"Final Project Report to the NYS IPM Program, Agricultural IPM 2002–2003."

1. Title:
IPM Demonstration and Implementation Plan for Christmas Tree Growers

2. Project Leader(s):
Stephanie Mallozzi, Horticulture Team Coordinator, CCE – Dutchess County and Gary Couch, Cornell Ornamentals IPM Specialist – Hudson Valley.

3. Cooperator(s):
George Hudler, Plant Pathology Professor, Cornell University, Karen Snover, Director, Cornell Plant Pathology Diagnostic Laboratory, Leslie Weston, Weed Science Professor, Cornell University.

4. Type of grant:
- Training practitioners to use IPM techniques

5. Project location(s):
Dutchess County

6. Abstract:
The program increased in both numbers of participants and acreage enrolled in 2002. Outside resources were acquired and distributed. Pests and pest management patterns were further delineated. Growers were educated via one-on-one contact, newsletters, and a workshop. A weed management demonstration trial was initiated and results were viewed and discussed at a twilight workshop. IPM signage was developed and distributed to growers for display at their farms. This Christmas tree IPM demonstration and education program continues to be unique to Dutchess County and New York State. We expect this program to eventually become a blueprint for others to establish a Christmas tree IPM education program in other parts of New York State.

7. Background and justification:
The Christmas Tree Industry in Dutchess County is a strong and growing industry. Total value of the industry in Dutchess County is estimated to be in excess of $5,000,000. There are approximately 40 Christmas Tree growers in Dutchess County with a total of about 750 acres. Farms vary in size from five acres to 225 acres per farm. About 25% are full time growers, and 75% are part-time growers. Approximately 50% of the growers also grow other crops (i.e. roadside vegetables, greenhouse bedding plants, nursery stock, etc.). Christmas tree growers who incorporate IPM into their everyday growing regime promote environmental stewardship. Dutchess County has become a suburban county. Growers are constantly faced with challenges when it comes to pest management and public perception of these practices. In 1998 several growers approached Cornell Cooperative Extension Dutchess County and requested assistance to develop an IPM program. The program was funded through the NYS IPM Program and initiated in 1999. As environmental and growing conditions differ regionally throughout New York State, growers need information that is relevant to the Hudson Valley. Much of the information and practices developed carry over to the ornamental horticulture industry, specifically the nursery and landscape contracting sector. With increased public concern of commercial pesticide use, expanding IPM practices in Christmas Tree production is a responsible practice for farmers.

8. Objectives:

1) Work with current participants and recruit new growers through existing relationship with Hudson Valley Christmas Tree Growers Association.

2) Acquire, adapt and fine tune IPM materials and protocols.

3) Determine the Key Pests and Pesticide Usage patterns of area growers in order to focus research efforts and measure impact.

4) Gather baseline pest management economic information to enhance impact evaluation.

5) Educate growers through direct contact, workshops, presentations, newsletters, and other appropriate media.

6) Explore weed management alternatives via replicated pre and post emergent trials and make a comparison of standard treatments to low toxicity alternatives such as acetic acid compounds, ground covers, and mechanical weed control equipment

7) Explore the public marketing of Christmas Tree IPM participation. Develop a public relations effort that allows participating growers to publicly market their involvement in the Cornell Cooperative Extension Christmas Tree IPM program.

8) Informal program evaluation is continuous throughout the growing season. A formal evaluation is completed at season's end.

9. Procedures:

1) There are active associations at both the regional and state levels and marketing lists exist for local growers. There is a historical relationship between Cornell Cooperative Extension Dutchess County and the local growers. CCE Dutchess County has been the educational resource for Christmas tree pest management concerns and has assisted growers with marketing. As of the writing of this grant five growers have committed to participating in the program in 2002. Working from the local marketing list letters, phone calls and personal visits will be utilized to recruit new participants for 2002.

Participants will pay an annual fee based on acreage enrolled for scouting. They will be interviewed and supply all information available on past pesticide practices, amounts and costs
as well as plant losses incurred. They will identify a minimum of one key person to receive training and program participation will run for a period not to exceed 5 years.

2) The scouting form developed in 1999 will be further modified and improved.
a standardized pesticide use reporting form was developed in 2001. Growers will be instructed and assisted in utilizing this form.

3) Pest and pest management information will be recorded during scouting. All data will be examined and comparisons made with previous years .

4) Pest management costs and tree losses will be tracked by at least one participating grower.

5) Participants will accompany scouts on a regular basis and receive a copy of the scouting report. A summary of pest activity will be sent to area growers using appropriate technology (mail, email, fax). Two workshops will be held. A winter workshop will be classroom style and will focus on diseases, insects, and weed management. A summer workshop will be on-sight and will display the results of weed management trials.

6) A pre and post-emergent weed demonstration trial will be facilitated by Dr. Leslie Weston, a graduate student, Stephanie Mallozzi, and Gary Couch. Dr. Weston will make several trips to Dutchess County to facilitate the implementation of a replicated weed control trial at a participating farm for both pre-emergent and post-emergent materials. In addition, the trial will also compare standard chemical treatments with low toxicity products such as acetic acid weed killers, the use of ground covers to suppress weeds and mechanical weed control equipment such as flame burners and/or hot water machines will be trialed. Data will be evaluated and presented.

7) Signage will be developed and publicly displayed at participating farms. In order to have the signage displayed, growers will agree to allow surveying of their customers for impact evaluation.

8) Feedback is received from growers on a continuous basis throughout the growing season. At season's end a formal face to face meeting is held with each participant to get their input on specific aspects of the program.

10. Results and discussion:

1) This is the fourth year of this program. In 2002 we had three continuing participants, one in their fourth year and another in their second year. We recruited two new growers this year. A total of 36 acres were enrolled in the program. 31 acres were scouted in 2001. This represents a 16% increase of the acreage scouted last year.

Grower participation fees remained the same in 2002. Growers were charged $250.00 for the first five acres and an additional $40.00 per acre beyond five acres.

2)All participating farmers received a comprehensive resource packet containing insect and disease information and the 2002 New England Christmas Tree Weed Management Guide.

The scout form revised in 2001 was utilized.
A scouting calendar based on recent years of pest data collected was used by the scout.

3) Pest data is still in the process of being analyzed. Weed management continues to be the most product and labor intensive area of pest management (for more details see objective number six.

Grower evaluations indicated and our data supports that weed management continues to be very labor and pesticide intensive. Hopefully, the combination pre-emergent weed and variety trials will assist with this. We intend to focus more effort towards alternative weed management in the future. We hope to compliment the post emergent weed management study conducted this season with pre-emergent trials early next spring. Weed management will be the focus of a planned winter workshop.

Rhabdocline needlecast of Douglas fir is the most prevalent disease problem. Growers continue to be frustrated in their efforts to manage this disease. Drought conditions in 2001 appeared to minimize sporulation thus reducing the number of protective fungicide applications needed. For several growers, despite fungicide applications, this persistent disease was once again a problem in 2002. Dr. George Hudler suggests the possibility that this needlecast disease has become resistant to the commonly used fungicide chlorothalonil. With his assistance a fungicide experiment was initiated. Petri dishes containing differing strengths of chlorothalonil were placed underneath mature trees at two different farms and collected after 24 hours during sporulation. They were immediately sent back to Dr. Hudler's lab. The expectation was to compare the rate or lack of sporulation based on the different strengths. Unfortunately, the Petri dishes did not yield any sporulation. We anticipate assisting Dr. Hudler in continuing this investigation next spring with an improved technique.

Balsam twig aphids continues to be a concern. Radical weather patterns early in the spring appears to have thrown off insect development. During the third week in April we experienced 90 degree temperatures and just three weeks later in May, a freeze. This made it difficult to accurately predict optimum times for management. Newly developing buds which popped out in full force at the end of April were soon killed off by the freeze in late May.

Once again, extreme weather patterns in the past three seasons created challenges for pest and pest management activities. Data needs to be collected for several more seasons to accurately represent average growing conditions.

4) At the time of this writing, we are still awaiting these pesticide costs information. Baseline pest management information from new participants was collected and recorded.

5) A one day seminar was held in late winter to educate growers on insects, diseases, and weed management. Gary Couch, Dr. Hudler and Dr. Weston were the featured speakers. Over 20 growers from the Hudson Valley attended this workshop. Another one day workshop will be held this winter. This workshop will focus on in-depth weed management and equipment.

A twilight meeting on weed management was held in September. 15 farmers were in attendance.

One seasonal newsletter was prepared and mailed to all farmers.

The hands-on workshops were very well received. It also provided a forum for local growers to network, discuss common issues, and exchange information. We intend to continue these and other educational efforts.

6) Due to funding constraints, the weed management part of the grant was initially eliminated. In early August, additional funding was acquired which allowed us to conduct the post-emergent trial and initiate the process for the pre-emergent trial. Due to the severe drought of 2001, results of our post-emergent weed management trials were inconclusive. The decision was made to repeat the 2001 post-emergent weed management trials in 2002. The trial was conducted on the same site as last year. A workshop to demonstrate the results of the trial was held on September 24. 15 farmers were in attendance. Seven different herbicide applications were trialed. We are presently attempting to set up a site for pre-emergent and variety trials to compare alleged Rhabdocline resistant types to Rhabdocline susceptible types. We also plan to look at weed suppressive ground covers. It has been difficult to locate a site as most farmers do not start out with totally bare soil, but rather plant in strips or next to existing stumps.

7) Thanks to additional funding obtained in the summer, participating growers each received a publicity sign that listed them as an IPM Program participant. These signs were posted on their barns, sheds, garages, etc. in a location where customers are able to view it. Due to time constraints, the survey to measure impact was not developed.

8) Feedback is received from growers throughout the growing season during site visits, phone calls, and workshops. End of season visits with new program participants indicated they were very pleased with the program and learned a lot about pests and diseases. They were especially grateful to learn about Rhabdocline and its management. Existing participants appreciated the opportunity to make comparisons from one year to the next and continue to get a better handle on their pest management procedures and options.

12. Samples of materials:

Scouting Form (attached)

Scouting Calendar (attached)

Pest Management Activities Form (attached)

Publicity Photo (attached)

The Cornell Cooperative Extension Dutchess County Christmas Tree IPM Education Program received a national award from the National Association of County Agricultural Agents (NACAA) at their annual professional improvement conference held in Savannah, GA at the end of July. The award received was in the *Search for Excellence* program under the Responsible Use of Pesticides-Urban category.

Doug Moffitt of Solvang Farm, Poughkeepsie, NY when asked if he plans to continue with the program in 2003 stated "Absolutely. This program ensures that I get out into the fields and look for pests instead of sitting on my lawn tractor."

The Christmas tree IPM project has become an integral part of the commercial horticulture education program in Dutchess County and the rest of the Hudson Valley. The information garnered during this project has proven useful not only to Christmas tree growers but to landscapers, arborists, and spray services that deal with the same pest complex.

Dutchess CCE **Christmas Tree IPM Scouting Report**

Grower _____ Date _____ Field _____ Scout _____

Tree Type	Pest	#Plants Examined	#Plants Detected	Comments
Douglas firs	Rhabdocline	10		Do hi, med, low, Growth stage Bud, 1", 2" etc (estimate overall)
Spruces	White pine weevil	10		Look for adults, feeding damage (sap flow) separate count each (ie 7 none, 2 sap, 1 adults seen)
	Eastern Spruce Gall	10		Look for white puffs, present vs absent
	Cooley Spruce Gall	10		Look for white puffs, present vs absent
	Mites	10		Tap 3 branches per tree, count mites each tap, note average per tree
Frazer and Canaan Firs	Mites	10		Tap 3 branches per tree, count mites each tap, note average per tree
	Balsam Twig Aphid	10		Tap 3 branch/tree, look for green aphids, simple presense vs absent
White Pine	White pine weevil	10		Look for adults, feeding damage (sap flow) separate count each (ie 7 none, 2 sap, 1 adults seen)

Dutchess CCE **Christmas Tree IPM Scouting Report**

Grower _____ Date _____ Field _____ Scout _____

Tree Type	Pest	#Plants Examined	#Plants Detected	Comments

Pest Management Activities

Grower _____

DATE	FIELD	TREE TYPE	TARGET PEST	ACTIVITY	PESTICIDE PRODUCT	RATE	AMOUNT AI USED	TIME SPENT


Cornell Cooperative Extension
Dutchess County
IPM
Christmas Tree
Integrated Pest Management
Program Participant