 134.0 crates on treatment five. The marketable yield on treatment six was only 88.5 crates.

The mean weight of marketable fruit was increased by the nitrogen fertilization in all cases. Treatments three, four and five were significantly greater than treatment one; treatment five was also significantly greater than treatment six.

The percentage of marketable fruit—the number of marketable fruit compared with the total fruit ripening during the

harvesting period—was analyzed. The same significant differences existed as in the total marketable fruit, except that treatment two gave a significantly greater percentage of marketable fruit than did treatment six.

There were no significant differences between treatments as to the percentage of total soluble solid content of fruit. Nitrogen fertilization in the tests did not significantly alter the yield of total fruit but most treatments reduced the number of unmarketable—culled—fruits. The check treatment yielded 7,009 cantaloupes per acre. Fertilized treatments yielded from 6,682 fruits—treatment six—to 7,683 fruits—treatment five.



Per cent marketable fruit and per cent cull fruit of the check and the five nitrogen treatments.

Heavier application of nitrogen tended to reduce the number of slick fruits. The check treatment averaged 1,338.7 slicks per acre, and the figure was even higher for treatment six. Treatment four had the fewest slick fruits—956 per acre—the other treatments averaged around 1,100 slicks per acre.

No significant effect was observed on the maturity rate of cantaloupes resulting from the various nitrogen treatments. However, the no nitrogen check and treatment six reached peak production before any of the nitrogen treatments.

The poor showing of treatment six might be explained by the fact that considerable amounts of nitric acid were lost in the run-off water, or leached below the root systems of the plants.

F. W. Zink is Assistant Specialist in Truck Crops, University of California College of Agriculture, El Centro.

G. N. Davis is Associate Professor of Truck Crops, University of California College of Agriculture, Davis.

The above progress report is based on Research Project No. 1129.