

Great Lakes Fruit, Vegetable & Farm Market EXPO

December 9-11, 2008

DeVo Place Convention Center, Grand Rapids, MI



Pickling Cucumber

Tuesday morning 9:00 am

Where: Gallery Overlook (upper level) Room A-B

Recertification credits: 1 (1B, PRIV CORE)

CCA Credits: PM(1.0) CM(1.0)

Moderator: Bernard Zandstra, Horticulture Dept., MSU

9:00 a.m. A Season-Long Weed Control Program for Pickling Cucumbers

- Mark Van Gessel, Plant Science Dept., Univ. of Delaware

9:20 a.m. Agricultural Trade: Opportunities and Challenges

- Brian Bursiek, Pickle Packers International, Washington, DC

9:50 a.m. Parthenocarpic Pickle Production in Europe, Asia, and the USA

- Jos Suelmann, Nunhems Seeds, Haelen, Netherlands

10:30 a.m. Developments in Downy Mildew Control in Pickling Cucumbers

- Mary Hausbeck, Plant Pathology Dept., MSU
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DEVELOPMENT IN DOWNY MILDEW CONTROL IN PICKLING CUCUMBERS

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Michigan State University, Department of Plant Pathology

Pickling cucumber production in Michigan has a farm gate value of \$30.6 million with production plant receipts of \$240.7 million. These values are based on the approximately 38,000 acres of pickles harvested yielding 4.8 tons/acre and 21.9 million cases of finished product.

Michigan pickle growers have battled downy mildew, incited by the water mold, *Pseudoperonospora cubensis*, for four consecutive years. Downy mildew is well-known for causing catastrophic losses in a brief period of time. Unprotected foliage can become completely infected and appear to be frosted within 10 days of initial infection. This downy mildew pathogen is resistant to commonly used fungicides including Ridomil Gold-based products and the strobilurin fungicides (i.e. Cabrio, Quadris, and Flint). Results from our 2005-08 research identified a limited number of fungicides that are effective, but must be applied every 5-7 days when the weather favors disease.

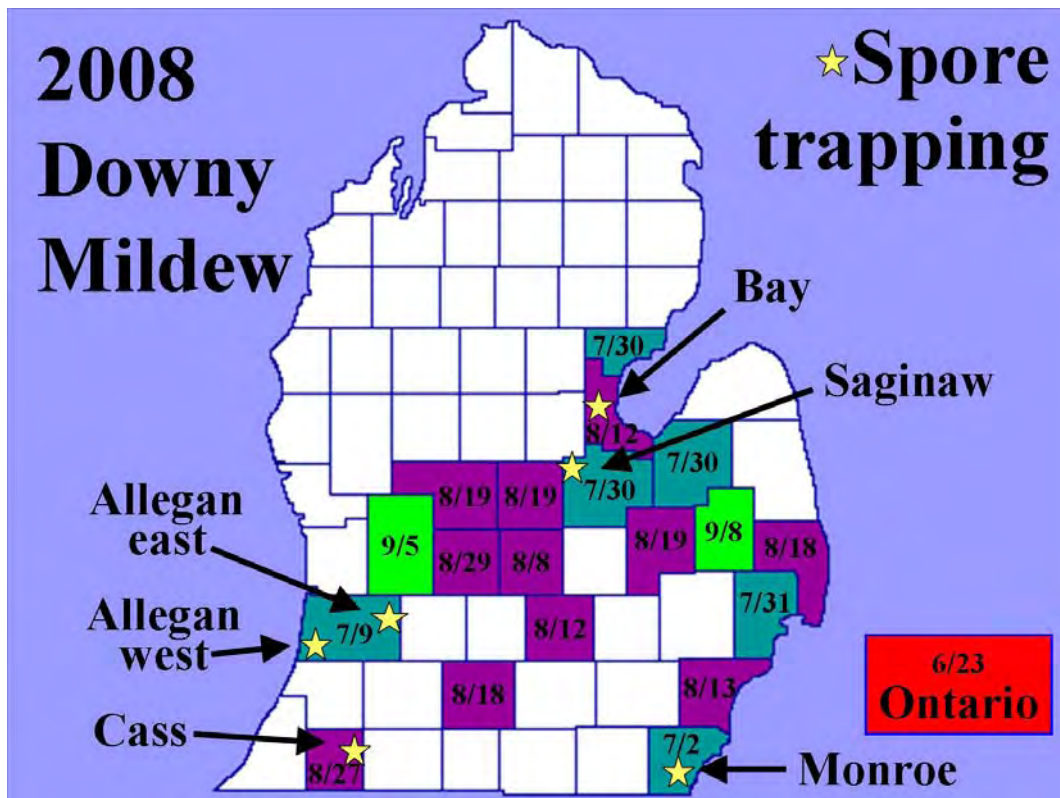


Fig. 1. Occurrence of downy mildew in the Great Lakes region. Stars designate sites of spore trapping.

Downy Mildew Spore Trapping 2008

The downy mildew reproduces via tiny, microscopic spores that act as seeds of the pathogen. Six spore traps were placed in five Michigan counties spread across the state (Fig. 1). A compound microscope is needed to have enough magnification to identify any downy mildew spores that may be present on the tapes. The spore traps helped to alert us to any influx of spores into those production regions, but were not used to time fungicide sprays. Since we did not have a trap in each field, it is possible that we could miss an isolated spore mass coming into a particular region (Fig. 2).

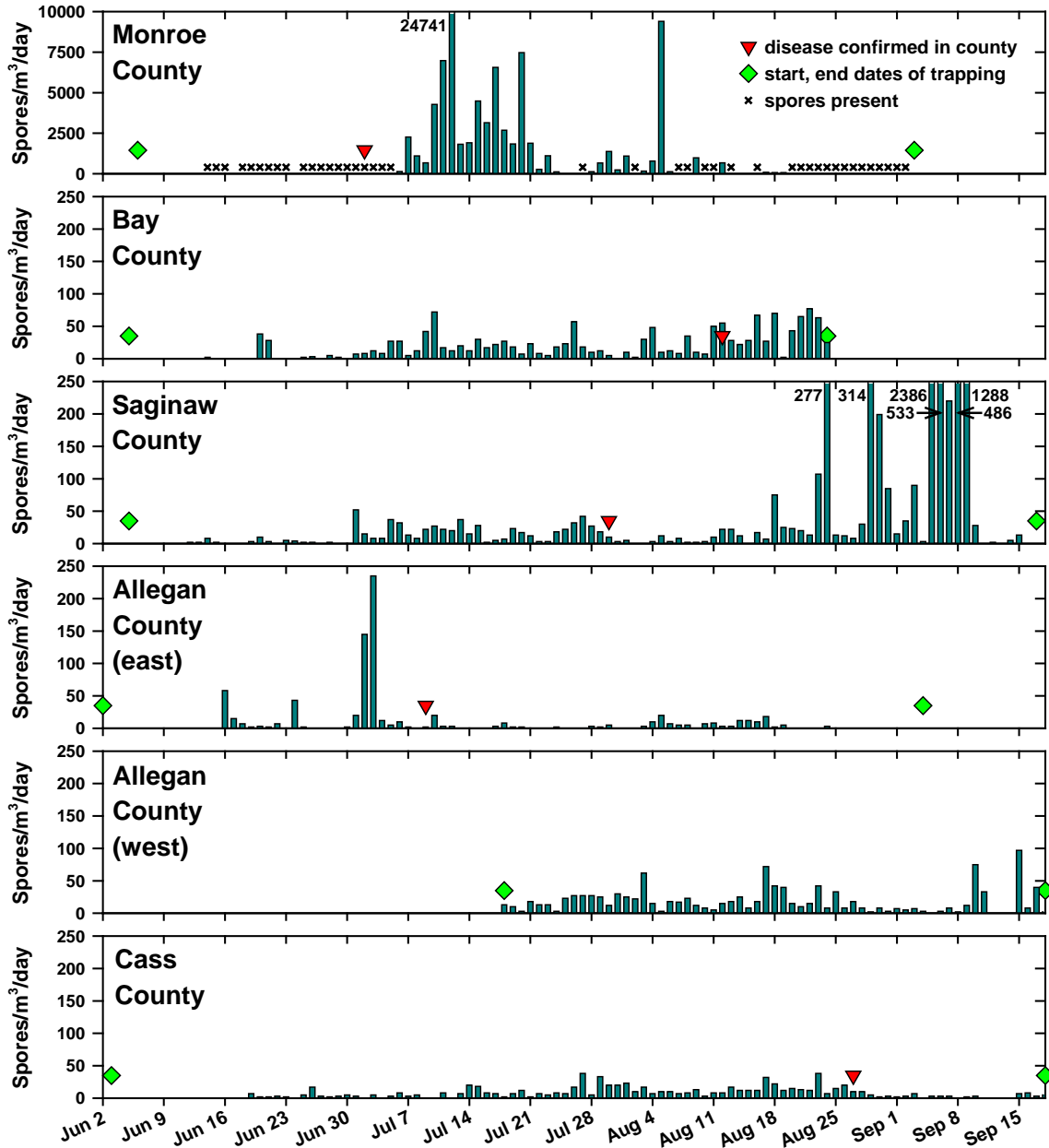


Fig. 2. Daily atmospheric spore counts for five Michigan counties.

Fungicide Trials

Chemical control must be focused on using the most effective products, alternating the products, and applying fungicides at short intervals. Results from our downy mildew research in past research trials and those from field season 2008 (Figs. 3,4) indicate that an effective spray program includes the following: Previcur Flex (propamocarb hypochloride) plus Bravo (chlorothalonil) alternated with Tanos 50DF (cymoxanil + famoxadone) plus mancozeb. Presidio is a newly registered product that is highly effective against downy mildew and against Phytophthora crown, fruit and root rot. All fungicides should be used in a tank mix with another fungicide effective against downy mildew (Table 1).

Table 1. Recommended products for managing downy mildew on pickle.

APPLIED BEFORE DISEASE (7-day intervals)	APPLIED AFTER DISEASE (5-day intervals)
<ul style="list-style-type: none"> Gavel 75WG (5 day PHI) Presidio 4FL (2 day PHI) Previcur Flex 6SC (2 day PHI) Ranman 3.6SC (0 day PHI) Tanos 50WG (3 day PHI) 	<ul style="list-style-type: none"> Presidio 4FL (2 day PHI) Previcur Flex 6SC (2 day PHI) Ranman 3.6SC (0 day PHI) Tanos 50WG (3 day PHI)
Alternate products and mix each with either: <ul style="list-style-type: none"> Dithane (mancozeb) 3 lb or Bravo (chlorothalonil) 1.5 pt 	Alternate products and mix each with either: <ul style="list-style-type: none"> Dithane (mancozeb) 3 lb or Bravo (chlorothalonil) 2 pt

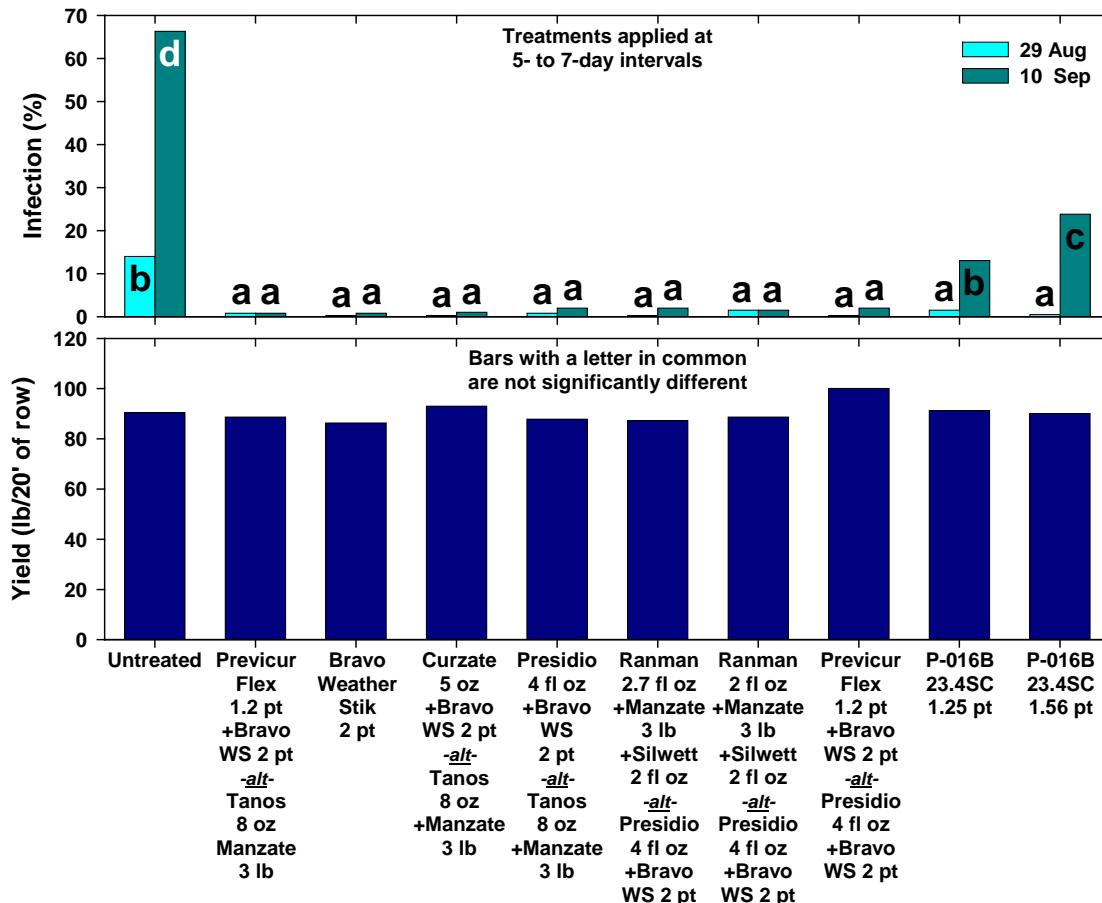


Fig. 3. Evaluation of fungicides for control of downy mildew of pickling cucumber, trial 1.

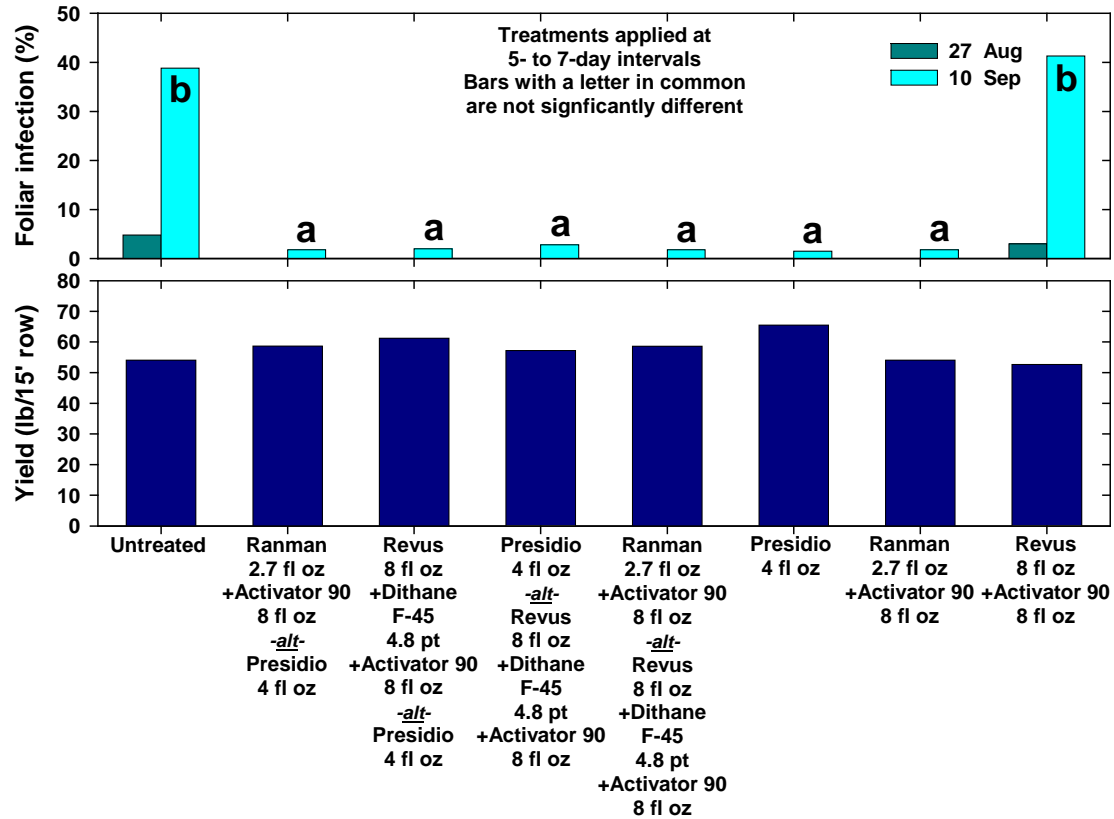


Fig. 4. Evaluation of fungicides for control of downy mildew of pickling cucumber, trial 2.

Acknowledgements

This research has been funded by the Pickle and Pepper Research Committee for MSU and the Agricultural Research Fund, Pickle Packers International Inc., Project GREEN, the Michigan Agricultural Experiment Station and the North-Central Integrated Pest Management Program.