Insects and diseases are the most important limiting factors in the growing of
cucurbit crops in Virginia. The most destructive insect pests of these crops
are the cucumber beetles and the pickle and melon worms. Bacterial wilt, downy
mildew, anthracnose, and mosaic are the most destructive diseases.

Cucumber Beetles and Bacterial Wilt

The most serious injury by cucumber beetles is done soon after the insects come
out of hibernation. At that time, the young plants, if not protected might be
completely destroyed within a few hours. The beetles deposit their eggs around
the base of plants. In a few days these eggs hatch into small, white worms,
which bore into the stems and roots. In addition to the injury caused by the
adult and worm stages, this beetle also carries a destructive bacterial wilt
disease, often seen later in the season. To control bacterial wilt, it is neces-
sary first to control the cucumber beetles.

Control: First, try to prevent the beetles from entering the garden or field
when the plants are coming up. This means you should dispose of the vines and
green fruit at the end of the bearing season, to deprive the beetles of food.
Eliminating crop residue, and fence rows, will do much to reduce winter survival
of the beetles.

After careful attention has been given sanitation, follow with a thorough dusting
with a rotenone and copper, or a calcium arsenate and copper dust mixture. Make
the first application of this material as soon as the ground cracks above the
germinating seeds. Blow the rotenon dust into the crevices to cover as much of the
stems as possible, so that it will be present when beetles attack the young,
tender shoots. Make additional applications of dust at 4 to 5-day intervals, until
the beetles are under control, then apply a copper dust (without poison) at 7-
to 10-day intervals until the harvest season is finished.

Results of recent investigations of the Virginia Truck Experiment Station has
revealed that the "purified" or "safered" form of DDT can be used safely on cu-
cumbers, squash, and melons. Old type DDT produces stunting to some varieties
of cucurbits.

Purified DDT can be used in combination with (3% DDT, 5% metallic copper) for
dusting cucurbit crops. Apply at 7- to 10-day intervals until the insects are
under control. Cover the vines well with the dust at each application. The dust
is best applied late in the evening or early in the morning when the air is quiet.

DDT leaves a poisonous residue on the fruit, and thus cucumbers and squash should
be peeled before they are eaten. The danger of poisonous residue is much less on
melons and cantaloupes.

Downy Mildew

Downy mildew is a fungus disease which causes yellow spots on the leaves. When
the spots become numerous, the leaves wither and die and the plant may be par-
tially or entirely defoliated. The fungus does not overwinter in Virginia,
but does survive on plants in the South. During rainy periods in the spring of
the year, the disease moves up the coast by means of wind borne spores.

(over)
Control: Downy mildew can be effectively controlled by frequent applications of copper dust. Fungicidal dusts containing 5 to 6% metallic copper, derived from one of the fixed coppers have proved effective. New materials such as Parzate and Dithane M-75 are also effective. Make the first application when the vines are about 22 inches long, or earlier if the disease is present in the neighborhood. Repeat the treatment at 7- to 10-day intervals throughout the season. If rain washes the dust off, repeat the application. Ready mixed copper dusts can be bought from most larger seed stores and farm supply companies.

**Pickle and Melon Worms**

Frequently cucumbers, melons and squash are attacked by fruit worms. The young caterpillars feed at first on the blossoms and tips of the vines, later boring into the fruits. Pot usually sets in after the worm enters the fruit. Infested fruits are not marketable.

Control: Regular garden poisons are not very effective in controlling the pickle worm and melon worm. The moths are strong fliers; therefore, rotation is of little benefit. The destruction of the vines and immature fruits after the crop has been made, will reduce the moths during the next season. Varieties planted for early harvest will escape most of the injury. Fruit damage usually occurs late in the summer.

The Virginia Truck Experiment Station has shown that DDT is effective in the control of pickle worms and melon worms. Late-planted cucumbers, squash, and melons should be dusted with a mixture of 5% metallic copper and DDT. The 1% impregnated dust or 5% purified DDT dust might be used. Start applications of the DDT-copper dust when the first fruits set. Repeat at 7- to 10-day intervals until the crop is harvested. Since DDT is poisonous, squash and cucumbers treated with it should be peeled before being eaten.

**Other Diseases**

**Anthracnose** frequently causes considerable injury to cucurbits. It can be partially controlled by dusting with fungicides as outlined under downy mildew. **Mosaic** causes stunting of the vines and a wrinkling and mottling of the leaves. The yield of fruit is frequently very much reduced. Cucumber beetles and other insects that spread the disease must be controlled, and all milkweed, pokeweed, wild cucumber, ground cherry and other host plants of mosaic, in or near cucumbers, squash, etc., should be destroyed.

**Equipment**

For small areas of an acre or less, a hand-operated rotary duster will be satisfactory. However, for larger commercial areas, a tractor or truck-mounted power duster will be much more satisfactory. If power dusting is anticipated, space the rows to give room for the operation of such equipment.

MR-126 (Revised)
Fenne and Rowell
1-13-50

Cooperative Extension Work in Agriculture and Home Economics, Virginia Polytechnic Institute and the U.S.D.A. Cooperating.