NM STATE UNIVERSITY

Extension Plant Pathology

"News You Can Use"

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Alfalfa Mosaic Virus – Over the past month, the New Mexico State University – Plant Diagnostic Clinic has received several plant samples that are exhibiting severe symptoms of Alfalfa Mosaic Virus (AMV). This virus is found worldwide on a wide variety of cultivated plants and weed species, and is particularly common on plants in the solanaceous (nightshade) and leguminaceous (pea) plant families. It is common in New Mexico on chile peppers and has also been identified on tomato, bean, alfalfa, peanut, cowpea and lavender. While this disease occurs every year in New Mexico, it rarely causes serious economic losses as the number of plants infected in any given field is usually low. It can, however, severely infect individual plants resulting in little of no fruit production.

Figure 1. Alfalfa Mosaic Virus on peppers (Photo: Natalie P. Goldberg, NMSU-PDC)

Figure 2. Alfalfa mosaic virus on alfalfa (Photo: J. K. Lindsey, www.commanster.edu)

Figure 3. Alfalfa mosaic virus on potato (Photo: Howard F. Schwartz, Colorado State University, Bugwood.org)

Symptoms: Symptoms caused by Alfalfa Mosaic Virus can be somewhat varied, but the most common symptom is white to yellow blotches in a mosaic pattern on the leaves (Figs. 1, 2, and 3). Other symptoms seen in peppers include white discoloration that occurs in a ringspot or curving mosaic pattern (Fig. 4). When young plants are infected, they are stunted and produce small, deformed fruit. When mature plants are infected, the fruit produced before infection is normal, but little or no fruit is produced after infection. Stem necrosis may occur in tomato plants infected with AMV and tomato fruit often exhibits necrotic spots or blotches (Fig. 5). Some infected plants do not exhibit symptoms and serve as symptomless carriers in the field.

Disease Cycle and Conditions for Disease: Alfalfa Mosaic Virus is a single stranded RNA virus which is transmitted in a non-persistent manner by at least

Figure 4. Alfalfa mosaic virus on chile peppers (Photo: Natalie Goldberg, New Mexico State University)

14 species of aphids. The aphids acquire the virus after feeding on the plant for a few minutes. After acquisition, the insect can immediately transfer the virus to susceptible healthy plants. The aphid can transfer the virus for only a short time after acquisition, however they can re-acquire the virus anytime they feed on infected plants. The virus can also be transmitted mechanically (by touching or equipment), by grafting and by seed. Some green chile fields in Southern New Mexico are mechanically mowed after the first harvest. The plants grow back and produce a second concentrated crop load. Unfortunately, this practice has proven to be problematic fields where mechanically transmissible viruses, such as Alfalfa Mosaic Virus, are present.

Management: Insecticides are ineffective in managing this disease because the acquisition of the virus by the insect occurs too quickly. There are no pepper varieties that are resistant to the disease. As such, the best approach to management is to try to minimize the likelihood of

Figure 5. Tomato fruit infected with Alfalfa Mosaic Virus (Photo: T. A. Zitter, Cornell University)

infection. Whenever possible, avoid planting chile peppers next to alfalfa fields and use high quality seed or transplants that are free of the disease.

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