NH Horticultural Endowment

2011 Annual Report

NH Plant Grower's Association * New Hampshire Horticulture Endowment

The Grant-Making resource for New Hampshire's Horticulture Industry

We want to put in a wildflower meadow but how? What is the best way to go about establishing one? How do we know if the young plant is a weed or a wildflower? Dr. Cathy Neal and Amy Papineau of UNH Cooperative Extension using a grant from NHHE have been working to answer these questions. Read on to learn more.

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NEW HAMPSHIRE PLANT GROWERS ASSOCIATION
Horticulture Endowment Fund

Wildflower Meadow Establishment Methods and Seedling Identification Guide

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Building a wildflower meadow involves much more than simply spreading seeds and letting them grow. It is true that a wildflower meadow can be a self-sustaining, low-input landscape once established, but getting to that point requires much more site preparation and maintenance than many realize. In order to create a strong, species-diverse meadow, one must start with a weed-free site and must keep weeds at bay, particularly during the first years of growth while the wildflowers are becoming established. Without proper weed control, slower growing and less competitive wildflowers will not survive and the aesthetic, environmental, and economic benefits of a diverse meadow community will not be realized.

Pre-plant site preparation is crucial for successful meadow establishment. Whether the meadow is to be planted in an existing field or is to replace an area of turf, all vegetation must be cleared from the site before the meadow species are planted. Companies selling wildflower seed mixes often provide guidelines for site preparation, but this information needs to be modified for the unique environment of northern New England.

In spring 2011, we began planting approximately 2,000ft^2 of wildflower meadow plots at the UNH Ag. Experiment Station (Woodman Horticultural Farm) in Durham to evaluate site preparation and planting methods, with the goal of developing meadow establishment guidelines specifically for northern New England. Evaluation of these plots is on-going, but in the first year of growth, we have seen surprising and clear differences in species composition and number, size and density of the plants.

In our study, six site preparation methods were evaluated. Three of these methods quickly eliminate existing vegetation, allowing for immediate spring planting: (a) a single application of glyphosate herbicide followed by tilling, (b) a single application of glyphosate followed by raking and (c) tilling only. Another three methods employ extended summer weed control

regimes prior to planting in the fall: (d) repeated applications of glyphosate, (e) repeated tilling and (f) smothering with black plastic mulch. A mix of 21 native perennial wildflower and grass species were planted in each plot, either from seeds or as young vegetative plants.

Spring-planted plots were prepared and planted in May 2011, so are now in their second growing season. In the first season, we saw dramatic differences in species composition and density between plots started from seed versus those started from young plants (plugs). Today, this trend continues. Plots planted from seed are dense, with little or no bare space. Those planted from plugs have bare spots where species have not yet grown to fill in the space. Seeded plots, while dense, lack diversity. Despite being planted with a mix of species, the vast majority of visible plants are Black-eyed Susan (*Rudbeckia hirta*), with other competitive species including, *Coreopsis lanceolata Penstemon digitalis*, and *Monarda fistulosa* occasionally seen. Plots started from plugs continue to show more diversity. Most of the 21 species planted at the start of the project remain, although some individuals of the weaker species have not survived.

Early in the first summer after planting, differences between soil preparation methods were visible in the spring-seeded plots, with the 'glyphosate & rake' method having a higher weed density. By mid-summer, however, weed pressure was equally high in all plots. Annual and perennial weeds were competitive in all plots, but non-native grasses were particularly problematic. A thick infestation of crabgrass formed a dense canopy, smothering the native meadow species. In late July, we mowed the plots. The wildflowers regrew and many bloomed in late summer. Now in their second year of growth, weed pressure in the plots is considerably reduced but some plots have large bare areas (taken up by annual weeds last year) and species diversity has been reduced as some of the smaller and more delicate native species did not survive the difficult first year.

Fall-planted plots, planted last September, are now in their first summer of growth. The extended site-preparation methods used in these plots were designed to eliminate stubborn perennial weeds and deplete the soil weed seed bank. So far this year, we have seen very few perennial weeds in these plots. Annual weeds, such as chickweed and

Native wildflower and grass species for New England meadows

- *Agastache foeniculum*
- *Aquilegia canadensis*
- *Asclepias syriaca*
- *Asclepias tuberosa*
- *Aster noviae angliae*
- *Coreopsis lanceolata*
- *Echinacea purpurea*
- *Elymus virginicus*
- *Epilobium angustifolium*
- *Eupatorium purpureum*
- *Festuca rubra*
- *Heliopsis helianthoides*
- *Liatris spicata*
- *Lobelia cardinalis*
- *Lupinus perennis*
- *Monarda fistulosa*
- *Penstemon digitalis*
- *Petalostemum candida*
- *Ratibida pinnata*
- *Rudbeckia hirta*
- *Schizachyrium scoparium*
- *Solidago juncea*
- *Solidago speciosa*
- *Sorghastrum nutans*
- *Verbena hastata*
- *Vernonia altissima*

speedwell are present in all plots, but the plugs and meadow seedlings are growing quickly and may successfully out-compete these weeds. Similar to the spring-planted plots, fall-planted plots started from seed are dense, but are lacking in species diversity. *Rudbeckia hirta* and the native meadow grass, *Festuca rubra*, occupy most of the space. Plots started from plugs remain diverse, with most of the planted species surviving.

A wildflower meadow is a diverse ever-changing plant community. Long-term success of the meadow plantings cannot be evaluated after only one or two seasons of growth. With a grant recently received from the UNH College of Agriculture and Life Science through the Anna and Raymond Tuttle Environmental Horticulture Fund, we will continue to observe and evaluate long-term species composition changes in the plots. Future research will build on this initial study to address weed control issues and other challenges faced in establishment of a strong, diverse New England meadow.

Seedling identification guide: A wildflower reference garden was created at the UNH Woodman Horticultural farm in spring of 2011 to aid in the identification of wildflower species in meadow plantings. The garden features 48 species of native perennial wildflowers and 8 species of native grasses. During the past year, we have documented the growth and development of each species as the plants have grown from seedlings to mature plants through weekly photographs. We have focused on photographing the dramatic structural changes that many perennial species undergo as they transition from vegetative to flowering plants. We have amassed a large collection of photographs which will be a valuable tool to aid in identification of wildflower species at vegetative stages when many species look very different from the flowering plants featured in other wildflower identification references. Development of a web-based guide to identifying native wildflowers is underway with an official launch planned for later this year.

Penstemon digitalis transitions from a vegetative seedling to a mature flowering plant in the UNH Wildlower Reference Garden.

For more information, see **The Plantsman** articles in February-March 2011 and October-November 2011 issues. If you'd like to see our plots and visit the reference garden, please contact us (amy.papineau@unh.edu or cathy.neal@unh.edu); we'd love to show you around!

NH Horticulture Endowment

Financial Report: 1/1/11 through 12/31/11

Checking account balance: 1/1/11	$12,116.59
Income	
Fafard Soil Bag fundraiser	$2,614.00
NHPGA dues donations	$825.00
	$3,439.00
Expenses	
Admin. Asst.	$390.00
Grant	$4,000.00
Office supplies, postage, Printing	$322.44
	$4,712.44
Income Less Expenses:	**($1,273.44)**
Checking Account Balance: 12/31/11	$10,843.15
MFS Mutual Fund Value: 1/1/11	$18,094.50
MFS Mutual Fund Value: 12/31/11	$18,437.58
Income (loss):	$343.08
NH Charitable Foundation: 1/1/11	$110.584.34
NH Charitable Foundation: 12/31/11	$107,653.91
Income (loss):	($2,930.43)
Net Gain (loss) 1/1/11 – 12/31/11	($3,860.79)
Total assets 1/1/11	$140,795.43
Total Assets 12/31/11	**$136,934.64**

NHPGA Container Mix Program:

NHPGA members raised over $2,600 dollars in the past year for the NHHE Endowment fund. One dollar from the sale of every bag goes to research that benefits NH Growers. To learn more about selling the container mix please contact John Gerkin at Gerkin Horticultural Sales jgerken2009@hotmail.com, 603-357-3734 office or 603-770-1742 cell

Donors to Date:

Pacesetting $10,000 plus

*Pleasant View Gardens

Leading $5,000 to $9,999

First Pioneer Farm Credit
*Ledgewood Farm
*Newton Greenhouses

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Ball Seed Company
*D.S. Cole Growers, Inc.
*Griffin Greenhouse and Nursery Supply
New Hampshire Landscape Association
*Spider Web Gardens
*Van Berkum Nursery
W.H. Milikowski, Inc.

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Cavicchio Greenhouses, Inc.
*Champions of NH Farms/ NH Dept. Of Agriculture
*Deerfield Gardens
*Demers Garden Center
Durham Garden Club
Edgewater Farm
*Garrison Hill Florists, Inc.
*Goldstar Wholesale Nursery, Inc.
*Hortica (formerly known as Florist's Mutual Insurance Company)
*Outdoor World
*Prides Corner Farm, Inc.
*Rimol Greenhouse Systems, Inc.
*Rolling Green Nursery
*Round Table Farm Greenhouse
*Stratham Circle Nursery and Landscape
*Trugreen Landcare (Formerly *Coronis Landscaping, Inc.)
Wentworth Greenhouses

Supporting $500 to $999

*Berger Peat Moss, Inc.
*Berger's Springledge Nursery
*Bergevin's Greenhouse
*Charter Oak Landscape & Nursery Sales
*Davis Brook Farm
*Ellison's Greenhouse
McSherry's Nursery
*Kathan Gardens
Millican Nurseries
* Nancy E. Adams
*Nancy Carlisle Interior Plantings
The Mixed Border Nursery
*New England Anemones
*Wayside Farm

Special $300 to $499

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*Bayberry Nursery
*Belknap Landscape Co., Inc.
*Blackberry Farm
*Colby Hines Contracting
*Davis Engineering
*Deer Cap Greenhouse
*Fred C. Gloeckner Company
*Gillyflower Glen
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*Neva Dun Farm
NH Association of County Extension Agents
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*Sunderman Manufacturing Company
*The Green Thumb of North Haverhill
*Uncanoonuc Mt. Perennials
*Weir Tree Farm

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*Environments
French Farm
Frizzhome Gardens
Garden Center of Epping
* Ginny Hast
Goudreault Farm
*Greenstuff
*Growing Things
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*Meredith Gardens
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Northeast Landscaping
Parkwood Farm
Pure Barnyard
*Putnam's Flowers & Gifts
*Revay's Garden Center
*Ronald B. Laurence, P.E. Consultant
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