TECHNICAL NOTE

USDA – Natural Resources Conservation Service
Boise, Idaho – Salt Lake City, Utah - Lakewood/Denver, Colorado

Plant Materials Technical Note No. 2C **July 2013**

Plant Materials for Pollinators and Other Beneficial Insects in Eastern Utah and Western Colorado

Derek Tilley, Agronomist, NRCS Plant Materials Center, Aberdeen, Idaho
Christine Taliga, Plant Materials Specialist, NRCS, Lakewood, Colorado
Casey Burns, State Biologist, NRCS, Salt Lake City, Utah
Loren St. John, Team Leader, NRCS Plant Materials Center, Aberdeen, Idaho



The purpose of this Technical Note is to provide guidance for the design and implementation of conservation plantings to enhance habitat for pollinators and beneficial insects including: bees, wasps, butterflies, moths and hummingbirds. Plant species included in this document are adapted to the Colorado Plateau of eastern Utah and western Colorado to the Continental Divide.

TABLE OF CONTENTS

MAP OF COVERED AREA……..4

INTRODUCTION……...5

ECOLOGLICAL BENEFITS OF POLLINATOR PLANTINGS……..…….5

TYPES OF POLLINATOR PLANTINGS…….…5

HABITAT CONSIDERATIONS……..……...…..……6

TABLE 1: HABITAT REQUIREMENTS FOR GENERAL NATIVE POLLINATORS……..……7

ESTABLISHING POLLINATOR PLANTINGS: GENERAL CONSIDERATIONS…….…..7

PLANT SELECTION AND ESTABLISHMENT GUIDELINES …..…….……...8

EXAMPLE OF POLLINATOR PLANTING SEED MIXTURE……..…….9

RECOMMENDED ESTABLISHMENT GUIDELINES…….……..10

SPECIES DESCRIPTIONS……...…….…….…….…..…….12

FORBS AND LEGUMES…….……...……..12

TREES, SHRUBS, AND HALF-SHRUBS…….…….....33

POLLINATOR PLANT LISTS ….....43

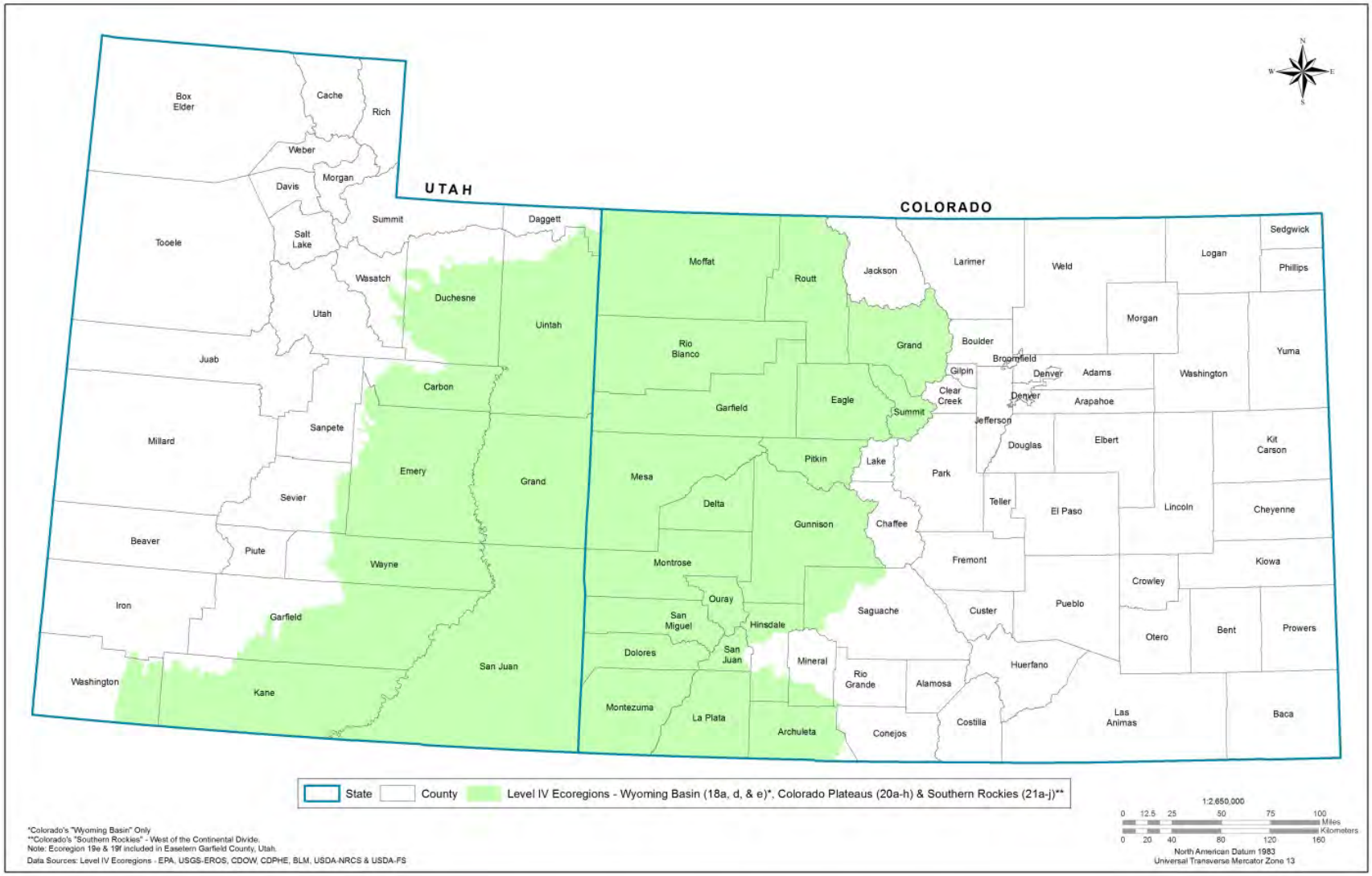
TABLE 2: FORB AND LEGUME SPECIES CHARACTERISTICS ……...…44

TABLE 3: FORB AND LEGUME SEEDING INFORMATION …….……48

TABLE 4: GRASSES…….……..……51

TABLE 5: TREES, SHRUBS, AND HALF-SHRUBS”……..…..……...…...52

REFERENCES……..……..…....54



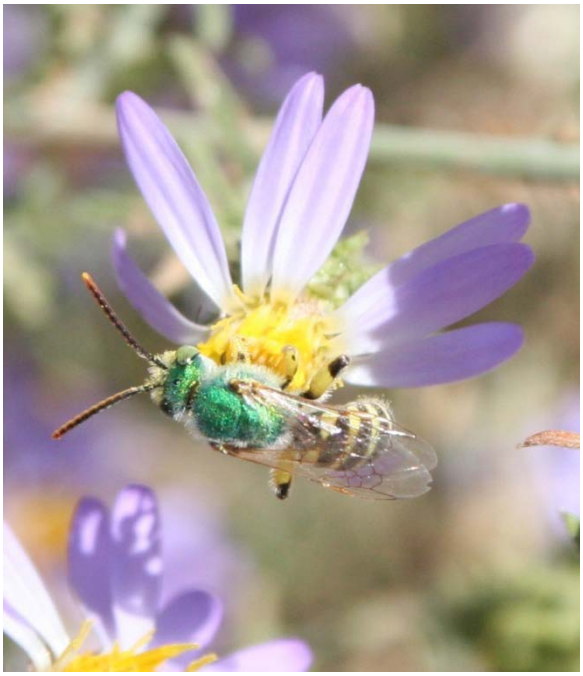
Area covered by this Technical Note encompassing EPA Ecoregions 20 (Colorado Plateau) and 21 (Southern Rockies) delimited to the east by the continental divide. Contributed by Christine Taliga, Colorado Plant Materials Program.

INTRODUCTION

Many of the world's crop species benefit from insect pollination, which is mostly provided by bees. In North America, bees pollinate billions of dollars' worth of crops annually. Nearly one quarter of our diet comes from crops whose production benefits from pollinating bees.

Pollinators include bees, moths, flies, beetles, wasps, desert bats, hummingbirds, and butterflies. Collectively, pollinators are critical to the function of terrestrial ecosystems because they enhance plant reproduction. Despite their importance, pollinators are threatened world-wide by habitat loss, habitat fragmentation, improper pesticide use, disease and parasites. This has serious economic implications for humans and for maintaining ecosystem diversity and stability.

The Natural Resources Conservation Service can assist landowners with habitat enhancement for pollinators by encouraging the establishment of an array of attractive plants that flower throughout the growing season. Plant species, both herbaceous and woody, that provide a source of nectar, pollen and cover for adult and immature pollinators, will also provide habitat for a large array of other wildlife species.



Green sweatbee on hoary tansyaster. Derek Tilley, NRCS Aberdeen.

This technical note covers eastern Utah comprised of the Colorado Plateau Ecoregion, and the West Slope region of Colorado to the Continental Divide. These boundaries are not intended to illustrate the precise area of adaptation for the listed species, but a generalized boundary in which the species should be applicable. The species listed herein should be used in areas to which they are adapted according to the precipitation and soil requirements of the species. For additional species adapted to the Intermountain Western Region, refer to Idaho Plant Materials Technical Note 2A. Species adapted to the southern deserts can be found in Arizona Plant Materials Technical Note 12-1, New Mexico Plant Materials Technical Note 71, and Colorado Plant Materials Technical Note 59.

This is not meant to be an inclusive list of all species that can be used for pollinator plantings. Revisions and updates to this guide will be made as new species and varieties become available on the market, and as more knowledge is developed to better establish and manage pollinator plantings.

ECOLOGICAL BENEFITS OF POLLINATOR PLANTINGS

Pollinator-friendly plantings have the potential to provide multiple ecological benefits. They can:

Reduce pesticide use. Sequentially flowering plants provide forage and cover for predatory and parasitic insects that help control pest species. Established plant communities will also resist weed invasion.

Stabilize soil and provide ground cover. Root systems and above ground vegetation hold soil in place, improve soil moisture infiltration and water holding capacity, reduce the risk of erosion and serve as buffers which protect against surface water pollution. Legumes also contribute nitrogen to the soil.

Serve as hedgerows, windbreaks and shelterbelts. Shrubs and trees protect farmsteads, feeding areas, crops and livestock from wind, snow and dust damage. They also provide food, nesting and cover habitat for a great variety of wildlife, pollinators and other beneficial insects.

TYPES OF POLLINATOR PLANTINGS

The easiest and most effective way to provide habitat for pollinators and beneficial insects is through maintaining or restoring natural areas. These are the

largest and best areas for pollinators and one can see the largest benefits if these areas are managed properly. Grazing management with pollinator habitat in mind will have huge landscape-level effects.

In addition to restoration and management of natural areas, many options are available to landowners to provide a pollinator friendly environment. These range from areas designed specifically for pollinator habitat to using pollinator friendly species as part of a farming rotation.



A predatory stink bug (*Podisus maculiventris* [Say], Pentatomidae) feeding on an eastern tent caterpillar (*Malacosoma americanum* [F.], Lasiocampidae). Ted Evans, Utah State University. Used with permission.

Insectary plantings are plantings that may be placed as a block inside of a crop, along the borders or placed just outside of a crop to attract beneficial insects to the crop for biological control (i.e. predators or parasitoids) of crop pests. Beneficial insects can be as much as ten times more abundant in insectary plantings compared to nearby locations. Some of these plants can also provide good pollen or nectar sources for bees. These may be annual plantings or more permanent plantings along the outer rows within the field or outside but adjacent to the crop field. The principles of enhancement for pollinators also generally apply to insectary plantings - such as including a diversity of flowers that bloom through the entire growing season to provide a steady supply of nectar and pollen.

Insectary plantings often include species with very small flowers. Predatory and parasitoid beneficial insects are often small with small mouth-parts. Plants with simple, cup-shaped and open flowers (that the insects can easily access) are preferred.

Cover crops, seasonally established crops for vegetative cover and soil conservation, can reduce soil erosion and weed competition, and improve soil organic material and soil tilth. They may be part of a crop rotation that is a harvested crop or they may be inter-planted between crop rows (e.g. vineyards) to enhance soil organic matter and nutrients. Broadleaf cover crops (i.e. forbs and legumes) can also provide good pollen or nectar sources for bees and other beneficial insects.

HABITAT CONSIDERATIONS

Habitat needs for pollinators are similar to other animal species: food, shelter, nesting sites and water. Shelter and nesting sites may be a limiting factor in your project area and should be considered during planning.

Nectar and pollen from flowering plants provide food and water for pollinators. Additional needs for water, if necessary, can be met in riparian areas and wetlands, birdbaths, fountains, irrigation water, and moisture from plants. Moist salt licks help provide mineral requirements for butterflies and sweat bees. Shelter and nesting habitat needs differ by pollinator species and include bare or partially vegetated, well-drained soil; soil banks and cliffs, dead standing or fallen trees with beetle emergence holes, bee nest blocks, live trees, clumps of grass, live brush, piles of leaves and sticks, wood piles, tree bark and rock crevices.

Most native bees are solitary, nesting underground, or less commonly, above ground using beetle holes in dead-wood or dead pithy stems (e.g. elderberry, sumac or rose). Bumblebees are social with colonies of dozens to hundreds of workers. They typically nest in tree hollows or below ground in old rodent burrows or in grass hummocks.

In pollinator plantings, use of pesticides should be avoided, especially insecticides. (Some applications, such as carbaryl bran baits for grasshoppers, are safe for bees.) If pesticides must be used, leave some areas untreated as refuge habitat for predatory and parasitic insects and pollinators that can re-colonize treated areas. Harm to beneficial insects can also be limited by spraying at dusk when pollinators are nesting and not actively foraging.

TABLE 1: HABITAT REQUIREMENTS FOR NATIVE POLLINATORS

Pollinator Group	Food	Nest
Solitary bees	Nectar and pollen	Nest in bare and partially vegetated soils where water won't pond; or in beetle holes in deadwood, within pithy stems or twigs, or construct surface nests of mud or leaf pulp
Bumblebees	Nectar and pollen	Nest cavities underground, often in old rodent burrows, or in hollow trees or within clumps of grass
Butterflies and moths	Nectar, nutrients, minerals and salts from rotting fruit, tree sap, clay deposits and mud puddles	Leaves and stems of larval host plants; also small woodpiles used by species that winter as adults
Hummingbirds	Nectar, insects, caterpillars, tree sap and willow catkins	Trees, shrubs and vines

ESTABLISHING POLLINATOR PLANTINGS: GENERAL CONSIDERATIONS

- **Select an area that is at least 0.5 acres in size**. This will ensure adequate floral resources are available for pollinators. Bigger is obviously better; however small scale plantings (backyards, community gardens) can also be very beneficial.
- **Start right**. Most grasses and forbs, including legumes, can be started by direct seeding or in some cases by transplanting nursery seedlings. Flowering shrubs and trees are often best established by transplanting nursery seedlings.
- **Determine soil drainage and other soil limitation factors**. Most species will not do well in heavy, poorly drained or saline to sodic soils; select species that can perform well in the soils of the site. You may need to conduct a soil test to assess salinity and other existing site conditions that may affect plant establishment.
- **Match plants with similar site preferences**. Choose plants that have similar soil and water requirements and that are adapted to the local climate (reference ecological site descriptions, local plant inventories, etc.)
- **Choose the right plant species**. Plantings should include a mixture of species that provide continual blooms throughout the growing season. A well planned seed mix of plant species that bloom throughout the growing season will result in a continuous source of nectar, pollen, and nesting sites needed by pollinators and other beneficial insects. Depending on the precipitation zone, at least one to three species are recommended for each bloom period: early (April-May), mid (June-July) and late (August-September). One or two grass species may also be included in the mix if ground cover is needed and to provide nesting habitat for ground nesting bees. Grasses should not comprise more than 25% of the mixture. To select plant species for your precipitation zone, use the Approved Pollinator Plant Lists (Tables 2-5).
- **Water wisely**. Shrub and tree plantings in the drier portions of the Intermountain West may require irrigation. For the best establishment biweekly watering the first 2 to 3 years is recommended. Once the plants are well established, watering less frequently, and for a longer duration will drive the moisture deeper into the soil to ensure the plants develop their roots more fully, enhancing long-term survival.
- **Control weeds**. Most plants do not compete well with weeds during establishment. Before establishment, select a weed free area or create one using appropriate herbicides or tillage. Keep the area relatively weed

free for the first 2 to 3 years of establishment. Mowing weeds during plant establishment will help suppress weed competition and encourage desired plants. However, some annual and biennial weeds are good nectar sources for pollinators and will die out naturally as the planting becomes established.

- **Protect planting from wildlife and livestock**. Fencing to protect the planting may be required in areas with abundant deer, antelope or elk, or with livestock such as sheep, cattle or horses. Monitor and control rodents and rabbits. This will ensure flowers are available to provide nectar, pollen and succulent foliage for pollinators. After plants are established, sustainable levels of wildlife use may be an additional benefit of the planting.
- **Maintain plantings**. Treatments such as haying or mowing may be required outside of the primary flowering period(s) to remove excess residue or weeds. Leaf litter and downed branches should be left in place for soil erosion, weed control, soil organic matter, and wildlife habitat and forage. Spot-spray herbicide treatments may also be needed to control invasive or noxious weeds.

PLANT SELECTION AND ESTABLISHMENT GUIDELINES FOR POLLINATOR HABITAT PLANTINGS

PLANT SELECTION

- Select plants from the Approved Plant List (found in appendix tables 2-5) that are adapted to your precipitation range.
- For restoration projects on range and other non-cropped lands such as riparian areas, select native species.
- A mixture of 5 to 9 species including those that bloom in spring, summer and late summer (fall) are recommended (follow NRCS guidelines for CRP).
- Select plants that will attract the target pollinator type(s). There may be concern that pollinator plants can lure pollinators away from crop areas. The opposite however has been shown to be true. Farms adjacent to natural areas have a greater diversity and number of native bees resulting in increased pollination.



Honey Bee on Rocky Mountain bee plant. Photo by Colorado Plant Materials Program.

- Species with an asterisk (*) are known to establish easily and are commercially available in large quantities. It is strongly recommended several of these species be included in all mixes. The remaining species for each mix will depend on seed availability and the price the landowner is willing to pay.
- Annual flowering plants can be useful tools in pollinator plantings because they produce tremendous amounts of flowers. However, many annual plants only last one growing season and can be very competitive with perennial species that are slower to establish. Some annual plants may also be considered “weedy”. Consequently, annuals should only be used for site specific purposes such as for small, odd areas where they are not mixed with perennials or as pollinator friendly cover crops.

- Non-native annual plants that readily attract pollinators include buckwheat, canola, safflower, berseem clover, camelina, lentils and dry peas. Some annual forbs may be used as temporary cover crops prior to planting perennials to suppress weed growth and reduce the weed seed bank in the soil.
- Native annuals and biennials such as Rocky Mountain beeplant, annual flax, annual sunflower, native annual buckwheat, golden crownbeard, and greenthread may be helpful in perennial stand establishment by acting as soil primers for mycorrhizae. These plants can act as soil stabilizers, and may also be more tolerant to higher levels of soil nitrogen (which is sometimes the case in former cropland). These traits can aid in establishment of post-disturbance plant communities, such as after wildfire (fireweed). These species tend to reseed themselves in a site appropriate seed mix decreasing in density over time as the perennial plants become established.
- Many pollinator species available have not been thoroughly tested, and their performance in conservation plantings is unknown. Released cultivars and pre-varietal germplasm releases have been tested and evaluated for performance prior to their official release. Source Identified and wildland collected materials may not have a history of evaluation and likelihood of establishment is less certain. The use of certified seed from varieties released by NRCS, ARS and other plant materials programs is recommended.
- Some species listed may be toxic to livestock and are not appropriate for planting in rangeland or pasture grazing situations.
- For NRCS plantings, species not included on these lists may be substituted only if approved by the State Plant Materials Specialist.

EXAMPLE OF POLLINATOR PLANTING SEED MIXTURE

The table below showcases a possible seed mix appropriate to eastern Utah and western Colorado, within a 12-14" precipitation zone. This seed mix might be applicable for example in the lower Dolores River Drainages in western Colorado, in a site that was historically a basin big sagebrush, Indian ricegrass, blue grama plant community with sandy loam soils. (PLS=Pure Live Seed).

Species	Variety	Color/Bloom Time			Full Seeding Rate Lbs/ac	Desired % of Mix	PLS lbs./ac	Ac to be seeded	Total PLS
		Early	Mid.	Late					
Rocky Mtn. penstemon	Bandera				4	10	0.4	10	4.0
Lewis flax	Maple Grove				4	15	0.6	10	6.0
Western Yarrow	Eagle				0.5	5	0.025	10	0.25
Rocky Mountain beeplant	Common				17	5	0.85	10	8.5
Sulfurflower buckwheat	Common				4	10	0.4	10	4.0
Utah sweetvetch	Timp				24	10	2.4	10	24.0
Annual Sunflower	Common				24	2	0.5	10	5.0
White prairieclover	Common				2	10	0.2	10	2.0
Hoary tansyaster	Common				2	8	0.16	10	1.6
Blue grama	Hachita	N/A			3	10	0.3	10	3.0
Indian ricegrass	White River	N/A			8	15	1.2	10	12.0
Totals					73.1	100	7.04		70.4

RECOMMENDED ESTABLISHMENT GUIDELINES

SITE PREPARATION

- Some herbicides can have residual carryover and can negatively affect seedling establishment. Know the cropping history and past herbicide use of the site to be planted.
- Eliminate existing vegetation prior to seeding with tillage, herbicide, or a combination of techniques.
- Fallow the area to be seeded for at least one growing season. Delay seeding until after a flush of fall germinating weeds. Weed seedlings need to be controlled prior to seeding.
- Create a firm, weed-free seed bed. Rule of thumb: a person's footprint will not sink deeper than ½ inch into the seedbed.

SEEDING

- Seed forbs and grasses at the same time during a late fall dormant planting (November or December).
- One of two seeding methods is recommended:
    - Drill seed into a firm, weed-free seedbed. The best drill seedings have been accomplished by setting the drill to place the seed no deeper than ¼ inch. Drag chains or press wheels help to cover the seed with a thin soil layer.
    - Broadcast seed into a weed-free seedbed. The best broadcast seedings have been accomplished by pulling the tubes on the drill and running the packer wheels with enough downward pressure to create good furrows and improve seed to soil contact. Often, a harrow is pulled behind the drill to lightly cover the broadcasted seed.
- Rice hulls, cracked grain or granular clay may be used to assist seed flow.
- Omit grasses from the planting mix in areas heavily infested with cheatgrass or medusahead to allow for the option of using selective grass herbicides. This should only be done if the ground is not highly erodible.

SHRUB ESTABLISHMENT

- Plant shrub seedlings in early spring (late March through April) directly into soil where vegetation has been killed during the previous growing season with 1-2 applications of herbicides or by mechanical site preparation. Plant shrubs in areas that will not be mowed, or in rows to allow for mowing between the rows.
- Suppress weed growth around the shrubs with use of weed barrier fabric or herbicides.
- Install protective tubes or other barriers to reduce damage from rodents, rabbits and deer.

MANAGEMENT

- Manage weeds during the first year by mowing prior to seed production to prevent development and spread of weed seed.
- Manage weeds during following years by hand rogueing, spot spraying, using pre-emergent herbicides or herbicides applied during phases of perennial dormancy.
- Do not apply fertilizer during the first year of establishment.

Establishment techniques different than those listed may be used, but only with extreme caution. The guidelines have proven to have the highest rates of success.

There are many challenges associated with establishing forb plots. Many forb seedings fail due to poor seedbed preparation, poor seed germination/emergence, weed competition, and neglect. Establishing, monitoring and maintaining forb plantings may be expensive and labor-intensive. The area may have to be re-seeded if an adequate stand is not achieved the first time.

An alternative establishment method to seeding is transplanting forb seedlings. Transplanting seedlings may initially be more expensive than seeding but may be less expensive in the long run, especially if a seeded stand fails, and has to be reseeded. The advantages of forb seedlings are: there are no seed dormancy/germination concerns, they already have a developed root system, and they can better compete with weeds. To establish forb plugs, use the same planting guidelines listed above for shrub establishment. A disadvantage of transplanting seedlings may be lack of commercial sources of seedlings.

Species Descriptions

Additional information for many of these species can be found in NRCS Plant Guides and Fact Sheets, available by download from the PLANTS Database (http://plants.usda.gov). Seeding rates listed are full stand pure live seeding rates, derived from a target rate of 20-30 PLS/ft² for species with <500,000 PLS/lb, and 40-50 PLS/ft² for species with >500,000 PLS/lb. **Rates should be adjusted to reflect the percentage in the mixture when used as a part of a seed mixture (see example on page 9).** In Colorado, follow Colorado Plant Materials Technical Note 59 and ECS-5 for seeding rate instructions and specifications. For plants with multiple applicable species, for example Indian paintbrush (*Castilleja* spp.)**,** select locally adapted and available species. Consult your plant materials specialist if you have any questions regarding appropriate species selection.

Forbs and Legumes



Western Yarrow. Derek Tilley, NRCS Idaho.

Achillea millefolium, western yarrow
Origin: native forb
Mature Height: 0.5-1.5 ft.
Growth Rate: rapid
Growth Habit: upright to prostrate
Wildlife Value: good forage
Attracts: butterflies, pollinating flies some bees
Flowers: white to yellow
Bloom: June-August
Seeding Rate: 0.5 lb/ac
Recommended precipitation range: 8-60 in.



Giant hyssop. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Agastache pallidiflora, giant hyssop
Origin: native forb
Mature Height: 2 feet
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: good food
Attracts: bees
Flowers: purple
Bloom: July- September
Seeding Rate: 2 lb/ac
Recommended precipitation range: 12-24 in.


Nettleleaf giant hyssop. Derek Tilley, NRCS Idaho.

Agastache urticifolia, nettleleaf giant hyssop
Origin: native forb
Mature Height: 2-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: good food
Attracts: bees
Flowers: lavender
Bloom: June-July
Seeding Rate: 2 lb/ac
Recommended precipitation range: 18-36 in.


Western pearly everlasting. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Anaphalis margaritacea, western pearly everlasting
Origin: native forb
Mature Height: 1-2 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: limited
Attracts: larval host plant of Virginia lady butterfly (*Vanessa virginiensis*).
Flowers: yellow
Bloom: June-July
Seeding Rate: 0.5 lb/ac
Recommended precipitation range: 10-35 in.


Pussytoes. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

***Antennaria* spp.,** pussytoes
Origin: native forb
Mature Height: 1-2 ft.
Growth Rate: rapid
Growth Habit: mound
Wildlife Value: poor forage
Attracts: painted lady butterfly.
Flowers: white-pink
Bloom: June-July
Seeding Rate: 0.5 lb/ac
Recommended precipitation range: 8-40 in.


Blue columbine. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Aquilegia caerulea, blue columbine
Origin: native forb
Mature Height: 1-2 ft.
Growth Rate: moderate to rapid
Growth Habit: upright

Wildlife Value: excellent food
Attracts: hummingbirds
Flowers: blue/white
Bloom: June-July
Broadcast Seeding Rate: 3 lb/ac
Recommended precipitation range: 20-40 in.
Note: avoid cultivated varieties


Showy milkweed. Derek Tilley, NRCS Idaho.

Asclepias speciosa, showy milkweed
Warning: Toxic, Limit use to non-grazed areas
Origin: native forb
Mature Height: 2-3 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: toxic to livestock
Attracts: butterflies; Larval host plant for the monarch (*Danaus plexippus*,) and the queen butterflies (*Danaus gilippus thersippus*), predacious insects
Flowers: pink
Bloom: May-July
Seeding Rate: 15 lb/ac
Recommended precipitation range: 16-30 in.


Butterfly milkweed, J.S. Peterson @ PLANTS Database.

Asclepias tuberosa, butterfly milkweed
Warning: Toxic, Limit use to non-grazed areas
Origin: native forb
Mature Height: 1-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: toxic to livestock
Attracts: butterflies
Flowers: orange
Bloom: July-August
Seeding Rate: 15 lb/ac
Recommended precipitation range: 28-45 in.


Gray Aster. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Aster glaucodes, gray aster
Origin: native forb
Mature Height: 1-3 ft.
Growth Rate:
Growth Habit: upright
Wildlife Value: fair forage
Attracts: bees, butterflies
Flowers: blue/purple
Bloom: July-September
Seeding Rate: 3 lb/ac
Recommended precipitation range: 10-18 in.


Cicer milkvetch. Dan Ogle, NRCS Idaho.

Astragalus cicer, cicer milkvetch
Origin: introduced forb
Mature Height: 1-3 ft.

Growth Rate: moderate to rapid
Growth Habit: upright (lodges at maturity)
Wildlife Value: excellent forage
Attracts: bees
Flowers: cream
Bloom: May-July
Seeding Rate: 7 lb/ac
Recommended precipitation range: 16-60 in.


Basalt milkvetch. Gary A. Monroe @ PLANTS Database.

Astragalus filipes, basalt milkvetch
Origin: native legume
Mature height: 1-3 ft.
Growth Rate:
Growth Habit: upright
Wildlife Value: excellent forage
Attracts: bees
Flowers: white to cream
Bloom: May-July
Seeding Rate: 9 lb/ac
Recommended precipitation range: 8-12 in.



Hooker's balsamroot. Alfred Brousseau @ USDA-NRCS PLANTS Database.

Balsamorhiza hookeri, Hooker's balsamroot
Origin: native forb
Mature Height: 1-2 ft.
Growth Rate: slow
Growth Habit: upright
Wildlife Value: excellent
Attracts: bees
Flowers: yellow
Bloom: May-June
Seeding Rate: 18 lb/ac
Recommended precipitation range: 9-20 in


Cutleaf balsamroot. Teresa Prendusi, U.S. Forest Service.

Balsamorhiza macrophylla, cutleaf balsamroot
Origin: native forb
Mature Height: 1-2 ft.
Growth Rate: slow
Growth Habit: upright
Wildlife Value: excellent
Attracts: bees
Flowers: yellow
Bloom: May-June
Seeding Rate: 18 lb/ac
Recommended precipitation range: 14-40 in.


Arrowleaf balsamroot. Derek Tilley, NRCS Idaho.

Balsamorhiza sagittata, arrowleaf balsamroot
Origin: native forb
Mature Height: 1-2 ft.
Growth Rate: slow
Growth Habit: upright
Wildlife Value: excellent
Attracts: bees, butterflies
Flowers: yellow
Bloom: May-June
Seeding Rate: 18 lb/ac
Recommended precipitation range: 14-18 in.


Indian paintbrush. Derek Tilley, NRCS Idaho.

***Castilleja* spp.,** Indian paintbrush
Origin: native forb
Mature Height: 6-18 in
Growth Rate:
Growth Habit: upright
Wildlife Value: limited
Attracts: hummingbirds; Larval host plant of many scroph-feeding Western U.S. checkerspot butterflies including *Thessalia leanira alma*, *Euphydryas anicia wheeleri*, and *Euphydryas anicia*.
Flowers: red
Bloom: May-July
Seeding Rate: Paintbrush species are hemi-parasitic and require a host plant for establishment. Site appropriate transplants are recommended.
Recommended precipitation range: 8-15 in.


Douglas' dustymaiden. Derek Tilley, NRCS Idaho.

Chaenactis douglasii, Douglas' dustymaiden
Origin: native forb
Mature Height: 1-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: excellent food
Attracts: bees
Flowers: white to pinkish
Bloom: June-July
Seeding Rate: 3 lb/ac
Recommended precipitation range: 9-15 in.


Yellow beeflower. Idaho Dept. of Transportation

Cleome lutea, Yellow beeflower
Origin: native annual forb
Mature Height: 2-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: pollinator forage
Attracts: bees, wasps, butterflies
Flowers: yellow
Bloom: May-June
Seeding Rate: 11 lb/ac
Recommended precipitation range: 8-12 in.


Rocky Mountain bee plant. Casey Burns, NRCS Utah.

Cleome serrulata, Rocky Mountain beeplant
Origin: native annual forb
Mature Height: 2-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: pollinator forage
Attracts: bees, wasps, butterflies
Flowers: purple
Bloom: May-June
Seeding Rate: 17 lb/ac
Recommended precipitation range: 13-55 in.


Tapertip hawskbeard. Derek Tilley, NRCS Idaho

Crepis acuminata, tapertip hawksbeard
Origin: native forb
Mature Height: 1-3 ft.
Growth Rate:
Growth Habit: upright
Wildlife Value: good forage
Attracts: bees
Flowers: yellow
Bloom: June-July
Seeding Rate: 3 lb/ac
Recommended precipitation range: 7-20 in.


Large flower hawskbeard .Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Crepis occidentalis, largeflower hawksbeard
Origin: native forb
Mature Height: 8-36 in
Growth Rate:
Growth Habit: upright
Wildlife Value: good forage
Attracts: bees
Flowers: yellow
Bloom: June-July
Seeding Rate: 10 lb/ac
Recommended precipitation range: 12-18 in.


White prairie clover. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Dalea candida, white prairie clover
Origin: native forb
Mature Height: 2-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: excellent forage
Attracts: bees; larval host plant of the southern dogface butterfly (*Zerene cesonia*).
Flowers: white
Bloom: June-August
Seeding Rate: 4 lb/ac
Recommended precipitation range: 10-18 in.


Purple conflower. Jeff McMillian @ PLANTS Database.

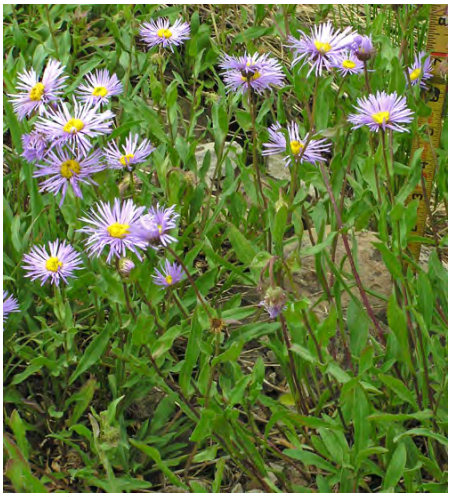
Echinacea purpurea, purple coneflower
Origin: introduced forb
Mature Height: 1.5-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: excellent forage
Attracts: butterflies, bees
Flowers: white to purple
Bloom: July-September
Broadcast Seeding Rate: 9 lb/ac:
Recommended precipitation range: 14-40 in.


Engelmann's aster. Photo by W. Padgett, BLM Utah.

Erigeron engelmannii, Engelmann's fleabane
Origin: native forb
Mature Height: 2-18 in
Growth Rate: rapid
Growth Habit: upright to spreading
Wildlife Value: limited
Attracts: bees
Flowers: white-pink
Bloom: June-July
Seeding Rate: 1 lb/ac
Recommended precipitation range: 8-20 in.


Shaggy fleabane. Derek Tilley, NRCS Idaho.

Erigeron pumilus, shaggy fleabane
Origin: native forb
Mature Height: 2-18 in
Growth Rate: rapid
Growth Habit: upright to spreading
Wildlife Value: limited
Attracts: bees, butterflies
Flowers: purple
Bloom: May-June
Seeding Rate: 1 lb/ac
Recommended precipitation range: 6-17 in.


Aspen fleabane. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Erigeron speciosus, aspen fleabane
Origin: native forb
Mature Height: 0.5-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: limited forage value
Attracts: bees, butterflies
Flowers: pink/purple
Bloom: July-September
Seeding Rate: 1 lb/ac
Recommended precipitation range: 18-25 in.


Blanketflower. Casey Burns, NRCS Utah.

Gaillardia aristata, blanketflower
Origin: native forb
Mature Height: 1-1.5 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: excellent food and cover
Attracts: bees
Flowers: orange, yellow
Bloom: July-September
Seeding Rate: 6 lb/ac
Recommended precipitation range: 16-30 in.
Note: avoid cultivated varieties


Sticky geranium. Derek Tilley, NRCS Idaho.

Geranium viscosissimum, sticky geranium
Origin: native forb
Mature Height: 2-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value:
Attracts: bees, butterflies
Flowers: purple
Bloom: May-June
Seeding Rate: 20 lb/ac
Recommended precipitation range: 16-20 in.


Northern or Utah sweetvetch. USDA-ARS.

Hedysarum boreale, northern or Utah sweetvetch
Origin: native legume
Mature Height: 1-2 ft.
Growth Rate: moderate
Growth Habit: spreading to upright
Wildlife Value: good forage
Attracts: bees, butterflies
Flowers: red to purple
Bloom: May-June
Seeding Rate: 24 lb/ac
Recommended precipitation range: 12-18 in.


Oneflower sunflower. Teresa Predusi, USDA Forest Service.

Helianthella uniflora, oneflower sunflower
Origin: native forb
Mature Height: 1-3 ft.

Growth Rate: rapid
Growth Habit: upright
Wildlife Value: good forage
Attracts: bees, ants
Flowers: yellow
Bloom: June-July
Seeding Rate: 26
Recommended precipitation range: 12-35 in.


Annual sunflower. A. Schneider @ PLANTS Database.

Helianthus annuus, annual sunflower
Origin: native forb
Mature Height: 2-5 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: good winter food
Attracts: butterflies, bees, ants and birds
Flowers: yellow to orange
Bloom: July-September
Seeding Rate: 4 lb/ac
Recommended precipitation range: 8-15 in.



Prairie sunflower. Patrick J. Alexander @ USDA-NRCS PLANTS Database.

Helianthus petiolaris, prairie sunflower
Origin: native forb
Mature Height: 2-5 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: good winter food
Attracts: bees
Flowers: yellow
Bloom: July-September
Seeding Rate: 9 lb/ac
Recommended precipitation range: 9-18 in.


Showy goldeneye. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Heliomeris multiflora, showy goldeneye
Origin: native forb
Mature Height: 1-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: cover
Attracts: bees
Flowers: yellow
Bloom: June-July
Seeding Rate: 2 lb/ac
Recommended precipitation range: 16-25 in.


Hairy false goldenaster. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Heterotheca villosa, hairy false goldenaster
Origin: native forb
Mature Height: 1-2 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: cover for small animals
Attracts: bees
Flowers: yellow
Bloom: June-August
Seeding Rate: 3 lb/ac
Recommended precipitation range: 10-26 in.


Scarlet gilia. Derek Tilley, NRCS Idaho.

Ipomopsis aggregata, scarlet gilia
Origin: native biennial forb
Mature Height: 1-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: limited
Attracts: hummingbirds, moths
Flowers: red, pink
Bloom: June-July
Seeding Rate: 3 lb/ac
Recommended precipitation range: 13-40 in.


Blue-flag iris. Casey Burns, NRCS Utah.

Iris missouriensis, Blue-flag iris
Origin: native forb
Mature Height: 3-4 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: limited
Attracts: bees, bumblebees, butterflies
Flowers: blue
Bloom: April-May
Seeding Rate: 54 lb/ac
Recommended precipitation range: 24-35 in.


Fewflower pea. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Lathyrus pauciflorus, fewflower pea
Origin: native forb
Mature Height: 1-3 ft.
Growth Rate: rapid
Growth Habit: climbing vine
Wildlife Value: medium palatability
Attracts: bees; larval host for butterflies
Flowers: pink-purple
Bloom: April-May
Seeding Rate: 87 lb/ac
Recommended precipitation range: 5-14 in.


Dotted blazingstar. R. Alan Shadow, NRCS Texas.

Liatris punctata, dotted blazingstar
Origin: native forb
Mature Height: 1-2 ft.
Growth Rate: slow
Growth Habit: upright
Wildlife Value: good forage
Attracts: bees, butterflies
Flowers: pink-purple
Bloom: July-August
Seeding Rate: 9 lb/ac
Recommended precipitation range: 18-26 in.


Lewis flax. Derek Tilley, NRCS Idaho.

Linum lewisii, Lewis flax
Origin: native forb
Mature height: 1-2 ft.
Growth Rate: moderate to rapid
Growth Habit: upright
Wildlife value: excellent food
Attracts: bees
Flowers: light blue
Bloom: May-July
Seeding Rate: 4 lb/ac
Recommended precipitation range: 10-20 in.


Blue flax. Derek Tilley, NRCS Idaho.

Linum perenne, blue flax
Origin: introduced forb
Mature height: 1-2 ft.
Growth Rate: moderate to rapid
Growth Habit: upright
Wildlife value: excellent food
Attracts: bees
Flowers: light blue
Bloom: May-July
Seeding Rate: 4 lb/ac
Recommended precipitation range: 10-20 in.


Cardinal flower. William S. Justice @ USDA-NRCS PLANTS Database.

Lobelia cardinalis, cardinalflower
Origin: native forb
Mature Height: 1-4 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: hummingbird food
Attracts: hummingbirds
Flowers: red
Bloom: May-Oct
Seeding Rate: 0.2 lb/ac
Recommended precipitation range: 28-60 in.


Fernleaf biscuitroot. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Lomatium dissectum, fernleaf biscuitroot
Origin: native forb
Mature Height: 0.5-2 ft.
Growth Rate: slow
Growth Habit: erect
Wildlife Value: excellent food
Attracts: bees
Flowers: yellow green
Bloom: June-July
Seeding Rate: 24 lb/ac
Recommended precipitation range: 14-30 in.

Lomatium macrocarpum
Origin: native forb
Mature Height: 0.5-2 ft.
Growth Rate: moderate
Growth Habit: erect
Wildlife Value: good food
Attracts: bees
Flowers: white
Bloom: April-June
Seeding Rate: 10 lb/ac
Recommended precipitation range: 8-16 in.


Nineleaf biscuitroot. A. Schneider @ PLANTS Database.

Lomatium triternatum, nineleaf biscuitroot
Origin: native forb
Mature Height: 2-3 ft.
Growth Rate: slow
Growth Habit: erect
Wildlife Value: excellent food
Attracts: bees
Flowers: yellow green
Bloom: May-June
Seeding Rate: 20 lb/ac
Recommended precipitation range: 12-20 in.


Birdsfoot trefoil. R. Mohlenbrock @ PLANTS Database.

Lotus corniculatus, birdsfoot trefoil
Origin: introduced legume
Mature Height: 1.5-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: good winter food
Attracts: bees
Flowers: yellow
Bloom: June-August
Seeding Rate: 3 lb/ac
Recommended precipitation range: 20-45 in


Silver lupine. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Lupinus argenteus, silver lupine
Warning: May be toxic to animals and humans
Origin: native forb
Mature Height: 1.5-2 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: forage
Attracts: bumble bees, bees, butterflies, hummingbirds
Flowers: blue to purple
Bloom: June - August
Seeding Rate: 70 lb/ac
Recommended precipitation range: 10-45 in.


Hoary tansyaster. Derek Tilley, NRCS Idaho.

Machaeranthera canescens, hoary tansyaster
Origin: native forb
Mature Height: 2-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: forage
Attracts: bees, butterflies
Flowers: blue to purple
Bloom: August-October
Seeding Rate: 2 lb/ac
Recommended precipitation range: 8-15 in.

Machaeranthera tanacetifolia, tansyleaf aster
Origin: native forb
Mature Height: 0.5-2 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: limited food
Attracts: bees, butterflies
Flowers: purple
Bloom: May-October
Seeding Rate: 3 lb/ac
Recommended precipitation range: 16-24 in.


Alfalfa. Derek Tilley, NRCS Idaho.

Medicago sativa, alfalfa
Origin: introduced legume
Mature Height: 2-3 ft.
Growth Rate: fast
Growth Habit: upright
Wildlife Value: excellent forage
Attracts: bees
Flowers: purple
Bloom: May-July (delay by cutting)
Seeding Rate: 10 lb/ac
Recommended precipitation range: 12-65 in.


Yellow blossom alfalfa. Derek Tilley, NRCS Idaho.

***Medicago sativa* ssp. falcata**, yellow blossom alfalfa
Origin: introduced legume
Mature Height: 2-3 ft.
Growth Rate: fast
Growth Habit: upright, spreading
Wildlife Value: excellent forage
Attracts: bees
Flowers: yellow
Bloom: May – July (delay by cutting)
Seeding Rate: 10 lb/ac
Recommended precipitation range: 10-25 in.


Yellow sweetclover. J.S. Peterson @ PLANTS Database.

Melilotus alba* and *M. officinalis, white and yellow sweetclover
Origin: introduced legume
Mature Height: 1-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: fair forage
Attracts: bees
Flowers: white or yellow
Bloom: June-July
Seeding Rate: 1 lb/ac
Recommended precipitation range: 9-18 in.
Note: can become invasive; not recommended in wildlands


Bee balm. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Mondarda fistulosa, bee balm
Origin: native forb
Mature Height: 1-3 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: limited food
Attracts: bees, bumblebees
Flowers: purple
Bloom: June-September
Seeding Rate: 2 lb/ac
Recommended precipitation range: 20-60 in.


Sainfoin. Derek Tilley. NRCS Idaho.

Onobrychis viciifolia, sainfoin
Origin: introduced legume
Mature Height: 2-5 ft.
Growth rate: rapid
Growth Habit: upright

Wildlife Value: excellent forage
Attracts: larger bees
Flowers: pink
Bloom: May-July (delay by cutting)
Seeding Rate: 34 lb/ac
Recommended precipitation range: 14-45 in.



Sharpleaf penstemon. Photo by Cassondra Skinner, USDI-BLM, Idaho.

Penstemon acuminatus, sharpleaf penstemon
Origin: native forb
Mature Height: 1-2 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value:
Attracts: bees
Flowers: blue
Bloom: May-July
Seeding Rate: 3 lb/ac
Recommended precipitation range: 12-30 in.



Narrowleaf penstemon. USDA NRCS Los Lunas Plant Materials Center, Los Lunas, New Mexico.

Penstemon angustifolius, narrowleaf penstemon
Origin: native forb
Mature Height: 8-20 in
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: limited
Attracts: bees, hummingbirds
Flowers: lavender
Bloom: May-June
Broadcast Seeding Rate: 3 lb/ac
Recommended precipitation range: 9-35 in.



Firecracker penstemon. Derek Tilley, NRCS Idaho.

Penstemon eatonii, firecracker penstemon
Origin: native forb
Mature Height: 1-2.5 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: excellent forage
Attracts: bees, wasps, hummingbirds
Flowers: red
Bloom: April-June
Broadcast Seeding Rate: 4 lb/ac
Recommended precipitation range: 10-18 in.



Low penstemon. Derek Tilley, NRCS Idaho.

Penstemon humilis, low penstemon
Origin: native forb

Mature Height: 3-8 in
Growth Rate: moderate
Growth Habit: erect, semi mat-forming
Wildlife Value: limited
Attracts: bees
Flowers: purple
Bloom: May-June
Seeding Rate: 2 lb/ac
Recommended precipitation range: 12-20 in.



Toadflax penstemon. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Penstemon linarioides, toadflax penstemon
Origin: native forb
Mature Height: 6-18 in
Growth Rate: moderate
Growth Habit: subshrub, upright
Wildlife Value: food
Attracts: bees
Flowers: lavender/blue
Bloom: May-July
Broadcast Seeding Rate: 2 lb/ac
Recommended precipitation range: 12-20 in.

Penstemon pachyphyllus, thickleaf beardtongue
Origin: native forb
Mature Height: 1-2 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: good forage
Attracts: bees
Flowers: blue/purple
Bloom: May-June
Broadcast Seeding Rate: 3 lb/ac
Recommended precipitation range: 12-20 in.



Palmer's penstemon Stan Young, Utah Crop Improvement Association. Used with permission.

Penstemon palmeri, Palmer's penstemon
Origin: native forb
Mature Height: 2-3 ft.
Growth Rate: rapid
Growth Habit: erect
Wildlife Value: fair forage
Attracts: larger bees
Flowers: pink
Bloom: May-July
Broadcast Seeding Rate: 3 lb/ac
Recommended precipitation range: 6-12 in.

Penstemon rydbergii, Rydberg's penstemon
Origin: native forb
Mature Height: 1-2 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: limited
Attracts: small bees
Flowers: blue
Bloom: June-July
Broadcast Seeding Rate: 8 lb/ac
Recommended precipitation range: 20-30 in.


Royal penstemon. Derek Tilley, NRCS Idaho.

Penstemon speciosus, royal penstemon
Origin: native forb
Mature Height: 1-2 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: good forage
Attracts: bees, moths
Flowers: blue, pink
Bloom: May-July
Seeding Rate: 3 lb/ac
Recommended precipitation range: 8-24 in.

Penstemon spectabalis, showy penstemon
Origin: native forb
Mature Height: 1-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: food, cover
Attracts: bees, wasps
Flowers: pink/purple
Bloom: April-June
Seeding Rate: 3 lb/ac
Recommended precipitation range: 12-40 in.


Rocky Mountain penstemon. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Penstemon strictus, Rocky Mountain penstemon
Origin: native forb
Mature Height: 1-3 ft.
Growth Rate: rapid
Growth Habit:
Wildlife Value: fair forage
Attracts: bees
Flowers: purple
Bloom: May-July
Seeding Rate: 2 lb/ac
Recommended precipitation range: 14-26 in.


Silverleaf phacelia. Derek Tilley, NRCS Idaho.

Phacelia hastata, silverleaf phacelia
Origin: native forb
Mature Height: 1-2 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: limited
Attracts: bees

Flowers: lavender
Bloom: May-August
Seeding Rate: 7 lb/ac
Recommended precipitation range: 10-18 in.



Silky phacelia. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Phacelia sericea, silky phacelia
Origin: native forb
Mature Height: 1-3 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: limited
Attracts: bees
Flowers: purple
Bloom: June-July
Seeding Rate: 3 lb/ac
Recommended precipitation range: 18-30 in.



Cinquefoil. Derek Tilley, NRCS Idaho.

Potentilla arguta, tall cinquefoil
Origin: native forb
Mature Height: 2-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: flowers are palatable
Attracts: bees
Flowers: yellow
Bloom: May-June
Seeding Rate: 0.5 lb/ac
Recommended precipitation range: 10-50 in.



Prairie coneflower. C.A. Rechenthin @ PLANTS Database.

Ratbida columnifera, prairie coneflower
Origin: Origin: introduced forb (native to the east of the Continental Divide)
Mature Height: 1-1.5 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: poor to fair forage
Attracts: bees
Flowers: yellow/orange
Bloom: June-August
Seeding Rate: 3 lb/ac
Recommended precipitation range: 16-40 in.



Small burnet. Derek Tilley, NRCS Idaho.

Sanguisorba minor, small burnet
Origin: introduced forb
Mature Height: 1-2.5 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: excellent forage
Attracts: bees
Flowers: green-red
Bloom: June-August
Seeding Rate: 26 lb/ac
Recommended precipitation range: 15-25 in.

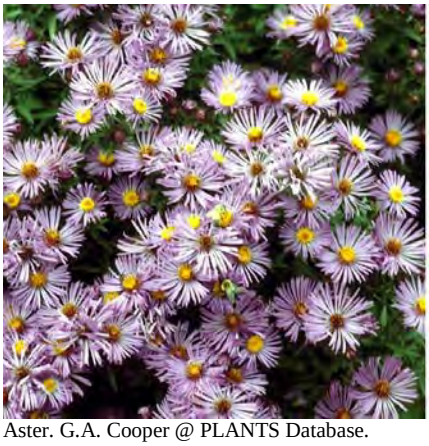

Scarlet globemallow. Derek Tilley, NRCS Idaho.

Sphaeralcea coccinea, scarlet globe mallow
Origin: native forb
Mature Height: 6-18 in
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: excellent forage
Attracts: bees
Flowers: orange/red
Bloom: April-June
Seeding Rate: 3 lb/ac
Recommended precipitation range: 6-15 in.

Sphaeralcea grossulariifolia, gooseberryleaf globe mallow
Origin: native forb
Mature Height: 1.5-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: excellent forage
Attracts: bees
Flowers: orange to red
Bloom: April-June
Seeding Rate: 3 lb/ac
Recommended precipitation range: 8-15 in.


Small flower globemallow. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Sphaeralcea parvifolia, small flower globemallow
Origin: native forb
Mature Height: 6-18 in
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: excellent forage
Attracts: bees
Flowers: orange/red
Bloom: April-June
Seeding Rate: 3 lb/ac
Recommended precipitation range: 6-15 in.


Aster. G.A. Cooper @ PLANTS Database.

***Symphyotrichum* ascendens**, western aster
Origin: native forb
Mature Height: 0.5-3 ft.
Growth Rate: moderate
Growth Habit: upright

Wildlife Value: excellent food and cover
Attracts: bees
Flowers: pink/purple
Bloom: July-October
Seeding Rate: 1 lb/ac
Recommended precipitation range: 14-60 in.


Mountain goldenbanner. Derek Tilley, NRCS Idaho.

Thermopsis montana, goldenbanner
***Warning*:** Toxic, Limit use to non-grazed areas
Origin: native legume
Mature Height: 24-30 in
Growth Rate: medium
Growth Habit: erect
Wildlife Value: toxic
Attracts: bee, bumblebees
Flowers: yellow
Bloom: May-June
Seeding Rate: 36 lb/ac
Recommended precipitation range: 24-30 in.

Trifolium fragiferum, strawberry clover
Origin: introduced legume
Mature Height: 1-18 in
Growth Rate: rapid
Growth Habit: decumbent to ascending
Wildlife Value: excellent food
Attracts: bees
Flowers: pink
Bloom: April-May
Seeding Rate: 4 lb/ac
Recommended precipitation range: 20-60 in.

Trifolium hybridum, alsike clover
Origin: introduced legume
Mature Height: 1-3 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: excellent forage
Attracts: bees
Flowers: white/pink
Bloom: April-May
Seeding Rate: 3 lb/ac
Recommended precipitation range: 25-60 in.


White clover. L. Allain@PLANTS Database.

Trifolium repens, white clover
Origin: introduced legume
Mature Height: 4-14 in
Growth Rate: rapid
Growth Habit: creeping
Wildlife Value: forage
Attracts: bees
Flowers: white
Bloom: May-July
Seeding Rate: 3 lb/ac
Recommended precipitation range: 24-70 in.


American vetch. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Vicia americana, American vetch
Origin: native legume
Mature Height: 0.5-1 ft.
Growth Rate: rapid
Growth Habit: spreading
Wildlife Value: excellent forage
Attracts: bees
Flowers: purple
Bloom: May-June
Seeding Rate: 34 lb/ac
Recommended precipitation range: 9-50 in.



Mule-ears. Andy Degues, USFS.

Wyethia amplexicaulis, mule-ears
Origin: native forb
Mature Height: 1-3 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: flower heads eaten by deer
Attracts: bees, bumblebees, butterflies
Flowers: yellow
Bloom: May-June
Seeding Rate: 39 lb/ac
Recommended precipitation range: 12-20 in.

Trees, Shrubs, and Half-Shrubs


Serviceberry. Derek Tilley, NRCS Idaho.

Amelanchier alnifolia, serviceberry
Origin: native shrub-small tree
Mature Height: 6-15 ft.
Growth Rate: slow
Growth Habit: upright
Wildlife Value: good cover and food
Attracts: butterflies, bees
Flowers: white
Bloom: May-June
Seeding Rate: seedlings recommended
In-row Spacing: 5-10 ft.
Recommended precipitation range: 12-30 in.

Amerlanchier utahensis, Utah service berry
Origin: native shrub
Mature Height: 3-12 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: cover and food
Attracts: butterflies, bees; larval butterfly host plant of the weidemeyer's admiral (*Limenitis weidemeyeri*) and the lorquin's admiral (*Limenitis lorquini*).
Flowers: white
Bloom: May-June
Seeding Rate: seedlings recommended
In-row Spacing: 5-10 ft.
Recommended precipitation range: 12-20 in.


Greenleaf manzanita. Gary A. Monroe @ PLANTS Database.

Arctostaphylos patula, Greenleaf manzanita
Origin: native shrub
Mature Height: 3-6 ft.
Growth Rate: slow
Growth Habit: rounded shrub
Wildlife Value: good cover and browse
Attracts: bees
Flowers: pink
Bloom: April-June
Seeding Rate: seedlings recommended
In-row Spacing: 5 ft.
Recommended precipitation range: 13-60 in.

Arctostaphylos uva-ursi, kinnikinnik
Origin: native shrub
Mature Height: 6 in
Growth Rate: moderate
Growth Habit: prostrate creeping
Wildlife Value: fruit provide food for bids
Attracts: bees, butterflies, hummingbirds
Flowers: pink
Bloom: March-June
Seeding Rate: seedlings recommended
In-row Spacing: 2-3 ft.
Recommended precipitation range: 18-45 in.


Photo left. Eucosma ragonoti, moth on prairie sagewort, Christine Taliga, Colorado Plant Materials Program.

Artemisia frigida, prairie sagewort
Origin: native shrub
Mature Height: 4-16 in.
Growth Rate: moderate
Growth Habit: upright low shrub
Wildlife Value: good cover and forage
Attracts: provides habitat and nesting structure; used as food plants by the larvae of a number of Lepidoptera species and other insects.
Flowers: yellow
Bloom: August-September
Seeding Rate: 0.5 lb/ac
In-row Spacing: 1-3 ft.
Recommended precipitation range: 10-40 in.

Artemisia nova, black sagebrush
Origin: native shrub
Mature Height: 4-12 in
Growth Rate: moderate
Growth Habit: upright low shrub
Wildlife Value: good cover and forage
Attracts: provides habitat and nesting structure
Flowers: yellow
Bloom: August-September
Seeding Rate: 2 lb/ac
In-row Spacing: 1-3 ft.
Recommended precipitation range: 6-18 in.



Basin big sagebrush. Derek Tilley, NRCS Idaho**.**

Artemisia tridentata* ssp. *tridentata, basin big sagebrush
Origin: native shrub
Mature Height: 3-8 ft.
Growth Rate: slow
Growth Habit: upright shrub
Wildlife Value: cover and food
Attracts: provides habitat and nesting structure
Flowers: yellow
Bloom: September-October
Seeding Rate: 0.5 lb/ac
In-row Spacing: 3-6 ft.
Recommended precipitation range: 9-15 in.

Artemisia tridentata* ssp. *vaseyana, mountain big sagebrush
Origin: native shrub
Mature Height: 2-4 ft.
Growth Rate: slow
Growth Habit: upright shrub
Wildlife Value: cover and food
Attracts: provides habitat and nesting structure
Flowers: yellow
Bloom: September-October
Seeding Rate: 0.5 lb/ac
In-row Spacing: 3-6 ft.
Recommended precipitation range: 16-25 in



Wyoming big sagebrush. Derek Tilley, NRCS Idaho**.**

Artemisia tridentata* ssp. *wyomingensis, Wyoming big sagebrush
Origin: native shrub
Mature Height: 2-3 ft.
Growth Rate: slow
Growth Habit: upright shrub
Wildlife Value: cover and food
Attracts: provides habitat and nesting structure
Flowers: yellow
Bloom: September-October
Seeding Rate: 0.5 lb/ ac
In-row Spacing: 3-6 ft.
Recommended precipitation range: 8-13 in.


Fourwing saltbush. Derek Tilley, NRCS Idaho.

Atriplex canescens, fourwing saltbush
Origin: native shrub
Mature Height: 1-6 ft.
Growth Rate: slow
Growth Habit: upright shrub
Wildlife Value: cover and browse
Attracts: provides habitat and nesting structure
Flowers: green/brown
Bloom: August-September
Seeding Rate: 2 lb/ac
In-row Spacing: 3-6 ft.
Recommended precipitation range: 8-16 in.


Mule-fat. USDA PLANTS Database.

Baccharis salicifolia, mule-fat
Origin: native shrub
Mature Height: 6-10 ft.
Growth Rate: rapid
Growth Habit: upright shrub
Wildlife Value:
Attracts: butterflies
Flowers: white
Bloom: April-July
Seeding Rate: seedlings recommended
In-row Spacing: 8-10 ft.
Recommended precipitation range: 10-15 in.

Ceanothus velutinus, snowbrush ceanothus
Origin: native shrub
Mature Height: 2-5 ft.
Growth Rate: moderate
Growth Habit: rounded shrub
Wildlife Value:
Attracts: butterflies
Flowers: white
Bloom: May-June
Seeding Rate: seedlings recommended
In-row Spacing: 3ft.
Recommended precipitation range: 16-40 in.


Desert sweet. Nevada native Plant Society @ PLANTS Database.

Chamaebatiaria millefolium, desert sweet
Origin: native shrub
Mature Height: 3-7 ft.
Growth Rate: moderate
Growth Habit: upright shrub
Wildlife Value: cover
Attracts: bees
Flowers: white
Bloom: July-September
Broadcast Seeding Rate: 8 lb/ac
In-row Spacing: 8-12 ft.
Recommended precipitation range: 15-60 in.

Chrysothamnus viscidiflorus, yellow rabbitbrush
Origin: native shrub
Mature Height: 1-3 ft.

Growth Rate: moderate
Growth Habit: upright shrub
Wildlife Value: browse and cover
Attracts: butterflies, bees and other beneficial insects
Flowers: yellow
Bloom: September-October
Seeding Rate: 0.25 lb/ac
In-row Spacing: 2-3 ft.
Recommended precipitation range: 7-15 in.

Cornus sericea, *redosier dogwood*
Origin: native shrub
Mature Height: 4-12 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: food and cover
Attracts: bees, butterflies
Flowers: white
Blooms: May-June
Seeding Rate: seedlings recommended
In-row Spacing: 5-10 ft.
Recommended precipitation range: 12-60 in.



Black hawthorn. Susan McDougall @ PLANTS Database

Crataegus douglasii, black hawthorn
Origin: native shrub-small tree
Mature Height: 12-15 ft.
Growth Rate: slow
Growth Habit: upright
Wildlife Value: food and cover
Attracts: moths, bees, butterflies
Flowers: white
Blooms: May-June
Seeding Rate: seedlings recommended
In-row Spacing: 5-10 ft.
Recommended precipitation range: 16-60 in.


Shrubby cinquefoil. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

Dasiphora fruticosa, shrubby cinquefoil
Origin: native shrub
Mature Height: 2-4 ft.
Growth Rate: slow
Growth Habit: upright
Wildlife Value: food and cover
Attracts: moths, bees, butterflies
Flowers: yellow
Blooms: May-June
Seeding Rate: seedlings recommended
In-row Spacing: 4-6 ft.
Recommended precipitation range: 18-25 in.


Rubber rabbitbrush. USDI-BLM.

Ericameria nauseosa, rubber rabbitbrush
Origin: native shrub
Mature Height: 2-6 ft.
Growth Rate: moderate
Growth Habit: open spreading
Wildlife Value: loafing, food and browse
Attracts: butterflies, bees, and other beneficial insects
Flowers: yellow
Bloom: August-October
Seeding Rate: 0.25 lb/ac
In-row Spacing: 3-6 ft.
Recommended precipitation range: 7-16 in.


Whorled buckwheat. Derek Tilley, NRCS Idaho.

Eriogonum heracleoides, whorled buckwheat
Origin: native sub-shrub
Mature Height: 1-3 ft.
Growth Rate: moderate
Growth Habit: spreading, open sub-shrub
Wildlife Value: cover, fall forage
Attracts: moths, butterflies, bees and other beneficial insects
Flowers: white, cream
Bloom: July-September
Seeding Rate: 6 lb/ac
In-row Spacing: 1-3 ft.
Recommended precipitation range: 12-25 in.


Sulphurflower buckwheat. Derek Tilley, NRCS Idaho.

Eriogonum umbellatum, sulphurflower buckwheat
Origin: native sub-shrub
Mature Height: 0.5-2 ft.
Growth Rate: moderate
Growth Habit: spreading, open sub-shrub
Wildlife Value: cover, fall forage
Attracts: moths, butterflies, bees, and other beneficial insects
Flowers: yellow
Bloom: July-September
Seeding Rate: 4 lb/ac
In-row Spacing: 1-3 ft.
Recommended precipitation range: 12-25 in.

Fallugia paradoxa, Apache plume
Origin: native shrub
Mature Height: 4-6 ft.
Growth Rate: rapid
Growth Habit: upright shrub
Wildlife Value: cover
Attracts: bees and butterflies
Flowers: white-purple
Bloom: May-June
Seeding Rate: seedlings recommended
In-row Spacing: 4-6 ft.
Recommended precipitation range: 8-20 in.

Forestiera neomexicana, stretchberry
Origin: native shrub
Mature Height: 4-6 ft.
Growth Rate: moderate
Growth Habit: shrub
Wildlife Value: cover
Attracts: butterflies
Flowers: yellow
Bloom: April-May
Seeding Rate: seedlings recommended
In-row Spacing: 4-6 ft.
Recommended precipitation range: 9-24 in.


Oceanspray. Gary Monroe @ PLANTS Database.

Holodiscus discolor, oceanspray
Origin: native shrub-small tree
Mature Height: 6-20 ft.

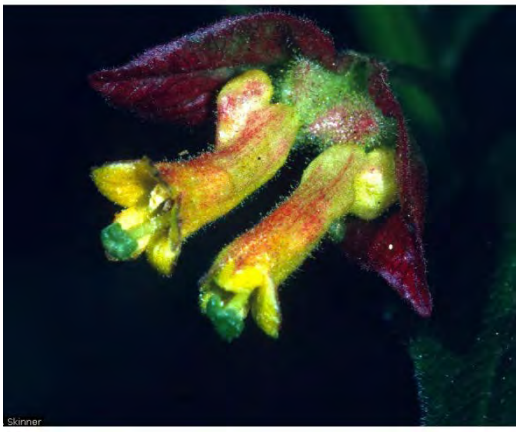
Growth Rate: moderate
Growth Habit: upright shrub
Wildlife Value: cover and browse
Attracts: butterflies, bees
Flowers: white
Bloom: May-August
Seeding Rate: seedlings recommended
In-row Spacing: 10-20 ft.
Recommended precipitation range: 18-24 in.

Holodiscus dumosus, rockspirea
Origin: native shrub
Mature Height: 6-12 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: browse and cover
Attracts: butterflies, bees
Flowers: white
Bloom: June-August
Seeding Rate: seedlings recommended
In-row Spacing: 10-20 ft.
Recommended precipitation range: 10-35 in.



Winterfat. Derek Tilley, NRCS Idaho**.**

Krascheninnikovia lanata, winterfat
Origin: native shrub
Mature Height: 1-3 ft.
Growth Rate: rapid
Growth Habit: low shrub
Wildlife Value: excellent winter forage
Attracts: provides nesting structure for bees
Flowers: green/white
Bloom: July-August
Broadcast Seeding Rate: 2 lb/ac
In-row Spacing: 3 ft.
Recommended precipitation range: 7-12 in.



Twinberry honeysuckle. Mark Skinner @ PLANTS Database.

Lonicera involucrata, twinberry honeysuckle
Origin: native shrub
Mature Height: 2-7 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: cover, food for birds
Attracts: butterflies, hummingbirds
Flowers: yellow
Bloom: March-July
Seeding Rate: seedlings recommended
In-row Spacing: 6 ft.
Recommended precipitation range: 14-32 in.



Prickly pear cactus. Casey Burns, NRCS Utah**.**

Opuntia spp., prickly pear cactus
Origin: native shrub
Mature Height: 1-2 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: cover
Attracts: bees, beetles
Flowers: yellow, pink

Bloom: May-June
Seeding Rate: 8 lb/ac
In-row Spacing: 4 ft.
Recommended precipitation range: 10-20 in.

Philadelphus microphyllus, littleleaf mockorange
Origin: native shrub
Mature Height: 3-7 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: cover
Attracts: bees
Flowers: white
Bloom: March-May
Seeding Rate: seedlings recommended
In-row Spacing: 6 ft.
Recommended precipitation range: 12-20 in.

Poliomintha incana, frosted mint
Origin: native shrub
Mature Height: 1-3 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: cover
Attracts: bees
Flowers: purple
Bloom: May-August
Seeding Rate: seedlings recommended
In-row Spacing: 3 ft.
Recommended precipitation range: 8-12 in.

Prunus americana, American plum
Origin: native shrub
Mature Height: 8-10 ft.
Growth Rate: moderate
Growth Habit: rounded crown, suckers
Wildlife Value: nesting, loafing, food, browse
Attracts: butterflies, bees
Flowers: white
Bloom: April-May
Seeding Rate: seedlings recommended
In-row Spacing: 6-10 ft.
Recommended precipitation range: 16-40 in.


Chokecherry. Derek Tilley, NRCS Idaho.

Prunus virginiana, chokecherry
Origin: native shrub
Mature Height: 12-25 ft.
Growth Rate: moderate
Growth Habit: oval to round; suckering
Wildlife Value: excellent food and cover
Attracts: bees, butterflies
Flowers: white
Bloom: April-May
Seeding Rate: seedlings recommended
In-row Spacing: 8-12 ft.
Recommended precipitation range: 16-60 in.

Purshia glandulosa, desert bitterbrush
Origin: native shrub
Mature Height: 3-7 ft.
Growth Rate: slow
Growth Habit: upright
Wildlife Value: cover, fall forage
Attracts: bees
Flowers: yellow
Bloom: April-May
Seeding Rate: seedlings recommended
In-row Spacing: 5 ft.
Recommended precipitation range: 5-12 in.

Purshia mexicana, Mexican cliffrose
Origin: native shrub
Mature Height: 2-10 ft.
Growth Rate: moderate
Growth Habit: upright shrub
Wildlife Value: cover, fall forage
Attracts: butterflies, bees
Flowers: yellow
Seeding Rate: seedlings recommended
Bloom: May-June
In-row Spacing: 5-10 ft.
Recommended precipitation range: 6-12 in.


Antelope bitterbrush. Derek Tilley, NRCS Idaho.

Purshia tridentata, antelope bitterbrush
Origin: native shrub
Mature Height: 2-6 ft.
Growth Rate: moderate
Growth Habit: upright shrub
Wildlife Value: cover, fall forage
Attracts: butterflies, bees
Flowers: yellow
Seeding Rate: seedlings recommended
Bloom: May-June
In-row Spacing: 3-5 ft.
Recommended precipitation range: 10-15 in.


Skunkbush sumac. Derek Tilley, NRCS Idaho.

Rhus trilobata, skunkbush sumac
Origin: native shrub
Mature Height: 6-8 ft.
Growth Rate: slow to moderate
Growth Habit: ascending to spreading
Wildlife Value: browse, nesting, bird food
Attracts: early bees
Flowers: light yellow
Seeding Rate: seedlings recommended
Bloom: May-June
In-row Spacing: 4-6 ft.
Recommended precipitation range: 8-18 in.


Golden currant. Derek Tilley, NRCS Idaho.

Ribes aureum, golden currant
Origin: native shrub
Mature Height: 5-8 ft.
Growth Rate: moderate
Growth Habit: spreading and upright
Wildlife Value: roosting, loafing, nesting, fruit
Attracts: early spring bees, bumblebees
Flowers: fragrant golden yellow
Seeding Rate: seedlings recommended
Bloom: April-May
In-row Spacing: 4-6 ft.
Recommended precipitation range: 12-18 in.

Ribes cereum, wax currant
Origin: native shrub
Mature Height: 2-5 ft.
Growth Rate: rapid
Growth Habit: upright
Wildlife Value: cover, nesting, fruit
Attracts: bees
Flowers: white
Bloom: May-June
Seeding Rate: seedlings recommended
In-row Spacing: 5 ft.

Recommended precipitation range: 13-35 in.


Wood's rose. Derek Tilley, NRCS Idaho.

Rosa woodsii, Wood's rose
Origin: native shrub
Mature Height: 3-6 ft.
Growth Rate: moderate
Growth Habit: upright to semi-weeping shrub
Wildlife Value: nesting, cover, excellent food
Attracts: bees
Flowers: pink
Seeding Rate: seedlings recommended
Bloom: June-July
In-row Spacing: 3-5 ft.
Recommended precipitation range: 12-40 in.

***Salix* spp**, willow
Origin: native shrub, multiple-stemmed small tree
Mature Height: 12-18 ft.
Growth Rate: moderate
Growth Habit: upright
Wildlife Value: cover, nesting
Attracts: bees, butterflies
Flowers: yellow-green
Bloom: April-May
Seeding Rate: cuttings recommended
In-row Spacing: 6-10 ft.
Recommended precipitation range: 20-60 in.


Buffaloberry. R.A. Howard @ PLANTS Database.

Shepherdia argentea, buffalo berry
Origin: native shrub
Mature Height: 6-20 ft.
Growth Rate: moderate
Growth Habit: upright to spreading tall shrub
Wildlife Value: browse, fruit
Attracts: butterflies, bees
Flowers: male=yellow; female=inconspicuous
Seeding Rate: seedlings recommended
Bloom: May-July
In-row Spacing: 8-10 ft.
Recommended precipitation range: 12-20 in.


Goldenrod. Casey Burns, NRCS Utah.

***Solidago* spp,** goldenrod
***Warning*:** Toxic when dried as hay
Origin: native shrub
Mature Height: 1-7 ft.
Growth Rate: moderate
Growth Habit: rhizomatous shrub
Wildlife Value: fair forage
Attracts: bees, wasps, beetles
Flowers: yellow
Seeding Rate: seedlings or 0.5 PLS/ac
Bloom: August-September
In-row Spacing: 3-5 ft.
Recommended precipitation range: 16-60 in.


Snowberry. R.A. Howard @ PLANTS Database.

Symphoricarpos oreophilus, mountain snowberry
Origin: native shrub
Mature Height: 2-4 ft.
Growth Rate: moderate
Growth Habit: open and spreading
Wildlife Value: loafing, food, browse
Attracts: butterflies, bees, hummingbirds
Flowers: pink
Seeding Rate: seedlings recommended
Bloom: May-August
In-row Spacing: 3-4 ft.
Recommended precipitation range: 14-45 in.


Yucca. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.

***Yucca* spp.**, yucca or soapweed
Origin: native to the Great Plains
Mature Height: 2-4 ft.
Growth Rate: slow
Growth Habit: upright
Wildlife Value: cover
Attracts: moths
Flowers: creamy white
Seeding Rate: seedlings recommended
Blooms: June-July
In-row Spacing: 3 ft.
Recommended precipitation range: 7-60 in.

NRCS APPROVED POLLINATOR PLANT LISTS

The following tables lists plants approved for use in NRCS pollinator plantings. These species have known value for pollinators and are adapted to various precipitation ranges in eastern Utah and western Colorado. Care was taken to list species that are commercially available. Additional species may be available or become available that were not considered for this technical note during publication. Consult your State Plant Materials Specialist prior to making any species substitutions.

Species with an asterisk (*) are known to establish easily and are commercially available in large quantities. It is strongly recommended several of these species be included in all mixes.

This section also lists additional grasses and shrubs, which do not provide pollen or nectar, yet are important elements of pollinator habitat, and should be included in pollinator or wildlife friendly plantings, but may not count towards the CRP required species, or other programmatic guidelines. Several conservation programs are administered by USDA NRCS to assist private landowners in developing pollinator habitat, such as the Environmental Quality Incentives Program (EQIP), the Wildlife Habitat Incentives Program (WHIP), the Conservation Stewardship Program (CSP), and the Conservation Reserve Program (CRP). For additional information, please consult your local NRCS Service Center.

TABLE 2. FORB AND LEGUME CHARACTERISTICS LISTED BY PRECIPITATION REQUIREMENTS

		Bloom Time and Color								Soils		
Latin Name	Common Name	Early	Mid.	Late	Origin	Character	Height (in)	Seedling Vigor	Longevity	Precip. Range (in)	Fine	Med.	Coarse
Lathyrus pauciflorus	Pea, fewflower				N	Vine	8-30	**	**	5-14	x	x	x
Penstemon palmeri	Penstemon, Palmer's				N	Erect	24-36	V. Low	Medium	6-12		x	x
Machaeranthera bigelovii	Tansyaster, Bigelow's				N	Erect	12-36	**	Short	6-15	x	x	x
Penstemon cyanocaulis	Penstemon, bluestem				N	Erect	8-18	V. Low	Medium	6-15		x	x
Sphaeralcea coccinea	Globemallow, scarlet				N	Erect	12-18	Low	Short	6-15		x	x
Erigeron pumilus	Fleabane, shaggy				N	Decumbent	4-12	**	**	6-17		x	x
Sphaeralcea parvifolia	Small flower globemallow				N	Erect	6-18	Low	Short	6-18		x	x
Crepis acuminata	Hawksbeard, tapertip				N	Erect	10-30	Low	Long	7-20		x	x
Astragalus filipes	Milkvetch, basalt				N	Erect	12-36	Low	Medium	8-12		x	x
Cleome lutea	Beeflower, yellow				N	Erect	24-36	Med.-Rapid	Annual	8-12	x	x	
***Castilleja* spp.**	Paintbrush, Indian				N	E	6-18	Low	Short	8-15			
Helianthus annuus*	Sunflower, annual				N	Erect	36-120	Medium	Annual	8-15	x	x	x
Machaeranthera canescens	Tansyaster, hoary				N	Erect	24-36	Low	Short	8-15		x	x
Sphaeralcea grossulariifolia	Globemallow, gooseberryleaf				N	Erect	18-36	Low	Long	8-15		x	x
Lomatium macrocarpum	Biscuitroot, bigseed				N	Prostrate	5-12	Medium	Short	8-16			x
Erigeron engelmannii	Fleabane, Engelmann's				N	Erect	9-12	**	**	8-20	x	x	x
Penstemon speciosus	Penstemon, royal				N	Erect	12-24	V. Low	Medium	8-24		x	x
Antennaria* sp. *(rosea)	Pussytoes				N	Mat	6-12	V. Low	**	8-40	x	x	x
Achillea millefolium*	Yarrow, western				N	Erect	6-24	Low	Medium	8-60		x	x
Chaenactis douglasii	Dustymaiden, Douglas'				N	Erect	12-36	Medium	Short	9-15		x	x
Helianthus petiolaris	Sunflower, prairie				N	Erect	10-36	Medium	Annual	9-18			x
Melilotus alba	Sweetclover, white				I	Erect	12-36	Med.-Rapid	Short	9-18	x	x	x
Melilotus officinalis	Sweetclover, yellow				I	Erect	12-36	Med.-Rapid	Short	9-18	x	x	x
Balsamorhiza hookeri	Balsamroot, Hooker's				N	Erect	12-24	Medium	Medium	9-20	x	x	x
Penstemon angustifolius	Penstemon, broadleaf				N	Erect	24-36	V. Low	Short	9-35		x	x

TABLE 2 (cont). FORB AND LEGUME CHARACTERISTICS LISTED BY PRECIPITATION REQUIREMENTS

		Bloom Time and Color									Soils		
Latin Name	Common Name	Early	Mid.	Late	Origin	Character	Height (in)	Seedling Vigor	Longevity	Precip. Range (in)	Fine	Med.	Coarse
Vicia americana	Vetch, American				N	Spreading	6-12	Low	Medium	9-50		x	x
Aster glaucodes	Aster, gray				N	Erect	20-30	Low	Short	10-18		x	x
Dalea candida	Prairie clover, white				N	Erect	24-36	Med.	**	10-18		x	x
Penstemon eatonii	Penstemon, firecracker				N	Erect	12-30	V. Low	Short	10-18		x	x
Phacelia hastata	Phacelia, silverleaf				N	Decumbent	18-24	Medium	Medium	10-18		x	x
Tradescantia occidentalis	Spiderwort, prairie				N	Erect	12-16	**	**	10-18			x
Linum lewisii*	Flax, Lewis				N	Erect	12-24	Low-Med.	Short	10-20		x	x
Linum perenne*	Flax, blue				I	Erect	12-24	Low-Med.	Short	10-20		x	x
Verbesina encelioides	Crownbeard, golden				N	Erect	16-30	Medium	**	10-20	x	x	
Medicago sativa* ssp. *falcata	Alfalfa, yellow blossom				I	Erect	24-36	Medium	Medium	10-25	x	x	
Heterotheca villosa	Goldenaster, hairy false				N	Rounded	12-18	Medium	Short	10-26		x	x
Anaphilis margaritacea	Pearly everlasting, western				N	Erect	24-36	Medium	Short	10-35		x	
Lupinus argenteus	Lupine, silver				N	Erect	18-24	High	Short	10-45	x	x	x
Potentilla arguta	Cinquefoil, tall				N	Erect	24-36	V. Low	Short	10-50		x	
Crepis occidentalis	Hawksbeard, largeflower				N	Erect	10-30	Low	Long	12-18	x	x	x
Hedysarum boreale*	Sweetvetch				N	Erect	12-24	Low	Medium	12-18	x	x	x
Lomatium triternatum	Biscuitroot, nineleaf				N	Erect	24-36	Medium	Long	12-20			x
Penstemon humilis	Penstemon, low				N	Erect	6-14	**	**	12-20		x	x
Penstemon linarioides	Penstemon, toadflax				N	Erect	4-12	**	**	12-20			
Penstemon pachyphyllus	Penstemon, thickleaf				N	Erect	12-20	V. Low	**	12-20		x	
Wyethia amplexicaulis	Mule's ears				N	Erect	24-30	Low	Long	12-20	x	x	
Agastache pallidiflora	Hyssop, mountain giant				N	Erect	12-30	**	**	12-24	x	x	x
Penstemon acuminatus	Penstemon, sharpleaf				N	Erect	8-24	V. Low	Medium	12-30		x	x
Helianthella uniflora	Sunflower, oneflower				N	Erect	12-36	Medium	Medium	12-35		x	x
Penstemon spectabilis	Penstemon, showy				N	Erect	24-30	**	**	12-40		x	x

TABLE 2 (cont). FORB AND LEGUME CHARACTERISTICS LISTED BY PRECIPITATION REQUIREMENTS

		Bloom Time and Color								Soils		
Latin Name	Common Name	Early	Mid.	Late	Origin	Character	Height (in)	Seedling Vigor	Longevity	Precip. Range (in)	Fine	Med.	Coarse
Medicago sativa	Alfalfa				I	Erect	24-36	Medium	Medium	12-65	x	x	
Ipomopsis aggregate	Gilia, scarlet				N	Erect	12-36	Low	Biennial	13-40		x	x
Cleome serrulata	Beeflower, Rocky Mountain				N	Erect	12-72	Med.-Rapid	Annual	13-55		x	x
Balsamorhiza sagittata	Balsamroot, arrowleaf				N	Erect	12-24	V. Low	Long	14-18		x	x
Penstemon strictus	Penstemon, Rocky Mountain				N	Erect	12-36	V. Low	Medium	14-26	x	x	
Lomatium dissectum	Biscuitroot, fernleaf				N	Erect	6-24	Medium	Long	14-30		x	
Balsamorhiza macrophylla	Balsamroot, cutleaf				N	Erect	12-24	V. Low	Long	14-40	x	x	x
Echinacea purpurea*	Coneflower, purple				N	Erect	6-24	Medium	Medium	14-40	x	x	x
Onobrychis viciifolia*	Sainfoin				I	Erect	24-60	Low-Med.	Medium	14-45		x	x
Symphyotrichum ascendens	Aster, western				N	Erect	12-40	Low	Medium	14-60		x	x
Sanguisorba minor*	Burnet, small				I	Erect	12-30	Medium	Medium	15-25	x	x	
Geranium viscosissimum	Geranium, sticky purple				N	Erect	24-36	Low	Short	16-20	x	x	
Machaeranthera tanacetifolia	Tansyaster, tansyleaf				N	Erect	24	Medium	Annual	16-24		x	
Heliomeris multiflora	Goldeneye, showy				N	Erect	8-39	Medium	Long	16-25		x	x
Asclepias speciosa	Milkweed, showy				N	Erect	36-48	Medium	Long	16-30		x	x
Gailardia aristata*	Blanketflower				N	Erect	12-18	Medium	Short	16-30		x	x
Ratibida columnifera*	Coneflower, prairie or Mex hat				N	Erect	12-18	Medium	Medium	16-40	x	x	x
Astragalus cicer	Milkvetch, cicer				I	Erect	12-36	Low	Long	16-60	x	x	
Solidago simplex/canadensis	Goldenrod				N	Erect	24-40	Medium	Long	16-60	x	x	x
Erigeron speciosus	Fleabane, aspen				N	Erect	24-36	**	**	18-25		x	x
Liatris punctata	Blazingstar, dotted				N	Erect	24-32	Low	Short	18-26	x	x	x
Phacelia sericea	Phacelia, silky				N	Erect	12-18	**	**	18-30			
Agastache urticifolia	Hyssop, nettleleaf giant				N	Erect	30-36	Low	Long	18-36	x	x	x
Penstemon rydbergii	Penstemon, Rydberg's				N	Erect	24-36	Low	Medium	20-30	x	x	

TABLE 2 (cont). FORB AND LEGUME CHARACTERISTICS LISTED BY PRECIPITATION REQUIREMENTS

		Bloom Time and Color									Soils		
Latin Name	Common Name	Early	Mid.	Late	Origin	Character	Height (in)	Seedling Vigor	Longevity	Precip. Range (in)	Fine	Med.	Coarse
Thermopsis montana	Goldenbanner				N	Erect	24-30	Medium	**	20-30		x	x
Symphyotrichum laeve	Aster, smooth blue				N	Erect	36-48	**	**	20-35		x	x
Aquilegia caerulea	Columbine, Colorado				N	Erect	12-24	Medium	Short	20-40		x	
Lotus corniculatus	Trefoil, birdfoot				I	Erect	18-36	Low	Long	20-45	x	x	x
Trifolium fragiferum	Clover, strawberry				I	Erect	6-14	Medium	Short	20-60		x	
Monarda fistulosa	Bee balm (wild bergamot)				N	Erect	36-48	Medium	Medium	20-60	x	x	
Thermopsis montana	Goldenbanner, mountain				N	Erect	24-30	Medium	**	24-30		x	x
Iris missouriensis	Blue-flag iris				N	Erect	24-35	High	Short	24-35	x	x	x
Trifolium repens	Clover, white				I	Prostrate	3-14	Medium	Short	24-70	x	x	
Trifolium hybridum	Clover, alsike				I	Erect	24-48	Medium	Short	25-60	x	x	
Asclepias tuberosa	Milkweed, butterfly				N	Erect	12-36	Low	Medium	28-45		x	x
Lobelia cardinalis	Cardinalflower				N	Erect	48-60	High	Medium	28-60		x	
Rudbeckia hirta*	Blackeyed Susan				N	Erect	9-12	Rapid	Short	28-65	x	x	

*Seed readily available and easily established
** Information not available

TABLE 3. FORB AND LEGUME SEEDING INFORMATION

Latin Name	Common Name	Seeding depth	Seeds/lb	Drill lb/ac	Releases-recommended are underlined	Pollinators
Achillea millefolium	Yarrow, western	0-1/8	4,400,000	0.5	Eagle, Yakima, Great Northern	butterflies, some bees
Agastache pallidiflora	Hyssop, mountain giant	0-1/8	1,500,000	1	common	bees
Agastache urticifolia	Hyssop, nettleleaf giant	0-1/8	1,400,000	1	common	bees
Anaphilis margaritacea	Pearly everlasting, western	0-1/8	8,200,000	0.3	common	larval host plant of the Virginia lady (*Vanessa virginiensis*).
Antennaria* sp. *(rosea)	Pussytoes	0-1/8	6,600,000	0.3	common	painted lady butterfly
Aquilegia caerulea	Columbine, Colorado	0-1/8	400,000	3	common	hummingbirds
Asclepias speciosa	Milkweed, showy	1/8-1/2	72,000	15	common	butterflies; larval host of Monarch butterfly (*Danaus plexippus*)
Asclepias tuberosa	Milkweed, butterfly	1/8-1/2	70,000	15	common	butterflies
Aster glaucodes	Aster, gray	1/8-1/2	800,000	3	common	bees, butterflies
Astragalus cicer	Milkvetch, cicer	1/4-1/2	130,000	8	‘Lutana', 'Monarch', 'Windsor'	bees
Astragalus filipes	Milkvetch, basalt	1/4-1/2	120,000	9	‘NBR-1'	bees
Balsamorhiza hookeri	Balsamroot, Hooker's	0-1/4	55,000	18	common	bees
Balsamorhiza macrophylla	Balsamroot, cutleaf	0-1/4	55,000	18	common	bees
Balsamorhiza sagittata	Balsamroot, arrowleaf	0-1/4	55,000	18	common	bees, butterflies
***Castilleja* spp.**	Paintbrush, Indian	Seedlings	N/A	N/A	common	hummingbirds, butterflies
Chaenactis douglasii	Dustymaiden, Douglas'	0-1/8	350,000	3	common	bees
Cleome lutea	Beeflower, yellow	0-1/4	101,000	11	common	bees, wasps, butterflies
Cleome serrulata	Beeflower, Rocky Mountain	0-1/8	64,000	17	common	bees, wasps, butterflies
Crepis acuminata	Hawksbeard, tapertip	1/4-1/2	800,000	3	common	bees
Crepis occidentalis	Hawksbeard, largeflower	1/4-1/2	105,000	10	common	bees
Dalea candida	Prairie clover, white	1/4-1/2	448,000	2	common	bees
Echinacea purpurea	Coneflower, purple	1/8-1/4	128,000	9	common	butterflies, bees
Erigeron engelmannii	Fleabane, Engelmann's	1/8-1/4	1,000,000	2	common	bees
Erigeron pumilus	Fleabane, shaggy	1/8-1/4	1,800,000	1	common	bees
Erigeron speciosus	Fleabane, aspen	1/8-1/4	1,900,000	1	common	bees, butterflies
Gailardia aristata	Blanketflower	1/4-1/2	200,000	5	common	bees
Geranium viscosissimum	Geranium, sticky purple	1/4-1/2	55,000	20	common	bees, butterflies
Hedysarum boreale	Sweetvetch	1/4-1/2	46,000	24	‘Timp'	bees, butterflies
Helianthella uniflora	Sunflower, oneflower	1/8-1/4	41,000	26	common	bees, ants
Helianthus annuus	Sunflower, annual	1/4-1/2	45,000	24	common	bees, ants
Helianthus petiolaris	Sunflower, prairie	1/8-1/4	120000	9	common	bees
Heliomeris multiflora	Goldeneye, showy	1/4-1/2	1,000,000	2	common	bees
Heterotheca villosa	Goldenaster, hairy false	1/8-1/4	726,000	3	common	bees

TABLE 3 (cont). FORB AND LEGUME SEEDING INFORMATION

Latin Name	Common Name	Seeding depth	Seeds/lb	Drill lb/ac	Releases-recommended are underlined	Pollinators
Ipomopsis aggregata	Gilia, scarlet	0-1/8	360,000	3	common	hummingbirds, moths
Iris missouriensis	Iris, blue-flag	1/4-1/2	20,000	54	common	bees, bumblebees, butterflies
Lathyrus pauciflorus	Pea, fewflower	1/8-1/2	12,500	87	common	bees, butterfly larval host
Liatris punctata	Blazingstar, dotted	1/8-1/4	139,000	8	common	bees, butterflies
Linum lewisii	Flax, Lewis	0-1/8	260,000	4	Maple Grove	bees
Linum perenne	Flax, blue	0-1/8	278,000	4	'Appar'	bees
Lobelia cardinalis	Cardinalflower	0-1/8	11,000,000	0.2	common	hummingbirds
Lomatium dissectum	Biscuitroot, fernleaf	1/8-1/2	45,000	24	common	bees
Lomatium macrocarpum	Biscuitroot, bigseed	1/8-1/2	100,000	11	common	bees
Lomatium triternatum	Biscuitroot, nineleaf	1/8-1/2	45,000	24	common	bees
Lotus corniculatus	Trefoil, birdfoot	1/8-1/4	370,000	3	'Norcen', 'Empire', 'Leo', 'Maitland'	bees
Lupinus argenteus	Lupine, silver	1/4-1/2	15,500	70	common	bees, bumblebees
Machaeranthera canescens	Tansyaster, hoary	0-1/8	1,300,000	2	common	bees, butterflies
Machaeranthera tanacetifolia	Tansyaster, tansyleaf	0-1/8	400,000	3	common	bees, butterflies
Medicago sativa	Alfalfa	1/8-1/2	200,000	5	multiple, Trevois, Rambler, Spreador, Ladak	bees
Medicago sativa falcata	Alfalfa, yellow blossom	1/8-1/2	211,000	5	'Don', Yellowhead, SD201	bees
Melilotus alba	Sweetclover, white	1/8-1/2	260,000	4	recommend 1 lb/ac standard in mixture	bees
Melilotus officinalis	Sweetclover, yellow	1/8-1/2	260,000	4	multiple	bees
Monarda fistulosa	Bee balm (wild bergamot)	0-1/8	1,300,000	2	common	bees, bumblebees
Onobrychis viciifolia	Sainfoin	1/4-3/4	32,400	34	'Delaney', Shoshone, 'Eski', 'Melrose', 'Remont'	bees
Penstemon acuminatus	Penstemon, sharpleaf	0-1/8	400,000	3	common	bees
Penstemon angustifolius	Penstemon, broadleaf	0-1/8	313,000	3	common	bees, hummingbirds
Penstemon eatonii	Penstemon, firecracker	0-1/8	315,000	3	Richfield	bees, wasps, hummingbirds
Penstemon humilis	Penstemon, low	0-1/8	952,000	2	common	bees
Penstemon linarioides	Penstemon, toadflax	0-1/8	1,000,000	2	common	bees
Penstemon pachyphyllus	Penstemon, thickleaf	0-1/8	817,000	3	common	bees
Penstemon palmeri	Penstemon, Palmer's	0-1/8	294,000	4	'Cedar'	large bees
Penstemon rydbergii	Penstemon, Rydberg's	0-1/8	132,000	8	common	small bees
Penstemon speciosus	Penstemon, royal	0-1/8	400,000	3	common	bees, moths
Penstemon spectabilis	Penstemon, showy	0-1/8	750,000	3	common	bees, wasps, hummingbirds
Penstemon strictus	Penstemon, Rocky Mountain	0-1/8	286,000	4	'Bandera'	bees

TABLE 3 (cont). FORB AND LEGUME SEEDING INFORMATION

Latin Name	Common Name	Seeding depth	Seeds/lb	Drill lb/ac	Releases-recommended are underlined	Pollinators
Phacelia hastata	Phacelia, silverleaf	1/8-1/4	450,000	2	common	bees
Phacelia sericea	Phacelia, silky	0-1/8	450,000	2	common	bees
Potentilla arguta	Cinquefoil, tall	0-1/8	4,400,000	0.5	common	bees
Ratibida columnifera	Coneflower, prairie or Mex hat	1/4-1/2	740,000	3	common	bees
Rudbeckia hirta	Blackeyed Susan	1/8-1/4	1,600,000	1	common	bees, butterflies
Sanguisorba minor	Burnet, small	1/4-1/2	42,000	26	'Delar'	bees
Solidago simplex/canadensis	Goldenrod	1/8-1/4	2,000,000	1	common	bees, beetles
Sphaeralcea coccinea	Globemallow, scarlet	1/4-1/2	500,000	2	common	bees
Sphaeralcea grossulariifolia	Globemallow, gooseberryleaf	1/4-1/2	500,000	2	common	bees
Sphaeralcea parvifolia	Small flower globemallow	1/4-1/2	500,000	2	common	bees
Symphyotrichum ascendens	Aster, western	0-1/4	2,000,000	1	common	bees
Symphyotrichum laeve	Aster, smooth blue	0-1/8	1,000,000	2	common	bees, butterflies
Thermopsis montana	Goldenbanner	1/4-1/2	30,600	36	common	bees, bumblebees
Trifolium fragiferum	Clover, strawberry	1/8-1/4	300,000	4	common	bees
Trifolium hybridum	Clover, alsike	1/8-1/4	680,000	3	common	bees
Trifolium repens	Clover, white	1/8-1/4	800,000	4	common	bees
Vicia americana	Vetch, American	1.0-2.0	33,000	33	common	bees
Wyethia amplexicaulis	Mule's ears	0-1/8	28,000	39	common	bees, bumblebees, butterflies

TABLE 4. GRASSES LISTED BY PRECIPITATION REQUIREMENTS

Latin Name	Common Name	Origin	Seeding Depth	Seeds/lb	drill lb/ac	Precip. Range (in)	Soils			Pollinator benefit
							Fine	Med	Coarse	
Achnatherum hymenoides	Ricegrass, Indian	N	1/2-3.0	162,000	8	6-14		x	x	Nesting habitat
Aristida purpurea	Three-awn, purple	N	1/2-1.0	250,000	4	6-14		x	x	Nesting habitat
Achnatherum lettermanii	Needlegrass, Letterman	N	1/4-1/2	150,000	6	6-18		x	x	Nesting habitat
Pleuraphis jamesii	Galletta, James'	N	1/4-1/2	270,000	4	6-18	x	x	x	Nesting habitat
Sporobolus cryptandrus	Dropseed, sand	N	0-1/4	5,300,000	1	7-12			x	Nesting habitat
Hesperostipa comata	Needle and Thread	N	1/2-3/4	115,000	6	7-16	x	x		Nesting habitat
Poa secunda	Bluegrass, Sandberg	N	0-1/4	1,000,000	2	8-12	x	x	x	Nesting habitat
Elymus wawawaiensis	Wheatgrass, Snake River	N	1/4-1/2	139000	8	8-13		x	x	Nesting habitat
Elymus elymoides	Squirreltail, bottlebrush	N	1/4-1/2	220,000	6	8-15		x	x	Nesting habitat
Elymus lanceolatus	Wheatgrass, streambank and thickspike	N	1/4-1/2	135,000	8	8-16	x	x		Nesting habitat
Leymus cinereus	Wildrye, basin	N	1/4-3/4	130,000	8	8-18		x	x	Nesting habitat
Poa ampla	Bluegrass, big	N	0-1/4	925,000	2	9-18	x	x		Nesting habitat
Elymus trachycaulus	Wheatgrass, slender	N	1/2-3/4	135,000	8	10-18	x	x		Nesting habitat
Sporobolus airoides	Saccaton, alakali	N	0-1/4	1,700,000	1	10-18	x	x	x	Nesting habitat
Pseudoroegneria spicata	Wheatgrass, bluebunch	N	1/4-1/2	139,000	8	10-20	x	x		Nesting habitat
Carex geyeri	Sedge, elk	N	1/4-1/2	91,400	12	12-20		x	x	Documented larval host plant for *Oeneis jutta reducta* and *Oeneis chryxus*
Elymus multisetus	Squirreltail, big	N	1/4-1/2	192,000	6	12-20	x	x		Nesting habitat
Boutelou gracilis	Grama, blue	N	1/4-1/2	711,000	3	12-22	x	x	x	Nesting habitat
Pascopyrum smithii	Wheatgrass, western	N	1/4-1/2	115,000	8	12-36	x	x		Nesting habitat
Elymus canadensis	Wildrye, Canada	N	1/4-1/2	115,000	8	12-45	x	x	x	Nesting habitat
Festuca idahoensis	Fescue, Idaho	N	1/4-1/2	450,000	4	14-20	x	x		Nesting habitat
Koeleria macrantha	Junegrass, prairie	N	0-1/8	2,135,000	1	14-20		x	x	Nesting habitat
Nassella viridula	Needlegrass, green	N	1/4-1/2	180,000	6	14-24		x		Nesting habitat
Bromus marginatus	Brome, mountain	N	1/4-1/2	80,000	10	16-25	x	x	x	Nesting habitat
Elymus glaucus	Wildrye, blue	N	1/4-1/2	145,000	8	16-60	x	x		Nesting habitat

TABLE 5. TREES, SHRUBS AND HALF-SHRUBS LISTED BY PRECIPITATION REQUIREMENTS

Latin Name	Common Name	Origin	Bloom time and color: Early	Mid	Late	Seeding depth	Seeds/lb	Drill lb/ac	Precip range (in)	Soils: Fine	Med.	Coarse	Pollinators
Purshia glandulosa	Bitterbrush, desert	N				Seedlings	N/A	N/A	5-12		x	x	bees
Purshia mexicana	Cliffrose, Mexican	N				Seedlings	N/A	N/A	6-12			x	bees
Artemisia nova	Sage, black	N				0-1/4	950,000	2	6-18	x	x	x	habitat structure
Krascheninikovia lanata	Winterfat	N				0-1/8	123,000	2	7-12		x	x	habitat structure
Chrysothamnus viscidiflorus	Rabbitbrush, yellow (green)	N				0-1/8 or Seedlings	782,000	0.25	7-15		x	x	butterflies
Ericameria nauseosa	Rabbitbrush, rubber	N				0-1/8 or Seedlings	693,000	0.25	7-16	x	x	x	butterflies, small bees
***Yucca* spp.**	Yucca (soapweed)	N				Seedlings	25,000	44	7-60		x	x	moths
Poliomintha incana	Mint, frosted	N				Seedlings	N/A	N/A	8-12			x	bees
Artemisia tridentata* ssp. *wyomingensis	Sagebrush, Wyoming big	N				0-1/8	1,700,000	0.5	8-13	x	x	x	habitat structure
Atriplex canescens	Saltbush, fourwing	N				1/4-3/4	52,000	2	8-16		x	x	habitat structure
Rhus trilobata	Sumac, skunkbush	N				Seedlings	N/A	N/A	8-18		x	x	bees
Fallugia paradoxa	Apache plume	N				Seedlings	N/A	N/A	8-20		x	x	bees and butterflies
Artemisia tridentata* ssp. *tridentata	Sagebrush, basin big	N				0-1/8	1,700,000	0.5	9-15		x	x	habitat structure
Forestiera neomexicana	Stretchberry	N				Seedlings	N/A	N/A	9-24	x	x	x	butterflies
Baccharis salicifolia	Mule-fat	N				Cuttings	N/A	N/A	10-15	x	x	x	butterflies
Purshia tridentata	Bitterbrush, antelope	N				Seedlings	N/A	N/A	10-15		x	x	bees, butterflies
***Opuntia* spp.**	Cactus, prickly pear	N				0-1/8	145,000	8	10-20	x	x	x	bees, beetles
Holodiscus dumosus	Spiraea, rock	N				Seedlings	N/A	N/A	10-35		x	x	various insects
Artemisia frigida	Sage, fringed	N				0-1/8	4,500,000	0.5	10-40	x	x	x	habitat structure
Ribes aureum	Currant, golden	N				Seedlings	N/A	N/A	12-18		x		bees, bumblebees
Amelanchier utahensis	Serviceberry, Utah	N				Seedlings	N/A	N/A	12-20		x	x	Larval butterfly host plant of the weidemeyer's admiral *(Limenitis weidemeyer*i) and the lorquin's admiral (*L lorquini*).
Philadelphus microphyllus	Mockorange, littleleaf	N				Seedlings	N/A	N/A	12-20		x	x	bees
Shepherdia argentea	Buffaloberry, silver	N				Seedlings	N/A	N/A	12-20		x		bees, butterflies

TABLE 5 (cont). TREES, SHRUBS AND HALF-SHRUBS LISTED BY PRECIPITATION REQUIREMENTS

Latin Name	Common Name	Origin	Bloom time and color: Early	Mid	Late	Seeding depth	Seeds/lb	Drill lb/ac	Precip range (in)	Soils: Fine	Med.	Coarse	Pollinators
Eriogonum heracleoides	Buckwheat, parsnipflower	N				0-1/8	170,000	6 or plants	12-25		x	x	bees, butterflies
Eriogonum umbellatum	Buckwheat, sulphurflower	N				0-1/4	209,000	4 or plants	12-25		x	x	bees, butterflies
Rosa woodsii	Rose, Woods'	N				Seedlings	N/A	N/A	12-40		x	x	bees
Cornus sericea	Dogwood, redosier	N				Seedlings or cuttings	N/A	N/A	12-60		x	x	bees, butterflies
Ribes cereum	Currant, wax	N				Seedlings	N/A	N/A	13-35		x	x	bees
Arctostaphyllos patula	Manzanita, greenleaf	N				Seedlings	N/A	N/A	13-60		x	x	bees
Amelanchier alnifolia	Serviceberry	N				Seedlings	N/A	N/A	14-30		x		bees, butterflies
Lonicera involucrata	Honeysuckle, twinberry	N				Seedlings	N/A	N/A	14-32	x	x		butterflies, bees, hummingbirds
Symphoricarpos oreophilus	Snowberry	N				Seedlings	N/A	N/A	14-45	x	x		bees, butterflies, hummingbirds
Chamaebatiaria millefolium	Fern bush, Desert sweet	N				0-1/8 or seedlings	144,000	8	15-60		x	x	bees
Artemisia tridentata* ssp. *vaseyana	Sagebrush, mountain big	N				0-1/8	1,700,000	0.5	16-25		x	x	habitat structure
Ceanothus velutinus	Ceanothus, snowbrush	N				Seedlings	N/A	N/A	16-40		x	x	butterflies
Crataegus douglasii	Hawthorn, black	N				Seedlings	N/A	N/A	16-60	x	x		moths, bees, butterflies
Prunus virginiana	Chokecherry	N				Seedlings	N/A	N/A	16-60		x		bees, butterflies
***Solidago* spp.**	Goldenrod	N				1/8-1/4 or seedlings	4,600,000	0.5	16-60	x	x	x	bees, wasps, beetles
Holodiscus discolor	Oceanspray	N				Seedlings	N/A	N/A	18-24	x	x	x	various insects
Dasiphora fruticosa	Cinquefoil, shrubby	N				Seedlings	N/A	N/A	18-25		x		moths, bees, butterflies
Arctostaphylos uva-ursi	Kinnikinnick	N				Seedlings	N/A	N/A	18-45		x	x	butterflies, hummingbirds
Prunus americana	Plum, American	S				Seedlings	N/A	N/A	20-40		x	x	bees, butterflies
***Salix* spp.**	Willow	N				Cuttings	N/A	N/A	20-60	x	x	x	bees, butterflies

REFERENCES

Dreesen, D.R. and T.R. Grasswitz. 2012. Preliminary Pollinator Plant Recommendations for New Mexico USDA, NRCS, Los Lunas, NM. Plant Materials Technical Note No. 71, Albuquerque, NM. February 2012. 11p.

Mader, E. Shepherd, M., Vaughan, M. Hoffman Black, S., and G. LeBuhn. 2011. Attracting Native Pollinators. Storey Publishing. North Adams, MA. 371p.

Majerus, M., Reynolds, C. Scianna, J., Winslow, S., and L. Holzworth. 2001. Creating Native Landscapes in the Northern Great Plains and Rocky Mountains. USDA, NRCS, Bridger, MT. 16p.

Ogle, D.G., Cane, J., Fink, R., St. John, L., Stannard, M., and T. Dring. 2009. Plants for Pollinators in the Intermountain West. USDA, NRCS, Boise, ID. Plant Materials Technical Note No. 2A. 21p.

Ogle, D., St. John, L., and C. Stange. 2010. Tree Planting, Care and Management. USDA, NRCS, Boise, ID. Plant Materials Technical Note No. 43. 32p.

Ogle, D. G., L. St. John, and M. Stannard. 2010. Grass, Grass-like, Forb, Legume, and Woody Species for the Intermountain West. USDA, NRCS, Boise, ID. Plant Materials Technical Note No 24: 48p.

Pavek, P., Ogle, D., Cane, J., St. John, L., Stannard, M., Dring, T., and R. Fleenor. 2011. Plants for Pollinators in the Inland West. USDA, NRCS, Boise, ID. Plant Materials Technical Note No. 2B. 31p.

Selland, L.G. 2003. Landscaping with Native Plants of the Intermountain Region. USDI, BLM, Technical Reference 1730-3. Boise, ID. 47p.

Taliga, C. 2011. Plant Suitability and Seeding Rates for Conservation Plantings in Colorado. USDA, NRCS, Denver, CO. Plant Materials Technical Note No. 59. 35p.

USDA-NRCS Tucson Plant Materials Center and The Xerces Society. 2012. Plants for Enhancing Pollinator Habitat in Arizona. USDA, NRCS, Tucson, AZ. Plant Materials Technical Note No 12-1: 15p.

Vaughn, M., and S.H. Black. 2006. Improving Forage for Native Bee Crop Pollinators. USDA, NRCS and FS, Agroforestry Note No. 33. Lincoln, NE. 4p.

Vaughn, M., and S.H. Black. 2007. Pesticide Considerations for Native Bees in Agroforestry. USDA, NRCS and FS, Agroforestry Note No. 35. Lincoln, NE. 4p.

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers, employees, and applicants for employment on the bases of race, color, national origin, age, disability, sex, gender identity, religion, reprisal, and where applicable, political beliefs, marital status, familial or parental status, sexual orientation, or all or part of an individual's income is derived from any public assistance program, or protected genetic information in employment or in any program or activity conducted or funded by the Department. (Not all prohibited bases will apply to all programs and/or employment activities).