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OCTOBER & NOVEMBER 1997



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**October**

**25** Fall UNH-FFA Interscholastic Career Development Event, University of New Hampshire, Durham, NH; Dave Howell at 603-862-1760.

**25-26** Connecticut State Agricultural Exposition, Hartford Armory, Hartford, CT; 860-566-4845.

**29** NHPGA Pesticide Applicator Recertification Meeting, The Inn at Amoskege Falls, 21 Front Street, Manchester, NH; Robert Demers at 603-625-8298.

**November**

**11-12** Massachusetts Nursery and Landscape Association/University of Massachusetts Business Short Course, Holiday Inn, Boxboro, MA; 413-545-0895 or 413-369-4731.

**14** Lecture/slide presentation: "North American Trilliums," co-sponsored by the New England Wild Flower Society, New Hampshire and Maine Chapters, and the John Hay Estate, 10am-noon, at the Urban Forestry Center, Portsmouth, NH; 508-877-7630, Ext. 3301.

**17** Seminar: "Focusing on Biological Control for the Green Industry," University of Massachusetts Campus Center, Amherst, MA; Kathleen Carroll at 413-545-0895.

**December**

**1** Deadline for registration for UMass Extension's 1998 Green School and for application for Advanced Green School; Kathleen Carroll at 413-545-0895.

**4** Vermont Association of Professional Horticulturalists (VAPH) Vermont Department of Urban Forestry Joint Meeting, Vermont Technical College, Randolph, VT; Connie Gardner at 802-253-8565.

**16-18** New England Vegetable and Berry Conference, Sturbridge Host Hotel and Conference Center, Sturbridge, MA; Dominic Marini at 508 378-2546.

**January**

**8-9** New England Christmas Tree Pest Management Conference, Keene State College, Keene, NH; Marshall Patmos at 603-352-4550.

**9-11** ERNA Expo, Meadowlands Exposition Center, Secaucus, NJ; registration: 1-800-376-2463.

**12-13** Connecticut Nurserymen's Association Winter Meeting, Acqua Turf, Southington, CT; 860-872-2095.

**12-13** Rhode Island Nursery and Landscape Association (RINLA) Educational Day and Trade Show (in conjunction with RI Greenhouse Growers), Doubletree Inn, Newport, RI; Ken Lagerquist at 1-800-758-9260.

**13** Maine Landscape and Nursery Association (MeLNA) Annual Trade Show, Sheraton Tara Hotel, South Portland, ME; Edith Ellis at 207-225-3998.

**WEDNESDAY, JANUARY 14** New Hampshire Plant Growers' Association (NHPGA)/New Hampshire Landscape Association (NHLA) Joint Winter Meeting, Old Mill Restaurant, Epsom, NH; Tim Wolfe at 603-893-5858.

**21-22** New England Fruit Meeting and Trade Show, Sturbridge Host Hotel and Conference Center, Sturbridge, MA; Bill Lord at 603-863-3203.

**22-24** New England Grows!, Hynes Convention Center, Boston, MA; telephone: 508-653-3009; fax: 508-653-4112.

**February**

**6-7** Farm and Forest Exposition, Center of New Hampshire Holiday Inn and Convention Center, Manchester, NH; 603-271-3788.

**18** Annual VAPH Annual Winter Meeting, Holiday Inn, Rutland, VT; 802-253-8565.

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*The mum crop at Churchhill's Garden Center, Exeter, New Hampshire  
Photograph by Rick Raymond.*

*The Plantsman* is published in early February, April, June, August, October, and December with copy deadlines being the first of each prior month. While camera-ready ads are preferred, set-up assistance is available at a nominal fee. Free classified advertising is offered as a member service. We will carry a short message (no artwork or logos) for one or two issues of *The Plantsman*.

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For further information, please contact the editor: Robert Parker at the UNH Research Greenhouses, Durham, NH 03824, 603-862-2061; or PO Box 5, Newfields, NH 03856, 603-778-8353.

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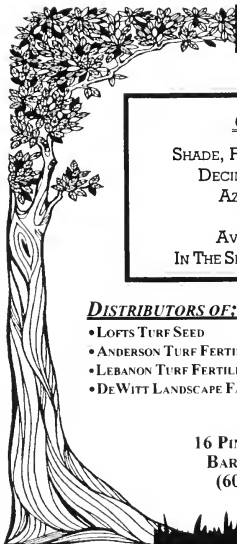
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## Endowment Update

Peter van Berkum

I hope you are all familiar with the New Hampshire Horticulture Endowment by now. We had our introductory "Take off" at the New Hampshire Plant Growers' Summer Meeting and this was met with enthusiasm. We've been writing about it in the newsletter. Then, we had our first real fund-raising event—The Phon-a-thon!!!

We're thrilled to say we were met with great responses. By the end of our two-day phon-a-thon, we'd raised \$60,000! Unbelievable—since our initial goal is \$100,000, we're better than half-way there!

The responses on the phones were very encouraging...a lot of support, everybody pitching in. We no longer have any doubt that we will reach our goal this year.

First, I'd like to thank the volunteers who sat in on the phone: Richard Campos, Nancy Carlisle, Doug Cole, Susan Englund, Dave Giurleo, Tammy Hathaway, Ann Hilton, John Howes, Henry Huntington, Dennis Kathan, Mac McPhail, Scott Murray, Bob Rimol, Rick Simpson, Bill Stockman, George Timm, and Kirk Wyant.

The list of donors is getting quite long. This is something we are very proud of—the amount of support coming from our members, as well as from other people in the trade. The following is the list as of August 29:

Nancy Adams, Barrett Greenhouse and Nursery, Belknap Landscape Corporation, Berger Peat Moss, Bergevin's Greenhouse, Blackberry Farm (in memory of Lillian M. Howes), Blue Star Peat Moss, Bly Farm, Andrea and Dave Capron, Nancy Carlisle Interior Plantings, Stewart Weston/Chadbourne's Florist, Churchill's Garden Center, Clausson's Greenhouses, D.S. Cole Growers, Inc. (in memory of Charles Wylcek), Colebrook Nursery, Davis Engineering, Deerfield Gardens, Demers Garden Center, Ellison's Greenhouse

(in memory of Robert Ellison), Gillyflower Glen, The Green Thumb of North Haverhill, Greenstuff (in memory of Maura McHugh), Griffin Greenhouse Supply, A Growing Concern, Susan Hutchins Greene, Tammy Hathaway, Ann Hilton, Jaderloon Greenhouse Company, Kathan Gardens, Konjoian's Floriculture Education Services, Lake Street Garden Center, L'Annscapes, La Rue Farm, The Pierce Family/Landscape Clinic Nursery (in honor of Raymond Gelineau), Ledgeview Greenhouses, Bill Lefebvre, D. McLeod, Inc., McSherry's Nursery, Meredith Gardens, Gary and Sabrina Matteson, The Mixed Border Nursery, Newton Greenhouses, Orchard Hill Greenhouse, Outdoor World (in memory of Jim Ludlow), The Person Family of Moultonboro, Pleasant View Gardens, Inc., Portsmouth Gardens, Prides Corner Farm, Putnam's Flowers and Gifts, Quietaire Corp., Revay's Garden Center, Rimol Greenhouse Systems, Inc., Rolling Green Nursery, Rosemont Farm, Round Table Farm Greenhouses, Calvin

Schroeder, Spider Web Gardens (in memory of Roger and Bernice Williams), Stratham Circle Nursery and Landscape (in honor of Jim Ludlow), Don Still, Sullivan Greenhouses/Life Everlasting Farm, Sunderman Manufacturing Company, Tenney Farms, Uncanoonuc Mountain Perennials, van Berkum Nursery, Village Greenery, Kirk Wyant, and Wier Tree Farm.

We would like to thank everyone who has participated in any way at this time. Watch for more news on the Horticulture Fund—we'll be keeping you posted on its growth and on the setting up of the grant-awarding committee.

Peter van Berkum is co-owner of van Berkum Nursery, 4 James Road, Deerfield; he can be reached at 603-463-7663.



New Hampshire  
Horticulture  
Endowment

*the seed of a great  
idea is growing into  
a reality!*



**Goal: \$100,000**

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80,000

----- 60,000

50,000

40,000

30,000

20,000

10,000

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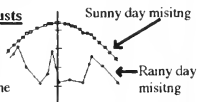
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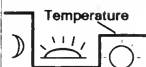
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## Summer Meeting Glass Houses, Blue Sky, and a Successful Take off...

The offerings on July 30 included a trade show of over 50 exhibitors, tours of the D.S. Cole facility, the kick-off of the fund-raising effort for the New Hampshire Horticultural Endowment, a barbecue lunch (once again, Perillo's created the feast), a discussion by Paul Fisher, Department of Plant Biology, UNH, on on-site soil testing as a way to improve quality and profit; and the scholarship fund auction. All this on a perfect summer day.

Many people are involved in creating these annual events. This year, thanks go to Doug Cole and his crew for their excellent hospitality; to Ann Hilton for handling registration, to Tim Wolfe and George, Rennie, and Adam Timm for their help at the registration table and setting up for the auction; to Paul Fisher for his presentation, to Peter Callioras, auctioneer, for donating his time and the use of his PA system; to George Timm, who was in charge of the prizes at the drawing—the TV (won by Mrs. Hardy of Hardy's Greenhouses in Tilton) and the radio/cassette player (won by Tim Wolfe).

We thank the many exhibitors. These included: The Robert Baker Co./Melrose Nursery; Ball Seed Co.; B.E. Supply; Ray and Mary Boule-

risse; Cavichio Greenhouses; Charter Oak Nursery Sales; Cherry Creek Systems; Chestnut Hill Marketing; The Conard-Pyle Co.; Conrad Fafard; Davis Brook Farm; Earthgro, Inc.; First Pioneer Farm Credit; Fletcher Granite Co.; Florists' Mutual Insurance Co.; F.C. Gloeckner Co.; Gold Star Wholesale Nursery; Greenleaf Nursery Co.; Griffin Greenhouse and Nursery Supplies; Hop River Nursery; Hove International, Inc.; Johnson and Dix Fuel Corporation; Jolly Farmer Products; Paul R. Larie; Laughton Nursery; Liberty International Trucks; W.H. Milikowski, Inc.; Millane Nurseries; Northeast Nursery; Northern Nurseries; OESCO, Inc.; Pleasant View Gardens; Pot Specialists, Inc.; Prides Corner Farms; Rough Brothers, Inc.; Les Serres Rosaire Pion and Fils, Inc.; Spence Farms; Harry Stoller and Co.; Sunflower Industries; Sun Gro Horticulture, Inc.; Tuckahoe Turf Farms; Western Maine Nurseries, Inc.; Wind-ing Brook Turf Farm, Inc.; Yoder Bros.

The donated products auctioned raised over \$1,000 for our scholarship fund.

## Thrips "Cocktail"

Since many of you have trouble controlling thrips, I obtained from Dr. R.K. Lindquist of Ohio State a recipe that works best for his growers. Here it is! Please follow label directions. You assume all risk.

1. Apply a tank mix of Avid (8 oz/100 gal) plus Azatin (10-16 oz/100 gal) or Neemazad (2.23-4.5 oz/100 gal) twice, five to seven days apart.
2. Wait five to seven days, then apply a tank mix of Thiodan (label rate) plus a pyrethroid (i.e., Decathlon, Talstar, Tame, Topcide). Reapply this tank mix after five to seven days.
3. Wait five to seven days, then apply Mesuro 75WP (8-16 oz/acre). Repeat the application after five to seven days.
4. Repeat the cycle, beginning at

Step One, after waiting five to seven days.

Other possibilities to add to the rotation are Precision (Preclude) and Naturalis-O. Good luck. Please follow all directions. Contact me if you have any questions (603-862-1733).

Sincerely,  
Stanley R. Swier  
*Extension Specialist, Entomology*  
Department of Plant Biology, UNH,  
Durham, NH 03824-3544.

## CLASSIFIEDS

**KING FARM** is expanding its staff. We are looking for an experienced grower who is good with people and who would like to help us to continue to grow top quality material. Excellent salary for the right person. Contact: Dana King, King Farm, 15 Scales Lane, Townsend, MA 01469. Telephone: 508-597-2866; Fax: 508-597-0262.

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**ASSISTANT MANAGER—Greenhouse.** To maintain and monitor the physical operation of UNH greenhouses. Qualifications: AA degree in Plant Science and 4 years of experience or BA degree in Plant Science and 2 years of experience. Salary normally not to exceed \$25,000. Send resume, college transcripts, and three letters of reference to Dr. Paul Fisher, Dept. of Plant Biology, UNH, Spaulding Hall, Durham, NH 03824. Tel. (603)862-4525. Review of applications will begin Oct 1, 1997. UNH is an EEO, Affirmative Action Employer.



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## Guide Available

The full title is *The 1997-1998 New England Greenhouse Floriculture Recommendations: a Management Guide for Insects, Weeds, and Growth Regulators*. The publication is a joint effort by faculty and professional staff of New England's state universities; New England Floriculture, Inc.; and the state grower associations, sponsors of the New England Greenhouse Conference.

It begins with a general pesticide information section which is followed by sections on insects and mites, diseases, growth regulators, and weeds and algae. Appendices list Extension contacts, useful publications, and tips on first aid for pesticide poisoning. This could be an essential part of your pest management arsenal.

To receive a copy, send a check for \$15.00, payable to UNH Cooperative Extension, to UNH Cooperative Extension Publication Center, 120 Forest Park, UNH, Durham, NH 03824.

## Display Available

An educational display on backyard composting is available for free loan from the New Hampshire Governor's Recycling Program. The display can help encourage and educate people on the ease, benefits, and fun—yes, fun—of back-

yard composting. The tabletop display consists of pictures, compost bin models, and simple educational text explaining the "how-to" of composting. The display can be used in a variety of ways. These include a simple informational display for your customers or a promotion of sales of commercial composting bins.

The display can be picked up at our office or local delivery can be arranged. For more information or to reserve the Backyard Composting Display for your business or special event, please write the NH Governor's Recycling Program at 2 1/2 Beacon Street, Concord, NH 03301-4497 or call 603-271-1098.

## Honors

It should be noted that Chris Robarge, Horticultural Facilities Manager at the Thompson School at UNH in Durham (and secretary/treasurer of the New Hampshire Plant Growers' Association) was, in May of this year, honored with the Presidential Award of Excellence—the highest award for a UNH employee—for his years of commitment to UNH and to the Thompson School. In recent years, Chris has actively served on the UNH Budget Task Force, the PAT Council (both as member and as chair) and numerous other school and university committees. Congratulations, Chris.

## Don Still (1921-1997)

Donald Proctor Still died at his home in Manchester on September 8, 1997. Born July 28, 1921, in Manchester, he was the son of Charles Douglas and Beth (Fifield) Still. He graduated from Manchester Central High School in 1939 and, with the exception of five years spent in the army during World War II, lived his entire life in Manchester.

He was the retired owner and operator of Still's Nursery and a life member and past president of the New Hampshire Plant Growers' Association.

He was active—often in a leadership role—in a number of organizations. These include American Legion Post 79; Veterans of Foreign Wars Post 9347; Washington Lodge 61, F&M; Hillsborough Lodge 2 of the International Order of Odd Fellows, and the First United Methodist Church. He was also a "rockhound" and a past president of the Nashua Mineral Club.

His family includes his wife of 52 years, Edith Wilhelm Still of Manchester; a daughter, Laurie (Mrs. Joseph) Chevalier of Manchester; a granddaughter; two brothers; two sisters; nieces and nephews.

Burial with military honors was in Pine Grove Cemetery. Memorial gifts may be made to the First United Methodist Church, 961 Valley Street, Manchester, NH 03103.

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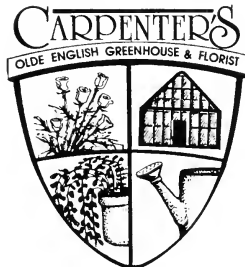
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## Biological Control Conference

On Monday, November 17, UMass Extension is sponsoring a one-day (8:30-3:30) conference, "Focusing on Biological Control for the Green Industry," at the Campus Center at the University of Massachusetts in Amherst. There are three concurrent sessions: "Nursery and Greenhouse Management," "Greenhouse Floriculture Crops," and "Turfgrass Management." Speakers include Stanton Gill (University of Maryland), Dan Gilrein and Margery Daughtry (both from Cornell), and Graeme Murphy, a greenhouse crops specialist from Ontario, Canada.

Cost (before November 11) is \$95.00. This includes lunch and parking pass. For information about general registration, call Kathleen Carroll at 413-545-0895.

## CGGA Tackles Greenhouse Taxation

(Plugged In, Issue 2, 1997)

After two years of debate and research, the Connecticut Greenhouse Growers' Association issued in late June voluntary guidelines for assessing greenhouses and their equipment for property taxes in the state's 169 towns. It's believed to be first such document prepared by a state greenhouse association the United States and may form the basis for similar moves in other states.

The guidelines took months of research for CGGA's Legislative Chairman Frank Hufner (Cedar Hill Farm, Newtown), Executive Director Bob Heffernan, Len Van Wingerden (Grower Direct, Somers) and the University of Connecticut's John Bartok.

CGGA also worked closely with the Connecticut Tax Assessors Association, providing a tour for a

delegation of assessors on March 13 at Woodland Gardens in Manchester and, later, a three-hour briefing for over 100 assessors at their annual meeting on June 3.

Connecticut's 169 towns are essentially 169 fiefdoms, where each local assessor decides on his own how the town will assess greenhouses and their equipment. There was no uniformity from town to town.

Also, local assessors—lacking other data—were referring to national guides such as *Marshall and Swift*, where suggested values for greenhouses were dramatically exaggerated and out-of-line with the Connecticut economy.

There were no laws in the Connecticut General Statutes governing the taxation of greenhouses until 1991, when the Connecticut Nurserymen's Association succeeded in pushing through the legislature an exemption targeting overwintering hoop houses.

Gradually, other farmers (dairy, etc.) began putting up greenhouses for a variety of uses: storing equipment, calves, etc. That drew the Connecticut Farm Bureau into the issue. In December, 1995, the group came to the CGGA and proposed a bill for the 1996 legislative session that would become essentially a uniform greenhouse taxation statute applying to all towns.

The CGGA Board asked the Farm Bureau not to introduce such a bill, feeling that without badly needed research and consultation, the bill would do more damage than good. A task force was formed to investigate the issue, but, unfortunately, because of changes in Farm Bureau staff, CGGA became the sole group investigating.

Early on, the Board had to decide whether to shoot for legislation that would dictate how towns

assess greenhouses or for some sort of voluntary guidelines developed with the state assessors' association.

CGGA opted for the voluntary route, holding out for legislation when and if the voluntary guidelines were deemed to have no impact—perhaps two or three years in the future.

The final version of the guidelines went through ten drafts, having been circulated to numerous in-state growers who had experience in greenhouse construction and to out-of-state greenhouse construction companies. In every case, the per square-foot figures for new construction were much lower than the figures being used by assessors across the state.

CGGA is to be congratulated for openly dealing with a volatile issue, looking for solutions that would be fair to a number of interested groups.

For a copy of the guidelines, contact the Connecticut Greenhouse Growers' Association, PO Box 415, Botsford, CT 06404. The telephone number is 203-261-9067; fax, 203-261-5429.

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# THE AMERICAN CRANBERRY IN NEW HAMPSHIRE

William Lord

**U** *accinium macrocarpum* is the name science gave to one of the more colorful berries indigenous to New Hampshire, the American cranberry. As kids, we would tag along with my father as he visited small wild plantings tucked in small pockets among the many gravel deposits along the Cochecho River in Farmington. These early fall trips generally yielded jars and jars of cranberry sauce tucked away in the cellar for winter use.

Commercial attempts to cultivate the wild cranberry got started on Cape Cod in Massachusetts in the early 1800s. Cape Cod offered an ideal setting for the cranberry—a layer of glacial deposit sand over clay providing the high water table and coarse-textured sand soils in which cranberries thrive. The industry today is alive and growing with major production in Massachusetts, New Jersey, Wisconsin, and Washington and, yes, one small commercial bog in New Hampshire.

David Eldredge grew up in cranberries on the Cape and has been unable to get them out of his blood. To satisfy that interest, David developed a couple-acre cranberry bog in North Hampton, just outside of Exeter. Bog development is not an easy chore. Soils that consist of an underlying layer of clay or hardpan impervious to water covered by a surface layer of acid peat or sandy loam are generally found in wetland sites, and, while upland sites with these conditions can be created, the cost is high. The first step after finding a suitable wetland site is a tedious 'permitting' process which can take many months.

Water is the crucial ingredient in a successful cranberry operation and its level in the bog is carefully controlled by the use of dikes, ditches, and tile drainage. Cranberry roots, like those of the blueberry are fine and fibrous, shallow (generally occupying only the top two or three inches of soil) and have no root hairs. Mycorrhizal fungi live in close association with the roots, suggesting an interdependent relationship. Meeting the water needs of the plant requires that the root zone be moist, yet not saturated.

Water is used for much more than supplying the moisture needs of the plant. Frost damage to blossoms in the spring, heat stress management during hot periods, water harvest of fruits, even winter protection—abundant clean water is essential. While meeting the water needs of the plants and protecting them from frost and heat is generally accomplished using overhead irrigation, flooding of bogs is used for wet harvest

and winter protection. In wet harvest, bogs are flooded and fruits are removed from plants by gently beating them with reel agitators. Ripe fruit are buoyant and can be easily herded to the edge of the bog where they are sucked up for transport to the processor. Of course, dry harvest is also done using a machine that separates fruit from the plant by 'combing', but dry harvest can be tough on young plantings.

The cranberry plant is evergreen. Winter dessication due to transpiration from leaf surfaces during cold, dry periods, especially if there is scant snow cover, can be lethal. To protect plants, David applies a winter flood. A two- or three-inch layer of water is put on the bog and allowed to freeze solid. Successive layers of ice are added until the plants are completely covered. Any free water that develops as ice melts must be drained away to prevent oxygen starvation of the cranberry plants. Flooding the bog requires a lot of water, a good dike and ditch system to regulate water levels, and a bog that is perfectly level.

Another key resource needed in the cranberry business is clean, coarse sand. Cranberry plants produce lateral stems called runners that are non-productive. Some of the axillary buds on these runners produce upright shoots. Floral initiation and subsequent fruiting occurs in the apical region of these upright shoots. Over time, these uprights will grow, but only the terminal six inches or so will remain upright as the base sags. Pruning to eliminate these long lateral shoots is not practical, so sand is used to do the job. A layer of sand up to an inch thick is applied every three or four years to the bog. This sand covers the laterals and runners and the bases of upright shoots which then root. This renews the planting by creating roots closer to the fruiting zone of the plant and encouraging production of more uprights.

The application of sand offers some other interesting side benefits. It gradually builds up a firm surface that supports equipment, helps improve soil drainage, and gives the grower a chance to re-level bogs that aren't quite right.

**M**ost cranberry cultivars grown commercially are selections from the wild, chosen for high yields, good fruit size and color, and harvest season. The names often reflect the origin of the cultivar. A good example is the *Höwes* cultivar. It was selected from the wilds in East Dennis, Massachusetts, in the mid-

1800s by a man named, of course, Eli Howes. New cultivars, the result of controlled crosses, are making their mark and will likely drive the industry in the future, but native selections still dominate the scene.

Propagation of plants is rather simple. Planting material (cuttings) is obtained by mowing vines from a well established planting of the cultivar wanted. Cutting material is kept moist until spread, either by hand or mechanically, on prepared bog sites, generally in May in New Hampshire. These loosely spread cuttings are then pressed into the soil either with the cleats of a small crawler or with a device that resembles a disc harrow, except that the discs are quite thick and blunt-surfaced. Once set, cuttings and surface soil are kept moist with frequent, light overhead irrigation. After a couple of weeks, roots will develop on stem surfaces below ground and axillary buds above ground will break and produce shoots. Within a year or two, the entire surface of the bog will be covered with new vines.

Many of those wild cranberry bogs I visited when young have disappeared, lost to development and gravel mining, but small pockets of wild cranberries are still out there, waiting to be discovered. One special wild cranberry I have taken a liking to in the past several years is what I call the mountain cranberry, *Vaccinium oxycoccus*, although it is perhaps more

accurately called the small or European cranberry. It is more winter-hardy than the American cranberry (*V. macrocarpon*) and is relatively common at higher elevations in Coos County where I pick a few each fall. Like the American cranberry, I find these sweet enough to eat readily out-of-hand and the flavor is just great. The cranberry is, after all, one of the great original tastes of America.

Bill Lord is Extension Fruit Specialist, UNH Cooperative Extension, University of New Hampshire, Durham. He can be reached at 603-862-3203.

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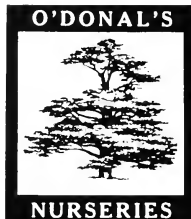
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## THE GREEN THUMB OF NORTH HAVERHILL— a Peaceable Kingdom

The Green Thumb of North Haverhill began in 1981, when Priscilla Brown, dissatisfied with the selection of plants offered at her employer's floral shop in Woodsville, left to begin growing plants herself. She and her family—her husband Alden and sons Clinton and Scott—put up a 25'x44' double-poly quonset-style house that fall. "I really didn't know if this would work out or not," but a crop was ready for sale on Mother's Day, 1982. "I grew everything—geraniums, petunias...I overgrew—I had a lot of things in cold frames..." People came, and, that fall, a second house—a 14'x72' double poly—was put up to the right of the first. In 1985, a third house was put up to the left and, later, a fourth was put up behind it.

Today, a line of structures sits parallel to the road. Beside the greenhouses is a 22'x24' garden shop. Beside this (although slightly further back) is a gazebo. Both of these were put up maybe six years ago. Beyond that is a 10'x44' wooden lath house in three sections forming a crescent. The lath house replaces an earlier one made of telephone poles that collapsed in a wind storm two years ago. Both the gazebo and lath house are of pressure-treated wood.

Behind this line, the land slopes downward (the gazebo and lath house are built on fill) to Granny Clark's Brook, then rises slightly to

woods and—eventually and more steeply—to Black Mountain. Five acres were cut and stumped. A few trees—maples in the open areas, hemlocks and birch by the brook—were left standing. Two areas of marsh were left as well and cattails planted.

A lawn was created—by both hydroseeding and hand-sowing. This is not mown field, but trimmed, green lawn and its unexpectedness contrasting with the woods and marshes around it makes it dramatic. Mass plantings—potentilla, spirea, a hedge of high-bush blueberry—are used around trees and as backdrops for gardens—perennial, shade, "vegetable, cutting, and dried flower"—set into the lawn.

"I like the twisted, the gnarled," and an "ODDesy garden" highlights unusual material—weeping pine, weeping crab apple, Harry Lauder's walking stick—plants not normally found in North Haverhill gardens.

A garden of native plants is planned, but many natives are already here. Steeplebush (*Spiraea tomentosa*) grows in the marshes and along the stream. "There's no reason why this shouldn't be in people's gardens," Priscilla says, and, alongside the commercially available varieties of spirea, it seems to fit in well.

Mountain ash (*Pyrus americana*) is offered in the nursery display area, but she wonders why striped maple (*Acer pensylvanicum*), a small tree

with conspicuously striped bark, isn't. Another plant that grows along the stream is the purple flowering raspberry (*Rubus odoratus*). Its maple-shaped leaves and rose-like blossoms add to the August landscape. The wild and the commercial seem to blend comfortably here in a Peaceable Kingdom of plant life.

Water is everywhere—its sound is an important element. "The whole place is infested with springs. An old man in his eighties water-witched for us and found three springs below the spot where the gazebo was built. We dug and found water just below the surface. We've enclosed them with tile and capped them. One is piped to the house and another to the greenhouses and nursery; the third is a reserve."

Two spring-fed ponds have been created. The Trout Pond, a 125'x 200' body of water on one side of the display area (the Browns' home looks down onto it), is a major focal point. There's a small beach of sand on one end, but it's twelve feet deep on the other; stairs lead down from the lawn below the house to a small deck where people stand to feed the fish—some very prosperous-looking brook trout. Otter, beaver, and mink sometimes take up residence—and are removed, but most of the time, these trout definitely lead the good life.

The Frog Pond, maybe half the



size, is further back, at the edge of the woods. It's planted with cattails, edged with boulders and potentilla, and decorated with cement frogs painted bright green and white.

There will soon be a waterfall, created by diverting some of Granny Clark's Brook at a point further up the slope, first into a six-inch pipe, then into a four (to create a stronger flow), then over rocks. The water follows a channel into the pond, then drains through a culvert into a second channel which rejoins the brook further downstream.

There's a lot of green here. Focal points—places to sit, well-placed points of color—metal holders containing tiers of potted impatiens are good examples—draw the eye.

Statuary is large and often quite lifelike. A buck stands among the shrubs in one of the far gardens; a boy fishing, sitting on one of the capped springs, is so realistic that Paco, the family black Lab (mellow, but without an exceptionally long memory), will forget and start barking at the seated figure.

SMALLER GARDENS surround the greenhouses. Perennials border all the houses. Customers like to check out what's doing well because these areas are subject to a lot of winter abuse—snow collects and snow is plowed there. At the end of one house is a rock garden. This is not surprising, but a Cactus Garden—various hens-and-chickens planted around a protruding ledge—is. Pots of cacti are added in summer. Also surprising are shrub roses surrounded by a boxwood (*Buxus microwintergreen*) hedge and chives. The boxwood has survived one winter (North Haverhill is Zone 3); the chives are cut weekly; the smell apparently repels rose-loving insects.

Because so much is going on around the greenhouses, many customers never go further. In order to "introduce them to all we have to offer," the first Flora Fun Day was held on August 16. Refreshments

were served; there were end-of-the-season specials and a perennial sale, but the highlight of the day was The Tour. A map of the property, with a suggested self-guided tour indicated by a dotted line, was given to each customer. Along the route were sixteen stations—the germination chamber, the vegetable and dried flower garden, the frog pond, etc. At each station, a hand-lettered sign interpreted the site, describing plants and giving ideas for customers to try themselves. Also at each station were "tickets," with a question to be answered. The customer took a ticket and filled in the answer. Those customers with all sixteen tickets (the answers didn't have to be correct) received a "prize"—two perennials of their choice.

The whole thing sounds like a lot of fun—which obscures the fact that it is excellent marketing.

THE HOUSES ARE SIMPLE: floors are dirt, but raked and without weeds; the center and two side benches—going the length of each house—are of wood. "We have some wire benches, but I don't like them—I guess we're all into 'natural.'"

The entire production system—production begins in March—is housed within the greenhouses. A germination chamber (holding 96 flats, thermostatically controlled, a water reservoir in the bottom) is here. Priscilla seeds (with a Perkins

seeder) all but the earliest. For plants like begonias and coleus, she buys in plugs. One house has a checkout counter by the door; in two, bench space is given board sides and potting is done in the broad shallow box.

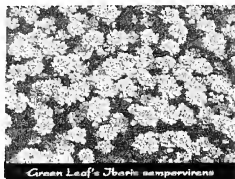
The houses are propane-heated in winter, covered with shade cloth in summer; Promix is the standard medium (nursery material is in a mix of Promix, sand, and pine bark); watering is by hand, feeding (20-20-20), with a Dosatron.

One house fills with geraniums; the others, with bedding plants. Above everything are hanging baskets.

BUT UNDERNEATH the rustic look sit some up-to-date business practices. The entire operation—the financial records, the stock inventory—is computerized. All pot labels for the nursery material are printed out on computer as well. A white plastic strip stapled to each pot tells name, year bought, price, and a description of characteristics—height, blossom color, etc.

The Green Thumb seems somewhat away from major traffic patterns and Priscilla advertises heavily—from Mother's Day to Columbus Day in three local weeklies—and in other papers during special sales. Each ad offers discount coupons. Each ad's coupons are different; customers sign them when they turn them in—which gives informa-





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tion on which ads work and where customers live (many come from fairly long distances—Littleton, Bow, Concord, Conway). She adds these names to a growing mailing list.

She has long-term, steady, enthusiastic help. Lillian Kimball has worked part-time here for eight years. Another woman, Karen Lamarre, a recent graduate of Delaware Valley College in Philadelphia, will begin full-time in 1998.

PEOPLE IN THE NORTH COUNTRY often "wear many hats," and Priscilla wears several. She wholesales to an outlet in Plymouth. She sells dried arrangements made from materials she grows and gathers herself. After Columbus Day, she shuts down, but reopens after Thanksgiving, when, for four days a week, she sells cut-your-own Christmas trees from a neighbor's lot across the street. The owners live in Connecticut—they plant and maintain the trees; The Green Thumb sells them and gives the

owners a percentage of the money made. Customers bring saws and can cut any tree for \$15.00; in the shop, garlands and wreaths are made and sold. The business closes for the winter the week before Christmas.

It should be said that the landscape—although the components were there—didn't "just happen." The nursery/greenhouse is one of several interconnected family enterprises. Alden (who worked as a mechanic at the local John Deere dealership before beginning the landscaping side of things) and two sons run a landscape installation and maintenance business. Clinton (who once planned to study accounting at Northeastern), is a partner and does design work and oversees crews. Scott has chosen not to be a partner—he's foreman on the commercial jobs; his busy season is winter, when he grooms for Loon Mountain and runs his own snow removal business. They have the equipment—tractors,

bucket loaders, a hydroseeder—with which to do fairly large jobs. Although the entire family genuinely loves the outdoors and "the natural," they have un sentimentally shaped this arcadian landscape.

Growth has always been intuitive—one aspect leading into another. The Browns recently acquired the adjoining eleven acres—to be used for bagged goods, equipment storage, and parking. (Clinton admits "our traffic flow is non-existent... it's something that needs to be worked on.") That will be next year's project...along with a natural garden, a fern garden, a new drip watering system for 1000 mums....

"We had no idea what this would turn into when we started," Priscilla says. What it would turn into? It's hard to tell—The Green Thumb of North Haverhill seems to have just begun. (BP)

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# Sustainability: A Contemporary Approach

John Hart

**S**ustainability is one of the mushier words to appear in the lexicon. There is no single definition of the term, but there is a shared vision: the earth's resources must be used only at a rate at which they can be replenished; waste must be disposed of at the rate at which it can be assimilated and recycled into the earth's systems. And this holds at all levels—from your customer's backyard to Spaceship Earth.

Over the past year, several informal and voluntary working groups have formed at the University of New Hampshire to tackle a number of "sustainability" concerns. An education and curriculum group has been working to foster interdisciplinary courses and integrate sustainability concepts into others. Another group is in the conceptual design phase of a sustainable living and learning center which would house demonstration projects, research and education components, and residential units. An outreach group is looking at how to take these ideas into the state.

A multimillion-dollar endowment for sustainable living education has been received and the first two rounds of seed grants have been awarded. A "UNH Sustainability Strategy Paper," a set of specific suggestions regarding university systems, has been produced (Published in the *Campus Journal* last spring, it is accessible online at <[http://www.unh.edu/natural\\_resources/index.html](http://www.unh.edu/natural_resources/index.html)>.) A director of sustainable programs, Dr. Tom Kelly, has been hired. The Class of 2001 is already on a path called "Sustainable 2001," in which their progress and attitudes will be polled and evaluated from freshman graduation through graduation and two years beyond.

A very visible part of the sustainability work at UNH is its landscape

**A**rborata and botanical gardens are tree and plant "museums" focused on education, research and the artful demonstration of the materials of horticulture and the interaction of humans with gardens. A number of colleges and universities make a point of unifying their landscapes under the umbrella of a botanical garden or arboretum—Smith College Arboretum, Scott Arboretum (Swarthmore College), Connecticut College Arboretum, Cornell Plantations.

Now the UNH campus is in the process of assuming the title of "Botanical Garden"—but one for the 21st century: a sustainable, systems-based, bioregional New England ecological garden. The vision includes the following:

artful integration of regional plant and animal com-

munities into the campus landscape, with connections to the larger watershed ecosystem;

conversion of the campus landscape to more sustainable management practices (less turfgrass; more meadow, native plants, community gardens; increase in organic matter mulched at site of origin; conversion of impervious to pervious paving; reduction in use of rocksalt; provision of new educational resources for students;

education of the campus, state, and Green Industry in the structure and function of the local watershed ecosystem and in sustainable landscape practices;

research (including research by students) on sustainable landscape management practices and other relevant issues;

extension of this research and these practices beyond the campus into the landscape and mindset of New England;

lowering landscape maintenance costs at the university while increasing funding for campus improvements by providing an attractive and timely target for federal, state, and private agencies interested in furthering this emerging example of sustainable living.

In February, The Garden Project was awarded an \$8,000 grant from the Sustainable Living Education Endowment; in August, the UNH Parents' Association awarded this project over \$20,000. These grants will support the garden establishment into the summer of 1998.

A steering committee is setting goals and moving projects forward. This group includes UNH students, faculty, and staff; Anne Moore, chairperson of the NH chapter of the New England Wild Flower Society; Amy Craig of Bestmann Green Systems, wetlands specialists from Salem, MA; and Lionel Chute, Society for the Protection of New Hampshire Forests.

There is significant advisory and psychological support and an abundance of ideas and enthusiasm. By this time next year, demonstration plots should be up and running. In the meantime, check out The Garden's preliminary website: <<http://pubpages.unh.edu/~lchute/ncgg.html>>. For more information on sustainability at UNH, contact Tom Kelly at 603-862-2640 or <[thkelly@hopper.unh.edu](mailto:thkelly@hopper.unh.edu)> or John Hart at 603-862-1091 or <[jlhart@christa.unh.edu](mailto:jlhart@christa.unh.edu)>.

*John Hart is associate professor in the horticulture curriculum at the Thompson School of Applied Sciences, University of New Hampshire, Durham.*



NOTES

**R**esistance is becoming a common concern. We're finding insects and disease are becoming more resistant to many of the products—fungicides, insecticides, or herbicides—we use today. Far fewer of these products have been registered in the horticultural industry than previously, leaving us with fewer choices or, in many cases, the same or similar compounds with new names. Using these same compounds over and over can cause the development of resistance.

We've seen resistance to systemic pesticides (pythium to Subdue, botrytis to thiofanate-methyl) develop most quickly. Systemic products normally have only one or two methods for controlling the pathogen; contact pesticides, usually more than one.

Which leads to the idea of rotation. This helps slow down the development of resistance immensely. If only one half of one percent of a certain pest develops resistance to a certain pesticide, within a very short period of time, this percentage can grow to 10%...and so on.

By rotating different classes of pesticides, the chances of the original population surviving is much more limited. Another way to approach this problem is to use premixes or tank mixes of pesticides on many of your applications. This is especially true with crops that we may spray once or twice during its cycle. If we use only one compound to spray for a pest once a year, we allow that potentially resistant population to survive for another.

Studies on anthracnose control are taking place at Connecticut's research stations. These are showing that anthracnose is resistant to most of the pesticides labelled for use against it; only mixes of compounds are showing any control.

Growers, using one compound applied many times, expect herbicides to control a whole range of weeds. Rarely will this work well. Premixes and tank mixes are the only ways to achieve reliable control.

*Jim Zablocki is Technical Manager, Northern Horticultural Group, Scotts Company. He can be reached at 603-224-5583.*



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## THE GREEN SPOT

### Cookbook Methodology

**B**io-control certainly isn't a no-brainer. Your crop scouting must continue on a weekly basis, as you *should* be doing with your chemical regimen already. A lot of thought must be put into a properly initiated and executed program. And if you need help with this, every reputable bio-control supplier can give you their recommended rates for the use of their products.

The Green Spot uses a very well-defined set of steps to make a recommendation. Keeping these protocols in mind, you'll need to be able to answer the following questions if you should call us with a pest problem.

1. What crops are you growing? An answer could be, "Impatiens."
2. How and where is it being grown? Again, a possible answer: "In soilless media-filled pots in a poly tunnel."
3. What is the size of the growing area? "3,000 square feet."
4. What pests are you dealing with? "Western flower thrips and fungus gnats."
5. Are these present in an area more than or less than 70% of the total growing areas described in question three? "Less than."
6. If less than 70%, what percentage is affected? "About 40%."
7. If over three feet tall, what is the height of the actual foliage portion of your plants? "They're under three feet tall." (If they were over three feet in foliage height, the number of levels—three feet per level—would be used later in the math calculations. See below.)
8. How heavy is the infestation? "Four thrips and 12

fungus gnats per one trap in a 250-square foot area per week" (which most suppliers would consider a medium/light to medium/medium infestation).

At this point, we'll do some simple math, using our current predetermined formulas. Multiply three thousand square feet times 40% (1200 square feet) times the number of three-foot levels (one) divided by nine to come up with the number of yards (this would be square or cubic, depending on the number of levels). The answer is 133 yards. We would recommend the use of two organisms: *Orius insidiosus* (*OI*), a thrips-predatory true bug, and *Hypoaspis miles* (*Hm*), a thrips/fungus gnat-predatory, soil-dwelling mite. For the infestation levels identified, we would suggest a rate of three *OI* and 130 *Hm* per yard—399 and 17,290 respectively. (These rates are due for revision in 1998.) *Hm* should be doubled if the floor under the benches is porous enough (i.e., is of gravel, is covered with weed cloth, etc.) to harbor thrips and fungus gnats. Both *OI* and *Hm* should be released every other week, two to four times. This should allow the predators to quasi-establish and gain the upper hand.

Despite definite rates and regardless of your approach, formal scouting is extremely important. Even with the cookbook methodology available for all pest control products (including bio-controls), awareness, flexibility, and reactivity are fundamental to all pest control forms.

Mike Cherim, president of The Green Spot, 93 Priest Road, Nottingham, New Hampshire 03290-6204, can be reached at 603-942-8925.

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# GRAPHICAL TRACKING

## A useful tool for New Hampshire growers

Paul R. Fisher

**W**ith increasing competition from other Northeastern states and Canada in the production of flowering potted plants—for example: poinsettias, chrysanthemums, and lilies—it is especially important that our local growers can consistently produce crops of a high quality and value.

Growers of potted flowering crops know the costs of having a crop finish at an unacceptable height: higher shipping charges, downgrading of product, and lost sales.

Graphical tracking is a grower-management tool that helps you clearly see whether your plants are too tall or short at any time in the season and make timely corrections. The technique is to plot plant height onto a graph once or twice each week and make height-control decisions by comparing actual and target heights (Figure 1). The small monitoring cost (about 15 minutes in labor per crop each week) for graphically tracking a crop rapidly pays for itself in improved quality.

This tool has been used successfully for the last ten years by hundreds of growers, regardless of whether their greenhouse business is large or small, located in the North or South, or low-tech or sophisticated.

Here at UNH, in collaboration with Dr. Royal Heins at Michigan State University (MSU), we are developing new graphical tracking tools to help growers avoid short or tall crops. Previous work by Dr. Heins developed graphical tracking target curves for poinsettia, chrysanthemum, and Easter lily.

New research has developed target curves for Oriental and Asi-florum (hybrid) lilies, a simple tool called a Height Meter, and a new computer program called UNH *FloraTrack* which is now being used by over 40 growers in the U.S. and overseas. UNH *FloraTrack* is available to NH grower members of the New Hampshire Plant Growers Association at only \$30.00, which is 25% of the normal retail price. (You can phone me at 603-862-4525 to obtain a copy.)

### Graphical tracking consists of the following steps:

1. creating the graph;
2. monitoring the crop;
3. plotting heights on the graph;
4. making height-control decisions.

### Step 1. Creating the graph

Several pieces of information are necessary to create a graphical tracking graph:

1. the crop species and cultivar (there are curves for pinched and single-stem poinsettia, chrysanthemum, Easter lily, Oriental lilies, and Asi-florum lilies);
2. the start date for the graph, which depends on the crop (Table 1);
3. a middle date for the graph, needed for several crops (Table 1);
4. the finish date when the crop is in flower and ready to ship;
5. the starting height for the crop;
6. the range in target final heights for aesthetic and shipping purposes.

If you have the UNH *FloraTrack* program, the above six pieces of information are entered into the computer, which will automatically make the graph to your specifications (Figure 2). If you would like to provide the above information to me at UNH for one or two crops, I will send you a paper copy of the graph to try out. Several educators in UNH Cooperative Extension are also starting to work with graphical tracking.

Figure 1 shows a graphical tracking chart for pinched poinsettia (solid lines), along with measured heights (rectangles) and growth retardant applications (G symbols). On the time (horizontal) axis in Figure 1, the start date for the curve represents the time plants are pinched and the end date represents the flowering time.

On the height (vertical) axis, the start and end heights represent the height at pinch and the final target heights, respectively. The curve follows the pattern of stem elongation of poinsettia; the shape of the target growth curve depends on the crop species. Growth is initially slow as apical dominance is broken. Rate of elongation then increases to a maximum, decreases as the flower develops, and eventually stops when the flower matures.

This s-shaped growth curve is used to generate a



	Pinched poinsettia	Single-stem poinsettia	Pinched chrysanthemum	Easter lily	Oriental lily	Asiflorum lily
<b>Start date</b>	pinch	when transplants elongate 1 inch	pinch	emergence	emergence	emergence
<b>Middle date</b>	start of short days	start of short days	start of short days	visible bud	not needed	not needed
<b>Finish date</b>	ship date	ship date	ship date	ship date	ship date	ship date
<b>Start height</b>	pot plus mother shoot	pot plus mother shoot	pot plus mother shoot	pot height	pot height	pot height
<b>Finish heights</b>	— — — — —	Minimum and maximum final height specifications				— — — — —

Table 1. Information needed to create graphical tracking curves.

target range of heights throughout the production season. In the example crop, the growth curve was scaled so that the pinch height on August 5 was 6.75 inches, and the final target height at shipping on November 8 was between 16 and 19 inches.

If you have more than one shipping date or cultivar, you will need to make several graphical tracking curves. Each graph will apply to a group of plants that has the same pinching and shipping date, cultivar, and temperature and light control location in your greenhouses.

#### Step 2. Monitoring the crop.

Once or twice a week during the production season, measure plant height from a sample of at least five plants for each graph. Make this regimen part of the regular work plan so that, for example, every Monday and Thursday, an employee measures heights and plots them on the graph. The sample plants should be spread out across the area the crop occupies and should represent the average crop height. Have the same

person measure each time and measure the same plants (as long as they continue to represent the average crop height) to keep your monitoring as consistent as possible.

If sample plants are touched regularly during measurement, they will elongate more slowly than the rest of the crop, so make sure you are not inadvertently adding an extra height control to your sample!

Use a yardstick to measure total plant height, including the pot. We recommend making a crossbar that slides over the yardstick. The crossbar can be

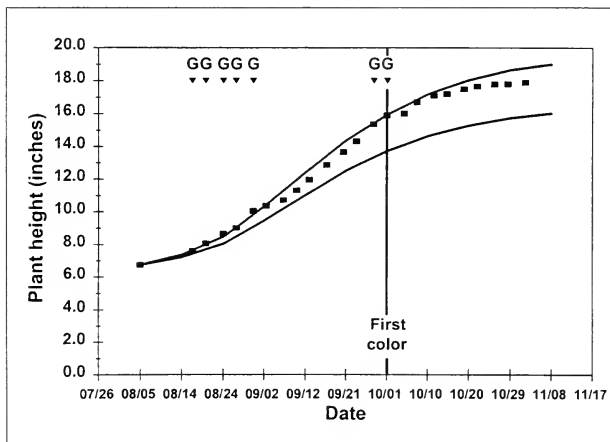


Figure 1. An example graphical tracking curve for a pinched poinsettia crop.

made from cardboard, wood, or metal and will have a slot to slide over the yardstick at a 90° angle (i.e., the crossbar is horizontal to the bench). A carpenter's level attached to the crossbar will further improve accuracy. With the yardstick placed on the bench, the crossbar can be slid gently down to just touch the top of the plant without disturbing leaves.

### Step 3. Plot heights on the graph.

Calculate the average height of the five sample plants and enter it onto the graph. In the example (Figure 1), the grower measured plant height twice a week and plotted them on the curve (shown as rectangles), and also recorded growth retardant applications ('G' symbols).

### 4. Make height-control decisions.

Graphical tracking will show you whether your crop is too tall or short, but it does not tell you what the best management decision is. The biggest advantage is that the method gives you a consistent basis for deciding whether to apply a growth retardant or change your DIF

temperatures.

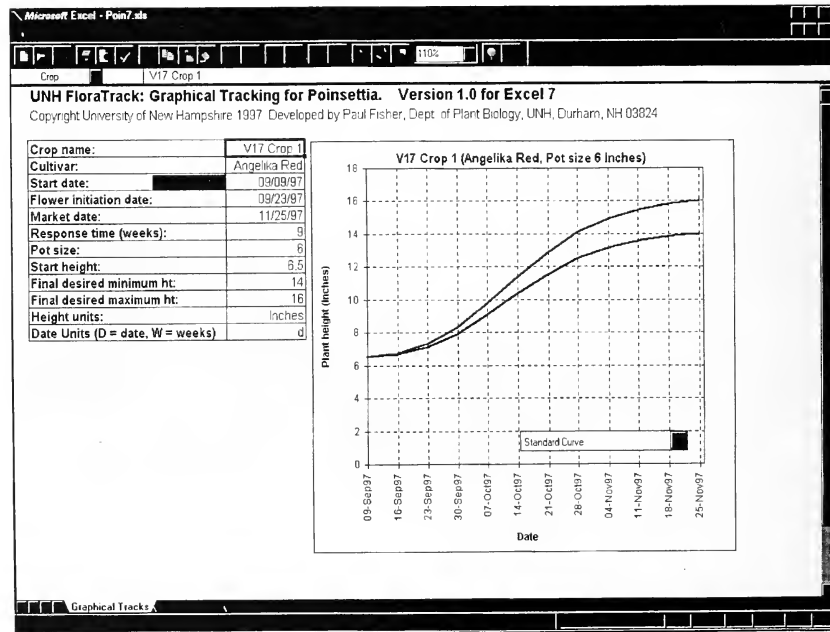
The aim is to keep plant height between the maximum and minimum target heights throughout the crop. If plant height is above the maximum target curve, apply a growth retardant if plants do not show bract color and/or run negative DIF temperatures (warmer night temperature than day temperature). Use positive DIF temperature (cool night, warm day) if plant height is below the minimum target curve.

In the example crop (Figure 1), the grower applied Cycocel 1500 ppm growth retardants when the crop was near or above the upper target curve, until the crop showed first bract color.

For those interested in more details about graphical tracking and height control, Dr. Heins and I are writing an in-depth series on graphical tracking in *Greenhouse Grower*, which started in the June 1997 issue.

Paul Fisher is assistant professor in the Department of Plant Biology, University of New Hampshire, Durham. He can be reached by phone at 603-862-4525 or fax at 603-862-4757; his e-mail address is <prf@hopper.unh.edu>.

Figure 2. A screen from UNH FloraTrack showing a poinsettia graphical tracking chart.



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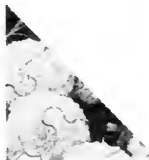
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The "strange" weather patterns have continued for much of the growing season (or is it that we're just getting back to "normal" weather?). The following is a sample of some of the problems seen from early July through early September.

### Woody Ornamentals

The immediate and long-term effects of drought continue to be seen not only in New Hampshire but throughout much of the northeast. Fungal cankers and tip blights were the most common visible symptoms. Canker diseases diagnosed during the last two months included *CYTOSPORA* on willow, flowering almond and maple; *BOTRYOSPHERA* on elm, red oak, rhododendron, honey locust, viburnum and *Pieris*; *PHOMOPSIS* on juniper and holly; and *SPHAEROPSIS* (diplo-dia) Scots and Austrian pines. The *botryosphaeria* on red oak is evident as clusters of dead leaves at the tips of branches. The dead leaves remain on the twigs throughout the winter. *ATROPELLIS* canker also seems to be increasing on hard pines, particularly Austrian pines. The disease is usually evident as one or more dead branches, often with a slight canker near the trunk. The bark beneath the canker is usually stained a dark greenish-brown. American elms are showing an increase in the incidence of *DUTCH ELM DISEASE* due to the effects of drought. *DELPHINELLA TIP BLIGHT* is relatively wide-spread in Christmas tree plantations in NH and VT.

Once again, *KABATINA* appears to be the most prevalent tip blight problem on junipers. *KABATINA*, *PHOMOPSIS*, and winter damage all produce similar symptoms, thus identification of the causal agent by symptoms alone is nearly impossible. Samples should be sent to a lab for positive identification since the timing of chemical controls for *PHOMOPSIS* and *KABATINA* differ (spring for *PHOMOPSIS* and late summer for

*KABATINA*). *LOPHODERMUM NEEDLECAST* has also been a common problem on prostrate juniper cultivars. Look for football-shaped, black fruiting bodies on the needles. Several other needlecasts have also been common problems due to the wet spring (and fall in 1996); *PLIODERMA* on Austrian and pitch pines; *RHABDOCLINE* on Douglas fir; *LIRULA* on firs; and lots of *RHIZOSPHERA* on spruce. *RHIZOSPHERA* needle blight on firs (balsam and Fraser) seems to be increasing in northern New England. *ANTHRACNOSE* diseases were widespread this year. Sycamore and ash were particularly hard-hit. *MONILINIA SHOOT BLIGHT* was widespread on ornamental *Prunus species* and was confirmed on flowering quince.

### Herbaceous Ornamentals

One of the most prevalent diseases on herbaceous ornamentals this summer was *PSEUDOMONAS LEAF SPOT* on impatiens. This disease is characterized by red-bordered spots with a light tan-to-white center. Since the disease is caused by a bacterium, rain splash and overhead watering, and poor drying conditions favor the spread and development of the disease. Be sure to remove all crop debris from the planting sites and containers, and sterilize all containers before using next season.

*BOTRYTIS* was widespread on annuals and perennials thanks to the cool, moist start to the growing season and rainy, overcast weather late in the season. An interesting case of *CALCIUM DEFICIENCY* was identified on oriental lily. The outer third of several of the youngest leaves were distorted and began to turn black. *BOTRYTIS* was initially identified as the causal agent, but turned out to be a secondary problem following a calcium deficiency.

### Turf

*FUNGAL LEAF SPOTS* and *RED THREAD* were fairly common during the

early- and mid-summer period, but were not a severe problem due to the relative lack of moisture. The typical summer diseases such as *BROWN PATCH*, *PYTHIUM*, and *SUMMER PATCH* occurred sporadically, but disease pressure was generally light because of the cooler, drier conditions. The only real "spurt" of these typical summer diseases was during early- to mid-July, when we had an outbreak of *PYTHIUM BLIGHT* and a couple of cases of *SUMMER PATCH* on home lawns.

As the summer progressed, it seemed that *ANTHRACNOSE FOLIAR BLIGHT* and *BASAL ROT (ABR)* were the most common problems on bluegrass, particularly in golf course settings. Most of the *ABR* infections first appear as small, slightly chlorotic spots one inch or less in diameter. The turf eventually turns to orange-brown then becomes bleached-out. Unlike foliar anthracnose, basal anthracnose is difficult to identify with a hand lens and usually requires laboratory confirmation.

During the next couple of months we can expect to see the typical problems in greenhouse crops (*ROOT ROTS*, *BOTRYTIS BLIGHT* and *CANKER*, and *INSV*). Remember that sanitation and good air circulation are the best measures for preventing diseases in greenhouse crops. Also remember that late autumn is the key time for fungicide control of *SNOW MOLD* on turf. And, the turf should continue to be mown until growth ceases.

*If you wish to submit plant material to the UNH-PDL for diagnosis, send samples (with a check for \$12.00) to: The UNH Plant Diagnostic Lab, C/O Dr. Cheryl Smith, Plant Biology Department, 241 Spaulding Hall - UNH, Durham, NH 03824. Samples should be accompanied by an identification form (available from your county Cooperative Extension office or by calling 862-3200). Cheryl Smith is the UNH Cooperative Extension Specialist in Plant Health, and can be reached at 603-862-3841, e-mail: cheryl.smith@unh.edu*

## Butterfly Plants

Tanya Jackson

Did you notice that there were more butterflies this summer than in recent years past? I can remember that, in Portsmouth twenty years ago, I could count as many as 200 Monarchs flitting about the autumn asters and meadow flowers when I went out for a walk. Last year, I literally counted on one hand the number I saw. I am overjoyed to see the increased numbers this year.

There are, of course, reasons for this. Butterflies have had a rough time of it, what with the terrible freeze in Mexico that killed millions of the Monarchs that hung helpless in their winter habitat trees and the other serious weather difficulties encountered in recent years as they've migrated northward. But we are culprits as well, building highways and houses, frequently mowing and eliminating their food supplies and making lawn where there once were meadows.

Many states throughout the country are now planting meadow flowers on roadsides and we, as individuals, can help as well.

As now is the time to think about plants for next year, you may want to think about stocking

a selection for customers who want to grow "butterfly gardens." There's a wonderful array of small decorative shrubs and perennials that appeal to butterflies. A Butterfly Garden need not be a wild meadow of milkweed.

At the Urban Forestry Center, we have several shrubs, including *Clethra alnifolia*. This especially attracts Swallowtails. Planted just outside the office door, its fragrance fills the air and attracts people as well! Its white blossoms are followed by seedheads that remain throughout the winter and the leaves turn brilliant yellow in fall. Like the more common *Buddleia davidii*, it's hardy only through Zone 5. However, I am seriously searching for New Jersey tea (*Ceanothus americanus*). Hardy in Zone 4, it's three to five feet tall and flowers in spring, attracting spring butterflies. Unfortunately, Japanese beetles like it as well.

Last year I purchased a swamp milk weed (*Asclepias incarnata* "Ice Ballet") from Rolling Green Nursery. That has been such a success! It grows quickly, makes a spectacular show of white umbrella-shaped blossoms enjoyed by Monarchs and Viceroy. The vanilla-

scented flowers are followed by green pods very similar to milkweed pods and the plant is hardy to Zone 3. It's a wonderful native plant and should be used so much more!

There are other perennials that attract butterflies. My favorites include Joe Pye weed (*Eupatorium* spp.), purple coneflower (*Echinacea*), mountain mint (*Pycnanthemum*), Mexican sunflower (*Tithonia rotundifolia*), and all the asters and yarrow.

Last year, my little neighbors next door, Kathleena and Lauren Meats, established and encouraged a row of common milkweed plants along the fence that separates the properties. You know, they are rather lovely—tall and green, now forming the unusually shaped pods. And we had butterflies! More than we could count!

Why not establish a Butterfly Garden at your business, thus encouraging customers to establish one of their own? The butterflies themselves will add beauty and pleasure. And with a little encouragement, they will return year after year.

Tanya Jackson, a well-known area herbalist, can be reached at 603-431-6774.



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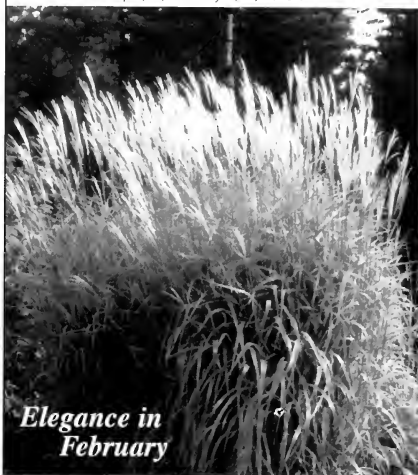
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**NHPGA**  
**Recertification Meeting**  
**OCTOBER 29**

**O**n Wednesday, October 29, the New Hampshire Plant Growers Association will sponsor its biennial pesticide applicator recertification meeting, at which five consecutive hours of presentations give participants five credits toward recertification.

The meeting will be held at The Inn at Amoskege Falls, 21 Front Street, Manchester. There will be three speakers in the morning, two in the afternoon. Speakers include Robert Kapinus, UniRoyal Chemical ("Uniroyal Crop Protection Products"); Bill Romp, Mycotech ("BotaniGard ES, a Myco Insecticide"); Samuel Wells, Olympic ("A Triple Threat Program and IPM").

Registration starts at 8:30. The first presentation is at nine. Lunch is on-your-own; a restaurant is on the premises. This meeting is free to members; there is a \$35.00 fee for non-members.

By now, members will have received a flier giving more specific information; if there are still questions, call Robert Demers at 603-625-8298.

This is an excellent opportunity to receive a block of credits while learning about new pest-control products and visiting with your colleagues. And, for members, it's free.

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