United States Department of Agriculture

NRCS Natural Resources Conservation Service

Conservation Cover - 327

Herbaceous Plantings for Pollinator Habitat

Conservation Practice Job Sheet ***January 2012***

INTRODUCTION

Pollinators perform key roles in natural ecosystems and agricultural production systems. By helping to keep plant communities healthy and able to reproduce naturally, native pollinators assist plants to provide food and cover for wildlife, prevent erosion, and keep waterways clean. Animals pollinate approximately 75 percent of the agricultural crops grown worldwide for food, fiber, beverages, condiments, spices, and medicines. As such, agricultural products that are produced with the help of pollinators make a significant contribution to the economy.

SELECTING A MIX

The Maryland native wildflower mixes for pollinators were developed with consideration of species benefits, adaptability, diversity, persistence, and cost. The mixes contain a high proportion of wildflowers to grasses based on the amount of viable seed, usually in the range of 75 to 90 percent wildflowers. The mixes contain species that support beneficial insects and provide flowering throughout most of the growing season. Grasses included in the wildflower mixes typically have a bunch-type growth form, are suitable for sites with low fertility, and are relatively non-competitive in a mix of grasses and forbs. Stock wildflower mixes may be less expensive on a weight basis, but will not provide all the benefits of a Maryland native mix, and usually require a much higher seeding rate.

Select an appropriate mix of grasses and wildflowers based on site conditions, from the following Maryland Conservation Cover practice standard (Code 327) mixes:

Mix 15 – Wildflower Meadow for Dry Sites. This Maryland native mix is appropriate for excessively-drained to well-drained soils. Wildflower meadow seeding rate is 4 – 4½ lb/ac PLS of the *Maryland Native Wildflower Mix for Dry Sites* (Mix 8b) with ½ – 1 lb/ac PLS native grasses.

Mix 16 – Wildflower Meadow for Mesic Sites. This Maryland native mix is appropriate for a broad range of soil moisture conditions from well-drained to somewhat poorly drained. Wildflower meadow seeding rate is 3½ – 4 lb/ac PLS of the *Maryland Native Wildflower Mix for Mesic Sites* (Mix 8c) with ½ – 1 lb/ac PLS native grasses.

Mix 17 – Wildflower Meadow for Wet Sites. This Maryland native mix is appropriate for somewhat poorly to very poorly drained soils. Wildflower meadow seeding rate is 2½ – 3 lb/ac PLS of the *Maryland Native Wildflower Mix for Wet Sites* (Mix 8d) with ½ – 1 lb/ac PLS native grasses.

Mix 18 – Custom Grass and Native Wildflower Mix. This Maryland native mix allows for the selection of a custom mix of grasses with the appropriate Maryland native wildflower mix for site conditions. Wildflower meadow seeding rate is ½ - 1 lb/ac PLS native grasses with 4 – 4 ½ lb/ac PLS of the *Maryland Native Wildflower Mix for Dry Sites* (Mix 8b), or 3 ½ - 4 lb/ac PLS of the *Maryland Native Wildflower Mix for Mesic Sites* (Mix 8c), or 2 ½ - 3 lb/ac PLS of the *Maryland Native Wildflower Mix for Wet Sites* (Mix 8d).

Mix 11e – Native Wildflower Mix for Inter-seeding. This mix should be used where the purpose is to enhance the wildflower diversity of an existing grass stand for pollinators. The mix contains a higher proportion of annual wildflowers relative to the other Maryland native mixes, and is appropriate for a wide range of soil moisture conditions. The inter-seeding rate is 2 – 4 lb/ac PLS.

ESTABLISHMENT AND MAINTENANCE

The majority of wildflowers in native pollinator mixes are perennial species that require establishment methods and management similar to those of native warm-season grasses. Unlike annual wildflowers, perennials wildflowers may take a season or more to establish their roots and basal leaves before flowering, and some wildflowers may take up to 3 years or more to become fully established. Therefore, it is important during establishment to protect the planting from being shaded out by weeds.

Although some weeds are beneficial to wildlife, they need to be controlled to establish a wildflower meadow. Perennial and annual grasses should be controlled prior to planting by herbicide treatment or conventional tillage methods. During wildflower establishment, annual grasses are usually controlled by periodic mowing at a height of 8 inches or more throughout the growing season. Sites with existing vegetation or extensive weed problems may require additional site preparation prior to planting.

Native wildflowers can also be inter-seeded into an existing grass-dominated planting to enhance vegetative diversity. Inter-seeding of wildflowers usually must be preceded by prescribed burning or disking of the grasses to ensure adequate seed to soil contact. Excessively thick stands of grasses may require significant treatment to allow the wildflowers to establish successfully. Inter-seeded wildflowers may be broadcast seeded or no-till drilled at a depth of ¼-inch.

Once established, most stands need occasional mowing every 2 to 3 years to keep trees and shrubs from invading. The best time to mow wildflowers for control of woody growth is in late summer or early fall, prior to leaves turning color. Mowing only a portion of the planting in any one year will provide year-round wildlife food and cover. All mowing should be conducted outside the primary nesting season (April 15 – August 15) once the stand is established.

MANAGEMENT

The primary management objective of a native wildflower planting is to maintain the wildflower component of the stand. After establishment, the main threats to a wildflower stand are competition from perennial grasses and encroachment of woody vegetation. Strip disking, prescribed burning, and targeted herbicide application may be used alone or in combination to control perennial grasses and woody vegetation, and maintain a wildflower planting. The best time to implement management activities on wildflower stands is in early fall, at which time wildflower germination and development is encouraged, and control of perennial warm-season grasses and woody vegetation is most effective.

Management activities are conducted on an as-needed basis to achieve desired objectives. Management activities on perennial wildflower stands are implemented less frequently than on annual wildflower stands. Management on perennial stands is usually not conducted for at least 5 years after planting, while annual wildflower stands are usually disked on a 2 to 3 year rotation. For optimum wildlife habitat, all management practices should be conducted outside of the primary nesting season for birds and ground-nesting wildlife (April 15 - August 15).

INSTRUCTIONS

The following schedule provides instructions for planting, maintaining, managing, and enhancing stands of native wildflowers for pollinators. Using proper planting and management techniques will significantly improve plant health, reduce weed problems, and increase the likelihood of success.

ESTABLISHMENT AND MANAGEMENT PLAN FOR HERBACEOUS POLLINATOR PLANTINGS			
Name:	**Farm:**	**Tract:**	**Program/Purpose:** ☐ **CREP/CRP** ☐ **CSP** ☐ **EQIP** ☐ **Other:** ☐ **N/A**
	Tax Map:	**Parcel:**	
Address:	**Assisted by:**		
	Date:		

SEED MIXTURE

Planting Area (Field # , Fire-break, etc.)	Acres	Species and/or Wildflower Mix	Cultivar (if any)	Seeding Rate (PLS lbs/ac)	Total Quantities Needed
Nurse/Cover Crop		**Oats, Barley, or Wheat** *(oats are pre-ferred because they are less competitive)*		**20 - 40**	

Additional Recommendations/Notes:

ESTABLISHMENT AND MAINTENANCE PLAN FOR HERBACEOUS POLLINATOR PLANTINGS

ESTABLISHMENT OF AN HERBACEOUS POLLINATOR PLANTING

Site Preparation

☐ ***Site Without Existing Vegetation***

- ☐ Site preparation not required (recently cropped, with no likelihood of aggressive weed problems).
- ☐ Plant a cover crop of oats, barley, or wheat to control erosion or suppress weed growth.
- ☐ Site has history of noxious or aggressive weeds. Treat weeds with herbicide and plant a full-season cover crop.

☐ ***Site With Existing Vegetation*** – Mow or brush-hog the site and treat using one of the following methods:

- Herbicide Treatment – Use an herbicide with low persistence (e.g. glyphosate) to kill existing vegetation. If the existing vegetation is well-established dense turf, a fall and spring or two spring treatments will probably be required.
- Cultivation – Cultivate the site to remove all existing vegetation. Plant a cover crop of oats, barley, or wheat, if necessary, to control erosion and suppress weed growth.

Planting

Seed Mixture – The species, cultivar, and seeding rate in pure live seed (PLS) is provided on the previous page. If a species or cultivar is not available, contact your local Soil Conservation District office to discuss alternatives.

☐ ***Nurse Crop*** – Use a nurse crop of _____ at a rate of _____ lb/ac at the time of planting for erosion control or weed suppression.

Planting Dates – Use the appropriate planting dates based on your plant hardiness zone. Spring plantings of warm-season grasses may be conducted up to June 30th in all zones if sufficient moisture is available.

Plant Hardiness Zone	Spring Planting	Fall Dormant Planting	Spring Planting - CSG/WSG Mix
5b and 6a	☐ Mar 15 – Jun 15	☐ Nov 1 – Dec 1	☐ Mar 15 – May 31
6b	☐ Mar 1 – Jun 15	☐ Nov 15 – Dec 15	☐ Mar 1 – May 15
7a and 7b	☐ Feb 15 – May 31	☐ Dec 1 – Dec 31	☐ Feb 15 – Apr 30

Planting Method –The most common method of seeding wildflowers is broadcast seeding. Because native wildflower seeds tend to be very small, they should be seeded at very shallow depths (approximately ¼ inch). They also need to be mixed with a bulking agent (e.g. sawdust, cat litter) to produce even seed distribution. Native seed drills may also be used to establish wildflower plantings, but care should be taken to ensure the seeds are not drilled too deeply. Seed the mix using one of the following methods:

- Broadcast seeding. Broadcast onto a firm seedbed and incorporate seed using a cultipacker, rake, or drag.
- No-till planting with a native seed drill into residue or a clean seed bed.
- No-till planting with a native seed drill into a spring cover crop. If the cover crop is tall or thick, mow it prior to planting. The cover crop may also be "burned down" with an herbicide prior to planting.

Lime and Fertilizer – Most wildflowers tolerate poor pH and nutrient conditions.

- If the pH is below 5.0, lime can be applied to achieve a pH of 5.5 to 6.5.
- Phosphorus (P_2O_5) and potassium (K_2O) should only be applied if a soil test indicates that these nutrients are in the low range, based on a nutrient management plan.
- Do not apply nitrogen because it is not needed and will only promote weed growth.

ESTABLISHMENT AND MAINTENANCE PLAN FOR HERBACEOUS POLLINATOR PLANTINGS

Weed Control During Establishment

Planting Year

In the first growing season after seed germination, it is very important to ensure that the seedlings do not get shaded out by weeds. Weeds are typically controlled by mowing, and in some cases by herbicide treatment, as follows:

- Mow the planting as needed during the summer months to control weeds and keep them from flowering. Mow at a height of 6 to 8 inches, or just above wildflower seedling height, but at a height that will clip off flower buds on the existing weeds. Do not let weeds get taller than 18 inches, at which point they may shade out the wildflower seedlings. Nesting season restrictions on mowing do not apply during the establishment period.
- Herbicides can be used to control weeds where application can be targeted in a way that does not kill the seeded wildflowers. Herbicide application may be useful for treating dense clumps of weeds, or where weeds are significantly taller than the wildflowers. Herbicides can be applied in a targeted manner with a backpack sprayer or a wick-bar applicator. Most wildflowers are susceptible to broadleaf control herbicides, so they should not be used in a wildflower planting. Be sure to read and follow herbicide label instructions. Contact your local weed control specialist for more information on herbicide application.

Second and Third Year After Planting

By the second growing season, the wildflowers should be fairly well established. If unwanted cool-season grasses or weeds comprise more than 25 percent of the stand, either treat with an appropriate herbicide or mow the area as necessary to prevent them from going to seed. Annual weeds become less of a problem as perennial plants establish and discourage germination.

MAINTENANCE

Wildflower plantings require periodic maintenance to control noxious and invasive weeds, and prevent succession of woody vegetation. Control of noxious weeds (specifically, johnsongrass, shattercane, Canada thistle, bull thistle, plumeless thistle, and musk thistle) is required by State law.

Weed Control

Control noxious weeds and other invasive plants by spot treatment using mechanical methods or approved herbicides. If it becomes necessary to control noxious weeds during the nesting season, contact your local weed control specialist concerning recommendations for spot-treating the weed problem.

Control of Woody Growth

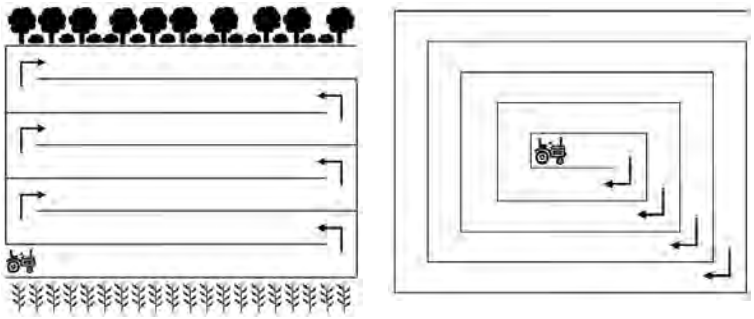
Methods to control woody growth in wildflower plantings include mowing, targeted herbicide treatment, and prescribed burning. Mowing is the most common method because of access to equipment. Herbicide treatment is a common and effective method of controlling brush, but care must be taken not to kill the wildflowers. Prescribed burning is probably the best method for controlling woody vegetation in a wildflower planting, but is not always a viable alternative because of issues with permits and availability of trained fire crew.

Mowing

- Mow as needed, but preferably on a 2 to 3 year rotation, mowing only 1/3 to 1/2 of the planting each year. The remaining unmowed areas will provide year-round wildlife food and cover.
- Mowing in late summer or early fall, prior to leaves turning color, is most effective for controlling woody growth, because mowing at this time prevents woody vegetation from translocating nutrient reserves to their roots. Mowing in the non-flowering season (usually December – March) allows for use of late season flowers by pollinators and other insects, but is less effective at controlling woody vegetation.
- Do not mow during the primary nesting season (April 15 - August 15). Spot mowing of clumps of weeds may be required during the flowering season, but should only be conducted when necessary.

ESTABLISHMENT AND MAINTENANCE PLAN FOR HERBACEOUS POLLINATOR PLANTINGS

- To the extent possible, mow in a manner that will provide escape routes for wildlife at the time of mowing, such as mowing from the inside out, or mowing from the field side toward the woods edge.
- Do <u>not</u> mow for cosmetic purposes.



Edge-to-edge (left) or inside-to-outside (right) mowing patterns provide escape routes for wildlife.

Targeted Herbicide Application

Herbicide treatment is a common and effective method for controlling woody vegetation. <u>However, because wildflowers are susceptible to most herbicides that control broadleaf plants, the use of herbicides in wildflower plantings should only be used in a targeted method that limits wildflower exposure to the herbicide</u>. Methods vary depending on the type, size, and age of the target species, and the size of the treatment area. Provided below are some general recommendations on the use of herbicides for woody vegetation control. For more specific information, contact your local University of Maryland Extension or Soil Conservation District office, or county weed control agent.

- Small areas of woody vegetation can be treated using basal bark, foliar spray, or cut-surface treatment methods in which the herbicide is applied with portable sprayers and hand tools.
- Large areas of woody vegetation will likely require foliar application of a systemic herbicide using a wick bar applicator. Systemic herbicides (e.g. 2,4-D) are absorbed by the plant and translocated to the roots. Woody vegetation may need to be mowed and allowed to re-grow to enable effective application of herbicide to foliar surfaces.
- Application of systemic herbicides in late summer or early fall, prior to leaf-drop, is typically more effective because the herbicide will be translocated to the roots.
- Check the pesticide label to determine the types of plants that are controlled or damaged by the herbicide.
- Always read and follow the pesticide label when applying herbicides.

MANAGEMENT PLAN FOR HERBACEOUS POLLINATOR PLANTINGS				
Name:		**Assisted by:**		**Date:**
Farm:	**Tract:**	**Field(s):**	**Acres:**	**Program:**

Prescribed Burning ☐ **Required** ☐ **Optional** ☐ **Will not be used**

Prescribed burning is the most effective management technique for removing accumulated plant litter and controlling woody plants. Prescribed burning will also enhance wildflower and warm-season grass re-growth by exposing seed to sunlight and releasing nutrients that are bound up in plant litter.

- The best time to conduct prescribed burns on wildflower stands is early fall. Burning at this time is most effective for controlling woody vegetation. Winter burns may encourage wildflowers, but are less effective at controlling woody vegetation. Spring burns favor warm-season grasses and harm wildflowers.
- Conduct prescribed burns on a 3 to 5 year rotation, or as needed to control woody growth. Burn only 1/3 to 1/2 of the wildflower stand at a time to maintain food and cover for wildlife.
- Prescribed burning requires the use of firebreaks that are usually 12 to 15 feet wide. Existing strips of cool-season grasses or disked strips of bare ground can be used as firebreaks.
- Prescribed burning can facilitate disking, which can be used to promote the germination of wildflower seeds. However, disking can also promote the germination of weed seeds. If wildflowers do not return in the numbers expected after burning, try lightly disking 30-foot strips to promote germination.
- **Prescribed burning requires a permit and may not be allowed in some areas**. Contact your local office of the Maryland Department of Natural Resources, Forest Service, or Soil Conservation District for current information concerning permits and assistance for this practice.
- Do not burn during the primary nesting season (April 15 - August 15).

Strip Disking ☐ ***Required as necessary*** ☐ ***Optional*** ☐ ***Will not be used***

Strip disking can be used to increase the vegetative diversity in a stand. <u>However, disking should only be conducted in wildflower stands when the need exists.</u> Disking is not necessarily needed in a diverse stand of wildflowers with a minor component of perennial grasses. Many wildflowers used in mixes are perennial, and some may not fully develop for three to four years after seeding. Disking during the development period may destroy seedlings. If perennial wildflowers were planted, <u>wait at least five years</u> before disking.

If a stand does becomes dominated by perennial grasses, disking may be used to simultaneously reduce the amount of perennial grass cover and promote wildflower germination. The appropriate intensity and timing for disking will depend on the objectives and the stand characteristics. Disking should only be used if it will not result in excessive erosion or adversely impact water quality, and will not destroy the planting.

Minimum Set-backs

For water quality purposes, avoid disking within 24 feet of a watercourse, water body, or wetland, or within 15 feet of intensively used areas (e.g. barnyards, conventionally tilled land).

Disking Intensity

- Before disking, mow the area that will be disked. Fall mowing can facilitate spring disking by providing time for breakdown of leaf matter.
- The required disking intensity will vary depending on the stand condition. For stands where perennial grasses are not dense, a single pass with a light finish disk may be sufficient to set back grasses and encourage wildflower germination. Thick stands of perennial warm-season grasses will require heavier, more intensive disking to open up the stand. In thick stands, multiple passes with a tandem disk, or a single pass with a heavy offset disk may be required to thin the grasses. A heavy offset disk will slice and turn the soil and bury residue, which may be needed to reduce the overall cover of grasses. After use of a heavy offset disk or when the soil has been turned over, the soil surface should be smoothed with a cultipacker, harrow, or other finishing implement.

MANAGEMENT PLAN FOR HERBACEOUS POLLINATOR PLANTINGS

Width, Spacing, and Timing

- Disk in strips on 1/3 to 1/2 of each field on the contour, as necessary to maintain vegetative diversity. Do not disk perennial wildflowers in the first 5 years after planting. Annual wildflowers may be disked more often, usually on a 2 to 3 year rotation.
- The best time to disk to promote wildflower germination is in late summer to early fall (September 1 – October 15). Late summer/early fall disking may also be more effective at reducing the density of warm-season grasses, because at this time they are sending reserves into their roots. If fall disking is not possible, disking can be conducted in late winter to early spring (preferably in March), although this is likely to encourage the growth of annual grasses (e.g. foxtail).
- After disking, monitor the site for weeds and apply control methods if necessary.
- Do not disk during the primary nesting season (April 15 – August 15).

Highly Erodible Land with an EI ≥ 16 ☐ is included in this plan. Follow this special guidance:

- Disk in strips no wider than 30 feet on the contour, in an alternating pattern of disked and undisked strips. Undisked strips should be twice the width of disked strips.
- Disking intensity should be light enough to maintain at least 30% residue cover in the disked strips.
- Do not disk parts of the field where excessive erosion or gully erosion is likely to occur.
- On highly erodible land with an EI > 30, only disk in the upper half of the slope, and adjust the disking intensity to attain at least 60% residue cover.

Additional Recommendations:

ENHANCING HERBACEOUS VEGETATION FOR POLLINATORS				
Name:		**Assisted by:**		**Date:**
Farm:	**Tract:**	**Field(s):**	**Acres:**	**Program:**

Inter-seeding Native Wildflowers ☐ ***Required*** ☐ ***Optional*** ☐ ***Will not be used***

The native wildflower components of a stand of herbaceous vegetation tends to naturally decline with age, and the stand tends to become dominated by perennial grasses. Wildflowers may be inter-seeded into existing herbaceous vegetation to maintain plant diversity and provide food for wildlife.

Seed Mixture – The species, cultivar, and seeding rate in pure live seed (PLS) is provided on page 3 or as an attachment. If a species or cultivar is not available, contact your local Soil Conservation District office to discuss alternatives. Native perennial forb and legume mixes can be inter-seeded at a rate of 2 to 4 lb pure live seed (PLS) per acre, while annuals or legumes alone are typically inter-seeded at rates from 5 to 10 lb per acre, depending on the species.

Planting Dates – Spring is the best time for inter-seeding the *Maryland Native Wildflower Mix for Inter-seeding* because it contains a significant proportion of annual wildflowers. Use the appropriate planting dates based on your plant hardiness zone.

Plant Hardiness Zone	5b and 6a	6b	7a and 7b
Planting Dates	☐ Mar 15 – Jun 15	☐ Mar 1 – Jun 15	☐ Feb 15 – May 31

Site Preparation – If the grass stand is thick or contains more than ¼ inch of litter (thatch), lightly disk or harrow the stand prior to seeding. For very dense and vigorous grass stands, targeted herbicide application can be used to kill some of the grasses and create space for wildflower development. It is important to ensure that the stand contains space for the wildflowers to establish. When disking or harrowing is needed, use a minimum set-back of at least 24 feet from a watercourse, water body, or wetland. Read and follow the pesticide label when applying herbicides.

Planting Method – Use <u>one</u> of the following planting methods for inter-seeding:

1. ***Broadcast Seeding***. If needed, cut the grass short before seeding. Mix the wildflower seed with a bulking agent such as sawdust or cat litter so the seed will be more evenly dispersed. Broadcast the seed. Then go over it with a cultipacker, drag or harrow to enhance seed-to-soil contact.
2. ***No-till Planting***. If needed, cut the grass short before seeding. Use a no-till drill to place seed about ¼-inch into the soil. Avoid placing the seed too deeply into the soil.

Additional Recommendations:

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

ADDENDUM

CONSERVATION COVER – CODE 327

This document is an addendum to the Maryland conservation practice standard for Conservation Cover (Code 327). All mixes provided in this addendum are approved mixes for conservation cover in Maryland.

The mixes and species contained in this addendum are focused on high diversity plantings to support wildlife habitat, with special consideration for pollinators and beneficial insects.

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TABLE 2: SELECTED LIST OF HERBACEOUS COVER MIXES
Mixes 8b, 8c, 8d, 8e, 15, 16, 17, 18

Provided here are additional mixes to table 2 of the Maryland conservation practice standard for Conservation Cover (Code 327). The species and mixes are focused on establishment of high-diversity herbaceous stands containing native grasses and wildflowers. Native grasses are matched up with one of three Maryland native wildflower mixes for dry, mesic, and wet soil moisture conditions. The grasses selected are native to Maryland and tend to be less competitive than nonnative grasses and tall-statured native grasses, which makes them more compatible with native wildflowers. All of the grasses tend to have a bunch-type growth form, and are suitable for sites with low fertility.

The wildflower mixes contain species that range throughout Maryland, support pollinators and other beneficial insects, provide flowering throughout most of the growing season (as a mix), and are commercially available. The composition of the wildflower mixes were selected to provide a target diversity-to-cost ratio. Select the appropriate mix for the soil moisture conditions of the site.

The native wildflower mix for interseeding (mix 8e) can be used for enhancing forb diversity in existing grass stands. This mix has a higher proportion of annual wildflowers than the other native wildflower mixes, which will result in a quicker but somewhat less sustained enhancement of forb diversity. Perennial wildflower species in this mix were partially selected based on their performance in warm-season grass stand renovation trials conducted at the Norm A. Berg National Plant Materials Center. Periodic soil disturbance will be required to maintain the annual wildflower component of this mix.

All mixes listed here, excluding mix 8e, have 2 seeding rates: *Conservation Cover Grasses with Wildflowers* and *Wildflower Meadow*. The *Conservation Cover Grasses with Wildflowers* seeding rate was designed as a native conservation cover mix of grasses and forbs with approximately 10 to 25 percent wildflowers by seed. The higher grass seeding rates listed are for sites where soils have a higher risk of erosion, or for excessively dry or infertile sites. The *Wildflower Meadow* seeding rate was designed to provide habitat for pollinators, and contains at least 80 percent wildflowers by seed. Both types of plantings will provide suitable habitat for early successional wildlife, but the *Wildflower Meadow* rate should be used when the purpose is specifically to provide habitat for pollinators. Neither set of rates were intended for sites where the Critical Area Planting practice standard (Code 342) applies.

Each mix includes a list of alternative species that can be selected as substitutes for species that are not available at the time, or when desired by the client or planner. When selecting alternative species, select species that have similar benefits and flowering periods, when possible. Native seed suppliers can provide assistance with selecting alternatives based on current availability.

Mix 18 is a custom mix, which includes instructions and a worksheet for selecting a custom mix of native grasses to be established with native wildflowers for either *Conservation Cover Grasses with Wildflowers* or a *Wildflower Meadow.*

Mix No.	Mix[1]	Seeding Rate Grasses with Wildflowers[2] (lb/ac PLS[3])	Seeding Rate Wildflower Meadow and Pollinators[2] (lb/ac PLS[3])	Soil Drainage Class[4]	Remarks
15	Purpletop *Tridens flavus* Broomsedge *Andropogon virginicus* ***OR*** Indiangrass *Sorghastrum nutans* Canada Wild Rye *Elymus canadensis* ***OR*** Little Bluestem *Schizachyrium scoparium* Mix 8b – Dry Site Native Wildflower Mix	1 – 2 1 – 2 1 – 2 2 – 3 2 – 3 1 – 2	1/10 1/10 1/10 3/10 3/10 4½	E – W	All grasses in this mix are 2 to 4 feet in height, except Indiangrass, which can reach up to 8 feet. All grasses in this mix are warm-season grasses, except for Canada Wild Rye.
16	Broomsedge Andropogon virginicus Virginia Wild Rye *Elymus virginicus* Purpletop *Tridens flavus* ***OR*** Purple Lovegrass Eragrostis spectabilis Mix 8c – Mesic Site Native Wildflower Mix	1 – 2 2 – 3 1 – 2 1 – 2 1 – 2	1/10 3/10 1/10 1/10 3½	MW – SP	All grasses in this mix are 2 to 4 feet in height. All grasses in this mix are warm-season grasses, except for Virginia Wild Rye.
17	Redtop Panicgrass Panicum rigidulum Virginia Wild Rye Elymus virginicus Beaked Panicgrass *Panicum anceps* ***OR*** Fox Sedge Carex vulpinoidea Mix 8d – Wet Site Native Wildflower Mix	1 – 2 2 – 3 1 – 2 1 – 2 ½ – 1	1/10 3/10 1/10 1/10 3½	SP – VP	All the grasses in this mix are 2 to 4 feet in height. Fox sedge ranges from 1 to 3 feet in height. Redtop panicgrass and beaked panicgrass are both warm-season grasses. Virginia wild rye is a cool-season grass. Use beaked panicgrass on less wet sites and fox sedge on wetter sites. Fox sedge may be somewhat aggressive. Avoid use in or adjacent to areas where sensitive plant species are known to occur.

1 – Where "OR" is shown, select from one of the two species separated by "OR" based on site conditions and desirability. Each mix shall contain 3 grass species.
2 – The seeding rate for *Grasses with Wildflowers* is a general conservation cover mix for wildlife. Use the *Wildflower Meadow* rate for pollinator plantings.
3 – Native grasses and wildflowers should be purchased by weight in pure live seed (PLS).
4 – Soil drainage classes: E – Excessively drained; W – Well drained; MW – Moderately well drained; SP – Somewhat poorly drained; P – Poorly drained.

MIX 18. CUSTOM GRASS AND NATIVE WILDFLOWER MIX

This list contains Maryland native species of grasses for use in developing a custom mix of grasses for Conservation Cover plantings. It is intended to include one of the Maryland native wildflower mixes as part of the planting. The proportion of species in a grass mix, as shown in column 2 of table 2B, is the proportion of grasses a particular species should represent in the grass mixture of the planting. The total for all grasses selected should add up to 1 (or 100%), and the proportion for each species should be multiplied by the total seeding rate for grasses in lb/ac PLS[1].

Steps for Developing a Custom Mix

1. Select at least 3 species of grasses that are appropriate for the location and site, and for which the proportions can add up to 1.
2. Select the proportions for each species based on the given range of proportions.
3. Determine the overall seeding rate for the grass mix based on the planting type as shown in table 2A.
4. Multiply the proportion for each grass species by the grass seeding rate to determine the seeding rate in lb/ac PLS.
5. Select an appropriate wildflower mix for the site from the choices of mix 8b, 8c, and 8d.

Example Mix 18 Selection for Conservation Cover with Wildflowers

(a) Selected Species	(b) Proportion Range (from col. 2 of table 2B)	(c) Proportion (selected from previous column)	(d) Overall Grass Mix Rate (selected from table 2A)	(e) Calculated Seed Rate (lb/ac PLS) (col. c x col. d)
Purple Lovegrass	0.2 – 0.3	0.3	4	1.2
Purpletop	0.2 – 0.3	0.3		1.2
Canada Wild Rye	0.4 – 0.6	0.4		1.6
Total Grasses		1		4.0

Example Mix 18 Selection for Wildflower Meadow

(a) Selected Species	(b) Proportion Range (from col. 2 of table 2B)	(c) Proportion (selected from previous column)	(d) Overall Grass Mix Rate (selected from table 2A)	(e) Calculated Seed Rate (lb/ac PLS) (col. c x col. d)
Purple Lovegrass	0.2 – 0.3	0.2	½	0.1
Purpletop	0.2 – 0.3	0.2		0.1
Canada Wild Rye	0.4 – 0.6	0.6		0.3
Total Grasses		1		0.5

Mix 18 Worksheet for Calculating Grass Species Seed Rates

(a) Selected Species	(b) Proportion Range (from col. 2 of table 2B)	(c) Proportion (selected from previous column)	(d) Overall Grass Mix Rate (selected from table 2A)	(e) Calculated Seed Rate (lb/ac PLS) (col. c x col. d)
Total Grasses		1		

TABLE 2A. SEEDING RATES FOR MIX 18		
Planting Type[1]	**Grass Mix Seeding Rate (lb/ac PLS**[2]**)**	**Wildflower Mix Seeding Rate (lb/ac PLS**[2]**)**
Conservation Cover Grasses with Wildflowers	4 – 6	Dry Site Mix: 1 – 2 Mesic Site Mix: 1 – 2 Wet Site Mix: ½ – 1
Wildflower Meadow and Pollinators	½ – 1	Dry Site Mix: 4 – 4½ Mesic Site Mix: 3½ – 4 Wet Site Mix: 2½ – 3

1 – The seeding rate for *Grasses with Wildflowers* is a general conservation cover mix for wildlife. Use the *Wildflower Meadow* rate for pollinator plantings.
2 – Native grasses and wildflowers should be purchased by weight in pure live seed (PLS).

TABLE 2B. GRASS SPECIES FOR MIX 18

Select at least 3 species, at least 2 of which are warm season species.

Grass Species	Proportion by Weight in a Grass Mix	Coastal Plain	Piedmont	Mountain	Warm or Cool Season	Dry Sites	Mesic Sites	Wet Sites	Soil Drainage Class[1]	Seeds per lb (approx.)	Remarks
Beaked Panicgrass *Panicum anceps*	0.2 – 0.3	●	●		W		●	●	MW - P	570,000	Spreads from short rhizomes to form dense clumps. Prefers some shade. Height: 2 - 4 ft. Use Maryland ecotype.
Broomsedge *Andropogon virginicus*	0.2 – 0.3	●	●	●	W	●	●		E – SP	800,000	Often volunteers in idle crop fields with low fertility and low pH. Height: 1½ - 3 ft.
Bushy Broomsedge *Andropogon glomeratus*	0.4 – 0.6	●	●	●	W			●	SP – P	205,000	Often volunteers in wet idle crop fields in association with *Andropogon virginicus*. Height: 1½ - 3 ft.
Canada Wildrye *Elymus canadensis*	0.4 – 0.6	●	●	●	C	●	●		E – MW	114,000	Prefers partial shade. Seedlings are vigorous and establish quickly, but are not highly competitive with other grasses. Not compatible with prescribed burning.
Deertongue *Dicanthelium clandestinum*	0.2 – 0.3	●	●	●	W	●	●		E – SP	350,000	Usually slow to establish, but tolerates a wide range of site conditions. Height: 1½ - 3 ft.
Fox Sedge *Carex vulpinoidea*	0.2 – 0.3	●	●	●	n/a			●	SP – VP	1,300,000	Obligate wetland species. Provides food and cover for wildlife. Can be aggressive. Seed is extremely small. Height: 1 - 3 ft.
Indiangrass *Sorghastrum nutans*	0.2 – 0.4	●	●	●	W	●	●		E – SP	175,000	Tallest (6 - 8 ft) species of the grasses listed here. May be somewhat aggressive on sites with normal moisture or fertility.
Little Bluestem *Schizachyrium scoparium*	0.4 – 0.6	●	●	●	W	●	●		E – MW	200,000	Prefers dry sites. Similar in appearance to *Andropogon virginicus*.
Purple Lovegrass *Eragrostis spectabilis*	0.2 – 0.3	●	●	●	W	●	●		E – MW	1,060,000	Prefers sandy sites. Seed is extremely small. Height: 1 - 3 ft.
Purpletop *Tridens flavus*	0.2 – 0.3	●	●	●	W	●	●		E – MW	465,000	Best suited for dry, sandy areas or sites with shallow soils.
Redtop Panicgrass *Panicum rigidulum*	0.2 – 0.3	●	●	●	W			●	SP – P	800,000	Prefers wet sites. Seed is extremely small, so seeding rate should be proportionally smaller in a mix. Height: 2 - 3 ft.
Virginia Wildrye *Elymus virginicus*	0.4 – 0.6	●	●	●	C		●	●	MW – P	100,000	See remarks for *Elymus canadensis*.

1 – Soil drainage classes: E – Excessively drained; W – Well drained; MW – Moderately well drained; SP – Somewhat poorly drained; P – Poorly drained.

MIX 8b. MARYLAND NATIVE WILDFLOWER MIX - DRY SITES

MD native wildflower mix for excessively-drained to well-drained soils. Wildflower meadow seeding rate is 4 – 4½ lb/ac PLS with ½ – 1 lb/ac PLS native grasses.

Scientific Name	Common Name	% by Wt.[1]	% by Seed[2]	Duration[3]	Legume	Flowering Period								
						M	A	M	J	J	A	S	O	N
Asclepias syriaca	Common Milkweed	2.0	5.6	P	N									
Asclepias tuberosa	Butterfly Milkweed	7.0	2.0	P	N									
Baptisia tinctoria	Yellow False Indigo	3.0	3.6	P	Y									
Chamaecrista fasciculata	Partridge Pea	12.0	3.1	A	Y									
Coreopsis verticillata	Whorled Tickseed	6.0	4.8	P	N									
Desmodium paniculatum	Panicled Tick-Trefoil	5.0	4.0	P	Y									
Heliopsis helianthoides	Smooth Oxeye	10.0	4.6	P	N									
Lespedeza hirta	Hairy Bush-Clover	4.0	2.8	P	Y									
Liatris pilosa var. pilosa	Grass-leaf Blazing Star	4.0	4.6	P	N									
Monarda fistulosa	Wild Bergamot	1.0	5.1	P	N									
Monarda punctata	Spotted Bee-balm	1.0	5.7	P	N									
Penstemon canescens	Gray Beard-tongue	3.0	4.8	P	N									
Penstemon digitalis	Tall White Beard-tongue	3.0	4.8	P	N									
Pycnanthemum tenuifolium	Narrow-leaf Mountain Mint	0.3	5.4	P	N									
Rudbeckia hirta	Black-eyed Susan	0.7	4.4	B	N									
Senna marilandica	Maryland Senna	25.0	2.0	P	Y									
Silphium trifoliatum	Whorled Rosinweed	5.0	1.0	P	N									
Solidago juncea	Early Goldenrod	0.5	5.0	P	N									
Solidago nemoralis	Gray Goldenrod	1.0	4.0	P	N									
Solidago rugosa	Wrinkle-leaf Goldenrod	1.0	4.0	P	N									
Symphyotrichum laeve var. laeve	Smooth Blue Aster	1.0	4.0	P	N									
Symphyotrichum oblongifolium	Aromatic Aster	2.0	5.6	P	N									
Symphyotrichum pilosum var. pilosum	White Oldfield Aster	2.0	5.6	P	N									
Tradescantia virginiana	Virginia Spiderwort	0.5	3.5	P	N									
ALTERNATIVES[4]														
Desmodium canadense	Showy Tick Trefoil			P	Y									
Euthamia graminifolia	Grass-leaved Goldenrod			P	N									
Monarda media	Purple Bergamot			P	N									
Pycnanthemum incanum	Hoary Mountain Mint			P	N									
Senna hebecarpa	American Senna			P	Y									
Symphyotrichum ericoides	White Heath Aster			P	N									
Symphyotrichum urophyllum	White Arrowleaf Aster			P	N									
Tradescantia ohiensis	Ohio Spiderwort			P	N									

MIX 8c. MARYLAND NATIVE WILDFLOWER MIX - MESIC SITES

MD native wildflower mix for well-drained to somewhat poorly drained soils. Mix contains species for a broad range of soil moisture conditions. Wildflower meadow seeding rate is 3½ – 4 lb/ac PLS with ½ – 1 lb/ac PLS native grasses.

Scientific Name	Common Name	% by Wt.[1]	% by Seed[2]	Duration[3]	Legume	Flowering Period								
						M	A	M	J	J	A	S	O	N
Asclepias syriaca	Common Milkweed	2.0	5.0	P	N									
Asclepias tuberosa	Butterfly Milkweed	6.0	1.5	P	N									
Chamaecrista fasciculata	Partridge Pea	10.0	2.3	A	Y									
Conoclinium coelestinum	Mistflower	1.0	5.4	P	N									
Coreopsis tinctoria	Golden Tickseed	0.5	5.8	A	N									
Desmodium canadense	Showy Tick Trefoil	15.0	3.9	P	Y									
Doellingeria umbellata var. umbellata	Flat-topped White Aster	2.0	5.7	P	N									
Eupatorium purpureum	Sweet-scented Joe-pye Weed	2.0	4.8	P	N									
Euthamia graminifolia	Grass-leaved Goldenrod	0.3	6.0	P	N									
Helenium flexuosum	Purple Sneezeweed	0.7	5.0	P	N									
Heliopsis helianthoides	Smooth Oxeye	10.0	4.2	P	N									
Lespedeza hirta	Hairy Bush-Clover	4.0	2.5	P	Y									
Liatris pilosa var. pilosa	Grass-leaf Blazing Star	5.0	5.2	P	N									
Monarda fistulosa	Wild Bergamot	1.0	4.6	P	N									
Monarda punctata	Spotted Bee-balm	1.0	5.2	P	N									
Penstemon canescens	Gray Beard-tongue	1.0	1.4	P	N									
Penstemon digitalis	Tall White Beard-tongue	4.0	5.7	P	N									
Pycnanthemum tenuifolium	Narrow-leaf Mountain Mint	0.3	4.8	P	N									
Rudbeckia hirta	Black-eyed Susan	0.7	4.0	B	N									
Senna hebecarpa	American Senna	25.0	1.8	P	Y									
Symphyotrichum novae-angliae	New England Aster	1.0	3.9	P	N									
Symphyotrichum oblongifolium	Aromatic Aster	1.0	2.5	P	N									
Symphyotrichum prenanthoides	Zigzag Aster	1.0	2.5	P	N									
Tradescantia virginiana	Virginia Spiderwort	0.5	3.1	P	N									
Zizia aurea	Golden Alexanders	5.0	3.0	P	N									

MIX 8c. MARYLAND NATIVE WILDFLOWER MIX - MESIC SITES (CONTINUED)

Scientific Name	Common Name	% by Wt.[1]	% by Seed[2]	Duration[3]	Legume	Flowering Period M	A	M	J	J	A	S	O	N
ALTERNATIVES[4]														
Asclepias incarnata	Swamp Milkweed			P	N									
Coreopsis verticillata	Whorled Tickseed			P	N									
Desmodium paniculatum	Panicled Tick-Trefoil			P	Y									
Eupatoriadelphus fistulosus	Joe-pye Weed			P	N									
Helenium autumnale	Yellow Sneezeweed			P	N									
Liatris scariosa	Large Blazing Star			P	N									
Monarda media	Purple Bergamot			P	N									
Penstemon laevigatus	Smooth Beard-tongue			P	N									
Pycnanthemum muticum	Big-leaf Mountain Mint			P	N									
Senna marilandica	Maryland Senna			P	Y									
Solidago rugosa	Wrinkle-leaf Goldenrod			P	N									
Symphyotrichum ericoides	White Heath Aster			P	N									
Symphyotrichum laeve var. laeve	Smooth Blue Aster			P	N									
Symphyotrichum lateriflorum var. lateriflorum	Calico Aster			P	N									
Tradescantia ohiensis	Ohio Spiderwort			P	N									
Veronicastrum virginicum	Culver's Root			P	N									

MIX 8d. MARYLAND NATIVE WILDFLOWER MIX - WET SITES

MD native wildflower mix for somewhat poorly to very poorly drained soils. Wildflower meadow seeding rate is 2½ – 3 lb/ac PLS with ½ – 1 lb/ac PLS native grasses.

Scientific Name	Common Name	% by Wt.[1]	% by Seed[2]	Duration[3]	Legume	Flowering Period								
						M	A	M	J	J	A	S	O	N
Asclepias incarnata	Swamp Milkweed	3.0	4.9	P	N									
Bidens aristosa	Bur Marigold	15.0	4.5	A	N									
Helianthus angustifolius	Swamp Sunflower	4.0	4.7	P	N									
Desmodium canadense	Showy Tick Trefoil	10.0	1.7	P	Y									
Doellingeria umbellata var. umbellata	Flat-topped White Aster	3.0	5.6	P	N									
Eupatoriadelphus fistulosus	Joe-pye Weed	1.3	6.1	P	N									
Eupatorium perfoliatum	Boneset	1.0	6.5	P	N									
Thalictrum pubescens	Tall Meadow Rue	10.0	4.5	P	N									
Helenium autumnale	Yellow Sneezeweed	2.0	6.8	P	N									
Lobelia cardinalis	Cardinal Flower	0.2	5.3	P	N									
Penstemon digitalis	Tall White Beard-tongue	5.0	4.7	P	N									
Pycnanthemum tenuifolium	Narrow-leaf Mountain Mint	0.5	5.2	P	N									
Senna hebecarpa	American Senna	20.0	1.0	P	Y									
Solidago patula	Rough-leaved Goldenrod	4.0	6.5	P	N									
Symphyotrichum lateriflorum var. lateriflorum	Calico Aster	2.0	3.5	P	N									
Symphyotrichum novae-angliae	New England Aster	2.0	5.1	P	N									
Symphyotrichum novi-belgii	New York Aster	4.0	6.5	P	N									
Tradescantia virginiana	Virginia Spiderwort	1.0	4.1	P	N									
Verbena hastata	Blue (Swamp) Vervain	2.0	7.0	B	N									
Vernonia noveboracensis	New York Ironweed	6.0	4.2	P	N									
Zizia aurea	Golden Alexanders	4.0	1.6	P	N									
ALTERNATIVES[4]														
Bidens cernua	Nodding Bur Marigold			A	N									
Conoclinium coelestinum	Mistflower			P	N									
Eupatoriadelphus dubius	Coastal Plain Joe-pye Weed			P	N									
Eupatorium purpureum	Sweet-scented Joe-pye Weed			P	N									
Geum laciniatum	Rough Avens			P	N									
Caltha palustris	Marsh Marigold			P	N									
Lobelia siphilitica	Blue Lobelia			P	N									
Monarda didyma	Scarlet Bee-balm			P	N									
Packera aurea	Golden Ragwort			P	N									
Pycnanthemum muticum	Big-leaf Mountain Mint			P	N									
Symphyotrichum puniceum var. puniceum	Purple-stemmed Aster			P	N									

MIX 8e. MARYLAND NATIVE WILDFLOWER MIX – INTERSEEDING

MD native wildflower mix for enhancing forb diversity in existing grass stands on sites with excessively-drained to somewhat poorly drained soils. Inter-seeding rate is 2 – 4 lb/ac PLS.

Scientific Name	Common Name	% by Wt.[1]	% by Seed[2]	Duration[3]	Legume	Flowering Period M	A	M	J	J	A	S	O	N
Asclepias syriaca	Common Milkweed	0.5	1.0	P	N									
Asclepias tuberosa	Butterfly Milkweed	1.0	0.2	P	N									
Chamaecrista fasciculata	Partridge Pea	30.0	5.6	A	Y									
Conoclinium coelestinum	Mistflower	0.5	2.1	P	N									
Coreopsis tinctoria	Golden Tickseed	1.5	13.8	A	N									
Desmodium canadense	Showy Tick Trefoil	15.0	3.1	P	Y									
Doellingeria umbellata var. umbellata	Flat-topped White Aster	0.5	1.1	P	N									
Eupatorium purpureum	Sweet-scented Joe-pye Weed	1.0	1.9	P	N									
Euthamia graminifolia	Grass-leaved Goldenrod	0.5	8.0	P	N									
Helenium flexuosum	Purple Sneezeweed	1.0	5.7	P	N									
Heliopsis helianthoides	Smooth Oxeye	10.0	3.3	P	N									
Lespedeza hirta	Hairy Bush-Clover	4.0	2.0	P	Y									
Liatris spicata	Marsh Blazing Star	0.5	0.1	P	N									
Monarda fistulosa	Wild Bergamot	4.0	14.5	P	N									
Monarda punctata	Spotted Bee-balm	4.0	16.4	P	N									
Penstemon digitalis	Tall White Beard-tongue	5.0	5.7	P	N									
Pycnanthemum tenuifolium	Narrow-leaf Mountain Mint	0.5	6.7	P	N									
Rudbeckia hirta	Black-eyed Susan	1.0	4.5	B	N									
Senna hebecarpa	American Senna	15.0	0.9	P	Y									
Symphyotrichum ericoides	White Heath Aster	0.5	1.0	P	N									
Symphyotrichum oblongifolium	Aromatic Aster	2.0	4.0	P	N									
Symphyotrichum prenanthoides	Zigzag Aster	1.0	2.0	P	N									
Tradescantia virginiana	Virginia Spiderwort	0.5	2.5	P	N									
Zizia aurea	Golden Alexanders	1.0	0.5	P	N									

MIX 8e. MARYLAND NATIVE WILDFLOWER MIX – INTERSEEDING (CONTINUED)

Scientific Name	Common Name	% by Wt.[1]	% by Seed[2]	Duration[3]	Legume	Flowering Period M	A	M	J	J	A	S	O	N
ALTERNATIVES[4]														
Asclepias incarnata	Swamp Milkweed			P	N									
Coreopsis verticillata	Whorled Tickseed			P	N									
Desmodium paniculatum	Panicled Tick-Trefoil			P	Y									
Eupatoriadelphus fistulosus	Joe-pye Weed			P	N									
Helenium autumnale	Yellow Sneezeweed			P	N									
Liatris pilosa var. pilosa	Grass-leaf Blazing Star			P	N									
Monarda media	Purple Bergamot			P	N									
Penstemon canescens	Gray Beard-tongue			P	N									
Senna marilandica	Maryland Senna			P	Y									
Solidago nemoralis	Gray Goldenrod			P	N									
Solidago rugosa	Wrinkle-leaf Goldenrod			P	N									
Symphyotrichum novae-angliae	New England Aster			P	N									
Symphyotrichum laeve var. laeve	Smooth Blue Aster			P	N									
Tradescantia ohiensis	Ohio Spiderwort			P	N									

Notes for Mixes 8b, 8c, 8d and 8e

1 – Order mixes using the percent by weight column, in pure live seed (PLS). The wildflower proportions were selected to provide a target diversity-to cost ratio.
2 – Approximate percentage of species in mix based on number of seeds; this is provided for informational purposes.
3 – Duration: P – Perennial; B – Biennial; A – Annual
4 – Alternative species may be substituted for species due to desirability or lack of availability. When possible, select an alternative that has a flowering period that is similar to the species for which it is being substituted.

TABLE 6: NATIVE SHRUBS AND SMALL TREES FOR POLLINATOR HABITAT

These trees and shrubs bloom in the spring. For optimum benefits to pollinators, habitat areas should have at least three species of plants in bloom during spring, summer, and fall. Use clumps or linear plantings of native trees and/or shrubs in combination with native wildflower mixes to ensure the availability of flowers during the entire growing season.

Common Name	Scientific Name	Distribution in MD	Soil Drainage Class [1]
Bayberry, Northern	*Morella (Myrica) pensylvanica*	Coastal Plain	W - SP
Beautyberry, American	*Callicarpa americana*	Statewide	W - MW
Cherry, Pin	*Prunus pensylvanica*	Western Maryland	W - MW
Chokeberry, Red	*Photinia pyrifolia (Pyrus arbutifolia)*	Statewide	SP - P
Chokecherry	*Prunus virginiana*	Western Maryland	MW - P
Dewberry, Bristly	*Rubus hispidus*	Statewide	SP - P
Dogwood, Silky	*Cornus amomum*	Piedmont & Coastal Plain	MW - P
Dogwood, Stiff (Swamp)	*Cornus foemina*	Coastal Plain	MW - P
Hawthorn, Cockspur	*Crataegus crus-galli*	Western Maryland	W - MW
Hawthorn, Green	*Crataegus viridis*	Coastal Plain	SP - P
Hawthorn, Washington	*Crataegus phaenopyrum*	Statewide	W - MW
Inkberry	*Ilex glabra*	Coastal Plain	SP - P
Meadowsweet, White	*Spiraea alba*	Statewide	SP - P
Mountain Ash, American	*Sorbus americana*	Western Maryland	MW - SP
Pepperbush, Sweet	*Clethra alnifolia*	Coastal Plain	MW - P
Plum, American	*Prunus americana*	Statewide	W - MW
Possumhaw	*Viburnum nudum*	Coastal Plain	SP - P
Raspberry, Black	*Rubus occidentalis*	Statewide	W - SP
Sassafras	*Sassafras albidum*	Statewide	W - MW
Serviceberry, Canadian	*Amelanchier canadensis*	Coastal Plain	SP - P
Spicebush	*Lindera benzoin*	Statewide	MW - P
Steeplebush	*Spiraea tomentosa*	Statewide	SP - P
Sweetbay	*Magnolia virginiana*	Coastal Plain	SP - P
Sweetspire, Virginia	*Itea virginica*	Coastal Plain	SP - P
Waxmyrtle, Southern	*Morella (Myrica) cerifera*	Coastal Plain	W - SP
Witchhazel, American	*Hamamelis virginiana*	Statewide	W - SP

1 – Soil Drainage Class (refer to the county soil survey): W - Well Drained; MW - Moderately Well Drained; SP - Somewhat Poorly Drained; P - Poorly Drained.