

CMV

Spells Headache For Plant Grower

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Proper placement of crop fields in relation to one another, year after year, can be highly significant in controlling virus diseases. Viruses attack all sorts of plants including vegetable, field and forage crops as well as ornamental plants and weeds.

CMV is Widespread

Cucumber mosaic virus (hereafter referred to as CMV) can infect over 200 species of plants in many different families. Using CMV as an example, it is certain that many kinds of this virus exist which attack different crops with variable damage.

Sometimes CMV is so slight in a plant that evidence of attack is not observable,

yet the final damage may be great. In order to detect the less evident kinds of CMV, investigators resort to varieties of tobacco. Viruses appear to become more concentrated in tobacco.

The accompanying diagram illustrates some of the most important relationships among strains of CMV attacking some of the most desirable crop plants. The possible relationships to weeds and other plants are shown. Successful inoculations (indicated by direction of the arrows) were made in the virus greenhouses on the campus of the University of Arizona, Tucson. Possible other combinations exist but only those which could be demonstrated experimentally on "guinea pig" or indicator plants are shown.

Two Viruses Affect Lettuce

The first evidence that lettuce (Great Lakes strain) can be naturally infected by CMV was obtained recently in tests on *Chenopodium amaranticolor* which is a "guinea pig" or indicator plant for CMV. Since CMV could be seed-borne, the problem in lettuce seed viruses becomes acute. About four to eight per cent of lettuce seed is usually infected with still another virus — lettuce mosaic.

Only recently was a virus recovered from watermelon fruits which causes veins in cantaloup leaves to become intensely yellow, then bronze-brown color. Symptoms appear in the older leaves. Many leaves, after the initial symptoms, sector much in the same manner as do cantaloups infected with so-called crown blight.

In tomato CMV causes typical "narrow leaf" (actually leaflets). The fruits become greatly distorted and lose their appeal to the housewife.

What About Ornamentals?

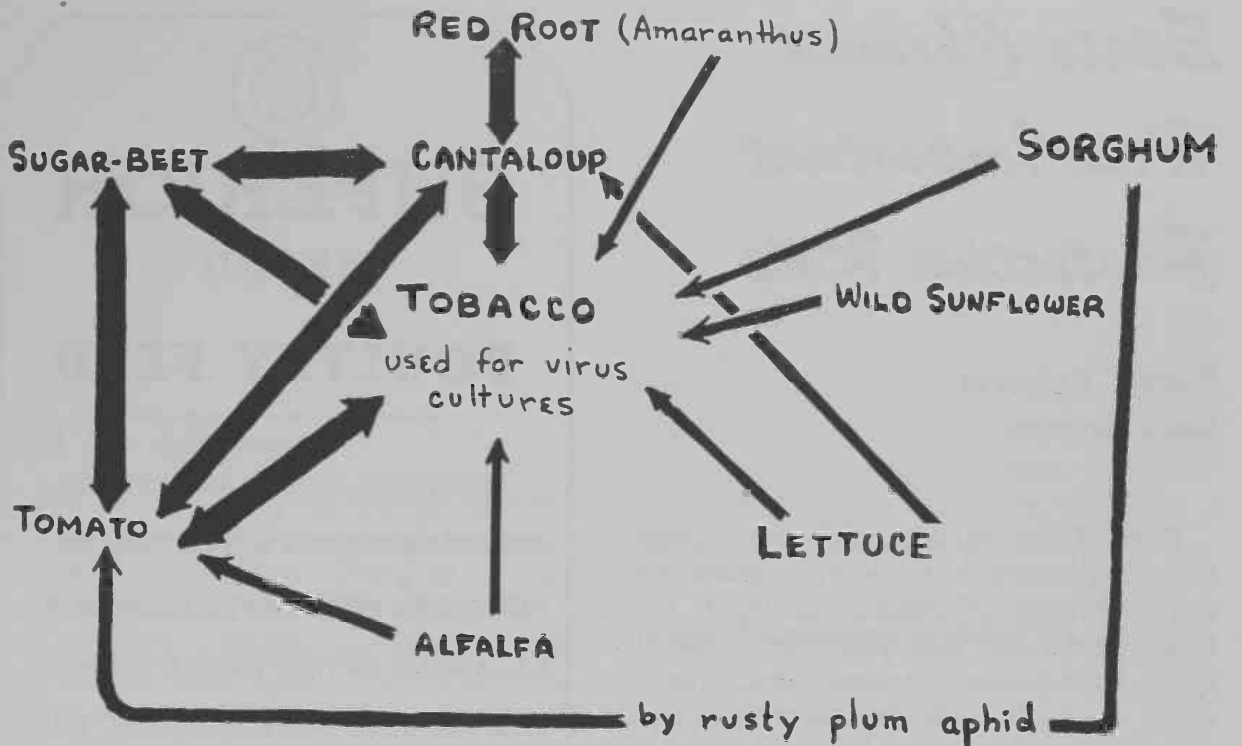
Many ornamental plants such as petunia may be attacked by CMV and thus serve as reservoirs for further spreads. Therefore careful planning must be observed when the ranch house yard is being landscaped.

Many weeds become infected by CMV. Wild sunflower (*Helianthus annuus*), red-root (*Amaranthus retroflexus*) and ground-cherry (*Physalis* sp.) appear to be the most troublesome to the Arizona grower, particularly to the melon industry. Honeydews infected with mosaic viruses are usually near red-root plants showing symptoms of CMV.

Keep Susceptible Crops Apart

CMV has been recovered experimentally from many crop plants, ornamentals and weeds. Avoid close plantings of fields devoted to crops mutually susceptible to CMV. Examples of poor risks are tomatoes close to lettuce, cantaloups close to tomatoes or lettuce, cantaloups and other melons as well as tomatoes close to sugar beets. Avoid as many susceptible weeds as possible.

Above all, select ornamental plants for the ranch house yard with the idea of avoiding CMV-susceptible species, such as petunias and many others.



BELOW, reaction of *Chenopodium amaranticolor* to a strain of CMV recovered from Great Lakes variety of lettuce in an Arizona field.

