

Annual USDA Report – 1st year of Potato SCRI Project

Objective 1. Develop and evaluate non-neonicotinoid pest management

programs: There was a coordinated replicated field plot trial in WA, ME, MI, WI and NY to compare the efficacy of non-neonicotinoid insecticide programs with a grower-standard neonicotinoid program and an unmanaged control. We assessed the abundance of Colorado Potato Beetle (CPB) life stages, leafhoppers, aphids, beneficials and other insects present during sampling, as well as defoliation weekly and measured potato yield at the end of the growing season. Using cyantraniliprole at planting, instead of a neonicotinoid, followed by a foliar novaluron application or applying isocycloseram foliarly instead of using at planting neonicotinoid resulted in lower CPB pressure and less defoliation compared to neonicotinoid insecticides. In WA, ME, MI, WI and NY we conducted another coordinated field experiment for managing PVY virus transmitted by aphids in seed potatoes. This experiment was completed, and results are currently being evaluated in a grow out trial.

In WA, non-neonicotinoid insecticides were tested for efficacy against green peach aphids and potato leafroll virus. Three non-neonicotinoid treatments were effective at reducing potato leafroll virus inoculation in potato and acquisition by aphids from infected plants: afidopyropen, flonicamid, and pymetrozine. In MI, the potato breeding program tested CPB-resistant and PVY-resistant germplasms in greenhouse bioassays.

Objective 2. Develop pest prediction and decision-making tools: The Decision Aid System (DAS) website added a CPB model and completed development of new models for potato tuberworm and beet leafhopper to be released in 2025. The DAS will be expanded to growers in the San Luis Valley, CO. A spray selection tool has been developed for the Pacific Northwest that allows users to get pesticide efficacy information. Phenological data collected from Objective 1 will be used for modeling. The potato DAS is used on over 90% of potato acreage in WA and in 2024, the pest prediction tools are estimated to have reduced sprays by 1.5 sprays/acre, which is a savings of \$75/acre for growers, totaling \$10mil across the area we serve.

Objective 3. Evaluate the socioeconomic influences and impacts associated with the transition from neonicotinoids to new pest management strategies: A comprehensive annotated bibliography exploring key topics was developed, including the history and chemistry of neonicotinoids, their environmental and health impacts, and their regulatory landscape across states was compiled for future use. A regulatory overview document was also developed to clarify U.S. regulations surrounding neonicotinoid use by state, which will help farmers and policymakers navigate compliance and consider alternatives in addition to illuminating the complex governance

structures around neonicotinoids. A grower survey is being developed for PNW potato growers and market intermediaries (e.g., shippers, packers, processors) in early 2025.

Objective 4. Facilitate adoption of new pest management strategies among growers: This objective is focused on the dissemination of information to stakeholders. We established a project website that will be the platform to disseminate all news and project related information and serve as a repository for outputs from the grant. We also worked with Potatoes USA to share information with the U.S. potato grower community, as a result a newsletter was sent out through their list serve information growers about our project. We also represented our project at their booth at the Potato Expo in 2024 allowing us the opportunity to inform stakeholders about the project. The project was also shared to stakeholders at various extension meetings.