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 Ohio State University Extension Vegetable Crops
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OVSFRDP HELPS PAVE THE WAY TO MAJOR GRANT ON CUCURBIT DOWNY MILDEW

Gerald Holmes (North Carolina State University) and Sally Miller

In 2007 the Ohio Vegetable and Small Fruit Research and Development Program (OVSFRDP) supported the downy mildew forecasting system at NC State University through a grant to NC State University in collaboration with OSU. While it is unusual for the OVSFRDP to fund out-of-state projects, downy mildew of cucurbits is a regional problem that has dramatically impacted cucurbit production in Ohio. The forecasts produced at NC State benefit Ohio growers as well as the entire region. This show of support from OVSFRDP was strong evidence of the severity of the problem, the widespread interest in the disease and use of the forecasting system by growers. This made a very strong argument for the importance of funding a USDA-sponsored research and development project for \$900,000, awarded to NCSU and collaborators in 2008. A portion of the funds will go to OSU, one of many state involved in the project, to conduct a sentinel plot program in Ohio at three locations in 2008 and 2009.



PROJECT TITLE: Expanding ipmPIPE for cucurbit downy mildew forecasting

PROJECT SUMMARY

Cucurbits (cantaloupe, cucumber, honeydew melon, pumpkin, squash and watermelon) are among the most important specialty crops grown in the U.S. In 2002, 628,813 acres were grown in the U.S. with a value of \$1.5 billion. All cucurbits are susceptible to downy mildew, a disease that is often called wild fire because of its ability to quickly destroy crops. In 2004, downy mildew reached new levels of devastation when it hit cucumbers (a crop previously resistant to the disease) and spread through 5 eastern states virtually unchecked. By season's end the disease brought about more than a \$20 million loss. In 2005 and 2006, the disease spread to Michigan (the largest cucumber producing state in the nation: 38,000 acres), Ontario, where it was previously not reported, and Ohio. As a result of these epidemics, cucurbit downy mildew has become the top priority for cucurbit growers and the organizations that serve them. However, cucurbits are not well represented by commodity boards, funding for research is very limiting, and federal crop insurance is not available.

Fortunately, fungicides sprays are an effective control strategy, but growers need to know when and where to use them to protect their crops while avoiding excessive fungicidal spraying, which is costly both economically and environmentally. To help growers make this decision, a disease forecasting system was developed and deployed in 1998. The Cucurbit Downy Mildew Forecasting System (CDMFS) tracks downy mildew outbreaks by studying the movement of the disease and receiving reports of actual outbreaks from 40 different collaborators in 19 states. Disease movement is forecasted from data reported from these sources using meteorological models that predict wind speed and direction. Forecasts are produced twice weekly between March and November and provide growers with a risk assessment for areas along a forecast trajectory

extending 48 hours into the future. ♦ The system is run by an experienced and competent team and performs a valuable and practical function for industry. In turn, tremendous industry support and stakeholder interest for the CDMFS is evidenced by website use statistics that show a 4-fold increase between 2004 and 2005 with up to 4,800 hits per day in July 2006, and by tens of small budget organizations annually contributing small amounts (but high percentages of their research dollars), several of whom typically do not fund research at all but who are committed to the CDMFS.

This project provides a stable home and expansion for the Cucurbit Downy Mildew Forecasting System and pursues three objectives: 1) to study the disease movement through a fully developed and expanded sentinel plot program across 82 locations; 2) to incorporate data from all the stages of disease and movement through a high level of collaboration with ZedX and ipmPIPE scientists, and 3) to automate and specifically target the disease tracking and forecasting web interface for growers and other end users. ♦ Fulfillment of these objectives will create the first systematic study of *P. cubensis* movement over long distances, as well as increase the location specificity and real-time accuracy of the existing CDMFS, a vital decision-making tool aiding growers in making timely fungicide applications and thus reducing unnecessary spraying.

Crop Reports by Matt Hoeflich and Hal Kneen

Northern, Ohio Crop Report May 29, 2008

Weather Report ♦ Cold! ♦ The below normal cool weather conditions Northern Ohio has experienced since the week of May 5 has continued. ♦ When taking a look at Growing Degree Days (GDD) recorded at the North Central Ag. Research Station in Fremont you will note in comparing May of this year vs. May of 2007 that we have seen only 187 GDD in May 2008 compared to 421 GDD for the same period in 2007 for a difference of 234 GDD. ♦ Last evening areas of Northern Ohio received scattered light frost. ♦ The extent of crop injury appears minimal. ♦ Concerning rainfall there is a 50% chance of thunderstorms Friday the 30th into Saturday 31st. ♦ Next week it appears that a warmer and drier pattern will then move in to start early June.

This morning the 29th that many area's in the Fremont area received scattered light frost. We had a low last evening of 36 degree's. I'm not certain how wide spread this frost was in other area's of northern Ohio at this point. Concerning research trials we should know later today the impact. Cabbage plantings should be fine. Its more of a concern with tomatoes and sweet corn at this point. I would suspect that all will be fine due to bare ground, soil moisture and heat. I will follow up later today. Additionally if you hadn't heard many area's of Michigan were wiped out yesterday morning (28th) with very heavy frost. It is to start warming up today, lets hope so!

The frost extended east into Huron County above Rt. 98 and was clearly visible on lawns and other unprotected areas. Temperatures dropped to 31 degrees in this region but no damage was visible at 10 to 11 AM the that morning. Sufficient heat was present from bare ground to protect tender vegetation.

Crop Report ♦ ♦ ♦ ♦ ♦ ♦ Despite very cool and damp soil conditions planting of processing tomatoes, cabbage and sweet corn continue. ♦ Early plantings of cantaloupe and watermelon were set into the field the week of May 19th. ♦ ♦ These plants look rugged but are growing. ♦ ♦ Limited planting of processing peppers and pickles started this week the 26th. ♦ Growers had been holding off hoping for warmer weather and soil conditions but feel pushed to start. ♦ Full scale seeding of pickling cucumbers and planting of peppers should start next week June 1. ♦ Concerning insects, the early pests this year have been flea beetle and wireworm. ♦ ♦ Flea beetles have been very active in cabbage fields and wireworms in sweet corn. ♦

Southeast Ohio along the Ohio River. ♦ May 14 to 21

May 14 to 21 was cool and wet weather. Only two full days of sunny weather, Saturday and Wednesday. Tomatoes are being staked, suckered and trellised. Lawrence County grower along the Ohio River has trellised twice and has pea size fruit. Starting to receive calls on possibly diseases on tomatoes attempting to confirm possible disease using the resources of the OSU Elliot Diagnosis Clinic. One looks like physiologically damage on the plant leaves.

Sweet corn continues to grow. Newly planted sweet corn especially Mirai varieties are rotting in the wet, cold soil.

Peppers, watermelon and cantaloupes are just sitting in the field awaiting warmer and sunnier weather.
Finding thrips on high tunnel tomatoes