

Georgia Technical Guide - Pollinator Habitat

Land Owner		County	
Farm #		Date	
Tract #		Assisted by	

Georgia Pollinators

Georgia animal pollinators include bees, butterflies, moths, wasps, flies, beetles, ants, and hummingbirds. Pollinators are an integral part of our environment and agricultural systems with animal pollinators important in 35-percent of global crop production and play significant role in producing the fibers we use, medicines that keep us healthy and more than half of the fats and oils in our diet. Long term population trends for several wild bee species, some butterflies, and hummingbirds are demonstrably downward. Many agricultural landscapes lack sufficient habitat to support native pollinators. This job sheet provides guidance on establishing and maintaining habitat to the primary benefit of animal pollinators.

Purpose: To provide food, shelter, and nesting resources for pollinator species.

General Specifications

Pollinator plantings can be planned as whole fields, along field borders, or interspersed between crops for beneficial insect plantings. Habitat areas must be between 0.1 to 3 acres per field to allow for feasible site preparation, state biologist approval is required for acreage exceptions.

Planting: A stand with a minimum of nine wildflower species and one native warm season grass should be established. This will include at least three flowering species from each of the three bloom periods (spring, summer, and fall). This will provide nectar and pollen food resources throughout the season.

The stand should include a minimum of one legume species and one native bunchgrass for a total of ten or more species.



Table 1 lists commercially available native species for dry and moist sites. On dry sites, plant 4.3 lbs of native flowers and 1 lb of little blue stem grass per acre, all PLS. On moist sites, plant 3.7 lbs of native flowers and .5 lb of bushy bluestem grass per acre, all PLS. See **Table 2** for more comprehensive list of plants. Plant 4-6 lbs per acre

Seeding rates are determined by pure live seed (PLS). Seed companies will sell seed at either a PLS rate or a bulk rate. See the work sheet to determine the bulk rate required to meet the required PLS rate. The percent purity and percent germination are needed to make these conversions. These can be found on the bag label or directly from the company.

The site may be broadcast seeded with no-till drilled, or hand seeded equipment. Due to the high forb content, broadcast seeding is preferred. Fertilizer or other soil amendments are not recommended.

The recommended planting dates for Georgia are:

Mountains March 1 to May 15
Piedmont Feb 15 to May 15
Coastal Plain Feb 15 to April 30

For dormant season planting, it is important to wait until the soil temperature has cooled to less than 55- degrees Fahrenheit (Nov. - mid Feb.).

Plant seeds no deeper than ¼ inch.

Competition Control Before Planting:

Site preparation is crucial for a successful pollinator planting. Seedbed preparation should start in the spring the year prior to planting and continue into the fall. For smaller acreages organic site preparation methods such as no till smothering with black plastic, tilling and solarizing with clear plastic, continuous tilling, and smother cropping can be used. Conventional seedbed preparation with herbicide application and tillage may also be used to control competition prior to planting.

Several steps are required to get successful undesirable competition control when using herbicide to control exotic species such as Bermuda grass, Bahia grass and tall fescue. Follow University of Georgia Extension recommendations for specific herbicides and make sure to follow label recommendations on rates and time of year for application.

Operation and Maintenance

Pollinator habitat should receive little to no disturbance, including the turning of machinery or driving within pollinator habitat.

Pesticide and herbicide use on or near a pollinator planting can have significant negative effects on pollinator populations. Locate pollinator habitat where chemical drift will not be an issue. Alternative means of managing pests (mowing, haying, burning, etc.) should be considered.

If carefully planned, periodic prescribed fire or mowing may be used to maintain plant diversity within pollinator habitat. However, it is important to note that some pollinator adult or immature stages may be killed during prescribed burns or other management actions.

To minimize the negative effects of management, no more than 1/3 - 1/2 of the stand should be mowed or burned in a year, with such management not occurring more frequently than once every 3-6 years. To promote for diversity and to reduce risks to pollinators and their nests, preference should be given to dormant season (November - March) burning and mowing. Consider rotating management and maintenance activities throughout the managed areas to maximize spatial and temporal diversity.

If weed competition after planting is a problem: Monitoring and controlling weeds is very critical in the first and second years. Prescribed burning (338) about every three years in early spring can prevent shrub invasion.

First Year - Observation of the growth of weed competition is essential. When undesirable vegetation reaches “12-18” tall, mow to no less than 6” high to prevent weeds from going to seed. Most native plants will grow deeper root systems than tops in the first year, and mowing 6-8” high will not hurt them.

Second Year - Mow once close to the ground in early spring. Postponing mowing until early spring provides winter cover for wildlife.

Maintenance practices must be adequate to control noxious and exotic invasive species. In some cases spot treatment with herbicides may be necessary. But take extreme caution when using herbicides.

Nesting and egg laying habitat: Undisturbed soil, duff and woody debris are important pollinator habitat attributes. Stable areas in full sun with good air circulation are preferred nesting/egg laying sites. A diversity of nesting/egg laying habitat (exposed soil, woody debris, herbaceous clumps, host food plants, bee blocks, twig bundles, etc.) should be represented as site conditions allow. Nesting and egg laying habitat should be located in close proximity to food and water resources.

Pollinator Habitat - Guidance

Landowner _____ Tract/field Number _____

Layout	Site 1	Site 2	Site 3	Total Dry	Total Moist
Field or Border width (ft)					
Field or Border length along edge of field (ft)					
Area (length X width)/ 43560 = Acres					
	Rate (PLS/ac)	% Germination	% Purity	Total = [PLS/ (% germination X % purity)] X acres	
Species:					
Total bulk seed required	-----	-----	-----		

Application rates are determined by pure live seed (PLS) for each species. To calculate the required amount of seed, multiply the % purity by % germination then divide the application rate by PLS. Purity and germination will be provided on the tag or by your supplier.

Example: If the seed purity is 95% and the germination is 75% then $(.95) \times (0.75) = 0.7125$ PLS.

If the application rate is a total of 1 lb PLS, divide 1 PLS by 0.7125 to determine that 1.4 lbs/ac of bulk seed is required for each acre. If your acreage is 2 acres, multiply the 1.4 lbs by 2 acres for a total of 2.8 or 3 lbs. This calculation is needed for each species.

Site Preparation

Remove all existing competition especially exotic grasses including Bahia, and Bermuda. Prepare seedbed. Seedbed should be firm prior to broadcasting seed.

Planting Method- Planting Dates Mt 3/1-5/15 Pd 2/15- 5/15 CP 2/15- 4/30

Broadcast, or drill grass/forb/legume seed ¼ inch deep uniformly over area. Culti-pack or roll after seeding and cover seed 1/4 inch (depth is critical for success). It is okay to see 30% of seed on top of ground. Establish vegetation according to the specified seeding rate.

Operation and Maintenance

Establishment may take 1 or 2 years. Mow or burn no more than 1/3 to ½ of the stand in a given year to protect pollinators or their eggs that are in the ground. This activity should only occur from Nov 1 to April 1 to protect ground nesting birds during their nesting season.

Job Sheet Certification

Prepared by: _____ **Title** _____ **Date** _____

Approved by: _____ **Title** _____ **Date** _____

Installation Meets NRCS Standards and Specifications? YES NO

Certified by: _____ **Date:** _____

Table 1 Common Name Species mix for xeric (dry site). Use southern ecotypes where possible.	Scientific Name / Alternate names (local ecotype available) either Annual (A) or Perennial (P)	seeding rate lb/ac PLS	Bloom Season Spring	Bloom Season summer	Bloom Season fall	Region Best Suited	Soil Moisture Requirements
Little Bluestem (grass)	<i>Schizachyrium scoparium</i>	1.0				All	dry to moist
Black-eyed Susan	<i>Rudbeckia hirta</i>	0.5	spring	summer		All	low to moderate
Butterfly Milkweed	<i>Asclepias tuberosa</i>	0.3		summer		All	low
Evening Primrose	<i>Oenothera biennis</i>	0.5		summer	fall	All	low to moderate
Indian Blanket	<i>Gaillardia pulegiella</i>	0.5	spring	summer	fall	P, CP	low to moderate
Lance Leaved Coreopsis	<i>Coreopsis lanceolata</i>	0.6	spring	summer		All	low
Largeflower Tickseed	<i>Coreopsis grandiflora</i>			summer			
Maryland Senna (legume)	<i>Senna marilandica / Cassia marilandica</i>	1.0	spring	summer		All	low
Ox Eye Sunflower	<i>Helopsis helianthoides</i>	0.2		summer		All	low to high
Panicle-leaf Trefoil (legume)	<i>Desmodium paniculatum</i>	0.5	spring	summer	fall	All	low to moderate
Total seed		0.2		summer		All	low
		5.3 lbs/pls					
Species Mix for mesic (moist sites)							
Bushy Bluestem (grass)	<i>Andropogon glomeratus</i>	0.5				All	moist to wet
Black-eyed Susan	<i>Rudbeckia hirta</i>	0.5	spring	summer		All	low to moderate
Indian Blanket	<i>Gaillardia pulegiella</i>	0.5	spring	summer	fall	P, CP	low to moderate
Rattlesnake Master	<i>Eryngium yuccifolium</i>	0.2		summer		All	low to moderate
Sneezeweed	<i>Helenium autumnale</i>	0.2			fall	All	moderate
Shrubby Tickseed Sunflower/Bur-marigold	<i>Bidens aristosa</i>	0.5		summer	fall	All	moderate to high
Evening Primrose	<i>Oenothera biennis</i>	0.5		summer	fall	All	low to moderate
Yellow Wingstem	<i>Verbesina alternifolia</i>	0.2		summer	fall	All	high
White Wild Indigo (legume)	<i>Baptisia alba</i>	0.1	spring			All	moderate
Illinois Bundleflower (legume)	<i>Desmanthus illinoensis</i>	1.0		summer		All	moderate
Total seed		4.2 lbs/pls					

Table 2 Common Name of Native Warm Season Grasses and Native Forbs. Use southern or local ecotypes where possible	Scientific Name / Alternate names (local ecotype available) Wildflowers for Pollinator Habitat - choose at least 9 species, 3 from each bloom season, optimum coverage is 4lb-6lb seeds per square foot.	cost estimate per lb. (P/L)	Bloom Seeds / lb.	Bloom Season	Bloom Season	Bloom Season	Bloom Season	Annual or Perennial	Region Best Suited	Wetland Indicator status	Soil Moisture Requirements	Light Requirement	Bloom Color
Common Ragweed	<i>Ambrosia artemisiifolia</i> (wildlife value, low pollinator value)	10	112,000	summer				A	All	FACU	low	sun to shade	green
Big Bluestem (grass)	<i>Andropogon gerardii</i>	10	165,000	summer				P	All	FAC	most to dry	full sun	
Big Bluestem (grass)-NC ecotype	<i>Andropogon gerardii</i> (Sulher)	20	165,000					P	All	FAC	most to dry	full sun	
Bushy Bluestem (grass)	<i>Andropogon glomeratus</i>	60	205,000					P	CP	FACW	most to wet	full sun	
Spillbeard Bluestem (grass)	<i>Andropogon ternatus</i>	74	200,000					P	P, CP	FACU	low	sun to part shade	
Wiregrass (seeds)	<i>Aristida stricta</i> or <i>beyrichiana</i> (plugs available)	1369	500,000					P	P, CP	FAC	low	sun to part shade	
Eastern Swamp Milkweed	<i>Asclepias incarnata</i>	240	76,800			fall		P	All	OBL	high	full sun	pink
Common Milkweed	<i>Asclepias syriaca</i>	64	70,000	summer				P	M, P	-	moderate	full sun	pink
Butterfly Milkweed	<i>Asclepias tuberosa</i>	160	70,000	summer				P	All	-	low	full sun	orange
Smooth Blue Aster	<i>Aster laevis</i> / <i>Symphoricarum laeve</i>	180	832,000	summer	fall			P	All	-	moderate	part sun	blue
New England Aster	<i>Aster novae-angliae</i> / <i>Symphoricarum novae-belgii</i>	200	1,088,000	summer	fall			P	M	FACW	moderate	part shade	purple
Purple Stemmed Aster	<i>Aster puniceus</i> / <i>Symphoricarum puniceum</i>	220	1,500,000			fall		P	P, CP	OBL	moderate	shade	blue
Eastern Shony Aster (NC ecotype)	<i>Aster spectabilis</i> / <i>Eurybia spectabilis</i> (NC)	200	1,500,000			fall		P	M, P	OBL	high	full sun	purple
White Wild Indigo (legume)	<i>Baptisia alba</i>	240	1,200,000	summer	fall			P	P	-	low	full sun	purple
Spiked Wild Indigo (legume) NC, SC	<i>Baptisia albescentis</i> (SC, NC ecotypes)	290	30,000	spring				P	All	FAC	moderate	full sun	white
Catclaws (legume)	<i>Baptisia perfoliata</i>	280	25,000	spring				P	All	-	low	shade	white
Horsely Weed (legume)	<i>Baptisia tinctoria</i>	280	25,000	spring				P, CP	-	FAC	low	full sun	yellow
Shony Tickseed Sunflower/Bar-natigold	<i>Bidens arifolia</i> (SC, NC)	400	25,000	summer				P	All	-	low	full sun	yellow
Deer Tongue Plant	<i>Carpheophorus odoratissimus</i>	20	25,000	summer	fall			A	All	FACW	high	partial shade	yellow
Spurred Butterfly Pea	<i>Centrosema virginianum</i>	228	na	summer				P	CP	FACW	low-moderate	full sun	purple
Partridge Pea (legume) FL ecotype	<i>Chamaecrista fasciculata</i> / <i>Cassia fasciculata</i> (FL)	345	100,000	summer	fall			P	ALL	na	low-moderate	part shade	purple
River Oats/Indian Wood Oats (grass)	<i>Chasmodon latifolium</i>	18	65,000	summer	fall			A	All	FACU	low	full sun or light shade	yellow
Slender Woodoats (grass)	<i>Chasmodon laxum</i>	36	90,000					P	All	FAC-	most	sun to shade	
Largeflower Tickseed (GA ecotype)	<i>Coreopsis grandiflora</i> (GA)	200	85,000					P	All	FACW-			
Lance Leaved Coreopsis NC	<i>Coreopsis grandiflora</i> (GA)	18	160,000	spring	summer			P	All	-	low	full sun	yellow
Tall Coreopsis AL	<i>Coreopsis lanceolata</i> (NC)	44	221,000	spring	summer			P	All	UPL	low	part shade	yellow
Toothache Grass	<i>Coreopsis tripteris</i> (AL)	260	224,000	summer	fall			P	M, P	FAC	moderate	part shade	yellow
Summer Farnell (FL ecotype)	<i>Cerium aromaticum</i>	173		summer				P, CP	P, CP	FACW	most to wet	part shade	
Illinois Bundleflower (legume)	<i>Dalea pinnata</i> (FL ecotype)	360	300,000	summer	fall			P	P, CP	-	low	full sun	white
Shony Tick-Trefoil (legume)	<i>Desmodium illinoensis</i> (wildlife value, low pollinator)	20	200,000	summer				P	All	FAC	moderate	full sun	white, yellow
Panicle-leaf Trefoil (legume)	<i>Desmodium condensense</i>	120	72,500	summer	fall			P	All	FAC	low to high	sun to part shade	purple
(legume)	<i>Desmodium paniculatum</i>	57	78,400	summer				P	All	FACU	low	shade	purple
Perplexed Tick-Trefoil	<i>Desmodium purpureum</i>	40	200,640	summer	fall			A	P, CP	-	low	full sun	purple
Purple coneflower	<i>Echinacea purpurea</i>	57	106,000	summer	fall			P	all		low to high	part shade	purple
Canada Wild Rye (grass)	<i>Elymus canadensis</i>	34	115,000	summer				P	not nat.	na	low to high	part shade	purple
Battlebrish Wild Rye (grass)	<i>Elymus hystrix</i>	12	83,200					P	All	FAC	low to high	sun to shade	
		36	121,600					P	P	-	wet to moist	shade	

Table 2 Cont. Common Name of Native		Scientific Name / Alternate names (local ecotype available) <i>Wildflowers for Pollinator Habitat: choose at least 9 species, 3 from each bloom season; optimum coverage is 40% seeds per square foot</i>	cost estimate per lb. (P15)	Seeds / lb.	Bloom Season	Bloom Season	Bloom Season	Bloom Season	Annual or Perennial	Region Best Suited	Wetland Indicator status	Soil Moisture Requirements	Light Requirements	Bloom Color
Warm Season Grasses and Native forbs. Use southern or local ecotypes where possible														
Riverbank Wild Rye (grass)		<i>Elymus riparius</i>	6	125,000	spring	summer	fall		P	P, CP	FACW	wet to moist	sun to shade	
Virginia Wild Rye (grass)		<i>Elymus virginicus</i>	6.5	100,000					P	All	FAC	low	sun to shade	white
Rattlesnake Master (SC, FL ecotype)		<i>Eryngium yuccifolium</i> (SC, FL)	120	124,000		summer			P	All	FAC	low to moderate	shade	white
Blue Milkflower (VA ecotype)		<i>Eupatorium coelestinum</i> / <i>Conoclinium coelestinum</i>	37	1,600,000		summer	fall		P	All	FAC	moderate	shade	blue, purple
Joe Pye Weed		<i>Eupatorium fistulosum</i>	180	1,600,000		summer	fall		P	All	FACW+	moderate	part shade	pink
Boneset (FL ecotype)		<i>Eupatorium perfoliatum</i> (FL ecotype)	160	1,600,000			fall		P	All	FACW+	high	part shade	white
Indian Blanket		<i>Goldfussia pulchella</i>	24	223,300	spring	summer			A	P, CP	-	low to moderate	full sun	red
Four Manna Grass		<i>Glyceria striata</i>	240	1,400,000			fall		P	All	OBL	moist	sun to shade	
Sneezeweed (FL, VA, PA ecotypes)		<i>Helenium autumnale</i> (FL, VA, PA)	80	2,080,000			fall		P	All	FACW	moderate	full sun	yellow
MD ecotype)		<i>Helianthus angustifolius</i> (SC, FL, AL, MD)	60	504,000		summer	fall		P	All	FAC+	moderate	partial shade	yellow
Thin-Leaf Sunflower		<i>Helianthus decapetius</i>	240	170,000		summer	fall		P	M, P	-	high	sun to shade	yellow
Woodland Sunflower		<i>Helianthus divaricatus</i>	300	170,000		summer			P	All	-	low	sun to shade	yellow
Ox Eye Sunflower		<i>Helianthus scaberrimus</i>	36	154,000	spring	summer	fall		P	All	-	low to moderate	full sun	yellow
Crimson-eyed Rose Mallow		<i>Hibiscus moscheutos</i>	180	45,000		summer			P	All	OBL	high	full sun	white
Blue Flag Iris		<i>Iris virginica</i>	80	16,000	spring				P	All	OBL	high	sun to shade	purple
Roundhead Lespedeza (legume)		<i>Lespedeza capitata</i> (wildlife value, low pollinator value)	180	174,000		summer	fall		P	All	FACU	low	full sun	yellow
Hairy Lespedeza (legume)		<i>Lespedeza hirta</i> (wildlife value, low pollinator value)	200	175,000		summer	fall		P	All	-	low	full sun	white
Slender Lespedeza/Bushclover (legume) VA ecotype		<i>Lespedeza virginica</i> (VA)	224	175,000		summer	fall		P	All	-	low	part sun to shade	pink
Elegant Blazing Star (GA ecotype)		<i>Liatris elegans</i> (GA)	400	140,000			fall		P	P, CP	-	low	full sun	pink
Grass-leaf Blazing Star		<i>Liatris graminifolia</i> L. pilosa	200	173,000		summer			P	All	-	low	full sun	purple
Marsh Blazing Star (FL ecotype)		<i>Liatris spicata</i> (FL)	300	135,000		summer	fall		P	M, P	-	moderate	sun	pink, purple
Scaly Blazing Star (VA ecotype)		<i>Liatris squarrosa</i> (VA)	278	173,000		summer			P	All	-	low	full sun	purple
Cardinal Flower		<i>Lobelia cardinalis</i>	560	8,000,000		summer	fall		P	All	FACW+	high	shade	red
Downy Lobelia (SC ecotype)		<i>Lobelia pumila</i> (SC)	560	8,000,000		summer	fall		P	All	OBL	high	shade	blue
Wild Blue Lupine (legume)		<i>Lupinus perennis</i>	96	16,000	spring				P	P, CP	-	low	full sun	blue
Sensitive Briar		<i>Wimosa quadrangula</i>	230	na		summer	fall		P	CP	na	low	part shade	purple
Lemon Vint		<i>Monarda citrifolia</i>	41	1,440,000		summer			A	P, CP	-	low to moderate	part shade	purple
Wild Bergamot		<i>Monarda fistulosa</i>	180	1,250,000		summer			P	M, P	-	high	part sun	pink
Spotted Bee Balm (SC, NC ecotypes)		<i>Monarda punctata</i> (SC, NC)	180	1,472,000		summer			A	All	FAC	low	full sun	purple
Mahoe Grass (Hairyroot) FL		<i>Muhlenbergia capillaris</i> (FL)	300			summer	fall		P	P, CP	FACU	moderate	full sun	yellow
Evening Primrose		<i>Oenothera biennis</i>	32	1,300,000		summer			P	All	FACU	low to moderate	light shade	yellow
Showy Primrose		<i>Oenothera speciosa</i>	50	1,000,000	spring	summer			P	All	-	low	full sun	yellow
ecotypes		<i>Panicum anceps</i> (SC, FL, GA ecotype)	36						P	All	FAC	moderate	part shade	yellow
Deer Tongue Rosegrass (grass)		<i>Panicum clandestinum</i> (Dichanthium)	12	400,000					P	All	FACW	dry	sun to shade	
Switchgrass (grass)		<i>Panicum virgatum</i>	12	390,000					P	CP	FAC+	moist to dry	full sun	
Wild Quinine (GA, NC, VA ecotypes)		<i>Parthenium integrifolium</i> (GA, NC, VA ecotypes)	160	112,000		summer			P	M, P	-	low	full sun	white

Table 2 Cont. Common Name of Native Warm Season Grasses and Native Forbs. Use southern or local ecotypes where possible	Scientific Name / Alternate names (local ecotype available) <i>Hydriflowers for Pollinator Habitat- choose at least 3 species, 3 from each bloom season- upthium- coverage is 4th- 60 seeds per square foot</i>	cost estimate per lb. (P.S.)	Seeds / lb.	Bloom Season Spring	Bloom Season Summer	Bloom Season Fall	Bloom Season Winter	Annual or Perennial	Region or Best Suited	Wetland Indicator	Soil Moisture Requirements	Light Requirement	Bloom Colors
Appalachian Beard Tongue (SC ecotype)	<i>Pentstemon laevis</i> (SC)	280	2,800,000	spring	summer			P	All	FAC	high	full sun	purple
Annual Phlox	<i>Phlox drummondii</i>		241,500	spring	summer			A	P, CP	-	low	shade	pink, red
Prickerveed	<i>Polemonis cordata</i>	104	5,000	spring	summer			P	All	OBL	high	full sun	purple
Clustered Mountain Mint	<i>Perovskia atrorubra</i>	480	3,500,000		summer			P	All	FAC	moderate	shade	white
New England Aster	<i>Rudbeckia hirta</i>	173	450,000		summer			P	All	na	low-mid	full sun	yellow
Orange Coneflower (VA ecotype)	<i>Rudbeckia fulgida</i> (VA)	400	1,472,000		summer	fall		P	All	FAC+	moderate	full sun	yellow
Black-Eyed Susan	<i>Rudbeckia hirta</i>	24	1,700,000	spring	summer			P	All	FAU	low to moderate	full sun	yellow
Brown-eyed susan	<i>Rudbeckia triloba</i>	28.5	500,000		summer			B	MT, P	FAU-	low-high	part shade	yellow
Little Bluestem (grass)	<i>Schizachyrium scoparium</i> (Andropogon scoparius)	12	260,000					P	All	FAU	low to high	full sun	
Little Bluestem (grass) NC ecotype	<i>Schizachyrium scoparium</i> (Andropogon scoparius)	32	260,000					P	All	FAU	low to high	full sun	
Maryland Senna (legume)	<i>Senna morilandica</i> (Cassia morilandica)	32	22,400		summer			P	All	FAC	low to high	light shade	yellow
Starry Rosinweed (SC, FL ecotypes)	<i>Silphium asteriscus</i> (SC, FL)	210	480,000		summer	fall		P	All	-	moderate	full sun	yellow
Narrow-leaved Blue-eyed Grass	<i>Sisyrinchium angustifolium</i>	300	720,000	spring				P	All	FAC	moderate	shade	blue
Wreath Goldenrod	<i>Solidago caesia</i>	320	2,200,000	spring				P	All	FAU	moderate	shade	yellow
Pinelawn Goldenrod (FL ecotype)	<i>Solidago fistulosa</i> (FL)	200	700,000		summer			P	CP	FAC+	moderate	full sun	yellow
Gray Goldenrod (VA, PA ecotypes)	<i>Solidago nemoralis</i> (VA, PA)	220	1,000,000		summer			P	All	-	moderate	full sun	yellow
Rough-leaved Goldenrod	<i>Solidago patula</i>	280	704,000		summer	fall		P	All	OBL	high	shade	yellow
Rigid Goldenrod	<i>Solidago rigida</i> or <i>Oligoneuron rigidum</i>	200	720,000		summer	fall		P	All	FAU	moderate	shade	yellow
Wrinkle-leaved Goldenrod	<i>Solidago rigida</i>	240	2,200,000		summer	fall		P	All	FAC	moderate	shade	yellow
Shrubby Goldenrod (GA, WV ecotypes)	<i>Solidago speciosa</i> (GA, WV)	160	1,600,000		summer	fall		P	All	-	high	part shade	yellow
Nodding Indiangrass (NC ecotype)	<i>Sorghastrum nutans</i> (NC)	64						P	All	-	low	shade	
Indiangrass (PA ecotype)	<i>Sorghastrum nutans</i>	11	175,000					P	All	FAU	low to high	full sun	
Indiangrass (GA ecotype)	<i>Sorghastrum nutans</i> (American)	12	175,000					P	All	FAU	low to high	full sun	
Indiangrass (NC ecotype)	<i>Sorghastrum nutans</i> (Suther)	16	175,000					P	All	FAU	low to high	full sun	
Lopsided Indian Grass	<i>Sorghastrum secundum</i>	96						P	CP	FAU	low	full sun	
Pinewoods Droopseed (grass)	<i>Sporobolus junceus</i>	173						P	P, CP	-	low	part shade	
Goat's Rue (legume)	<i>Leprosia virginiana</i>	230	120,000	spring	summer			P	All	-	low	sun to shade	pink, yellow
Ohio Spiderwort/Bluejacket	<i>Tradescantia ohiensis</i>	300	145,000	spring	summer			P	P, CP	FAC-	low	shade	purple
Zizag Spiderwort (VA ecotype)	<i>Tradescantia subspicata</i> (VA)	64	145,000	spring	summer			P	M, P	-	low	part shade	blue
Virginia Spiderwort (VA, PA ecotype)	<i>Tradescantia virginiana</i> (PA, VA)	300	145,000	spring				P	All	FAC+	moderate	part shade	purple
Purple Top (grass)	<i>Tridax flava</i>	12	460,000					P	All	FAU	low	full sun	
Purple Top (grass) NC, VA, AL, FL, GA	<i>Tridax flava</i> (Southern or other local ecotype)	36	460,000					P	All	FAU	low	full sun	
Crimson Clover (introduced legume)	<i>Trifolium incarnatum</i>	2	900,000	spring			winter	A	All	FAU-	low-mid		
Red Clover (introduced legume)	<i>Trifolium pratense</i>	3	270,000	spring			winter	AP	All	FAU-	low-mid		
White Clover (introduced legume)	<i>Trifolium repens</i>	4	800,000	spring			winter	AP	All		low-high		
Arrowleaf Clover (introduced legume)	<i>Trifolium vesiculosum</i>	3	399,161	spring				A	All		low-high		
Eastern Gamagrass (grass)	<i>Tripsacum dactyloides</i>	10	6,000					P	All	FAC+	most to wet	full sun	yellow
Yellow Wingstem	<i>Verbesina alternifolia</i>	56	344,000		summer	fall		P	All	FAC	high	full sun	yellow
Giant Ironweed	<i>Veronica gigantea</i> or <i>oblongifolia</i>	170	100,000		summer	fall		P	P, CP	FAC+	moderate	sun to shade	purple
New York Ironweed	<i>Veronica noveboracensis</i> (NC)	220	360,000		summer	fall		P	All	FAC+	moderate	sun to shade	purple
Golden Alexanders	<i>Zizia aurea</i>	150	185,000	spring	summer			P	All	-	moderate	shade	yellow

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