

Survey of Potential Reservoirs of Impatiens Necrotic Spot Virus

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Summary of findings

Funds from the YCEDA Desert Ag Seed Funding Program were used to bridge a gap in funding between two grants investigating the impact of weeds as reservoirs of Impatiens Necrotic Spot Virus (INSV) in Arizona lettuce. INSV is a new disease affecting Arizona lettuce growers and a major threat to the Salinas Valley of California lettuce industry costing growers up to \$150 million annually in recent growing seasons. Research from California has demonstrated that several common weeds around lettuce fields can serve as reservoirs of INSV and help maintain the virus alive in the environment when lettuce is not produced. The Arizona INSV weed survey seeks to document the most important reservoirs and virus dynamics over time in the desert. The YCEDA seed funds were necessary to continue project operations between two grant cycles (June through September 2022), an Arizona Iceberg Lettuce Research Council grant that ended in May 2022, and a Specialty Crop Block Grant Program which started in October 2022. The seed funding was used to pay for staff salaries (interns), which assisted with sample collection, processing, and testing, and to purchase INSV testing supplies (ELISA kits and immunostrips). During the summer months of Jun-Sep 2022, leading into the 2022-2023 produce season, 3,976 weeds were sampled, processed, and analyzed around formerly planted lettuce fields and their rotation crops across 25 collecting events (dates). During Jun-Jul 2022, 11 INSV infected samples belonging to five different weed species were found: nettleleaf goosefoot (*Chenopodiastrum murale*), common lambsquarters (*Chenopodium album*), common purslane (*Portulaca oleracea*), prickly lettuce (*Lactuca serriola*), and groundcherry (*Physalis* spp.). INSV Infected samples represented 0.6% (n = 11) of all weeds collected during Jun-Jul (n = 1911). Continuing INSV testing during the summer months (Jun-Sep) was crucial to the success of the overall project and grant objectives, as it allowed to determine whether the virus can survive in the local weed population when lettuce is not produced. Thanks to the continued testing, INSV weed hosts in the summer were identified and no virus in the local weed population was documented after August, suggesting that weeds may play a lesser role in spreading the virus (given current levels of incidence). These findings are important for the local lettuce industry, as they help understand virus dynamics over time and inform weed management decisions.