

Seed A Legacy Program

Kansas Monarch Butterfly Mix

Spring 2021

Species	Scientific Name	Suggested Seeding Rates	PLS lbs per acre	PLS seeds per sq ft	% of Mixture PLS	Bloom Period	Pollinator Value
Big Bluestem, VNS	<i>Andropogon gerardii</i>	--	0.150	0.50	1.45%	--	--
Canada Wildrye	<i>Elymus canadensis</i>	--	0.200	0.52	1.53%	--	--
Little Bluestem, VNS	<i>Schizachyrium scoparium</i>	--	0.200	1.11	3.23%	--	--
Plains Oval Sedge	<i>Carex brevior</i>	0.01 - 0.05	0.060	0.89	2.61%	--	--
Sideoats Grama, Native Source	<i>Bouteloua curtipendula</i>	--	0.300	1.10	3.21%	--	--
Western Wheatgrass, Barton	<i>Elymus smithii</i>	--	0.400	1.05	3.06%	--	--
Anise Hyssop	<i>Agastache foeniculum</i>	0.003 - 0.015	0.035	1.16	3.39%	3	5
Annual or Common Sunflower, Native Source	<i>Helianthus annuus</i>	0.08 - 0.2	0.050	0.05	0.16%	3	5
Ashy Sunflower, Native Source	<i>Helianthus mollis</i>	0.01 - 0.04	0.025	0.12	0.34%	3	5
Baldwin's Ironweed, Native Source	<i>Vernonia baldwinii</i>	0.008 - 0.03	0.015	0.24	0.70%	2	5
Blackeyed Susan	<i>Rudbeckia hirta</i>	0.01 - 0.1	0.050	1.81	5.29%	2	1
Blanketflower - G. pulchella	<i>Gaillardia pulchella</i>	0.04 - 0.2	0.250	1.07	3.13%	1	4
Blue Vervain, Native Source	<i>Verbena hastata</i>	0.008 - 0.03	0.025	0.86	2.52%	2	5
Bush Morning Glory, Native Source	<i>Ipomoea leptophyllia</i>	0.01 - 0.04	0.015	0.00	0.00%	2	3
Butterfly Milkweed	<i>Asclepias tuberosa</i>	0.01 - 0.04	0.020	0.03	0.09%	2	5
Canada Goldenrod, Native Source	<i>Solidago canadensis</i>	0.001 - 0.005	0.004	0.65	1.90%	2	5
Canada Milkvetch	<i>Astragalus canadensis</i>	0.02 - 0.15	0.080	0.50	1.45%	2	4
Canada Tick-trefoil	<i>Desmodium canadense</i>	0.01 - 0.03	0.050	0.10	0.30%	2	5
Candle Anemone, Native Source	<i>Anemone cylindrica</i>	0.005 - 0.012	0.005	0.05	0.14%	2	1
Clasping Coneflower	<i>Rudbeckia amplexicaulis</i> or <i>Dracopis amplexicaulis</i>	0.01 - 0.05	0.050	1.84	5.37%	1	2
Common Evening Primrose	<i>Oenothera biennis</i>	0.005 - 0.04	0.035	1.11	3.24%	2	4
Common Milkweed	<i>Asclepias syriaca</i>	0.03 - 0.08	0.040	0.08	0.22%	2	5
Compass Plant	<i>Silphium laciniatum</i>	0.01 - 0.05	0.030	0.01	0.02%	2	5
Cup Plant, Native Source	<i>Silphium perfoliatum</i>	0.01 - 0.05	0.030	0.04	0.13%	2	5
Deer Vetch, Native Source	<i>Acmispon americanus</i> or <i>Lotus unifoliolatus</i>	0.01 - 0.04	0.020	0.03	0.09%	3	4
Dotted Mint	<i>Monarda punctata</i>	0.008 - 0.015	0.020	0.68	1.98%	2	4
Entire-leaved Rosinweed, Native Source	<i>Silphium integrifolium</i>	0.01 - 0.04	0.020	0.02	0.05%	2	5
False Boneset, Native Source	<i>Brickellia eupatorioides</i>	0.005 - 0.01	0.015	0.18	0.53%	3	3
False or Oxeye Sunflower	<i>Heliopsis helianthoides</i>	0.03 - 0.09	0.100	0.24	0.70%	2	5
Four-point Evening Primrose, Native Source	<i>Oenothera rhombipetala</i>	0.005 - 0.01	0.015	0.87	2.53%	2	4
Foxglove Beardstongue, Native Source	<i>Penstemon digitalis</i>	0.01 - 0.03	0.020	0.18	0.54%	1	5
Golden Alexander	<i>Zizia aurea</i>	0.02 - 0.04	0.100	0.40	1.18%	1	5
Grayhead Coneflower	<i>Ratibida pinnata</i>	0.01 - 0.1	0.070	0.69	2.01%	2	4
Heath Aster	<i>Symphotrichum ericoides</i>	0.001 - 0.004	0.006	0.69	2.03%	3	5
Hoary Vervain, Native Source	<i>Verbena stricta</i>	0.01 - 0.06	0.020	0.27	0.79%	2	5
Hoary Vetchling, Native Source	<i>Lathyrus polymorphus</i>	0.01 - 0.03	0.008	0.00	0.00%	1	5
Illinois Bundleflower	<i>Desmanthus illinoensis</i>	0.05 - 0.25	0.250	0.49	1.43%	2	5
Ironweed	<i>Vernonia fasciculata</i>	0.02 - 0.06	0.020	0.18	0.52%	2	5
Jerusalem Artichoke, Native Source	<i>Helianthus tuberosus</i>	0.015 - 0.03	0.010	0.03	0.08%	3	5
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>	0.05 - 0.1	0.200	1.01	2.97%	2	4
Late or Giant Goldenrod, Native Source	<i>Solidago gigantea</i>	0.001 - 0.005	0.007	1.22	3.56%	3	5
Lemon Mint or Lemon Bee Balm	<i>Monarda citriodora</i>	0.02 - 0.05	0.050	1.65	4.84%	2	3
Maximilian Sunflower	<i>Helianthus maximiliani</i>	0.01 - 0.05	0.055	0.25	0.73%	3	5
Missouri Goldenrod	<i>Solidago missouriensis</i>	0.001 - 0.007	0.006	0.87	2.54%	2	5
New England Aster	<i>Symphotrichum novae-angliae</i>	0.005 - 0.01	0.015	0.36	1.06%	3	5
Pitcher Sage	<i>Salvia azurea</i>	0.01 - 0.04	0.018	0.12	0.36%	3	5
Plains Coreopsis	<i>Coreopsis tinctoria</i>	0.01 - 0.05	0.020	1.48	4.33%	2	2
Plains Sunflower	<i>Helianthus petiolaris</i>	0.01 - 0.05	0.050	0.13	0.38%	3	5
Prairie Spiderwort, Native Source	<i>Tradescantia occidentalis</i>	0.01 - 0.03	0.025	0.08	0.23%	1	4
Purple Coneflower	<i>Echinacea purpurea</i>	0.05 - 0.2	0.180	0.48	1.40%	2	5
Purple Prairieclover, Native Source	<i>Dalea purpurea</i>	0.03 - 0.15	0.050	0.36	1.06%	2	5
Rough Gayfeather	<i>Liatris aspera</i>	0.01 - 0.03	0.010	0.06	0.18%	3	5
Rough Purple Gerardia, Native Source	<i>Agalinis aspera</i>	0.002 - 0.006	0.005	0.24	0.71%	2	4
Roundhead Lespedeza	<i>Lespedeza capitata</i>	0.02 - 0.05	0.035	0.14	0.41%	3	4
Sawtooth Sunflower, Native Source	<i>Helianthus grosseserratus</i>	0.005 - 0.03	0.010	0.14	0.42%	3	5
Sensitive Briar, Native Source	<i>Mimosa nuttallii</i>	0.01 - 0.04	0.015	0.02	0.04%	2	3
Shell-leaf Penstemon	<i>Penstemon grandiflorus</i>	0.01 - 0.04	0.025	0.12	0.36%	1	5
Showy Partridgepea	<i>Chamaecrista fasciculata</i>	0.1 - 0.4	0.350	0.52	1.53%	2	5

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Showy-wand Goldenrod	<i>Solidago speciosa</i>	0.001 - 0.008	0.009	0.88	2.59%	3	5
Slender Beardstongue, Native Source	<i>Penstemon gracilis</i>	0.001 - 0.003	0.003	0.74	2.18%	2	5
Stiff Goldenrod, Native Source	<i>Solidago rigida</i>	0.01 - 0.02	0.025	0.39	1.13%	3	5
Stiff Sunflower, Native Source	<i>Helianthus pauciflorus</i>	0.01 - 0.04	0.020	0.34	0.99%	2	4
Sullivant's Milkweed, Native Source	<i>Asclepias sullivantii</i>	0.01 - 0.05	0.005	0.01	0.02%	2	5
Swamp Milkweed, Native Source	<i>Asclepias incarnata</i>	0.01 - 0.03	0.010	0.04	0.10%	2	5
Tall Boneset, Native Source	<i>Eupatorium altissimum</i>	0.006 - 0.025	0.010	0.18	0.54%	3	4
Tube Penstemon	<i>Penstemon tuiflorus</i>	0.01 - 0.03	0.015	0.14	0.40%	2	5
Upright Coneflower	<i>Ratibida columnifera</i>	0.02 - 0.08	0.060	1.02	2.97%	2	2
White Prairieclover	<i>Dalea candida</i>	0.05 - 0.2	0.060	0.42	1.23%	2	5
White Vervain, Native Source	<i>Verbena urticifolia</i>	0.002 - 0.004	0.007	0.18	0.52%	2	4
Wild Bergamot	<i>Monarda fistulosa</i>	0.01 - 0.03	0.025	0.73	2.14%	2	5
Willow-leaf Sunflower, Native Source	<i>Helianthus salicifolius</i>	0.01 - 0.04	0.020	0.03	0.09%	3	5
Rice Hulls - Filler for low planting rate mixtures		--	3.000	0.00	0.00%	--	--
Grasses Total:			1.310	5.160	15.10%		
Wildflower/Forb/Legume Total:			2.898	29.010	84.90%		
Filler Total:			3.000	0.000	0.00%		
Total Mixture:			7.208	34.171	100.00%		

Bloom Period	Wildflowers Used in Mixture	% PLS Seeding Rate of Mix
1 = April to May	7	10.81%
2 = June to July	39	56.00%
3 = August to October	19	18.08%
Total :	65	

 **4.40 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.nativerivegetation.org/era/>
- Botanical and beekeeping reference materials that list the pollinator value of species.
- Field observations of floral resource use by pollinator species.