Cantaloup Pests Have *Enemies*, Too

Beneficial Parasites Should Not Be Killed Off With New Insecticides

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Since the release of DDT for commercial use and the development of many new insecticides, much has been published regarding the effect of these insecticides on the natural enemies of insect pests and the so-called "upset of the natural balance." In some instances these new insecticides have been used without sufficient regard to their value, as determined by experimental evidence, and without regard to their effect on the entire insect complex.

The indiscriminate use of insecticides on cantaloups in the Salt River Valley of Arizona is an outstanding example of the ill effects of this practice. Leaf miners have long been recognized as pests of vegetables in this area, but were considered of minor importance until the severe leaf-miner outbreak on cantaloups during July 1948. This infestation was so severe that some of the infested crops were abandoned and disked, since at that time no insecticides that would control these pests were known.

Study Began in 1949

In 1949 the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture began investigations of insects affecting cantaloups at its Phoenix, Arizona, laboratory. Studies have been conducted not only to find insecticides that might control the beet leafhopper, leaf miners, and other insects affecting this crop, but also to determine the parasites and predators involved and the importance of these natural enemies in holding the insect pests in check.

The effect of the various insecticides on these parasites and predators also has been studied. It was found, for example, that 15 species of tiny wasplike insects attack and destroy leaf miners within the leaf tissue of cantaloups.

Without enemies, leaf miners may be very destructive to cantaloups and many other crops, particularly when the plants are small. It was found in experimental plots that, although DDT was ineffective against leaf miners, its use greatly reduced the numbers of natural enemies of this insect and apparently led to an increase in leaf-miner infestations. From the results of these studies it seems possible that the leaf-miner outbreak of 1948 may be attributed, at least in part, to the widespread use of DDT in cantaloups and other crops.

Dieldrin was shown to be very effective in the control of leaf miners, but such large populations of spider mites developed in the plots treated with dieldrin that the quality of the melons produced was below shipping requirements. Some experimental plots of cantaloups treated with dieldrin also developed excessively high populations of a species of green leafhopper later in the season.

It is possible that further studies may lead to the development of methods whereby this insecticide may be used for the control of leaf miners in cantaloups. However, it will be necessary to use it as directed in order to prevent an increase of other insects or spider mites.

Aphids Have Eenemies

Aphids are sometimes pests of cantaloups in the Salt River Valley. These insects also are affected by many natural enemies. If aphid-infested plants are observed closely, it will be found that certain of these insect enemies — such as small wasplike insects, larvae of the lacewing flies commonly called aphis lions, maggots of syrphid flies, and adults and larvae of lady beetles — occur among the aphid colonies and will frequently so reduce the aphid infestation that no insecticide application will be necessary.

Although it is often possible to produce a crop of cantaloups in the Salt River Valley without the use of insecticides, their use is profitable or essential under some conditions. Parathion is at present the only material recommended by the Bureau of Entomology and Plant Quarantine for the control of insects on cantaloups in this area. It should be used spe-

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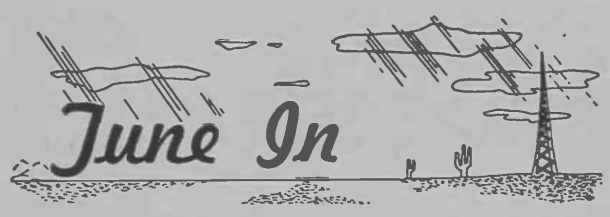
Leaf miner damage shows on this cantaloup leaf.



DAILY (EXCEPT SUNDAY)

KTAR, Phoenix, 6:15 a.m. — Farm Front — Maricopa County Extension Agent. (6:10 a.m. on Saturdays)

MONDAYS

KYMA, Yuma, 7:00 a.m. — On the Farm Front.

MONDAY THROUGH FRIDAY

KYUM, Yuma, 7:20 a.m. — Yuma County Agricultural Extension Service Radio Program.

TUESDAYS AND THURSDAYS

KCLS, Flagstaff, 6:15 a.m. — Your County Agent Reports.

FRIDAYS

KCKY, Coolidge,Casa Grande, 4:00 p.m. — Pinal County Farm and Home Program.

SATURDAYS

KGLU, Safford, 1:00 p.m. — Stepping Along with the Agricultural Extension Service.

Does Arizona 44 Meet Trade Needs?

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tiplied by Arizona's 1952 Upland production of 904,200 500-pound bales, this shows an increased return to Arizona producers of $678,150 due to the greater staple length of A-44.

Fringe Benefit

A benefit more difficult to measure, but not less important, is the increased interest of mills in Arizona cotton evidenced by the increasing number of salaried representatives of Eastern merchants appearing in the Phoenix market. These buyers have direct mill outlets for large quantities of Arizona cotton, and their presence has resulted in substantial improvements in the buying basis during the past year. If Arizona is able to continue her volume of A-44, and to eliminate undesirable varieties from production, these buyers will continue to come into the Phoenix market to buy Arizona cotton.

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cifically to control an infestation occurring on the crop at the time, and not as a preventive measure. It is not desirable to make routine applications when the plants have reached a certain stage of development.

Take Care!

Parathion is extremely toxic to humans and should be used only by a trained operator who will assume full responsibility and enforce the precautions prescribed by the manufacturers.

Pima S-1 Cotton

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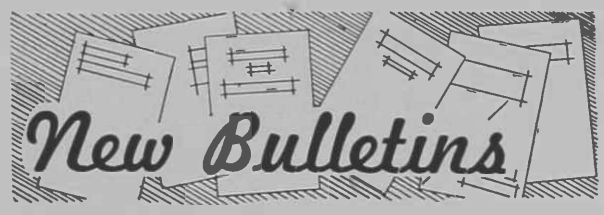
equal to Egyptian Karnak cotton, but not quite as good as Pima 32 or Amsak.

Type of Plant. Pima S-1 was bred originally for a plant height of 40 to 50 inches at Tucson on a medium heavy soil with normal irrigation. Pima S-1, when grown under these conditions, produces a plant which can be harvested with the cotton picker, provided defoliation is sufficiently complete.

But when Pima S-1 is grown on a heavy, fertile soil, such as alfalfa sod and irrigated heavily, it may grow considerably higher than 50 inches, as has happened in the Salt River and Yuma valleys. Under such conditions it is no longer a "Dwarf Pima," but even here it does not grow as high as Pima 32 or Amsak.

Present Status. Considering the lint yield per acre, lint quality, spinning performance and growth adaptation, Pima S-1 seems to have some promise as a commercial variety and the seed is being increased for a more extended acreage. With more experience in growing Pima S-1, it may be possible to obtain maximum yields of lint without at the same time growing too tall a plant.



Ask your County Agricultural Agent for a copy of any of these new bulletins or circulars. They are free to Arizona farmers and stockmen.

Experiment Station

Bulletin 246, "Cost of Pumping Irrigation Water, Pinal County, 1951."

Forty wells in Pinal County were used in this detailed survey of pumping costs by electric and gas powered pumps. Data are shown by graphs and tables. Procedures and results are covered in the text.

Extension Service

Circular 148-Revised, "Fruit Insect Control Hints."

This is a 1953 revision of the extension recommendations for control of deciduous fruit-tree pests in Arizona. Specific information is given.

Circular 179-Revised, "Cotton Insect Control, 1953."

Complete, up-to-date cotton insect control information is supplied, including hints on airplane application of insecticides.

Miniature Farm On U of A Campus

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Mohave soil. After cropping these soils for thirteen years, the nitrogen content of the two reached a temporary equilibrium point midway between that of the virgin soils. After another six years the nitrogen content of the Gila soil associated with the alfalfa rotation had remained constant while that of the Mohave soil had shown a serious slump. In both cases the soils in the "wheat-hegari" rotation had an unfavorably low nitrogen content.

The low nitrogen content of wheat grown on soils depleted in nitrogen is a direct reflection of the fertility of the soil. Certainly the discriminating buyer will choose the wheat with the highest protein content. This can only be grown on ground well supplied with nitrogen. The nitrogen content of the wheat grown on Gila soil in the wheat-hegari rotation was reduced by 50% during 23 years of cropping as a result of using a rotation lacking a legume. When it is realized that wheat is priced on the basis of its protein content the importance of maintaining a high nitrogen content in the soil becomes apparent.

Nitrogen Content of Wheat Grain
Gila Soil — 1952

	% nitrogen	% protein
Alfalfa rotation	2.5	15.6
Wheat—hegari rotation	1.25	7.8

This experiment disproves the old saying that only water is required to make a desert soil bloom. Experiments and practice have shown that desert soils cannot maintain a high level of productivity without the use of good cropping and fertilization practices. Inasmuch as Arizona's agriculture is becoming of age and most of the cropped land consists of Red Desert Soils it appears that fertilization must become a standard practice on these soils to maintain high yields and to insure crops of high nutritional quality.

Circular 203-Revised, "Defoliating Cotton in Arizona, 1953."

This is a complete revision of last year's circular. Latest available information on defoliating is included.

Circular 204-Revised, "Requirements for Arizona 4-H Club Work."

This circular lists in detail the requirements for all 4-H projects available in the state. It is for use of 4-H members and leaders.