STRAIN SPECIFITY AND SIMULTANEOUS TRANSMISSION OF CLOSELY-RELATED STRAINS OF A *POTYVIRUS* BY GREEN PEACH APHID, *MYZUS PERSICAE* (SULZER)

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Potato virus Y (PVY), (Family *Potyviridae*; Genus *Potyvirus*) is non-persistently transmitted by aphids. PVY severely affects potato production in the United States and worldwide. Single and mixed infections of PVY strains, namely PVY^{O}, PVY^{NTN}, and $PVY^{N:O}$ are a common occurrence in potato systems. However, information available on the ability of aphids to simultaneously transmit multiple PVY strains, specificity associated with simultaneous transmission of multiple strains, and factors affecting the same are limited. Aphid-mediated transmission experiments were conducted to initially evaluate the ability of individual aphids to transmit multiple strains using an indicator host. Preliminary results revealed that aphids can transmit at least two viral strains simultaneously. Subsequently, aphid-mediated transmission of three dual-strain combinations was tested using potato plantlets. Individual aphids transmitted two viral strains simultaneously for all three dual-strain combinations. In all aphid-mediated dual-strain infections involving PVY^{NTN}, the rate of PVY^{NTN} infection was higher than the second strain and the dual infection rate, indicating that there was specificity associated with transmission of PVY strains. Results of aphid-mediated transmission experiments were compared with results obtained through mechanical transmission. In general, PVY infection rates achieved by aphid-mediated transmission were lower than the rates achieved through mechanical transmission. Unlike aphid-mediated transmission, no strain or combination was eliminated through mechanical transmission. These results suggest that there may be interference associated with aphid transmission of closely-related PVY strains. Perhaps, the observed specificity and/or interference may explain the spike in the incidence of PVY^{NTN} and other necrotic strains in recent years.