UF IFAS Extension UNIVERSITY of FLORIDA

ENY168

# A Guide to Planting Wildflower Enhancements in Florida[1]

Mary C. Bammer, Josh Campbell, Chase B. Kimmel, James D. Ellis, and Jaret Daniels[2]

## Introduction

The establishment of native wildflower plantings in Florida can benefit agricultural producers as well as native pollinators and other beneficial insects (predators and parasitoids). The plantings do this by:

- providing forage and nesting sites for bees, butterflies, and other pollinators,
- increasing wild bee numbers possibly across the farm, and
- increasing natural enemies of insect pests (that also depend on forage and nesting sites).

When protecting, enhancing, or restoring habitat to benefit pollinators, choose a mix of native plant species that will bloom throughout the year and provide a continuous source of pollen and nectar for many pollinator species. Site selection and pre-planting weed eradication are key to the success of establishing new pollinator habitat. The site should be practical to manage, maximize benefits to wildlife, and fit into the overall management practices of the property.

## Wildflower Selection

- Flowering species that are native to (i.e., naturally occur in) Florida and suited to specific site conditions are the best choice for attracting and supporting diverse pollinator populations.
  - If possible, use seeds that are not only native to the state, but are also produced in Florida. Seeds produced in the climate in which they will be planted will be better adapted to regional growing conditions such as Florida's dry, sandy, and nutrient-poor soils.
- Diversify plantings
  - Planting a mix of species that bloom at different times (e.g., early spring, late summer, fall, and even winter in much of Florida) will provide pollinators with floral resources throughout much of the year (Figure 2).
  - Having a range of flower sizes, shapes, colors, and plant heights within the plot will attract a larger diversity of pollinators and other insects.

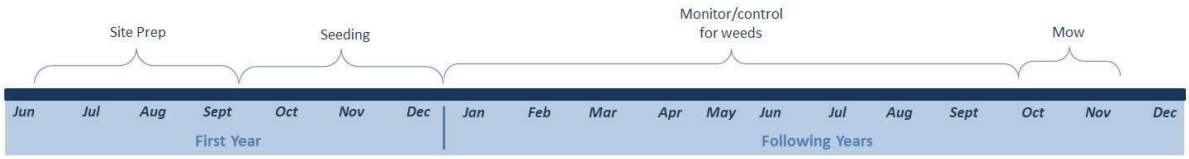


Figure 1. Generalized timeline of tasks for the establishment of a wildflower planting from the first year (preparation and planting) into following years (continued monitoring and control of weeds and mowing).
Credits: Chase Kimmel, UF/IFAS Honey Bee Research and Extension Laboratory

1. This document is ENY168, one of a series of the Department of Entomology and Nematology, UF/IFAS Extension. Original publication date September 2017. Visit the EDIS website at http://edis.ifas.ufl.edu.

2. Mary C. Bammer, Extension coordinator; Josh Campbell, postdoctoral researcher; Chase B. Kimmel, PhD candidate; James D. Ellis, associate professor; and Jaret Daniels, associate professor; Department of Entomology and Nematology, UF/IFAS Extension, Gainesville, FL 32611.

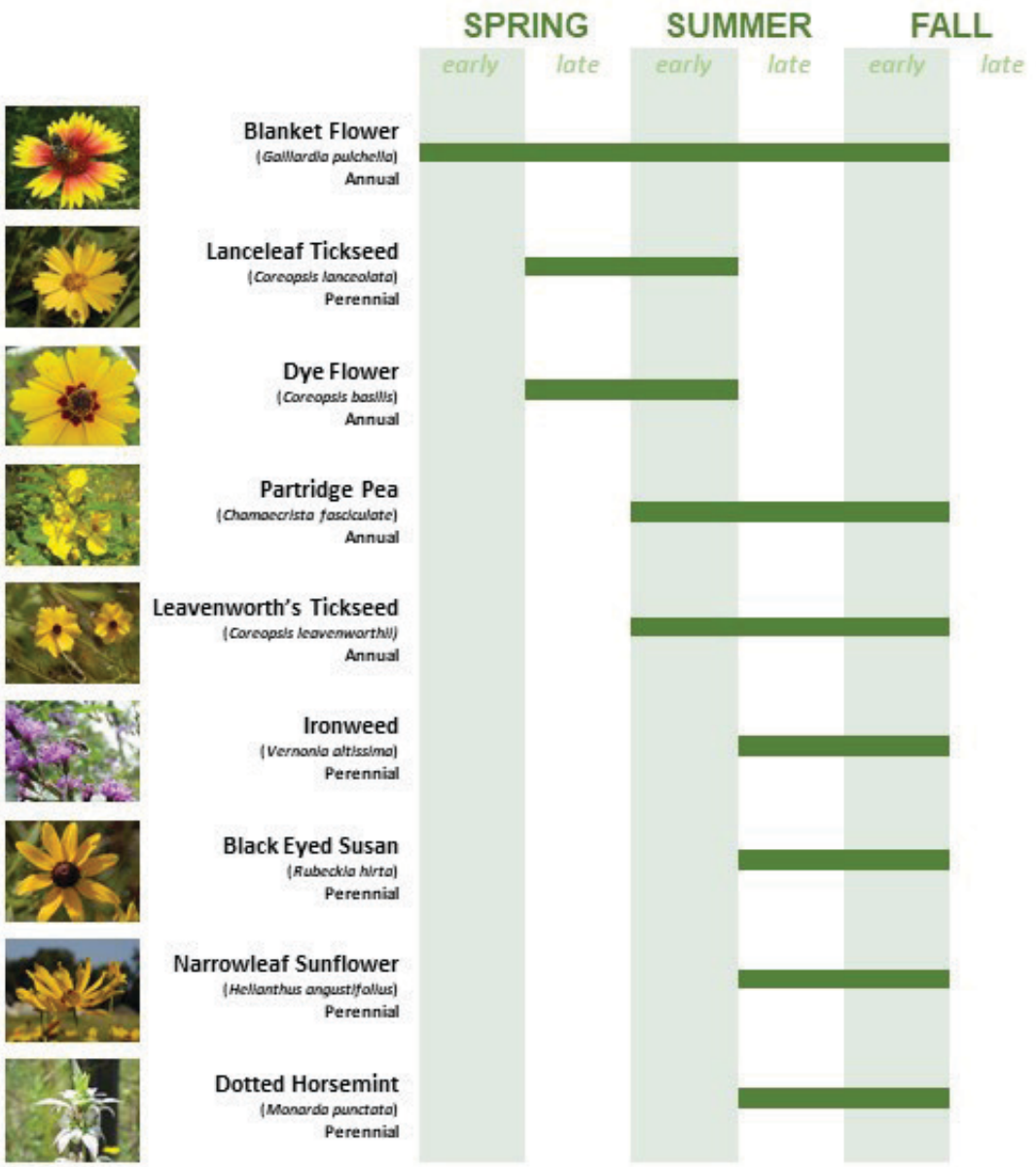


Figure 2. Example of a wildflower mix suitable for Florida with the expected bloom season for each species. Flower images by Akers Pence, University of Florida.
Credits: Mary Bammer, UF/IFAS Honey Bee Research and Extension Laboratory

## Site Planning

- Wildflower plots planted in full sun provide the most bloom and, therefore, the most pollen and nectar. Plant along field edges on farms, but far enough from cropped areas (in space and/or time) to be clear of any pesticide drift, and in areas that will not inhibit normal farm management practices.
  - Wildflowers planted in full sun are more attractive to pollinators. Bees are able to start working flowers early in the day. However, flowers wet with dew may be ignored until they are dry.
- Wildflowers should be planted in areas where the ground is not disturbed regularly.
  - Most bee species are solitary, meaning that they do not live in communal colonies or collaborate in rearing offspring; 70% of these solitary bees nest in the ground. A wildflower establishment can fulfill the shelter resource needs of these bees by maintaining an area that does not undergo regular tilling, thus minimizing nest disturbance.
- When possible, plant in multiple locations that have well-drained soils not subject to regular flooding (i.e., avoid low-lying areas).
- An easily available water source to use for irrigation purposes may benefit the planting, particularly during seed germination and early seedling establishment. Once

plants have established, additional watering usually is not necessary except in times of drought.

## Site Preparation

- Proper site preparation is needed to minimize weeds throughout plot establishment and growth. At least a full season of weed eradication is recommended before planting. There are multiple ways to prepare the site for seeding to prevent future weed issues.
  - Mow/Spray/Mow
    - At least two months before planting, mow the site and remove any thatch. Allow new weed growth to begin, and then treat the site with a non-persistent, post-emergent herbicide (such as one including glyphosate as an active ingredient). Follow all label instructions prior to application. Repeat the herbicide treatment a minimum of two more times, waiting two weeks between applications, allowing for more weed growth between treatments.
    - This process can be started as soon as weeds begin to grow in early spring (prior to seeding). Continue herbicide treatments throughout the summer, prior to seeding, with applications occurring whenever weeds reach around six inches tall (Xerces 2015).
    - Two weeks after the last herbicide application, mow as close to the ground as possible without disturbing the soil. Remove or burn any dead thatch to expose the bare ground. Make sure to acquire proper permits before burning.
    - Note that some herbicides have residual activity that can kill or prevent germination of wildflower species typically included in a pollinator planting. Herbicide labels list species that are tolerant depending on the rate applied. Remember, the label is the law when applying pesticides and always follow label instructions.
  - Solarization
    - As an alternative to chemical weed management, sites can be prepared using solarization (Figure 3), a technique that uses greenhouse plastic to raise soil temperatures high enough to kill weedy plants and seeds in the top four to six inches of soil (ENY-062).
    - Mow and remove thatch from the site. The site can also be tilled to increase how far down the heat infiltrates the soil. Wet the plot with water and immediately cover it with clear greenhouse plastic (1–1.2mm thick [Krueger 2009]). Weigh the plastic down around the edges with soil to trap heat and moisture inside. Leave this in place for at least six weeks or until it is time to plant (ENY-062). Repair any rips, tears, or open edges of the plastic to prevent loss of heat.
    - Read the EDIS document Introduction to Soil Solarization for more information on soil solarization.
    - After either solarization or chemical treatment and mowing, the aim is to have at least 90% of the soil free of plant material to ensure proper seed-to-soil contact during planting, which is necessary given the generally small size of many wildflower seeds.

Figure 3. Solarization employs the use of large sheets of plastic to control weeds.
Credits: Tyler Jones, UF/IFAS

## Seeding the Plot

- Depending on the region, plots should be planted between September and January in Florida (Table 1) following a full season of site preparation.

Table 1. When to plant wildflower establishments by Florida region (Xerces 2015).

| Florida Region | When to plant wildflower seeds |
|---|---|
| North | Mid-September to mid-October |
| Central | Mid-October through December |
| South | November through January |

- No-till planting is recommended. Years of weed seeds are stored within the soil (the "seed bank"), waiting to be exposed to sunlight and begin germinating. Tilling an area meant for establishing pollinator habitat will likely disturb the seed bank and promote weed growth rather than the desired wildflower growth.
- When the plot is ready to be planted, mix seeds together based on size and weight. Annual and perennial seeds can be mixed and planted together. Mix small, lightweight seeds together and larger, heavy seeds together. This allows all seeds to be spread evenly across the plot; seeds of similar weights, broadcasted together, will likely distribute in more uniform patterns. Alternatively, annuals and perennials can be planted in separate blocks to allow each type to be managed individually; however, this is not necessary for a successful planting.
  - Lightweight, fluffy wildflower seeds should be mixed with a bulking agent (e.g., pelletized lime, course sand, or vermiculite) at a ratio of at least 2:1 (at least two parts mixing agent to one part seed, by volume) (Xerces 2015) to help distribute the small volume of seeds evenly across a large area.
- Spreading seed (Figure 4):
  - Multiple techniques and equipment can be used to spread seeds along the soil surface: drop seeder, handheld broadcaster, or tractor-pulled equipment. Seeds planted in this manner should not be buried.
    - Using tractor-pulled equipment is the most efficient option for larger plots, but may be less successful in evenly spreading lightweight seeds.
  - Adjust the broadcast rate to achieve appropriate distribution for each seed size/weight group. When using a broadcaster or drop-seeder, seeds should be spread along the plot surface, not buried.
  - After seeding (as long as conditions are dry), use a weighted lawn roller or cultipacker to push any loose seeds into closer contact with the soil.
    - Be cautious of using a too-heavy roller in very sandy soil. Excessive weight will push the seeds too far under the sand where they may not germinate.
- Drilling seed:
  - An alternative to spreading seed on the plot surface is to use a no-till seed drill. Equipment costs of renting or purchasing a seed drill may outweigh the potential benefits of a small wildflower plot; however, seed drills can be very efficient for larger wildflower establishments.

Figure 4. Broadcast seeders can be used to distribute wildflower seeds along a plot's surface.
Credits: Mary Bammer, UF/IFAS Honey Bee Research and Extension Laboratory

  - The drill works by cutting thin, shallow tracks in the earth, dropping seeds into the small furrows, and then burying the seed.
  - Drills can be adjusted to the proper depth for each seed size/weight group. Seeds are generally buried at a depth of about 1.5x the seed's diameter with a maximum depth of ¼ inches (Xerces 2015).

# Management of Wildflower Planting

Undesirable weeds may establish very quickly within the wildflower plot the first year, especially if the site was not prepped thoroughly. Monitor the plants and try to control for weeds sooner rather than later. Fertilizing wildflower establishments may only give weeds an advantage. Remember, the planted wildflowers are adapted to thrive in Florida's soils and climate. Fertilization generally is not necessary.

## Chemical Control

- If competing weedy grasses start establishing in the plot, use a grass-specific herbicide to achieve control as soon as possible, preferably while the grass weeds are small. However, if you have included native grasses in your planting, consider using a mechanical control method.
- Spot spray larger patches of competing weedy wildflowers. The herbicide used will depend on the species that you are trying to control. Spray using a coarse/large droplet size to avoid overspray onto desired species. Whenever possible, spray at night to avoid times when pollinating species will be present on the flowers. Always follow the product label when applying herbicides of any type.

## Mechanical Control

- Hand-pull small patches of competing weeds. This can be time consuming, but allows you to target only weed species. Pull when weedy plants are small because pulling up large plants may disturb the seed bank, allowing more competing seeds to begin germinating.
- Cut or use a weed trimmer on larger patches of weeds. This may or may not be effective depending on the species being controlled. Remove any thatch because the leftover cuttings may contribute to reseeding the area or block sunlight from reaching young plants.
- Mowing your planting (with the mower deck set high) can reduce weed competition. When and how often you mow a plot depends on the types of wildflower seeds you plant.
  - In perennial-only plots, mow *throughout* the first (and possibly second) year to inhibit the growth of annual weeds (Xerces 2015). This can be done until the perennial plants start to reach the height of the mower deck.
  - Mow plots planted with both annual and perennial wildflowers in late fall of the first (and possibly second) year after planting. At this time, your wildflower species should have completed their blooms. The plants topped with dried seed heads will remain. Mow at a level that is low enough to hit and distribute the seed heads, but high enough to avoid disturbing the bases of overwintering perennial plants. The actual timing of this mowing will depend on region, soil type, and weather. Mowing with blades that leave larger, course pieces of thatch will help disperse wildflower seeds that have not fallen without destroying the seeds themselves.

## Crop Management

- Avoid pesticide and fertilizer overspray from cropped areas into the wildflower establishment; be particularly careful with broadleaf herbicides in the fall, as wildflowers tend to be sensitive to these chemicals.
- Avoid spraying chemicals alongside the established plots when wildflowers are blooming. If necessary, possible, and allowable based on the label instructions, spray at night when most pollinators are less active. Always follow the label because pesticide labels are designed to minimize product impact on beneficial pollinators. For more information, read the document Minimizing Honey Bee Exposure to Pesticides (http://edis.ifas.ufl.edu/in1027). Finally, consider using integrated pest management practices on farms, including the use of pesticides with lower toxicity to bees and other beneficial insects.
- Monitor cropped areas near wildflower establishments for signs of weed encroachment.

## Possible Funding

There are state and federal government programs that can provide funding for establishing pollinator habitats. Visit http://myfwc.com/conservation/special-initiatives/fbci/grant-opportunities/ for Florida's State Wildlife Grants, Nongame Wildlife Grants, and several other habitat restoration programs. For federal programs, see Using 2014 Farm Bill Programs for Pollinators (http://directives.sc.egov.usda.gov/opennonwebcontent.aspx?content=38006.wba). Visit your local United States Department of Agriculture (USDA) service center or the websites below for more information on these programs.

- Environmental Quality Incentives Program (EQUIP) http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/
- Conservation Reserve Program (CRP); Conservation Reserve Enhancement Program (CREP) http://www.fsa.usda.gov/programs-and-services/conservation-programs/index
- Conservation Stewardship Program (CSP) http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/csp/
- Agricultural Conservation Easement Program http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/acep/

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