



Disease Management for Floral and Nursery Crops

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Project Objectives:

Improve understanding and management of diseases of greenhouse and nursery crops:

- Help growers better utilize new tools, including new reduced-risk fungicides, biological controls, and SAR (systemic acquired resistance) materials
- Identify new diseases confronting the industry and develop control recommendations
- Develop new information that will lead to better management of diseases that commonly cause crop losses.



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Project Summary:

This program combines applied research with immediate extension of results to growers in NY and nationwide. Extension activities address pressing issues affecting ornamental crop health (e.g. the recent *Ralstonia* introduction in geraniums produced offshore and the potential impacts of sudden oak death on the nursery industry).

Research is conducted in several arenas:

Powdery mildew: cultivar comparisons, biological control trials, biorational and reduced-risk chemical tests. Poinsettia, gerbera, min-rose, petunia, verbena, phlox and monarda are used in these studies. AFE-sponsored research has fueled progress in managing both powdery and downy mildew diseases.

Water molds:

Pythium: identification of what species are affecting greenhouse crops, finding the reservoirs of these organisms in the greenhouse, learning how cultural controls may reduce problems, evaluating the role of fungicide resistance management strategies, evaluation of biocontrols and SAR materials.

Phytophthora: exploring biological/SAR/reduced risk control options for important new diseases on calibrachoa, pansy, poinsettia and petunia. Gloeckner-sponsored research examined late blight on petunia and tomato in greenhouses. Improved management of root diseases caused by water molds is funded through the Floriculture and Nursery Research Initiative.

Fusarium wilt: studies on Fusarium wilt of cyclamen aim to develop an integrated control system utilizing pH, biocontrols, appropriate fertilizers, and reduced risk fungicides to reliably protect plants. The Friends of Long Island Horticulture have supported these studies.



Powdery mildew epidemics develop quickly

Project Justification:

In these challenging economic times, growers can ill afford plant diseases, as these invariably lead to dollar losses. Disease preventive treatments add to production cost, so these must be made efficient for business profitability. Disease control must also be designed to safeguard health of workers and the environment. Studies on biology of pathogens and trials evaluating new control techniques provide valuable information to the ornamentals industry. Leading growers today actively seek well-informed advice on how to improve their pest management programs, and closely follow applied research so that they can adopt better methods immediately.

Impact to Industry:

In collaboration with Mary Hausbeck (MSU) and Larry Barnes (Texas A&M), we have learned about the environmental cues and management options for the new powdery mildew disease of poinsettias. As a result, losses to the industry have sharply declined since a peak in 1992, and florists now rarely observe this disease. Knowledge of new management options for other powdery mildew and downy mildew diseases affecting snapdragon, miniature rose, gerbera, verbena and pansy has been gained as well.

Studies in collaboration with Ann Chase (Chase Research Gardens) and Mary Hausbeck have developed critical new information on the biology and management of poinsettia scab, identifying cultural conditions that allow infection, and fungicide treatments that successfully prevent the leaf and bract disfigurement and superelongated shoots caused by this fungus disease. Effective control efforts offshore have reduced growers' battles in the US, reducing the need for control actions that are costly to growers.

Root disease management guidelines for growers have been improved through *Fusarium* studies (on cyclamen) as well as *Pythium* and *Phytophthora* research. Ongoing work in collaboration with Gary Moorman (Penn State), Steve Jeffers (Clemson) and Mary Hausbeck (MSU) has improved knowledge of what species are present in greenhouses today, how they may be identified using new technologies, and how they may be better managed. Many reduced-risk and biocontrol options have been identified. Floral and nursery product appearance and landscape performance are both improved through root health management.

Project Team Members:

Maria Tobiasz
Research Technician
Jadwiga Komorowska-Jedrys
Research Support Specialist
Barbara Ludlow, Part-time
Molly Harro, Student Intern

Some Key Collaborators:

Margot Beckett, Ann Chase,
Gary Chastagner, Mark
Gleason, Mary Hausbeck,
Steve Jeffers, Bill Miller,
Gary Moorman, John
Sanderson, Steve Wraight,
and Tom Weiler.



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Barbara Ludlow,
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