



Speaker:

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Date: Monday, April 20, 2026
Time: 4:00 pm - 4:50 pm
Format: In-Person Seminar & Virtual Access
Location: Genomics Auditorium 1102A
Zoom: 943 6687 2379
Passcode: 453393

Title:

“Problematic neighbors and helpful bystanders: Meshing ecology and IPM to understand the origins of – and develop strategies to suppress – an emerging disease in a specialty crop.”

Abstract:

High-value vegetables such as chile peppers (*Capsicum* spp.) in arid production systems are often grown in proximity to alfalfa, which supports dense aphid populations that transmit alfalfa mosaic virus (AMV). In recent years, AMV has emerged as a serious constraint to pepper production in Colorado, California, and other regions where peppers and alfalfa co-occur, causing up to 75% yield and quality losses and decreasing annual revenue by \$5.6-\$8.4 million in Colorado alone. The virus is transmitted non-persistently by transient aphids moving from alfalfa into nearby pepper fields. To address this challenge, we explored a diverse set of tactics common in IPM such as host plant resistance and planting date modifications. We also incorporated a generalist predator into the system to test whether mere presence of the natural enemy not assumed to consume transient aphids could lower disease prevalence. Preliminary data suggest that it indeed reduced AMV severity. Lastly, to better understand the drivers of this new disease, we also integrated an ecological theory into these applied systems, and examined whether associational susceptibility driven by spatial proximity to alfalfa as a virus reservoir drove prevalence and severity of AMV. We found that disease incidence declined with increasing distance from alfalfa, suggesting that crop placement can influence infection risk. Together, our results suggest that integrating spatial crop arrangement with host plant resistance and biological control can reduce AMV risk in pepper systems. Future research should focus on quantifying vector movement and refining spatial and temporal thresholds to support decision-making.