iPiPE INTEGRATED PEST INFORMATION PLATFORM FOR EXTENSION AND EDUCATION

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Connecticut Grape iPiPE: Information Infrastructure to Overcome Climate Challenges

New England's grape farming industry is experiencing significant growth, both in acreage and number of farms. Small diversified farms and dedicated grape growing operations are both contributing to this boost. In 2011, grape production and winery operations contributed $70.1 million to the New England economy. As of 2012, the USDA Census of Agriculture recorded 510 grape producing farms across 1226 acres. Data from the 2017 census is currently being processed, and that number is expected to go up.

Alongside this growth, the grape industry is facing significant challenges. Climate change has led to an increase in New England winter temperatures. Growing seasons are longer and drier. This has led in turn to both an increase in populations of native pests such as grape berry moth and an influx of new pests such as spotted wing drosophila and brown marmorated stink bug.

The University of Connecticut's iPiPE Grape Crop-Pest Program facilitates transfer of key information between Extension professionals, growers and crop consultants. Participants upload pest and beneficial insect data to the iPiPE website and distribute Extension newsletters to growers, consultants and educators in New England. Ag professionals are also receiving training on the iPiPE platform and tools to record pests in the field and integrate iPiPE into their IPM process.

Undergraduate students are also trained on iPiPE, field scouting procedures and pest and beneficial insect identification, and how to communicate actionable information to growers and crop consultants. Training includes identifying the samurai wasp, an introduced parasite of the brown marmorated stink bug and new invasive species. To read more about the University of Connecticut Cooperative Extension's Fruit IPM Program, visit http://ipm.uconn.edu/pa_fruit/.

Spotted wing drosophila male (left)
and female (right)

Brown marmorated stink bug
Image credit: Plunkett's Pest Control

Pest Prediction Modeling: New Research on a Valuable Tool

Pest prediction modeling is one of the valuable technological tools available to iPiPE users, providing forecasts or "real-time" simulations to predict when and where a pest is likely to occur. Modeling is an important component of pest surveillance, itself an essential Integrated Pest Management (IPM) tool. iPiPE currently offers 25 predictive models for plant diseases and 17 for insect pests.

Dr. Roger Magarey, a researcher at North Carolina State University, reports, "iPiPE will soon have an open-source, cloud-based modeling platform that will allow users to build their own models and compare model simulations with observations." The new platform features tools to allow users to generate and text or email maps to growers and other users. These updates, expected to be available next summer, will increase both the quality and quantity of model products available to iPiPE users.

Magarey and colleagues recently published work in *Biological Invasions* comparing predictive models for invasive weed distribution. They report that simple pest models can be just as accurate as complex ones, and that ease of use is an important consideration arguing for simplicity.

To read the research published in *Biological Invasions,* click here.

iPiPE Model Product Generation and Use Flow Diagram
Image credit: Roger D. Magarey

iPiPE's Continuous Evaluation Process

iPiPE's mission is to improve plant health, crop yields and farm profitability, build local and regional capacities to detect and respond to crop pest problems, and promote IPM to reduce adverse environmental impacts and contribute to an infrastructure for food security. The iPiPE evaluation team focuses on ongoing measurement of how well iPiPE is achieving its mission, and provides information to project leaders to help them adaptively manage to improve impacts.

The team is directed by Dr. Jean-Jacques Dubois at the Southern IPM Center, and includes Dr. Scott Isard, iPiPE project lead, Julie Golod, national iPiPE coordinator, and staff at the IPM Institute of North America. Data feeding into the evaluators include online user statistics, and participant surveys and interviews including growers, crop consultants, ag input retailers and manufacturers, Extension professionals including Crop-Pest Program Coordinators, and students and their advisors.

IPM Institute staff, in collaboration with the Crop-Pest Program Coordinators (CPPCs), develops IPM Elements for each Crop-Pest Program, which are converted into grower surveys to assess progress towards increasing IPM adoption. IPM Elements are concise lists of IPM practices available for specific crops and regions.

Applying adaptive management, the Evaluation team greatly simplified data collection on activities and

outcomes after the first year of the project. In year one, engagement and learning by growers, Extension and student interns were measured based on narrative-based coordinator plans and reports. In the second and subsequent years, the process was simplified by aligning planning, measuring and reporting, using focused reporting forms for coordinators, and shorter IPM surveys for growers. The new process was easier for everyone involved and continued to provide the information needed to inform project managers and funders.

The team continues look for new ways to engage those with potential to benefit from iPiPE including growers, Extension, consultants, input suppliers and others. To this end, iPiPE recently contracted with a research firm experienced in ag market development to help identify how iPiPE can best continue growing its network and expanding its impacts. The results of this research will be shared at iPMx, the annual iPiPE meeting next scheduled for February 5 - 6, 2019 in Raleigh, North Carolina.
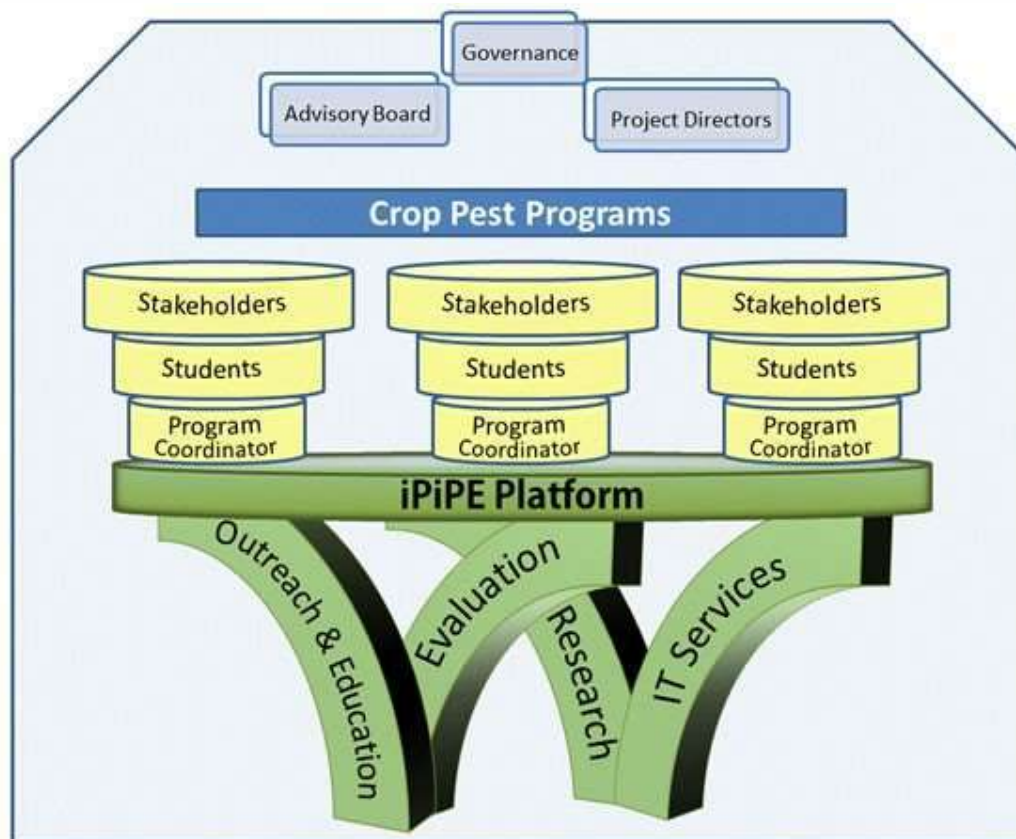
iPiPE Organizational Structure, Image credit: iPiPE Outreach Portal

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