Planting Pollinator Habitat – Species Selection, Site Prep, Planting and Maintenance

University of New Hampshire Cooperative Extension

Native Bees

4,000+ native bee species in North America
Over 250 species in northern New England

Native bees are effective pollinators
Most are generalists, some specialists

Background http://u.osu.edu/thebuzz/

Nesting Sites

Food Resources

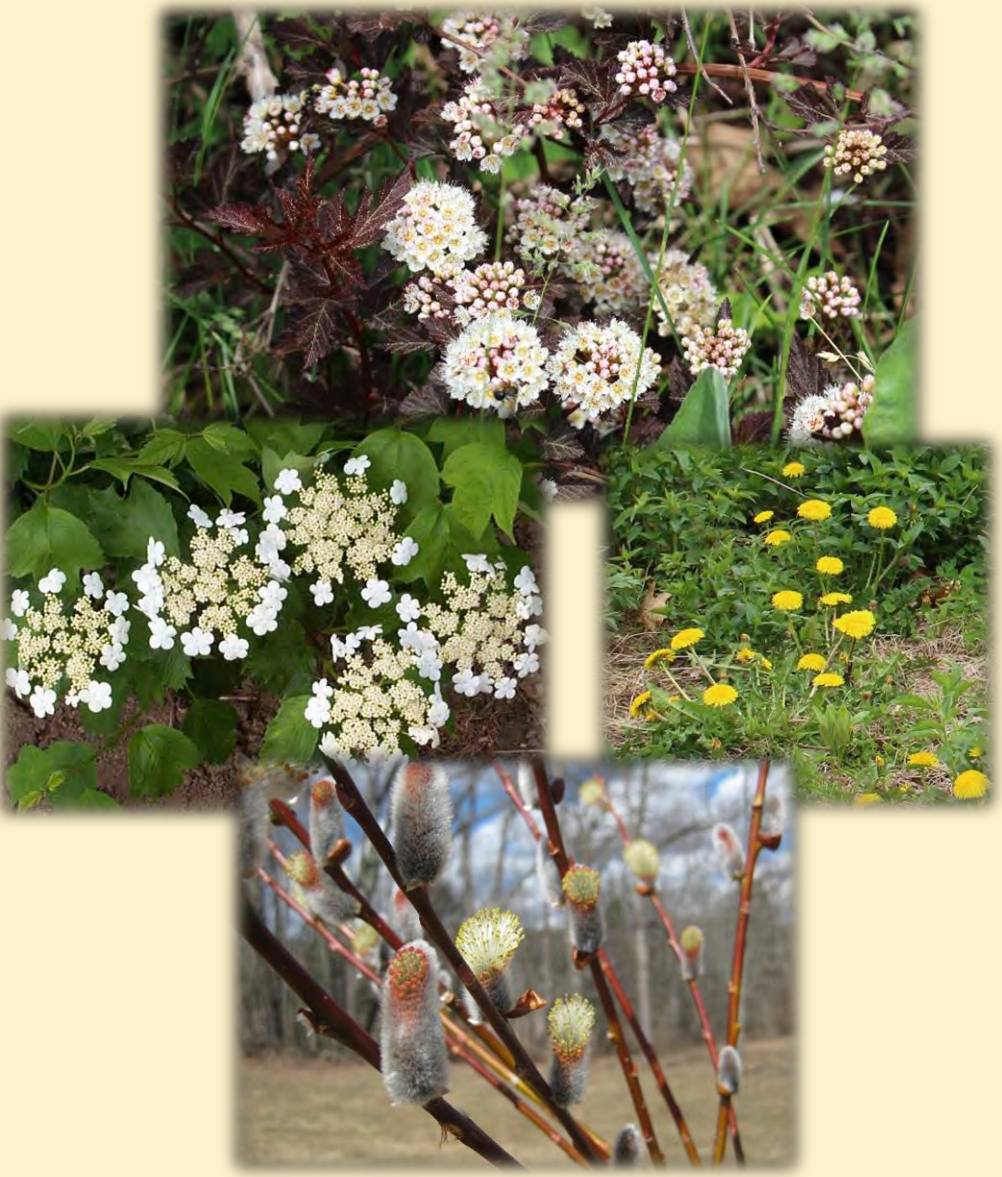
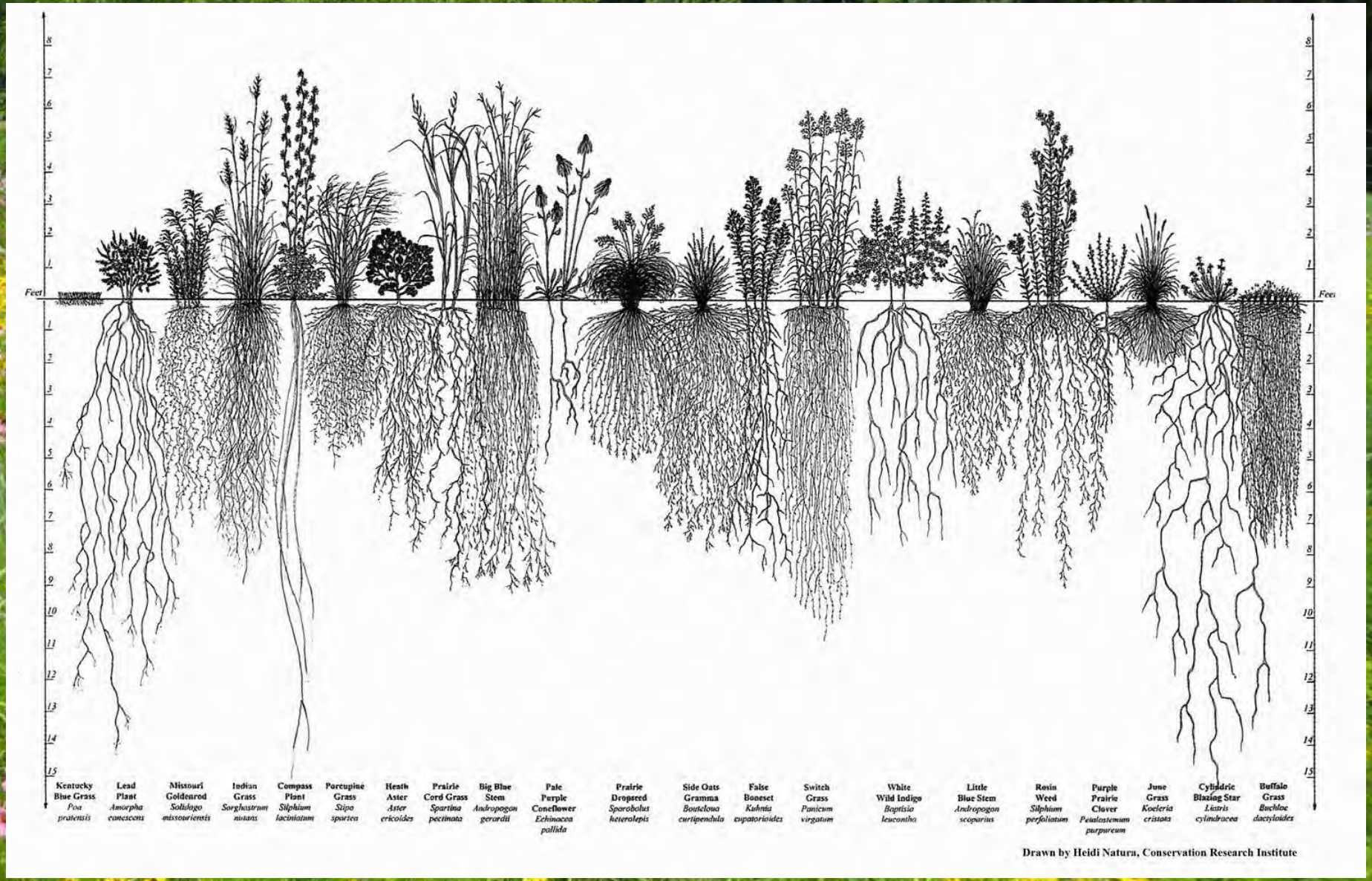


Image courtesy of Prairie Nursery



Our First Meadow


July 21, 2011


Aug., 2012

Site Selection

- Away from pesticide drift
- Open space with full sun
- Poor soil is ok
- At least 20’ x 20’
- Viewed from a distance

Site Preparation

- ✓ **Spend** an entire season
- ✓ **Use Best Methods**

Tillage?
Herbicide?
Smothering?
Solarization?

Site Preparation

Smothering (light exclusion)
black plastic

Solarization (heat treatment)
clear plastic

Seeding

Mix seed with moist carrier
Distribute evenly by hand or use seeder
Roll for good seed-soil contact
Mulch lightly
Be patient

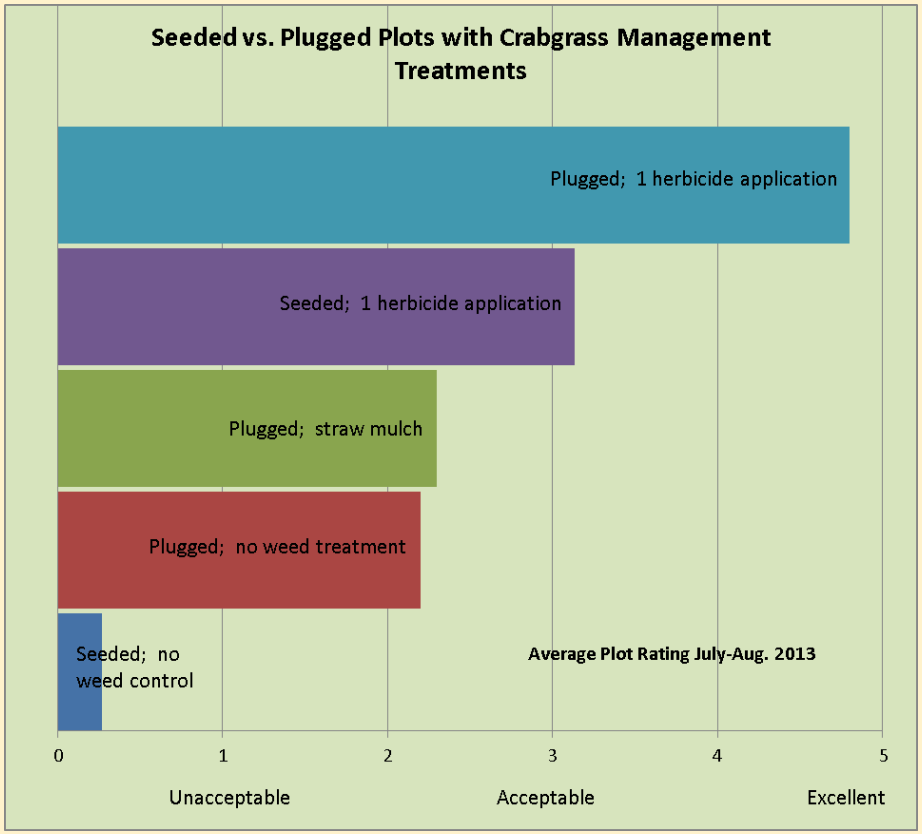
Year 2

Year 1

Year 3

Crabgrass Management Strategies

- Planting method
  - Seeds vs plugs
- Weed management
  - none - control
  - straw mulch <plugs>
  - mowing <seeds>
  - selective grass herbicide
    - Poast™ + crop oil applied to crabgrass July 8



Using Plugs or Transplants

✓ Advantages

Faster establishment
More competitive with weeds
More species diversity
Some flower the first year

✓ Disadvantages

More work
Need water
Expensive
Availability/minimum orders

Weed control year 1

Seeded plots (14 months later) Plugged plots

No weed control year 1

Species Selection/ Seed Mixes

Recommended seed list for trial on medium to dry sites in NH

	UNH custom Mix	Basic Mix	Options
Wildflowers (60-70% of mix by wt.)	Med-Dry Soils	for Med-Dry soils	(choices or additions)
Agastache foeniculum	Lavender Hyssop	x	
Aguilegia canadensis	Red Columbine		x
Asclepias syriaca	Common Milkweed	x	
Asclepias tuberosa	Butterfly Milkweed		x
Coreopsis lanceolata	Lanceleaf Coreopsis	x	
Echinacea pallida	Pale Purple Coneflower		x
Echinacea purpurea	Purple Coneflower	x	
Eupatorium perfoliatum	Boneset		x
Eutrochium purpureum	Sweet Joe Pye	x	
Heliopsis helianthoides	Oxeye Sunflower	x	
Liatris spicata	Dense Blazing Star	x	
Liatris pycnostachya	Prairie Blazingstar		x
Monarda fistulosa	Wild Bergamot	x	
Oligoneuron rigidum	Stiff Goldenrod	x	
Solidago speciosa	Showy Goldenrod		x
Ratibida pinnata	Yellow coneflower	x	
Rudbeckia hirta	Black Eyed Susan	x	
Symphyotrichum laeve	Smooth Blue Aster		x
Symphyotrichum novae-angliae	New England Aster	x	
Vernonia noveboriensis	New York Ironweed		x
Grasses (30-40% of mix by wt.)			
Elymus canadensis	Canada Wildrye	x	
Elymus virginicus	Virginia Wildrye		x
Shizachyrium scoparium	Little Bluestem	x	
Sorghastrum nutans	Indian Grass	x	

Commercial Wildflower Mixes

- 17-25 wildflower species plus 3-5 native grasses

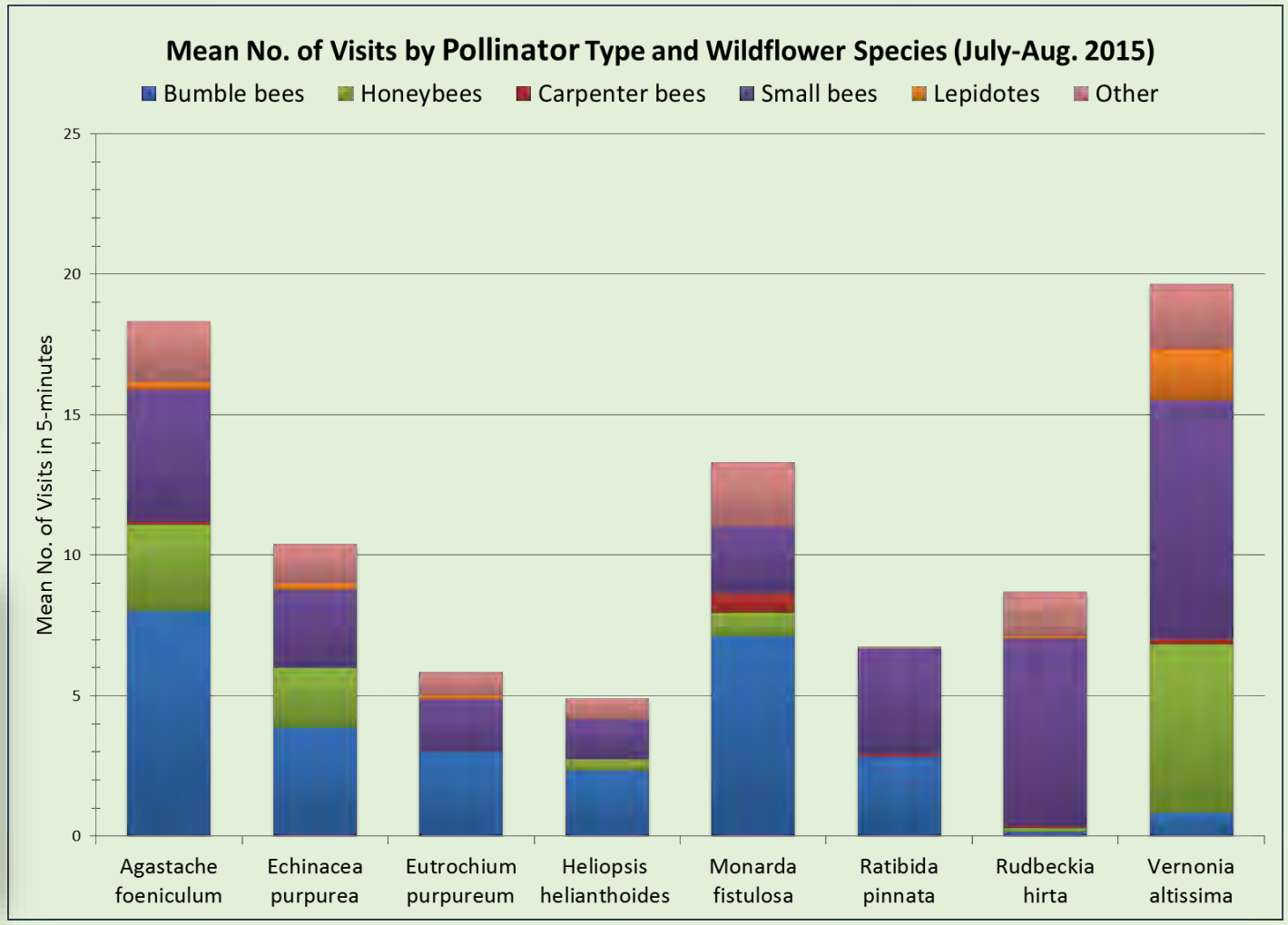
- Average seeding rate = 13 lbs/A or 0.3 lbs/1000ft^2
  Average seed cost = $1450/acre or $49/1000 ft^2

- Average plug cost $1.13
  @ 1 per square feet = $1130/1000ft^2
  @ 1 per 4 square feet = $282/1000ft^2

Wildflower Phenology Chart

Species	Common Name	Average Bloom Period (2013-15) in Durham, NH
Zizia aurea	Golden Alexanders	
Aquilegia canadensis	Wild Columbine	
Lupinus perennis	Wild Lupine	
Tradescantia ohiensis	Ohio Spiderwort	
Baptisia australis	Blue Wild Indigo	
Penstemon digitalis	Foxglove Beardtongue	
Coreopsis lanceolata	Lanceleaf Coreopsis	
Echinacea pallida	Pale Purple Coneflower	
Rudbeckia hirta	Black Eyed Susan	
Agastache foeniculum	Lavender Hyssop	
Asclepias syriaca	Common Milkweed	
Heliopsis helianthoides	Ox Eye Sunflower	
Asclepias tuberosa	Butterfly Milkweed	
Baptisia tinctoria	Yellow Wild Indigo	
Dalea purpurea	Purple Prairie Clover	
Echinacea purpurea	Purple Coneflower	
Parthenium integrifolium	Wild Quinine	
Senna hebecarpa	American Senna	
Pycnanthemum virginianum	Virginia Mountain Mint	
Ratibida pinnata	Yellow Coneflower	
Rudbeckia fulgida	Orange Coneflower	
Allium cernuum	Nodding Wild Onion	
Liatris spicata	Dense Blazing Star	
Verbena hastata	Blue Vervain	
Lobelia cardinalis	Cardinal Flower	
Monarda fistulosa	Wild Bergamot	
Eryngium yuccifolium	Rattlesnake Master	
Liatris pycnostachya	Prarie Blazingstar	
Eutrochium purpureum	Sweet Joe-Pye	
Rudbeckia subtomentosa	Sweet Black Eyed Susan	
Rudbeckia triloba	Brown Eyed Susan	
Vernonia altissima	Ironweed	
Solidago juncea	Early Goldenrod	
Solidago graminifolia	Flat-topped Goldenrod	
Oligoneuron rigidum	Stiff Goldenrod	
Gentiana clausa	Closed Gentian	
Solidago speciosa	Showy Goldenrod	
Symphotrichum laeve	Smooth Aster	
Symphotrichum novae-angliae	New England Aster	

Monitoring Pollinator Preferences



Maintaining the Meadow

Year 1

Mid-summer mowing to cut back weeds before they go to seed; mow high (4-6”)

No water, fertilizer, sprays are needed.

Maintaining the Meadow

Year 3+

Mow in late fall – every other year?

Leave the debris

Cut out invasive plants by hand

Make it part of your Farmscape

Take it to your Landscape

Ento.psau.edu/pollinators/public-outreach/cert/

Agriculture

- Agricultural Business
- Dairy, Livestock, & Poultry
- Field and Forage Crops
- Food Safety
- Fruit & Vegetable Production
- Greenhouse & Floriculture
- Integrated Pest Management
- Nursery & Landscape
  - Conference & Workshop Proceedings
  - Nursery Crop Production
  - Sustainable Landscapes
  - Wildflower Meadows
    - Pollinator Habitat
    - Wildflower Guide
- Pesticide Safety Education Program
- Problem Diagnosis and Testing Services

Wildflower Meadows

Why Wildflower Meadows? They are beautiful and tie your landscape in to the surrouonding environment. Adding even a small area of native wildflowers and meadow grasses to your property provides habitat for pollinators, birds, and other wildlife, serves as an infiltration area for storm water, and prevents soil erosion, making them valuable components of sustainable landscapes. Once properly planted and maintained over a season or two, they require almost no inputs of water, fertilizer, or energy. Compare this to a well-manicured lawn, which needs frequent watering, annual fertilization, and heavy use of pollution-producing mowers and lawn trimmers.

But, they are challenging to start successfully. Our research is identifying the most efficent and economical ways to start a meadow planting - which species work best, how to start from seed or plugs, how to prepare the site, how to address weed management, mowing, etc. Many farms, public and private land managers are very interested in planting wildflowers for bee habitat and we are monitoring bee activity in our research plots as well. More....

The following reports and fact sheets provide more information on establishing wildflower meadows and pollinator habitat

- Planting for Pollinators in Northern New England: Recommendations for Establishing a Wildflower Meadow - a poster presentation for the First National Conference on Protecting Pollinators in Ornamanetal Landscapes; Oct. 12-14, 2015. Includes information on species selection, site preparation, planting, and pollinator preferences. NEW!
- Flowering Calendar for Wildflower Species in Southern New Hampshire - use this calendar to select and combine species to provide flowers in bloom from early spring through late fall. Color bars indicate flower colors. NEW!
- Wildflowers for New England Meadows and Pollinator Plantings - A detailed list of wildflower species that have performed well in our meadows and at other sites around NH. Use this list as a starting point for designing a wildflower meadow or pollinator garden of your own. Revised in 2015.
- Wildflower Identification Guide for New England Meadows - An online guide for recognizing wildflowers before they bloom, from seedlings through mature plants, with lots of pictures. This will help you identify wildflowers you plant from seed, while they are still small and hard to tell apart from the

Pollinator Favorites

The species shown (left) were the top five pollinator plants during mid to late summer (July-Aug. 2015). They are high value pollinator plants because they bloom over a long period of time and/or attract large numbers of bees when in bloom.

extension.unh.edu/wildflower-guide