**Native Meadow Mix B** seeded in the Native Meadow Trials at the Hudson Valley Farm Hub in May 2017

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Flowering Period</th>
<th>Native Range</th>
<th>Percent of mix by volume (seed/ft²)</th>
<th>Trend in Abundance from 2018-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn Bentgrass</td>
<td><em>Agrostis perennans</em></td>
<td>NY, etc.</td>
<td>15.0%</td>
<td>down, occasional</td>
<td></td>
</tr>
<tr>
<td>Big Bluestem</td>
<td><em>Andropogon geradii</em></td>
<td>NY, etc.</td>
<td>6.4%</td>
<td>up, dominant</td>
<td></td>
</tr>
<tr>
<td>Blackeyed Susan</td>
<td><em>Rudbeckia hirta</em></td>
<td>July (into Sept)</td>
<td>Eastern and Central NA, prob. not NY</td>
<td>6.3%</td>
<td>down, but still dominant in one plot</td>
</tr>
<tr>
<td>Canada Wildrye</td>
<td><em>Elymus canadensis</em></td>
<td>NY, etc.</td>
<td>10.7%</td>
<td>same, common</td>
<td></td>
</tr>
<tr>
<td>Indiangrass</td>
<td><em>Sorghastrum nutans</em></td>
<td>NY, etc.</td>
<td>6.7%</td>
<td>same, common</td>
<td></td>
</tr>
<tr>
<td>Lance Leaved Coreopsis</td>
<td><em>Coreopsis lanceolata</em></td>
<td>June-July (into Sept)</td>
<td>Eastern and Central NA, prob. not NY</td>
<td>3.2%</td>
<td>down, occasional</td>
</tr>
<tr>
<td>Little Bluestem</td>
<td><em>Schizachyrium scoparium</em></td>
<td>NY, etc.</td>
<td>16.0%</td>
<td>down, occasional</td>
<td></td>
</tr>
<tr>
<td>Partridge Pea</td>
<td><em>Chamaecrista fasciculata</em></td>
<td>Aug-Sept</td>
<td>NY, etc.</td>
<td>1.1%</td>
<td>occasional</td>
</tr>
<tr>
<td>Purple Coneflower</td>
<td><em>Echinacea purpurea</em></td>
<td>July (into Sep.)</td>
<td>Eastern NA, prob. not NY</td>
<td>5.3%</td>
<td>down, occasional</td>
</tr>
<tr>
<td>Purple Lovegrass</td>
<td><em>Eragrostis spectabilis</em></td>
<td>NY, etc.</td>
<td>1.3%</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Purple Prairie Clover</td>
<td><em>Dalea purpurea</em></td>
<td>June</td>
<td>Central NA</td>
<td>2.1%</td>
<td>down, not seen in 2020</td>
</tr>
<tr>
<td>Purpletop</td>
<td><em>Tridens flavus</em></td>
<td>NY, etc.</td>
<td>16.4%</td>
<td>down, occasional</td>
<td></td>
</tr>
<tr>
<td>Slender Lespedeza</td>
<td><em>Lespedeza virginiana</em></td>
<td>July?</td>
<td>Eastern and Central NA, prob. not NY</td>
<td>1.1%</td>
<td>down, not seen in 2020</td>
</tr>
<tr>
<td>Switchgrass</td>
<td><em>Panicum virgatum</em></td>
<td>NY, etc.</td>
<td>8.5%</td>
<td>same, common</td>
<td></td>
</tr>
</tbody>
</table>
**Native Meadow Mix A** seeded in Native Meadow Trials at the Hudson Valley Farm Hub in May 2017

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Flowering Period</th>
<th>Native Range</th>
<th>Percent of mix by volume (seed/ft²)</th>
<th>Trend in Abundance 2018-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackeyed Susan</td>
<td><em>Rudbeckia hirta</em></td>
<td>July (into Sept)</td>
<td>Eastern and Central NA, prob. not NY</td>
<td>6.5%</td>
<td>down, but still common</td>
</tr>
<tr>
<td>Browneyed Susan</td>
<td><em>Rudbeckia triloba</em></td>
<td>Aug-Sept</td>
<td>Eastern NA, prob. not NY</td>
<td>2.2%</td>
<td>same, occasional and patchy</td>
</tr>
<tr>
<td>Butterfly Milkweed</td>
<td><em>Asclepias tuberosa</em></td>
<td>June (into Sept)</td>
<td>NYS, etc.</td>
<td>1.1%</td>
<td>same, sparse</td>
</tr>
<tr>
<td>Common Milkweed</td>
<td><em>Asclepias syriaca</em></td>
<td>July</td>
<td>NYS, etc.</td>
<td>1.1%</td>
<td>same, sparse</td>
</tr>
<tr>
<td>Dense Blazingstar</td>
<td><em>Liatris spicata</em></td>
<td>August</td>
<td>Eastern NA, prob. not NY</td>
<td>1.1%</td>
<td>same, sparse and patchy</td>
</tr>
<tr>
<td>Early Goldenrod</td>
<td><em>Solidago juncea</em></td>
<td>August</td>
<td>NYS, etc.</td>
<td>3.2%</td>
<td>up, common</td>
</tr>
<tr>
<td>Joe Pye Weed</td>
<td><em>Eupatorium purpureum</em></td>
<td>Aug-Sept</td>
<td>NYS, etc.</td>
<td>1.0%</td>
<td>none</td>
</tr>
<tr>
<td>Lance Leaved Coreopsis</td>
<td><em>Coreopsis lanceolata</em></td>
<td>June-July (2nd fl period: Aug-Sept)</td>
<td>Eastern and Central NA, prob. not NY</td>
<td>8.6%</td>
<td>down, common, but patchy</td>
</tr>
<tr>
<td>Lavender Hyssop</td>
<td><em>Agastache foeniculum</em></td>
<td>August</td>
<td>Midwest</td>
<td>8.6%</td>
<td>up, occasional</td>
</tr>
<tr>
<td>Little Bluestem</td>
<td><em>Schizachyrium scoparium</em></td>
<td></td>
<td>NYS, etc.</td>
<td>19.4%</td>
<td>up, common, but patchy</td>
</tr>
<tr>
<td>Mistflower</td>
<td><em>Eupatorium coelestinum</em></td>
<td>Sept-Oct</td>
<td>Eastern NA, prob. not NY</td>
<td>6.5%</td>
<td>down, occasional and patchy</td>
</tr>
<tr>
<td>Narrowleaf Mountainmint</td>
<td><em>Pycnanthemum tenuifolium</em></td>
<td>July</td>
<td>NYS, etc.</td>
<td>3.8%</td>
<td>same, sparse</td>
</tr>
<tr>
<td>New England Aster</td>
<td><em>Aster novae-anglae</em></td>
<td>Sept-Oct</td>
<td>NYS, etc.</td>
<td>2.1%</td>
<td>up, common</td>
</tr>
<tr>
<td>Ohio Spiderwort</td>
<td><em>Tradescantia ohiensis</em></td>
<td>May-July</td>
<td>Eastern and Central NA, prob. not NY</td>
<td>2.2%</td>
<td>up, occasional</td>
</tr>
<tr>
<td>Partridge Pea</td>
<td><em>Chamaecrista fasciculata</em></td>
<td>Aug-Sept</td>
<td>NYS, etc.</td>
<td>2.2%</td>
<td>same, occasional</td>
</tr>
<tr>
<td>Purple Coneflower</td>
<td><em>Echinacea purpurea</em></td>
<td>July (into Sep.)</td>
<td>Eastern NA, prob. not NY</td>
<td>4.3%</td>
<td>same, common</td>
</tr>
<tr>
<td>Purple Prairie Clover</td>
<td><em>Dalea purpurea</em></td>
<td>June</td>
<td>Central NA</td>
<td>2.2%</td>
<td>same, sparse</td>
</tr>
<tr>
<td>Roundhead Lespedeza</td>
<td><em>Lespedeza capitata</em></td>
<td>July-Aug</td>
<td>NYS, etc.</td>
<td>1.1%</td>
<td>same, sparse</td>
</tr>
<tr>
<td>Showy Goldenrod</td>
<td><em>Solidago speciosa</em></td>
<td>Sept-Oct</td>
<td>NYS, etc.</td>
<td>2.3%</td>
<td>up, common</td>
</tr>
<tr>
<td>Slender Lespedeza</td>
<td><em>Lespedeza virginiana</em></td>
<td>July?</td>
<td>Eastern and Central NA, prob. not NY</td>
<td>2.1%</td>
<td>same, sparse</td>
</tr>
<tr>
<td>Smooth Blue Aster</td>
<td><em>Aster laevis</em></td>
<td>Sept-Oct</td>
<td>NYS, etc.</td>
<td>2.1%</td>
<td>same, occasional</td>
</tr>
<tr>
<td>Tall White Beardtongue</td>
<td><em>Penstemon digitalis</em></td>
<td>June</td>
<td>NYS, etc.</td>
<td>9.7%</td>
<td>up, occasional, but patchy</td>
</tr>
<tr>
<td>Wild Bergamot</td>
<td><em>Monarda fistulosa</em></td>
<td>July</td>
<td>NYS, etc.</td>
<td>6.7%</td>
<td>up, dominant</td>
</tr>
</tbody>
</table>
NMT 1A through its first year (2017)

12-April-2017 (3 harrowings)

19-May-2017 seeding

12-June-2017

3-July-2017 (mowed 6 July)

11-July-2017 (mowed 28 July)

4-Aug-2017 (mowed 15 August)

11-Sep-2017 (after 3 cuts)

3-Nov-2017

14-Dec-2017
NMT 1A through its second year (2018)

- March - April 2018: Selective weeding
- May 2018
- June - July 2018
- August 2018
- September 2018

Photos:
- 25-March-2018
- 18-July-2018
- 13-Sept-2018
- 27-April-2018
- 10-July-2018
- 19-June-2018
- 9-Aug-2018
- 27-March-2018
- 8-June-2018
NMT 1A in its third year (2019)

17-April-2019

22-May-2019

27-June-2019

15-July-2019

14-Aug-2019

20-Sept-2019

Percent Cover of Flowers

2018

LL Coreopsis
Blk-eye S.
Monarda
NEAster
Brn-eye S.
Part. Pea

2019

2020
Evolution of Plant Composition in Native Meadow Trials

Seeded Species

Mix A: seeded

- Black-eyed Susan
- Lance-leaved Coreopsis
- Wild Bergamot
- other seeded spp.
- all seeded spp.

Mix B: seeded

- Black-eyed Susan
- Lance-leaved Coreopsis
- seeded grasses
- other seeded spp.
- all seeded spp.

Wild Species

Mix A: wild

- Crabgrass
- Horseweed
- Cottonwood
- other wild species
- all wild species

Mix B: wild

- Crabgrass
- Horseweed
- Cottonwood
- other wild species
- all wild species

Control (wild)

- Crabgrass
- Horseweed
- Cottonwood
- other wild species
- all wild species
Average Cumulative Flower Abundance in the three Treatments in 2018

- Mix A
- Mix B
- Control

Average Cumulative Flower Abundance in the three Treatments in 2019

- Mix A
- Mix B
- Control

Average Cumulative Flower Abundance in the three Treatments in 2020

- Mix A
- Mix B
- Control
Comparison of Native Meadow Trials on 8 July 2020

drone images courtesy of Oceans8/ Jon Bowermaster

NMT1:
- **Mix A**
- **Mix B**
- **Control**

Homogeneous silt clay

NMT2:
- **Mix B**
- **Control**
- **Mix A**

Homogeneous sandy

NMT3:
- **Control**
- **Mix A**
- **Mix B**

Patchy soil, incl areas of poor drainage
DOES IT ‘WORK’? IF YOU BUILD IT, DO THEY COME?

How does one define if it is ‘working’?

- Pretty Flowers
- Low Maintenance
- Support Biodiversity
- Support Farm Production

Remember:
- Seed Mix A = High # of Flowers, Low # of Grasses
- Seed Mix B = Low # of Flowers, High # of Grasses
- Fallow Control = No seeding, similar management

Do the wild flower plantings support insect biodiversity? Perhaps in some cases.

![Graph showing number of taxa for different categories and treatments]

2018-2019 data

Do the wild flower plantings support farm production?

A. Flowers attract beneficials / discourage pests (net benefit balance).

B. Those creatures are shared with adjacent crops.

C. Those crops respond in a positive way.
A. Which creatures come to these plots?

Circled taxa seem to have consistent responses across years.

2018-2019

“Beneficials”

“Pests”

2020
B. What seeps over into adjacent veggie plots?

C. What do the adjacent veggies think of all this?

**BUTTERNUT SQUASH**

<table>
<thead>
<tr>
<th></th>
<th>Average No. of Ripe Squash per Bed</th>
<th>Mean Squash Weight (lbs)</th>
<th>Total Harvest from Treatment (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed Mix A</td>
<td>81.7</td>
<td>41.7</td>
<td>4</td>
</tr>
<tr>
<td>Seed Mix B</td>
<td>91.3</td>
<td>48.3</td>
<td>4.1</td>
</tr>
<tr>
<td>Fallow Control</td>
<td>97.7</td>
<td>58.3</td>
<td>4.5</td>
</tr>
</tbody>
</table>

In terms of total harvest, in both 2019 and 2020, total Butternut Squash harvest in Mix A was a bit over 70% of the harvest from next to the Fallow Control; Seed Mix B harvest was around 80% of that from adjacent to the Fallow Control. There is no indication that Seed Mix A helps adjacent organic squash production in this farm’s landscape.
SWEET CORN (2020 only)

<table>
<thead>
<tr>
<th></th>
<th>Leaves &amp; Stalks</th>
<th>Cob Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Holes (# of leaves, out of five)</td>
<td>Specks (# of leaves out of five)</td>
</tr>
<tr>
<td>Seed Mix A</td>
<td>1.47</td>
<td>1.2</td>
</tr>
<tr>
<td>Seed Mix B</td>
<td>1.89</td>
<td>2.11</td>
</tr>
<tr>
<td>Fallow Control</td>
<td>2.17</td>
<td>1.94</td>
</tr>
</tbody>
</table>

ECB = European Corn Borer a major corn pest

Cob or ear weight from adjacent to Seed Mix A averaged about 15% heavier and leaves (and cobs?) had lower damage, although stink bug damage to kernels (=“punctures”? ) may have been higher…. A hint of a positive effect – needs repeating.

Conclusions

- Yes, one can establish native wild flower meadows organically on a farm such as this, although not without effort.
- Those meadows attract some beneficials but perhaps not others (no doubt dependent on specifics of flower mix and planting locations)
- Net effect on adjacent crops is unclear, may be negative in some cases, perhaps positive in others, perhaps neutral in yet others.
- There are other reasons to plant native wild flowers (aesthetics, conservation), but effects on the production of nearby crops is likely nuanced and very dependent on the crops, the specific farm system, and the landscape in which the farm is embedded.