



Scientists



The scientists working at the Yakima Agricultural Research Laboratory (YARL) are all respected leaders in their field. The scientists and technicians at YARL work in a variety of disciplines including Postharvest Technology, Integrated Pest Management, Insect Pathology, Quarantine research, Biological Control, Minor Use Pesticide Research, Molecular Biology of Agricultural Pests and many others. The entire staff of YARL is proud of their numerous past achievements and look forward to developing future advances in agriculture. Please take a moment to meet our scientists and learn more about their exciting research.



Dr. Peter Landolt (Research Leader)
peter.landolt@ars.usda.gov

Dr. Peter Landolt serves as Research Leader at the Yakima Agricultural Research Laboratory. Dr. Landolt studies insect behavior and chemical ecology with the aim of discovering and developing chemical attractants that can be used to monitor, detect, or manage pest insects of temperate tree fruit and vegetable crops. Projects include pheromones, kairomones and feeding attractants for pest insects, including the codling moth, pear psylla, and several species of noctuid moths.



Dr. Steve Garczynski
steve.garczynski@ars.usda.gov

Steve's research program involves the identification of proteins, critical to codling moth survival, which can be used as targets for developing new pest control strategies in the orchard. Research projects utilizing molecular biology, physiology and biochemical approaches are geared to gain a further understanding of the codling moth chemosensory and endocrine systems, specifically identification of membrane receptor/ligand pairs and their signal transduction pathways.



Dr. Dave Horton
dave.horton@ars.usda.gov

Dr. Horton is a Research Entomologist having interests in biological control, behavioral ecology, and applied ecology. His research focuses on the biology and management of pear psylla in pears and wireworms in potatoes. Other interests include studies on the systematics, behavior, and biology of predatory true bugs in the Family Anthocoridae.



Dr. Alan Knight
Alan.knight@ars.usda.gov

Dr. Alan Knight's research interests include mating disruption, and moth attractant technologies. He is currently field testing a bisexual attractant for codling moth among other projects.



Dr. Lawrence Lacey
lerry.lacey@ars.usda.gov

Dr. Lacey and his team in the insect pathology laboratory conduct research on insect-specific pathogens as biological control agents of insect pests of tree fruit and potato. Research on microbial control of tree fruit pests includes the development and use of entomopathogenic viruses, bacteria, fungi, and nematodes. The factors that enhance or limit these agents and the means to overcome limitations are key goals of the insect pathology laboratory. Targeted insects include codling moth, leafrollers and other Lepidoptera and cherry fruit fly. Targeted pests of potato for control with virus, bacteria and fungi include the potato tuber moth and the Colorado potato beetle. Research on these pathogens includes optimizing the timing and frequency of microbial applications to maximize control.



Dr. Joseph Munyaneza
joseph.munyaneza@ars.usda.gov

Joe's research focuses on the integrated pest management of insect pests of potato, with emphasis on insects vectoring potato diseases. Current research includes management of aphids, beet leafhopper, potato psyllid, potato leafroll virus (PLRV), potato virus Y (PVY), potato phytoplasmas, and zebra chip potato disease. Also, studies to enhance biological control of green peach aphid using predator attractants and habitat modification and to assess the effectiveness of biorational

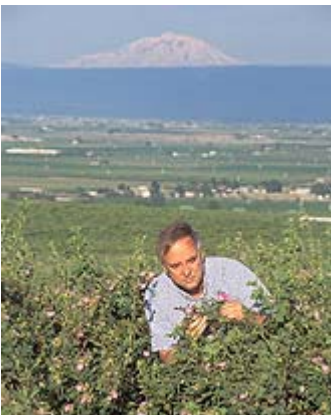
insecticides to reduce virus spread in potatoes are an integral component of Dr. Munyaneza's research. Dr. Munyaneza also serves as an adjunct professor in the Department of Entomology at Washington State University.



Dr. Lisa Neven
lisa.neven@ars.usda.gov

Dr. Lisa G. Neven, Research Entomologist, has been with the USDA-ARS since 1992. She works in the area of postharvest Entomology of deciduous tree fruits and vegetables. Dr. Neven has developed the CATTs (Controlled Atmosphere Temperature Treatment System) for the treatment of apples, pears, sweet cherries, peaches and nectarines to achieve quarantine security against internal feeding pests. These treatments are now in the USDA-APHIS treatment manual.

Dr. Neven is also involved in developing genetic sexing lines of codling moth for use in the Sterile Insect Technique (SIT). Dr. Neven has demonstrated that codling moth can be transformed with the transposon *piggyBac*. She helped develop a strategy to create genetic sexing lines in Lepidoptera using transgenesis of the female specific W-chromosome. She has developed a rapid method for determination of transgenic insects to facilitate transformation efforts. She has also helped develop a method for sexing eggs and early larvae using a duplex PCR procedure.



Thomas Unruh
thomas.unruh@ars.usda.gov

Tom Unruh's research addresses biology and IPM of the codling moth, leafroller complex, and pear psylla in tree fruits and the green peach aphid in potatoes. Research approaches include manipulative ecological studies (codling moth, leafrollers, and psylla) bioassay of insecticides (beneficial insects, green peach aphid), molecular phylogenetics and diagnostics (codling moth and relatives, *Anthocoris* predators, viruses in cherries), molecular gut content analysis (predators of codling moth, psylla), and recently protein marking to evaluate green peach aphid dispersal. All of these efforts are designed to improve our understanding of the

varied life system of insect pests and their natural enemies, ultimately leading to reduced pesticide use and enhancement of sustainable, natural controls.



Wee Yee

wee.yee@ars.usda.gov

Research in Wee Yee's laboratory focuses on the behavior, ecology, and management of temperate fruit flies, in particular the western cherry fruit fly, *Rhagoletis indifferens*, and the apple maggot fly, *Rhagoletis pomonella*, both major quarantine pests of cherry and apple, respectively, in the Pacific Northwest of the U.S. Ongoing research on cherry fruit fly includes determining the nutritional ecology and requirements of flies, and relating them to the use of protein bait sprays for fly control, use of newer insecticides to target control of immature stages of flies in fruit, and determining the susceptibility of fly eggs and larvae to various chilling regimes. Research on apple maggot fly includes the identification of fruit volatiles attractive to fly populations in Washington state and geometric morphometric diagnostics of apple maggot and snowberry maggot flies and molecular diagnostics of possible apple maggot host races in Washington state.