

Seed A Legacy Program

Iowa Monarch Butterfly Mix

2020

Species	Scientific Name	Suggested Seeding Rates	PLS lbs per acre	PLS seeds per sq ft	% of Mixture PLS	COC	Bloom Period	Pollinator Value
Big Bluestem, VNS	<i>Andropogon gerardii</i>	--	0.100	0.33	0.99%	5	--	--
Canada Blue Jointgrass	<i>Calamagrostis canadensis</i>	--	0.007	0.62	1.85%	6	--	--
Canada Wildrye	<i>Elymus canadensis</i>	--	0.500	1.31	3.92%	5	--	--
Little Bluestem, VNS	<i>Schizachyrium scoparium</i>	--	0.350	1.93	5.80%	4	--	--
Plains Oval Sedge, Native Source	<i>Carex brevior</i>	0.01 - 0.05	0.030	0.45	1.34%	3	--	--
Prairie Dropseed	<i>Sporobolus heterolepis</i>	--	0.030	0.18	0.53%	7	--	--
Prairie Junegrass	<i>Koeleria pyramidata</i>	--	0.015	0.80	2.39%	6	--	--
Rough or Tall Dropseed	<i>Sporobolus clandestinus</i>	--	0.090	0.99	2.97%	3	--	--
Sideoats Grama, Native Source	<i>Bouteloua curtipendula</i>	--	0.400	1.46	4.38%	5	--	--
Anise Hyssop	<i>Agastache foeniculum</i>	0.003 - 0.015	0.020	0.66	1.98%	--	3	5
Annual or Common Sunflower, Native Source	<i>Helianthus annuus</i>	0.08 - 0.2	0.010	0.01	0.03%	--	3	5
Aromatic Aster	<i>Aster oblongifolius</i>	0.001 - 0.01	0.008	0.95	2.84%	5	3	5
Ashy Sunflower, Native Source	<i>Helianthus mollis</i>	0.01 - 0.04	0.030	0.14	0.42%	--	3	5
Blackeyed Susan	<i>Rudbeckia hirta</i>	0.01 - 0.1	0.030	1.09	3.25%	3	2	1
Blanketflower - G. aristata	<i>Gaillardia aristata</i>	0.04 - 0.2	0.200	0.86	2.57%	5	1	4
Blue Vervain, Native Source	<i>Verbena hastata</i>	0.008 - 0.03	0.030	1.04	3.10%	4	2	5
Butterfly Milkweed	<i>Asclepias tuberosa</i>	0.01 - 0.04	0.020	0.03	0.10%	6	2	5
Canada Milkvetch	<i>Astragalus canadensis</i>	0.02 - 0.15	0.060	0.37	1.12%	5	2	4
Canada Tick-trefoil, Native Source	<i>Desmodium canadense</i>	0.01 - 0.03	0.030	0.06	0.18%	5	2	5
Clasping Coneflower	<i>Rudbeckia amplexicaulis</i> or <i>Dracopis amplexicaulis</i>	0.01 - 0.05	0.030	1.10	3.30%		1	2
Common Evening Primrose, Native Source	<i>Oenothera biennis</i>	0.005 - 0.04	0.020	0.63	1.89%	1	2	4
Common Milkweed, Nebraska Native	<i>Asclepias syriaca</i>	0.03 - 0.08	0.040	0.08	0.23%	1	2	5
Culver's Root	<i>Veronicastrum virginicum</i>	0.001 - 0.004	0.005	1.38	4.13%	9	3	4
Cup Plant, Native Source	<i>Silphium perfoliatum</i>	0.01 - 0.05	0.020	0.03	0.09%	4	2	5
Curly Top Gumweed, Native Source	<i>Grindelia squarrosa</i>	0.005 - 0.02	0.015	0.20	0.59%	--	3	5
Deer Vetch, Native Source	<i>Acmispon americanus</i> or <i>Lotus unifoliolatus</i>	0.01 - 0.04	0.020	0.03	0.10%	3	3	4
False Boneset, Native Source	<i>Brickellia eupatorioides</i>	0.005 - 0.01	0.015	0.18	0.54%	3	3	3
False or Oxeye Sunflower	<i>Heliopsis helianthoides</i>	0.03 - 0.09	0.100	0.24	0.72%	4	2	5
Foxglove Beardstongue, Native Source	<i>Penstemon digitalis</i>	0.01 - 0.03	0.015	0.14	0.41%	6	1	5
Golden Alexander, Native Source	<i>Zizia aurea</i>	0.02 - 0.04	0.028	0.10	0.31%	6	1	5
Gray Goldenrod	<i>Solidago nemoralis</i>	0.001 - 0.005	0.006	0.14	0.42%	--	3	4
Grayhead Coneflower	<i>Ratibida pinnata</i>	0.01 - 0.1	0.040	0.39	1.18%	3	2	4
Heath Aster	<i>Symphotrichum ericoides</i>	0.001 - 0.004	0.004	0.46	1.39%	3	3	5
Hoary Vervain, Native Source	<i>Verbena stricta</i>	0.01 - 0.06	0.035	0.47	1.41%	8	2	5
Illinois Bundleflower	<i>Desmanthus illinoensis</i>	0.05 - 0.25	0.180	0.35	1.05%	5	2	5
Ironweed, Native Source	<i>Vernonia fasciculata</i>	0.02 - 0.06	0.015	0.13	0.40%	4	2	5
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>	0.05 - 0.1	0.100	0.51	1.52%	--	2	4
Late or Giant Goldenrod, Native Source	<i>Solidago gigantea</i>	0.001 - 0.005	0.006	1.04	3.13%	3	3	5
Leadplant, Native Source	<i>Amorpha canescens</i>	0.025 - 0.06	0.025	0.11	0.34%		2	5
Maximillian Sunflower	<i>Helianthus maximiliani</i>	0.01 - 0.05	0.050	0.23	0.68%	4	3	5
Missouri Goldenrod, Native Source	<i>Solidago missouriensis</i>	0.001 - 0.007	0.006	0.87	2.61%	5	2	5
New England Aster	<i>Symphotrichum novae-angliae</i>	0.005 - 0.01	0.015	0.36	1.09%	4	3	5
Pale Purple Coneflower	<i>Echinacea pallida</i>	0.01 - 0.04	0.040	0.10	0.29%	--	2	5
Plains Coreopsis	<i>Coreopsis tinctoria</i>	0.01 - 0.05	0.012	0.89	2.66%	1	2	2
Plains Sunflower, Native Source	<i>Helianthus petiolaris</i>	0.01 - 0.05	0.030	0.08	0.24%	2	3	5
Prairie Aster	<i>Symphotrichum falcatum</i>	0.015 - 0.05	0.050	0.47	1.41%	--	3	5
Purple Prairieclover	<i>Dalea purpurea</i>	0.04 - 0.15	0.070	0.51	1.53%	6	2	5
Rattlesnake Master	<i>Eryngium yuccifolium</i>	0.01 - 0.04	0.020	0.08	0.24%	9	3	4
Rough Gayfeather, Native Source	<i>Liatris aspera</i>	0.01 - 0.03	0.015	0.09	0.28%	5	3	5
Rough Purple Gerardia, Native Source	<i>Agalinis aspera</i>	0.002 - 0.006	0.005	0.24	0.73%	10	2	4
Roundhead Lespedeza	<i>Lespedeza capitata</i>	0.02 - 0.05	0.030	0.12	0.36%	5	3	4
Sawtooth Sunflower	<i>Helianthus grosseserratus</i>	0.005 - 0.04	0.010	0.14	0.43%	4	3	5
Shell-leaf Penstemon, Native Source	<i>Penstemon grandiflorus</i>	0.01 - 0.04	0.015	0.07	0.22%	5	1	5
Showy Partridgepea	<i>Chamaecrista fasciculata</i>	0.1 - 0.4	0.400	0.60	1.79%	1	2	5
Showy-wand Goldenrod, Native Source	<i>Solidago speciosa</i>	0.001 - 0.008	0.008	0.79	2.36%	7	3	5
Smooth Blue Aster	<i>Symphotrichum laeve</i>	0.005 - 0.02	0.025	0.58	1.75%	5	3	5
Stiff Goldenrod, Native Source	<i>Solidago rigida</i>	0.01 - 0.02	0.020	0.31	0.93%	3	3	5
Stiff Sunflower, Native Source	<i>Helianthus pauciflorus</i>	0.01 - 0.04	0.025	0.42	1.27%	5	2	4
Sullivant's Milkweed, Native Source	<i>Asclepias sullivantii</i>	0.01 - 0.05	0.010	0.02	0.05%	7	2	5
Swamp Milkweed, Native Source	<i>Asclepias incarnata</i>	0.01 - 0.03	0.015	0.05	0.16%	--	2	5
Sweet Blackeyed Susan	<i>Rudbeckia subtomentosa</i>	0.01 - 0.03	0.030	0.51	1.52%	4	2	2
Tall Boneset, Native Source	<i>Eupatorium altissimum</i>	0.006 - 0.025	0.007	0.13	0.39%	3	3	4
Tall Cinquefoil, Native Source	<i>Drymocallis arguta</i>	0.003 - 0.008	0.006	0.51	1.52%	6	2	4
Tall Coreopsis	<i>Coreopsis tripteris</i>	0.004 - 0.01	0.015	0.57	1.70%	4	2	3

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Upright Coneflower	<i>Ratibida columnifera</i>	0.02 - 0.08	0.045	0.76	2.28%	3	2	2
Virginia Mountain Mint	<i>Pycnanthemum virginianum</i>	0.001 - 0.01	0.006	0.22	0.66%	6	2	4
Western Yarrow	<i>Achillea millefolium</i>	0.01 - 0.05	0.020	1.31	3.93%	2	1	2
White Prairieclover, Native Source	<i>Dalea candida</i>	0.04 - 0.1	0.045	0.31	0.94%	6	2	5
White Vervain, Native Source	<i>Verbena urticifolia</i>	0.002 - 0.004	0.006	0.15	0.46%	3	2	4
Wild Bergamot	<i>Monarda fistulosa</i>	0.01 - 0.03	0.030	0.88	2.63%	3	2	5
Rice Hulls - Filler for low planting rate mixtures		--	3.500	0.00	0.00%	--	--	--
Grasses Total:			1.522	8.064	24.18%			
Wildflower/Forb/Legume Total:			2.238	25.286	75.82%			
Filler Total:			3.500	0.000	0.00%			
Total Mixture:			7.260	33.349	100.00%			

Bloom Period	Wildflowers Used in Mixture	% PLS Seeding Rate of Mix
1 = April to May	6	10.74%
2 = June to July	32	39.38%
3 = August to October	23	25.70%
Total :	61	75.82%

 **4.36 Pollinator Value**

The Pollinator Value Score is determined based on a combination of factors that include:

- The pollen and/or nectar value of the plant species.
- Bee Integrated Program research results of pollinator pollen analysis
- Unique pollinator biological life histories of the plant species.
- The ability of the plant species to establish and persist in pollinator seeding mixtures.
- The total bloom period length of the plant species.
- The occurrence in early bloom periods (Bloom Period 1) that are hard to challenging to provide resources for.
- The commercial availability of the species for use in seeding mixtures.
- Value of the plant species pollen and nectar to commercial beekeepers.
- USGS Pollinator Library tool: <https://www.npwrc.usgs.gov/pollinator/home>
- The Ecoregional Revegetation Application tool: <http://www.nativerrevegetation.org/era/>
- Botanical and beekeeping reference materials that list the pollinator value of species.
- Field observations of floral resource use by pollinator species.