e-GRO Alert

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Volume 13 Number 49 September 2024

Poking Around the Greenhouse

Fall is a great time to do a quick scouting outside the greenhouse for any unusual leaf mottling symptomology on weeds. The weeds are typically larger in size and with the heat stress of summer, symptoms are more likely to be noticeable. By taking control measures now, it curtails the possibility of infecting next year's crop.

Figure 1. Mottling on leaves of pokeweed growing outside the greenhouse. (Photos: Brian Whipker)

Outside our greenhouse, there is a large landscape bed with annuals and perennials. It also contains some pokeweed (*Phytolacca americana*) plants. Pokeweed fruit are a birds favorite and seeds get dispersed by the droppings. Once established, the perennial pokeweed with its extensive taproot will survive for years. Several pokeweed plants were observed with mottled leaves (Fig. 1). Last year some annuals in the bed also developed virus-like mottling and necrosis. This situation brings up the need to scout for broadleaf, perennial weeds outside the greenhouse and eliminate any potential source for overwintering problems.

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We did not test any plants last year and therefore we do not know if the infected annuals were infected with the two most common greenhouse viruses, Impatiens Necrotic Spot Virus (INSV) or Tomato Spotted Wilt Virus (TSWV). This year the pokeweed was tested, and neither of the Agdia ImmunoStrips were positive for INSV nor TSWV. So the pokeweed has another undetermined virus.

Numerous viruses infect plants and some are host specific. This isn't the case with INSV or TSWV, both of which have a wide host range of 257 and 957 species, respectively. Viruses also vary in how they are transmitted. Both INSV and TSWV are thrips vectored. Tobacco Mosaic Virus (TMV) is primarily mechanically transmitted. Other common vegetable viruses can be carried by whiteflies or aphids. All in all, most viruses are efficient in getting around.

Viral outbreaks can be extensive. In North Carolina, during the 2002 growing season, there was a major problem with TSWV infestations in vegetable and tobacco production (Mila, 2010). For tobacco in the field, the primary vector is the tobacco thrips (*Frankliniella fusca*). These thrips can overwinter in the Eastern part of the state and readily feed on both tobacco and weeds along the edge of the field. This provided the viral source and the vector was able to infect the following year's tobacco crop. In some cases, 50% crop loss of tobacco was reported in 2002 (Mila, 2010). This virus situation continues in that part of the state. We were involved with a tobacco fertilization study in 2018 and while walking the field we discovered several plants infected with TSWV and scouting the weeds along the field border mottled leaves were observed on pokeweed (Fig. 3).

Figure 2. Close-up of mottling on leaves of pokeweed growing outside the greenhouse. (Photos: Brian Whipker)

Conclusion

Scouting around the outside (and inside) of the greenhouse to determine if any broadleaf weeds have mottled, distorted growth, or have ringspots is a great way to avoid future problems. Remove those weeds or spray with a contact herbicide. This will help avoid carryover of viral problems into next year.

References

Mila, A.L. 2010. Explaining loss caused by Tomato spotted wilt virus on tobacco with boreal winter weather: a Bayesian approach. Phytopathology 101:462-469.

Figure 3. Tobacco plants growing in Eastern North Carolina with Tomato Spotted Wilt Virus (TSWV) and a pokeweed along the edge of the field with mottling. (Photos: Brian Whipker)

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