Control
Cantaloup
Powdery Mildew

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Powdery mildew spots on the underside of a cantaloup leaf.

During the past four years, cantaloup vines have been dusted and sprayed with various fungicides in attempts to find the best chemical control for powdery mildew. Karathane is still the best of all the materials tested. It controls mildew and does not harm the vines when used at the recommended rate of 30 to 35 pounds per acre. The only time plants were injured by Karathane in the test was at an unusually high rate of 80 pounds per acre.

Since Karathane is the best material, our next questions are: What is the lowest effective concentration? How often must it be applied? Can we increase yields by controlling powdery mildew?

In 1957 and 1958, mildewed vines in Yuma Valley were dusted with 1/2% and 1% concentrations. These were applied at two different intervals as soon as powdery mildew appeared. Some plots were dusted weekly and others received applications every other week. Vines which were treated received four applications; only two bi-weekly dustings were made. Some control plots were not dusted and others received inert materials with which Karathane is usually mixed.

Lower Rates Are Sufficient

The controls were severely diseased by powdery mildew but all plots that were dusted with Karathane had significantly less disease. Fortunately for cantaloup growers, the lower concentration and the less frequent application proved to be adequate. Dusting with 1/2% Karathane every other week controlled mildew just as well as 1% applied weekly.

Yields of marketable fruit were recorded throughout the season. Since jumbo sizes 27, 36, and 45 per crate are generally preferred, yields of these sizes were compared. Plots dusted bi-weekly with 1/2% Karathane yielded significantly more of these desirable sizes than did the other treatments.

For best powdery mildew control, plant a cantaloup variety that has some disease resistance. Powdery Mildew Resistant No. 45 will resist one of the races of mildew found in our desert areas. In case the second race begins to infect your crop, apply a 1/2% Karathane dust every other week until the disease stops spreading.

During very hot weather, mildew spread often slows down so that chemical control can be discontinued. Don't dust until mildew infections appear in your fields.

Nutritional Responses of Lemons

On the Yuma Mesa

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Previous experiments concerning the nutrition of citrus trees at the Yuma Mesa Experiment Station have involved trees growing on silted soil. (The term silted soil refers to soil having a layer of silt on top of the superstition sand as a result of irrigation with silty water from the Colorado River before the completion of Hoover Dam.) In all such experiments, there has been no response to applications of any nutrient elements except nitrogen.

The data, here reported, are from Lisbon lemon trees growing in Superstition sand with no silt layer on the surface. The trees were planted in 1954 and since 1955, certain trees have received different amounts of nitrogen fertilizer, including 1 lb., 21/2 lbs., and 4 lbs. of nitrogen per tree per year, applied as ammonium sulfate. Some trees at each level of nitrogen have received two pounds of P2O5 per tree (applied as treble super phosphate), some have received manure at the rate of ten tons per acre and some have received both P2O5 and manure.

The trees have not yet reached maximum production, but the yields in the past three seasons have consistently shown the effects of the various treatments.

The average yield per tree in 1958, recorded as number of fruits, is presented graphically on Page 12. The yield given (Please turn to Page 12)
Herbicides
Supplement Good Farming Practices

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Herbicides have become increasingly important in the agriculture of the United States since World War II. Their role in agriculture is reflected in the annual production of 60 million pounds of herbicides which were not available 13 years ago, but now treat approximately 30 million acres of crop land annually.

Why have herbicides been accepted so readily? Because they often control weeds where other methods fail. Prolonged periods of rainfall in cotton or corn producing areas frequently prevent the use of mechanical cultivation to control weeds. Soil applications of herbicides before the rains control most annual weeds which usually develop under such conditions.

The use of herbicides is often the cheapest method to control weeds. In vegetable production, for instance, the use of selective herbicides is far cheaper than hand weeding to control annual weeds.

Supplement Good Farming
Herbicides are being used to supplement rather than replace good farming practices. The availability of effective herbicides should not cause the grower to be less dependent on crop rotations and proper crop management practices. In a few crops it is possible to control weeds through the proper use of herbicides and eliminate mechanical cultivation.

Certain herbicides control weeds better than mechanical cultivation, yet they have been used mainly to supplement cultivation. Research by the Arizona Agricultural Experiment Station cooperating with the Agricultural Research Service of the U.S. Department of Agriculture has shown that spot treating with dalapon will control Johnson grass growing in cotton fields, and that monuron and diuron will control annual weeds after cotton layby. The wide usage of these herbicides in Arizona has supplemented but not replaced either the hoe or the mechanical cultivator.

Other herbicides used in field crops in Arizona are 2,4-D for the control of broad-leaved weeds in small grains and sorghum, and DNBP for the control of broad-leaved weeds in alfalfa. In vegetables, the following herbicides are used to control annual weeds: (1) CDEC in lettuce and celery; (2) NPA in melons; (3) DNBP, sulfuric acid, and KOCN in onions; and (4) selective petroleum oils in carrots.

New Products Tested
Herbicides are being tested for use in other crops: dalapon for use in alfalfa and sorghum; and diuron for use in citrus. New herbicides and new formulations of herbicides are being tested each year and a few appear promising for use in Arizona, such as simazin for weed control in corn. Granular formulations of certain herbicides may prove more effective than liquids for specific uses.

Increasing amounts of herbicides will be used in the future but seldom will their use replace good farming practices.

Nutritional Responses of Lemons

(From Page 11)

for each treatment is an average for 10 trees. By comparing the bars in the N1 series with those in the N2 and N3 series, it becomes evident that yields at the N2 level of nitrogen application are higher than those of the corresponding treatments at either the N1 or N3 levels.

The highest yielding treatment is N3P; so apparently the N2 level of nitrogen application (2 1/2 lbs. of N per tree per year) plus that in the manure application (10 tons of manure per acre) is approximately the optimum amount of nitrogen for trees of this size (5 years of age).

A comparison of the N1, N2, and N3 bars reveals that when nitrogen alone was supplied to the trees, the higher rates increased the yield only a small amount over the N1 rate. This indicates that some factor other than nitrogen was limiting the yield.

That the limiting factor was probably phosphate is shown by the relatively large increase which occurred when phosphate was applied in addition to nitrogen. These yield increases for treatments N1P, N2P, and N3P were 124%, 128%, and 110% when compared with their respective nitrogen treatments, N1, N2, and N3.

The application of manure to the trees also resulted in large increases in yields (N1M, N2M, and N3M) since it supplied phosphate as well as additional nitrogen and other nutrient elements.

These trees are only four years of age; so their nutritional requirements may change as they continue to grow and produce larger amounts of fruit. But under the conditions of this experiment, Lisbon lemon trees on Rough lemon rootstock, growing in Yuma Mesa Superstition sand, given increased yields as a result of phosphate applications.

Yields of Lisbon Lemon Trees in 1958 as affected by rates of nitrogen, phosphorous and manure applied.
N: 1 lb. Nitrogen per tree per year
N: 2 1/2 lbs. Nitrogen per tree per year
N: 4 lbs. Nitrogen per tree per year
P: 2 lbs. P.O. per tree per year
Manure: 10 tons per acre

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