

Success by the Numbers

Food Program — EPA posted 208 tolerances that supports 918 new uses
EnvironHort Program — 2,574 crop uses in 5 EPA and 3 Cal-DPR actions
Biopesticide Program — 4 new approved products

Addressing Bacterial Diseases for Cherry and Walnut Growers



Solutions

After many years using kasugamycin under emergency use exemption, the product was registered to control bacterial diseases on cherry and walnut.

Challenges

Cherry and walnut crops are important agricultural commodities in the U.S. In 2014, sweet cherry production totaled 363,850 tons valued at \$767 million and tart cherry production totaled 300.9 million pounds valued at over \$106 million. Walnut production in California in 2014 totaled approximately 545,000 tons, with an estimated value of over \$1.8 billion.

Bacterial blast and bacterial canker of cherry are caused by the bacterium *Pseudomonas syringae* *pv.* *syringae*. Bacterial canker is the main cause of death for young sweet cherry trees in Oregon and other primary production states like Washington, Michigan and California.

Walnut blight caused by the bacterium *Xanthomonas campestris* *pv.* *juglandis*, can cause significant crop loss and is most severe in northern California. During the 2007 season in Tehama County, California, untreated trees had 32% blighted walnuts in the mid-canopy and almost 70% damage on walnuts in the lower canopy.

How We Got There

Three years of research on bacterial blossom blast determined that kasugamycin was an important treatment to reduce the disease on cherry crops.

Efficacy trials had demonstrated that the use of kasugamycin on walnut resulted in moderate to high control of walnut blight.

IR-4 conducted full residue studies on cherry and walnut, and made the registration request submissions to EPA.

Addressing Botrytis and Scale in EnvironHort Crops



Solutions

Two new fungicide products were registered for environmental horticulture crops (EHCs) which had been screened in Botrytis efficacy research protocols: Astun (isofetamid) and pydiflumetofen.

Ventigra (afidopyropen) was registered to manage scale species along with a number of other pests.

Challenges

EHC growers are dealing with various Botrytis species causing disease during crop production and during post-harvest storage and transport.

EHC Growers and Landscape Managers often have difficulty managing scale species, especially armored scales, which cause plants to be unthrifty and may contribute to honeydew and sooty mold being deposited on anything below infested trees.

How We Got There

Starting in 2013, finding additional solutions for Botrytis diseases has been a research priority. So far, IR-4 has sponsored 40 efficacy experiments and more than 500 crop safety trials with products included in the efficacy protocols. The outcome is that 11 products have had registration actions: four were not registered for Botrytis efficacy, six became registered in the US (including the two listed above) and one where IR-4 data supported a Canadian registration.

Scale insects have been prioritized by IR-4 as major issues since 2004. Beginning in 2013, IR-4 sponsored 40 efficacy experiments and more than 200 crop safety trials with products included in the efficacy protocols to determine new options for growers. The outcome is that since 2013 IR-4 data has contributed to four US product registrations, including Ventigra.



Using Biopesticides to Address Fungal Pathogens

Solution

KM1110 WDG, a water dispersible granule that contains *Metschnikowia fructicola* strain NRRL Y-27328, was registered. The active ingredient is an ascospore that protects certain fruits and berries against diseases caused by fungal pathogens.

Challenge

Growers dealing with *Botrytis cinerea*, *Monilinia* spp., and *Rhizopus* spp. that lead to post-harvest decay in fruits. These fungi invade the crop through wounds made during harvesting, packing, or transport. The result is often an unmarketable product.

How We Got There

In 2017, IR-4 received a request from North Carolina to assist in registering *M. fructicola* for pre and postharvest fruit rot. Subsequently, IR-4 submitted a petition to the EPA for exemption from the requirement of a tolerance.

Pepino Mosaic Virus in Greenhouse Tomatoes

Solution

PMV-01 (Pepino mosaic virus strain CH2 isolate 1906) was registered in 2018, for use in greenhouse tomato. This weak strain of the virus is a form of vaccine that prevents the development of the disease Pepino mosaic virus.

Challenge

Greenhouse growers were struggling with Pepino mosaic virus in tomato. The fruit damage presents in the form of necrosis and zebra striping. This virus is responsible for multiple industry losses.

How We Got There

In 2015, IR-4 received a request to assist in registering a mild strain of Pepino mosaic virus on greenhouse hydroponic tomatoes. PMV-01 had a 2011 registration in the European Union to use the product on greenhouse tomato. This led to an availability of more research data, and in 2017, IR-4 submitted a petition to the EPA for exemption from the requirement of a tolerance.

Ongoing Projects

Solution

IR-4 created the next generation efficacy program for food crops – Integrated Solutions – to continue addressing grower needs with biopesticides and conventional chemical pesticides.

Challenges

There are critical pest management voids for food crops due to product resistance, invasive pests, and concerns about residues at harvest. Organic growers face particular issues due to limited product choices.

How We Got There

IR-4 continues to fill critical pest management voids and take advantage of efficacious biopesticides that are playing a more significant role in both conventional and organic agricultural production systems.

Solution

IR-4 is leading a multi-state research project to study how growers can produce high quality environmental horticulture crops (EHCs) while protecting bees.

Challenges

Various factors influence bee pollinator health including reduced habitat, diseases, pests, poor nutrition and exposure to pesticides. Our industry can supply plants for improved habitat, but can growers produce plants with systemic insecticides without impacting bees?

How We Got There

After the 2014 Pollinator Workshop with stakeholders and scientists to outline knowledge gaps and formulate a path forward, we received funding through the USDA-NIFA's Specialty Crop Research Initiative (SCRI) to study pollinator attractiveness of high volume crops, movement of insecticide residues into pollen and nectar, consumer preferences and marketing, and comparisons of alternative pest management options.

This material is based upon work that is supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award number 2017-34383-27100 and the Hatch Multistate project accession number 1008823 through the New Jersey Agricultural Experiment Station Hatch Multistate project NJ27202, with substantial cooperation and support from other State Agricultural Experiment Stations, USDA-ARS, and USDA-FAS. In accordance with Federal Law and US Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age or disability.



Here's What's Planned for 2019...

Food Program — 72 residue studies and 44 product performance studies

EnviroHort Program — 24 protocols with more than 500 trials

Biopesticides & Organic Support — 6 research priorities

Integrated Solutions — 6 research priorities