e-GRO Alert
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Tobacco Mosaic Virus on Petunia

Watch for symptoms of TMV in your petunia crops! Symptoms of TMV include leaf mottle, leaf distortion, vein clearing, stunt, and flower break.

Recently samples of petunias showing symptoms of leaf mottle and distortion have tested positive for *Tobacco mosaic virus* (TMV). So far we've seen TMV only on petunia this season, but know that this virus commonly troubles petunia, calibrachoa, tomato, and pepper. There are various strains of TMV, and different strains have different host ranges – researchers are currently not certain which particular strain is being seen this season. Since the disease has been found on petunia, carefully keep an eye on your petunias as well as calibrachoas. Some TMV strains are known to infect other greenhouse crops such as marigold, impatiens, geranium, nicotiana, osteospermum, lobelia, torenia, chrysanthemum, and verbena.

Leaf mottle and necrosis symptoms. (Photo courtesy of Margery Daughtrey)

Symptoms can vary depending on the particular strain of TMV, the host, as well as environmental conditions. Symptoms include leaf mottle, leaf curling and twisting, yellowing of leaf veins, flower color break, and stunting.

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Leaf distortion caused by TMV. (Photo courtesy of Margery Daughtrey)

Check all incoming plants carefully for symptoms of TMV, and be sure to scout the crops already in your greenhouse. If you identify suspicious plants, get a diagnosis and quarantine the plants immediately. Contact your local extension specialist or diagnostic laboratory for a diagnosis, or use an in-house test kit such as ImmunoStrip® (Agdia, http://www.agdia.com).

Remember that this disease can be spread mechanically – if you handle an infected plant you can spread the virus to a healthy plant. It doesn't take much plant sap from an infected plant to transmit the virus – an infected plant can spread TMV to a healthy plant next to it just by brushing leaves. TMV can be easily spread throughout your greenhouse by workers' hands and infested tools.

All TMV-infected plants should be immediately removed, as well as any plant debris and potting media. Unlike most plant viruses that we encounter in greenhouse production, TMV particles are extremely stable and can survive long periods of time on greenhouse surfaces and in dead plant debris (it is possible for TMV particles to remain viable for many years). Carefully disinfest any potentially contaminated

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Vein clearing symptoms of TMV on petunia.
(Photo courtesy of Margery Daughtrey)

Leaf mottle symptoms of TMV on petunia.

Flower break symptoms on TMV-infected petunias.

tools, equipment, and surfaces (benchtops, door handles, hoses, etc.). Any infested pots, trays, gloves, or clothing should also be disinfested or discarded. Hands should also be cleaned after handling infected plants to avoid spreading the virus particles to other surfaces or to healthy plants. Oddly enough milk is one of the most effective products that can degrade virus particles, and can be used to wash contaminated hands or tools; research conducted at Ohio State University has shown that a 20% solution of non-fat dry milk is effective (plus it's safe for your workers); adding a surfactant may improve efficacy. A 10% bleach solution is also effective, but note that dilute bleach solutions have a short half-life (2 hours) and must be refreshed often and that bleach can be corrosive to metal tools. It's important to realize that a quick dip might not be effective. Research has shown that a 1 minute dip of a contaminated blade in numerous sanitizers was effective in reducing transmission. Not all sanitizers were equally effective – 10% bleach, 20% non-fat dry milk solution, and Virkon S were most effective (Lewandowski, D.J., Hayes, A.J. and Adkins, S. 2010. Plant Disease. 94:542-550). Other commercial disinfestants can also be used for tools and surfaces – remember to follow label directions for effective use of any disinfestant. Approach disinfecting seriously and be thorough!