UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

Alfalfa Mosaic Virus in Jalapeño Peppers

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Description of the problem:

Weeks-old jalapeño pepper plants, a few weeks old, were displaying symptoms of mottled chlorosis and stunting, along with some curly leaves and circular necrotic areas resembling virus symptoms in the CA low desert. These symptoms are consistent across all planted cultivars within the farm, although some cultivars appear to be more affected than others.

PICTURE TAKEN ON SITE:

Diagnostic: Alfalfa Mosaic Virus.

The disease

Alfalfa mosaic virus (AMV) infections are more prevalent in peppers grown near alfalfa fields. This virus is commonly found in alfalfa seeds, with most alfalfa fields being infected. Transmission occurs through several aphid species, with aphids transferring the virus to surrounding crops while probing leaf tissues. Once infected, aphids can transmit the virus for a brief period, leading to rapid local spread within fields. Overall spread is linked to aphid activity rather than the presence of aphids. Except in fields adjacent to alfalfa, the disease typically does not pose significant economic concerns.

Symptoms and signs

AMV symptoms manifest as leaf mosaic, discoloration, curling, and stunted growth. These signs typically emerge shortly after pepper transplants are planted and can affect any part of the plant throughout the season. While plants may recover, the virus persists. Varieties show varying symptom severity. Common symptoms include mosaic and discoloration, mainly on young leaves, which may bleach over time. Leaf deformation like curling and stunted growth is also prevalent. Less common symptoms include leaf necrosis and fruit abnormalities like mottling or necrotic marks.

Disease cycle

AMV primarily spreads through aphids, with mechanical transmission also possible. Aphids acquire the virus within seconds to minutes while feeding on an infected plant and can transmit it within

seconds when probing a healthy plant, even without colonizing it. Alfalfa serves as the main reservoir for AMV, increasing infection risk for pepper plants nearby.

Overwintering in alfalfa or seed transmission perpetuates the virus, albeit with a low seed transmission rate. Harvesting alfalfa triggers aphid movement to neighboring crops, facilitating virus transmission.

Management Strategies

AMV Management Challenges:

- Aphids can spread the virus by simply probing the plant, rendering **chemical control methods ineffective**.
- **AMV is prevalent in alfalfa**, increasing the risk of infection in neighboring vegetable crops.

Preventive Measures:

- **Avoid planting vegetable crops near alfalfa fields** to minimize the risk of AMV infection.
- Use AMV-**resistant cultivars**, if possible.

Aphid Management Strategies:

- Implement **aphid management techniques** such as mineral oil sprays, straw mulch, or reflective plastic mulch to reduce AMV incidence.
- Consider planting AMV-resistant border crops as a **barrier against virus transmission**.

Sanitation Practices:

- **Sanitize** pots or stakes used for growing pepper transplants before reusing them for new crops.

References:

- University of California - IPM (https://ipm.ucanr.edu/agriculture/peppers/alfalfa-mosaic/#gsc.tab=0)
- Colorado State University (https://agsci.colostate.edu/agbio/ipm-pests/alfalfa-mosaic-virus-amv/#:~:text=Pepper%20plants%20can%20recover%20from,plant%20in%20the%20younger%20leaves)