

Establishing Sustainable Wildflower Areas from Seed

Considerations when Ordering Wildflower Seed and Preparing Planting Plans

Updated December 2015

Establishing new wildflower plantings is an important aspect of FDOT's Wildflower Program even though the emphasis of the program has shifted toward locating and managing naturally occurring wildflower populations and native community remnants. The use of wildflowers native to Florida and adapted to Florida's environment is strongly encouraged.

See Table 1 (page 3) for a list of the best species to establish by seed on Florida's roadsides. Wildflower Coordinators are encouraged to use species from this list when establishing plantings by seed. Seed should always be ordered by scientific (Latin) name.

Please contact Jeff Norcini, FDOT State Wildflower Specialist (OecoHort@comcast.net; 850-491-0910), for assistance with planting plans or questions about wildflower species.

Issues that Affect the Establishment of a Sustainable Wildflower Area (WA)

1. Locate wildflower plantings in non-residential and non-commercial areas; however, median plantings are fine regardless of location.
2. A small, high quality planting is better than a large one in which parts are unsightly. Large sites are not likely to be uniform in terms of weed issues and soil conditions, so there is a risk that some portion of a large planting may fail.
3. The greatest likelihood for establishing a sustainable WA is in a sunny area with a bahiagrass monoculture (or nearly so), where the density of the bahiagrass is moderate to slightly moderate and the soil is sandy and well-drained. Be sure to check the site closely for any vegetation growing beneath the bahiagrass canopy.
4. Consider designing WAs that will be showiest in early to mid-spring. *Phlox drummondii* and *Coreopsis basalis* (see below) are examples of wildflowers that bloom in early or mid-spring. Peak bloom of such wildflowers typically occurs before unsightly and competing warm season vegetation can obscure the wildflowers and detracts from their aesthetics.

Coreopsis basalis* and *Phlox drummondii¹

- a. High probability of WA being sustainable and very showy if site conditions are appropriate, a Florida ecotype of *Coreopsis basalis* is used, and the WA is established and mowed properly. Both species co-exist very well with bahiagrass where bahiagrass density is moderate, the site is sunny, and the soil is slightly dry, sandy and well-drained.
- b. Often the least expensive, sustainable WAs to establish and manage.
- c. Use as monoculture or mixed stand.
- d. *Phlox* starts flowering in early to mid-spring in north Florida, and late winter/early spring in central Florida. *Coreopsis* starts flowering in mid-winter in south Florida, and in mid to late spring in north Florida.
- e. Regions to plant – See Table 1, page 3.

¹ Contact Jeff Norcini for establishment and management instructions. Paul Crist (Paul.Crist@dot.state.fl.us) in District 2 has an alternative method for successfully establishing sustainable plantings of *Coreopsis basalis* and *Phlox drummondii*; please contact Paul for details.

Issues that Affect the Establishment of a Sustainable Wildflower Area (WA) (continued)

5. Weeds are the most serious threat to a sustainable, showy wildflower planting

- a. The soil seed bank is the main source of weeds; there often are 100s to 1000s of seed per square foot in the top few inches. Any disturbance will stimulate germination of at least some of the weed seed. Disturbance ranges from mowing to leave an inch or less of stubble, to killing existing vegetation, to tilling.
- b. The best potential WAs in terms of weeds are where the sum total of all weeds is no greater than very sparse.
- c. As part of the site selection process, check for potential weed issues in late winter/early spring AND in summer.
- d. Avoid any area within 100 feet of Cogongrass.
- e. Plantings are the most susceptible to being overgrown by weeds shortly after seed are sown, with that likelihood decreasing over time as wildflowers fill in.
- f. Weed issues that threaten the establishment, sustainability, or aesthetics of the planting must be addressed in a timely manner regardless of when they occur.

6. Sow seed at the appropriate time of year

See Table 2 (page 7) for the optimum time to sow seed.

7. Germination may be limited by lack of rain

- a. Lack of rain can be dealt with by planting appropriate species in swales where the soil is naturally moist.
- b. Germination can be facilitated with supplemental irrigation. Irrigate 2-3 times per week for the first few weeks after sowing seed or until seedlings begin to emerge, whichever is latest; then taper off irrigation frequency over the next 2-3 weeks. Apply 0.3-0.5 inches of water per irrigation event; droplet size must be no larger than that of a lawn sprinkler; do not irrigate on a windy day.

8. Emergence of seedlings will be limited if seeds are too deep in the soil

- a. Most seed should only be about 1/8 inch deep; larger seed like those of Lupines (*Lupinus*) or Sunshine Mimosa (*Mimosa strigillosa*) can be 1/4 inch deep.
- b. As small seed become buried deeper than 1/4 inch (whether sown at that depth, or because of natural settling because soil is loose), seedling emergence declines. If too many seed become buried too deep the planting probably will fail.
- c. To help ensure that seed do not become buried too deep, make sure that the seed bed is firm when sowing seed; a turf roller may be needed to firm up seed bed before sowing seed.
- d. If seeding manually with a rotary spreader or by hand, use a turf roller to push seed into the top layer of soil, either one pushed manually or one pulled by an ATV. Do not use a tractor, truck, or car.

9. If hiring a contractor for establishing a planted WA

- a. The best landscape contractors are those that have a documented record of successfully establishing large scale wildflower plantings from seed, or has a subcontractor with that documented experience.
- b. The contractor should be keenly aware of why plantings fail, and should diligently implement practices that minimize the likelihood of failure.
- c. Contracts should be performance-based.
- d. Allow 2 years from date of sowing for establishment.

Table 1. Best roadside wildflowers to establish by seed.^{1,2} Seed of Florida ecotypes (seed derived from wild populations in Florida, adapted to Florida’s environmental conditions) may be available for species in bold font. Main Bloom Season – season when wildflowers are showiest; however, some species may have flowers throughout the year, especially in southern Florida. For species that occur in more than one region of the state, flowering starts and peaks earliest in the most southerly region. Best Districts – districts where a species is expected to perform well based on range maps and anecdotal evidence. **Always order seed by scientific name.**

Wildflower Species		Native to Fla.	Main Bloom Season	Soil Moisture	Best Districts	Comments ³
Scientific Name	Common Name					
<i>Coreopsis basalis</i>	Goldenmane or Goldenwave Tickseed	Yes	Spr	Dry	2,3 [5]*	*Marion County and north; however, probably can use further south since it performed well in Districts 4 and 7, where it blooms in winter when seeded in fall. Annual re-seeding may be necessary south of Marion County. Pollinators: Bees; Butterflies (N)
<i>Coreopsis lanceolata</i>	Lanceleaf Tickseed	Yes	Spr	Slightly moist	2,3 [5,7,8]*	*Best for Orlando and north. The common garden variety is much larger than the Florida ecotype; however, the common garden variety often must be re-seeded, and flowering may be limited the first season. Pollinators: Bees; Butterflies (N)
<i>Coreopsis leavenworthii</i>	Leavenworth’s Tickseed	Yes	Late Spr to mid Sum	Moist	1-8	Only Florida ecotype seed is available. Will tolerate periodic inundation for up to a week. Pollinators: Bees; Butterflies (N)
<i>Cosmos bipinnatus</i>	Cosmos	No	Sum, Fall*	Slightly moist	1,2 4-8	*Main bloom season varies by cultivar. Must be re-seeded each year. Pollinators: Bees; Butterflies (N)

Table 1. Best roadside wildflowers to establish by seed.^{1,2} (*continued*)

Wildflower Species		Native to Fla.	Main Bloom Season	Soil Moisture	Best Districts	Comments ³
Scientific Name	Common Name					
<i>Gaillardia pulchella</i>	Blanketflower, Indian Blanket, Firewheel	Yes	Spr to Sum	Dry	1-8	Annual to short-lived perennial. Good species for coastal areas. If mixing with other wildflowers be aware that it is an aggressive re-seeder. Pollinators: Bees; Butterflies (N)
<i>Glandularia aristigera</i> (aka <i>Verbena tenuisecta</i>)	Moss Verbena	No	Spr to early Fall	Dry	2,3,5,7 [1,8]*	*Best for Polk County and north, although it has naturalized in St. Lucie and Miami-Dade counties. Drought tolerant ground cover. Pollinators: Butterflies (N)
<i>Ipomopsis rubra</i>	Standing Cypress, Spanish Larkspur	Yes	Very late Spr to mid Sum	Dry	2,3,5,7 [1,4,8]*	Best for Pinellas to Indian River counties, and north. Performs best in deep, sandy soils. Performs well in alkaline soils. Should perform well in coastal areas. Very susceptible to disease in clay, loamy, or moist soil. Pollinators: Butterflies (N)
<i>Lupinus texensis</i>	Texas Bluebonnet	No	Spr	Dry	2,3	Hard-seed; seed may need to be scarified to maximize germination. Use in sandy soil. Pollinators: Bees; Butterflies (N, L)
<i>Mimosa strigillosa</i>	Sunshine Mimosa, Powderpuff	Yes	Spr to early Sum	Slightly dry to slightly moist	1-8	Ground cover. Hard-seed; non-scarified seed will germinate very slowly. Drought tolerant. Can spread quickly once established. Pollinators: Bees; Butterflies (N, L)

Table 1. Best roadside wildflowers to establish by seed.^{1,2} (*continued*)

Wildflower Species		Native to Fla.	Main Bloom Season	Soil Moisture	Best Districts	Comments ³
Scientific Name	Common Name					
<i>Monarda citriodora</i>	Lemon Beebalm	No	Late Spr.*	Slightly dry	7*	*Best for District 7 and north based on range maps and performance in District 7. Flowering season in north Florida probably in the early summer. Pollinators: Bees; Butterflies (N)
<i>Monarda punctata</i>	Spotted Beebalm, Dotted Horsemint	Yes	Late Sum to mid Fall	Dry to slightly moist	1-5 7,8	Aromatic scent. Bracts are the showy part of inflorescence; bract color can vary from purplish to white. Very attractive to bees and wasps. Pollinators: Bees; Butterflies (N)
<i>Phlox drummondii</i>	Annual Phlox, Drummond Phlox	No	Late Win to Spr	Dry to slightly dry	2,3,5,7 [1,8]*	*Best for Manatee County and north, although it has naturalized in some portions of Martin, Palm Beach, and Miami-Dade counties. Available as multi-colored or red. Pollinators: Butterflies (N)
<i>Rudbeckia hirta</i>	Black-eyed Susan	Yes	Mid Spr to mid Sum	Slightly dry to moist (see Comments)	1-8	North Florida – sow in slightly dry sites, and use north Florida ecotypes; Central and south Florida – sow in slightly moist to moist sites, and use central or south Florida ecotypes. Pollinators: Bees; Butterflies (N)
<i>Rudbeckia mollis</i>	Softhair Coneflower	Yes	Sum	Dry to slightly dry	2,3 [5,8]*	*Best for Lake County and north. Performs best in deep, sandy soils. Very susceptible to disease in clay, loamy, or moist soil. Can become shrub-like if browsed. Pollinators: Bees; Butterflies (N, L)

Table 1. Best roadside wildflowers to establish by seed.^{1,2} (*continued*)

Wildflower Species		Native to Fla.	Main Bloom Season	Soil Moisture	Best Districts	Comments ³
Scientific Name	Common Name					
<i>Trifolium incarnatum</i>	Crimson Clover	No	Spr	Slightly dry to slightly moist	2, 3	Must purchase inoculant, or pre-inoculated seed. Will perform well in loamy or sandy clay soils that are well-drained. Pollinators: Bees; Butterflies (N)

¹ All of these wildflowers are known to occur in ruderal habitats (disturbed sites). Ruderal wildflowers have excellent potential to perform well under suitable roadside conditions, and if established and managed appropriately.

² **The planting of *Coreopsis tinctoria* and *Gaillardia aristata* is strongly discouraged.** *Coreopsis tinctoria*, which probably is not native to Florida, will hybridize with *Coreopsis leavenworthii*, which is nearly endemic to Florida. Except for a few counties in Alabama, the only place in the world that *Coreopsis leavenworthii* is known to occur is in Florida. Not planting *Coreopsis tinctoria* will help to maintain the integrity of *Coreopsis leavenworthii* in Florida. Sarah Smith and Zhanao Deng (University of Florida/IFAS) noted in their research that hybridization of these two *Coreopsis* species "...would result in deleterious effects to both species." *Gaillardia aristata* is not native to Florida and easily hybridizes with our native *Gaillardia pulchella*. Not planting *Gaillardia aristata* will help to maintain the integrity of *Gaillardia pulchella*.

³ Pollinators – Bees: utilize as a source of nectar or pollen. Butterflies: utilize as source of nectar (N) and/or as a larval plant (L).

Table 2. Suggested times to sow seed.¹ Florida’s climate is a continuum from north to south so adjust the sowing date accordingly for a particular site.

Region	Peak bloom season of wildflowers or native grasses	When to sow
North Florida	<ul style="list-style-type: none"> • Spring or summer • Fall 	<ul style="list-style-type: none"> • Mid-September to late October • Mid-September to mid-November
Central Florida	Spring, summer, or fall	Mid-October to early January
South Florida	Spring, summer, or fall	November to mid-January

These dates may need to be adjusted based on information from [NOAA’s Climate Prediction Center](#) for fall, winter, and spring. For example, if drier than normal conditions are forecast for central Florida in the winter, then seed should be sown earlier in the fall rather than later. Moreover, if drier than normal conditions are predicted for winter and spring, consider sowing seed in sites that naturally retain more moisture, like a swale.

¹ Norcini, Jeffrey. 2010. *Factsheet: Seeding Dates for Florida Ecotypes of Native Wildflowers and Grasses*. Florida Wildflower Foundation: Maitland, FL. November 2010. < https://store-33ef7.mybigcommerce.com/content/SeedingDatesFinal_1-7-11.pdf >