Site specific applications via integration of existing weather networks and proven predictive models

Peter Oudemans¹, Jon Clements², Daniel Cooley², Terence Bradshaw³, David Robinson³, Lorraine Berkett³ and Juliet Carroll⁵

¹Department of Plant Biology and Pathology, Rutgers University, Chatsworth, NJ; ²Department of Plant, Soil, and Insect Sciences, University of Massachusetts, Amherst, MA; ³Department of Plant and Soil Science, University of Vermont, Burlington, VT; ⁴Department of Geography, Rutgers University, Piscataway, NJ; ⁵New York State IPM Program, Cornell University, Geneva, NY.

Integration of existing weather networks with established predictive models provides a significant value-added product for farmers and field professionals.

NEWA delivers weather data from weather stations primarily located on farms via www.newa.cornell.edu. NEWA generates weather data summaries and IPM forecast model results.

Degree days for 10 base temperatures and results for 22 IPM forecast models are calculated and displayed. NEWA provides a portal to weather and IPM forecast products from other groups (NOAA, NRCC, MSU, NWS, ipmPIPE, PA PIPE, and the North American Plant Disease Forecast Center).

NY NEWA

NY NEWA weather stations are owned primarily by farmers, and also by the NYS IPM Program, Cornell University faculty, and agricultural industries.

RUTGERS

New Jersey Agricultural Experiment Station

Our goal is to develop site specific applications for pests and diseases of New Jersey fruit and vegetable crops such as apples, cranberries, blueberries, grapes, tomatoes and potatoes (combined value of $200 million annually, USDA NASS 2010).

As of March 2012, MA NEWA includes 17 on-farm weather stations (13 Rainwise 4 Onset) and 23 airport/other locations in Massachusetts, reporting data to NEWA.

From March-September, 2011, about one-in-five visits to NEWA were from Massachusetts.

Our future focus will be on improving the sooty blotch & flyspeck model.

The Vermont NEWA network supports over 80 apple farms with gross farmgate receipts of $15 million annually.

The University of Massachusetts coordinates a network as part of a project with Eco Apple growers and advanced apple IPM research, including three stations at apple orchards in southern VT and NH and one in CT. Some Eco Apple growers use the NY and VT networks.

The Eco Orchard network, which is spread out around New England and New York, provides growers with valuable daily information that the project could not provide with on the ground scouting.

The project will target field evaluation of the systems in the 2012 season. We also will provide outreach to grape, apple and vegetable growers through weekly reports, newsletters and seminars.

In New Jersey, the office of the State Climatologist maintains three weather networks (MesoNet, SafteyNet and RISE) which includes over 60 stations distributed across the state. In 2011 we added these NJ weather networks to the NEWA system to provide site specific disease and insect prediction models.

MA NEWA

The MA NEWA network contains 30 apple and 16 other fruit and vegetable farms.

The Apple orchard NEWA network supports over 80 apple farms with gross farmgate receipts of $15 million annually.

Growers use information from the NEWA network to provide real-time, biologically-based modeling that assists in the efficient management of diseases and insects.

The Eco Orchard network, which is spread out around New England and New York, provides growers with valuable daily information that the project could not provide with on the ground scouting.

It’s a great source of real-time information. Growers are very positive.

VT NEWA

Northeast Regional Climate Center

Increased coverage of the network could increase usage.

The Vermont Tree Fruit Growers Association through the Specialty Crops Block Program, with technical support from the University of Vermont Fruit Team.

Most stations were funded by the Vermont Tree Fruit Growers Association through the Specialty Crops Block Program, with technical support from the University of Vermont Fruit Team.

The Vermont NEWA weather stations, complete with all sensors for disease and insect modeling, are in our primary apple growing regions and represent the variability of our farm sites, the Champlain Valley, the Champlain Islands, the Connecticut River Valley and upland interior sites.

Vermont fruit growers overwhelmingly support VT NEWA...

60% are accessing VT NEWA, 67% are saving spray costs and improving efficacy, 35% are reducing spraying and improving efficacy, 17% are improving farm labor efficiency. ...when using VT NEWA.

Most MA NEWA weather stations are on diversified, direct market fruit and vegetable farms.

Growers were introduced to MA NEWA via meetings, newsletter articles, and one-on-one training.

It’s a great source of real-time information. Growers are very positive.

NJ NEWA

The project will target field evaluation of the systems in the 2012 season. We also will provide outreach to grape, apple and vegetable growers through weekly reports, newsletters and seminars.

In New Jersey, the office of the State Climatologist maintains three weather networks (MesoNet, SafteyNet and RISE) which includes over 60 stations distributed across the state. In 2011 we added these NJ weather networks to the NEWA system to provide site specific disease and insect prediction models.

NOAA NWS data from airports in NY, MA, VT, NJ, and adjacent states, have been incorporated into the network.

NEWA-connected stations can be found throughout much of the Northeast.

Included stations are from adjacent states and other parts of the Northeast.

The Vermont Tree Fruit Growers Association through the Specialty Crops Block Program, with technical support from the University of Vermont Fruit Team.

Most stations were funded by the Vermont Tree Fruit Growers Association through the Specialty Crops Block Program, with technical support from the University of Vermont Fruit Team.

The Vermont Tree Fruit Growers Association through the Specialty Crops Block Program, with technical support from the University of Vermont Fruit Team.