To: All Colorado Western Slope Offices

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        Plant Materials Specialist

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

This Technical Note provides guidance for the design and implementation of conservation plantings to enhance habitat for pollinators and other beneficial insects.

Plant species included are adapted to the Colorado Plateau in eastern Utah and western Colorado.
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.
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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.

This technical note covers eastern Utah comprised of the Colorado Plateau Ecregion, 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
Plants for Pollinators in the Intermountain West

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.

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, bird baths, 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**

<table>
<thead>
<tr>
<th>Pollinator Group</th>
<th>Food</th>
<th>Nest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solitary bees</td>
<td>Nectar and pollen</td>
<td>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</td>
</tr>
<tr>
<td>Bumblebees</td>
<td>Nectar and pollen</td>
<td>Nest cavities underground, often in old rodent burrows, or in hollow trees or within clumps of grass</td>
</tr>
<tr>
<td>Butterflies and moths</td>
<td>Nectar, nutrients, minerals and salts from rotting fruit, tree sap, clay deposits and mud puddles</td>
<td>Leaves and stems of larval host plants; also small woodpiles used by species that winter as adults</td>
</tr>
<tr>
<td>Hummingbirds</td>
<td>Nectar, insects, caterpillars, tree sap and willow catkins</td>
<td>Trees, shrubs and vines</td>
</tr>
</tbody>
</table>

**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.

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**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.

- 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.
Plants for Pollinators in the Intermountain West

- 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).

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

*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.

*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.
Plants for Pollinators in the Intermountain West

**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.

**Anaphalis margaritacea**, western pearly everlasting
- 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.

**Aquilegia caerulea**, blue columbine
- Origin: native forb
- Mature Height: 1-2 ft.
Plants for Pollinators in the Intermountain West

**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.

**Aster glyaodes**, 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.
**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](image)

**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.

**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.

![Hooker’s balsamroot](image)

**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.

![Cutleaf balsamroot](image)
**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.

**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.

**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.
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.

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 hawksbeard. 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
**Plants for Pollinators in the Intermountain West**

**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.

**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.

**Engelmann’s aster.** Photo by W. Padgett, BLM Utah.

**Shaggy fleabane.** Derek Tilley, NRCS Idaho.

**Erigeron pumilus**, shaggy fleabane
- Origin: native forb
- Mature Height: 2-18 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.

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.

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Plants for Pollinators in the Intermountain West

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.

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

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*Gaillardia aristata*, blanketflower

Note: avoid cultivated varieties
**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.
Plants for Pollinators in the Intermountain West

**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.

**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

**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.

**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.

**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.

**Linum lewisii**, Lewis flax
Origin: native forb
Mature height: 1-2 ft.
Growth Rate: moderate to rapid
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
Plants for Pollinators in the Intermountain West

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.

*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
**Plants for Pollinators in the Intermountain West**

- **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 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: June - August
  - Seeding Rate: 70 lb/ac
  - Recommended precipitation range: 10-45 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.

- **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.

- **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
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

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.

**Mondarda fistulosa**, bee balm
Origin: native forb

Bee balm. Photo ©Al Schneider, www.swcoloradowildflowers.com, used with permission.
**Plants for Pollinators in the Intermountain West**

**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.

**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.

**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

**Penstemon humilis**, low penstemon
- Origin: native forb
- Mature Height: 3-8 in
- Growth Rate: moderate
- Growth Habit: erect, semi mat-forming
- Wildlife Value: limited
Plants for Pollinators in the Intermountain West

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.

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.
Plants for Pollinators in the Intermountain West

**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 spectabilis**, 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.

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

**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.

*Cinquefoil. Derek Tilley, NRCS Idaho.*

**Ratibida 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
Plants for Pollinators in the Intermountain West

**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.

**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: 8-15 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: 6-15 in.

**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.

**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.

**Aster. G.A. Cooper @ PLANTS Database.**

**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
**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.

**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.
Plants for Pollinators in the Intermountain West

Trees, Shrubs, and Half-Shrubs

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.

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.
**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.

**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.
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.

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.

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: 3 ft.
Recommended precipitation range: 16-40 in.
**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
- In-row 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

**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.

**Dasiphora fruticosa**, shrubby cinquefoil
- Origin: native shrub
- Blooms: May-June
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
Plants for Pollinators in the Intermountain West

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 shrub
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.

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.

Winterfat. Derek Tilley, NRCS Idaho.

Krascheninnikovia lanata, winterfat
Origin: native shrub
Mature Height: 1-3 ft.
Growth Rate: rapid
Growth Habit: low shrub

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 shrub
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.

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.

Winterfat. Derek Tilley, NRCS Idaho.

Krascheninnikovia lanata, winterfat
Origin: native shrub
Mature Height: 1-3 ft.
Growth Rate: rapid
Growth Habit: low shrub

Oceanspray. Gary Monroe @ PLANTS Database.
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.
Plants for Pollinators in the Intermountain West

**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.
**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.

![Skunkbush Sumac](image1.png)

**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.

![Golden Currant](image2.png)

**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.

**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.
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.

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.

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.
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

<table>
<thead>
<tr>
<th>Latin Name</th>
<th>Common Name</th>
<th>Bloom Time and Color</th>
<th>Early</th>
<th>Mid.</th>
<th>Late</th>
<th>Origin</th>
<th>Character</th>
<th>Height (in)</th>
<th>Seedling Vigor</th>
<th>Longevity</th>
<th>Precip. Range (in)</th>
<th>Fine</th>
<th>Med.</th>
<th>Coarse</th>
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</thead>
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<td>Lathyrus pauciflorus</td>
<td>Pea, fewflower</td>
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<td>Vine</td>
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<td>24-36</td>
<td>V. Low</td>
<td>Medium</td>
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<td>12-36</td>
<td>**</td>
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<td>Medium</td>
<td>Short</td>
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<td>Melilotus officinalis</td>
<td>Sweetclover, yellow</td>
<td></td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>Erect</td>
<td>12-36</td>
<td>Med.-Rapid</td>
<td>Short</td>
<td>9-18</td>
<td>x</td>
<td>x</td>
<td>x</td>
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</tr>
<tr>
<td>Balsamorhiza hookeri</td>
<td>Balsamroot, Hooker's</td>
<td></td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Erect</td>
<td>12-24</td>
<td>Medium</td>
<td>Medium</td>
<td>9-20</td>
<td>x</td>
<td>x</td>
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<td></td>
</tr>
<tr>
<td>Penstemon angustifolius</td>
<td>Penstemon, broadleaf</td>
<td></td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Erect</td>
<td>24-36</td>
<td>V. Low</td>
<td>Short</td>
<td>9-35</td>
<td>x</td>
<td>x</td>
<td>x</td>
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</tr>
</tbody>
</table>
Plants for Pollinators in the Intermountain West

<table>
<thead>
<tr>
<th>Latin Name</th>
<th>Common Name</th>
<th>Bloom Time and Color</th>
<th>Origin</th>
<th>Character</th>
<th>Height (in)</th>
<th>Seedling Vigor</th>
<th>Longevity</th>
<th>Precip. Range (in)</th>
<th>Soils</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Vicia americana</em></td>
<td>Vetch, American</td>
<td></td>
<td>N</td>
<td>Spreading</td>
<td>6-12</td>
<td>Low</td>
<td>Medium</td>
<td>9-50</td>
<td>x</td>
</tr>
<tr>
<td><em>Aster glaucodes</em></td>
<td>Aster, gray</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>20-30</td>
<td>Low</td>
<td>Short</td>
<td>10-18</td>
<td>x</td>
</tr>
<tr>
<td><em>Dalea candida</em></td>
<td>Prairie clover, white</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>24-36</td>
<td>Med.</td>
<td>**</td>
<td>10-18</td>
<td>x</td>
</tr>
<tr>
<td><em>Penstemon eatonii</em></td>
<td>Penstemon, firecracker</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-30</td>
<td>V. Low</td>
<td>Short</td>
<td>10-18</td>
<td>x</td>
</tr>
<tr>
<td><em>Phacelia hastata</em></td>
<td>Phacelia, silverleaf</td>
<td></td>
<td>N</td>
<td>Decumbent</td>
<td>18-24</td>
<td>Medium</td>
<td>Medium</td>
<td>10-18</td>
<td>x</td>
</tr>
<tr>
<td><em>Tradescantia occidentalis</em></td>
<td>Spiderwort, prairie</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-16</td>
<td>**</td>
<td>**</td>
<td>10-18</td>
<td>x</td>
</tr>
<tr>
<td><em>Linum lewisii</em></td>
<td>Flax, Lewis</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-24</td>
<td>Low-Med.</td>
<td>Short</td>
<td>10-20</td>
<td>x</td>
</tr>
<tr>
<td><em>Linum perenne</em></td>
<td>Flax, blue</td>
<td></td>
<td>I</td>
<td>Erect</td>
<td>12-24</td>
<td>Low-Med.</td>
<td>Short</td>
<td>10-20</td>
<td>x</td>
</tr>
<tr>
<td><em>Verbesina encelioides</em></td>
<td>Crownbeard, golden</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>16-30</td>
<td>Medium</td>
<td>**</td>
<td>10-20</td>
<td>x</td>
</tr>
<tr>
<td><em>Medicago sativa ssp. falcata</em></td>
<td>Alfalfa, yellow blossom</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>24-36</td>
<td>Medium</td>
<td>Medium</td>
<td>10-25</td>
<td>x</td>
</tr>
<tr>
<td><em>Heterotheca villosa</em></td>
<td>Goldenaster, hairy false</td>
<td></td>
<td>N</td>
<td>Rounded</td>
<td>12-18</td>
<td>Medium</td>
<td>Short</td>
<td>10-26</td>
<td>x</td>
</tr>
<tr>
<td><em>Anaphilis margaritacea</em></td>
<td>Pearly everlasting, western</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>24-36</td>
<td>Medium</td>
<td>Short</td>
<td>10-35</td>
<td>x</td>
</tr>
<tr>
<td><em>Lupinus argenteus</em></td>
<td>Lupine, silver</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>18-24</td>
<td>High</td>
<td>Short</td>
<td>10-45</td>
<td>x</td>
</tr>
<tr>
<td><em>Potentilla argata</em></td>
<td>Cinquefoil, tall</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>24-36</td>
<td>V. Low</td>
<td>Short</td>
<td>10-50</td>
<td>x</td>
</tr>
<tr>
<td><em>Crepis occidentalis</em></td>
<td>Hawksbeard, largeflower</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>10-30</td>
<td>Low</td>
<td>Long</td>
<td>12-18</td>
<td>x</td>
</tr>
<tr>
<td><em>Hedysarum boreale</em></td>
<td>Sweetvetch</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-24</td>
<td>Low</td>
<td>Medium</td>
<td>12-18</td>
<td>x</td>
</tr>
<tr>
<td><em>Lomatium triternatum</em></td>
<td>Biscuitroot, nineleaf</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>24-36</td>
<td>Medium</td>
<td>Long</td>
<td>12-20</td>
<td>x</td>
</tr>
<tr>
<td><em>Penstemon humilis</em></td>
<td>Penstemon, low</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>6-14</td>
<td>**</td>
<td>**</td>
<td>12-20</td>
<td>x</td>
</tr>
<tr>
<td><em>Penstemon linarioides</em></td>
<td>Penstemon, toadflax</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>4-12</td>
<td>**</td>
<td>**</td>
<td>12-20</td>
<td>x</td>
</tr>
<tr>
<td><em>Penstemon pachyphyllus</em></td>
<td>Penstemon, thickleaf</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-20</td>
<td>V. Low</td>
<td>**</td>
<td>12-20</td>
<td>x</td>
</tr>
<tr>
<td><em>Wyethia amplexicaulis</em></td>
<td>Mule's ears</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>24-30</td>
<td>Low</td>
<td>Long</td>
<td>12-20</td>
<td>x</td>
</tr>
<tr>
<td><em>Agastache pallidiflora</em></td>
<td>Hyssop, mountain giant</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-30</td>
<td>**</td>
<td>**</td>
<td>12-24</td>
<td>x</td>
</tr>
<tr>
<td><em>Penstemon acuminatus</em></td>
<td>Penstemon, sharpleaf</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>8-24</td>
<td>V. Low</td>
<td>Medium</td>
<td>12-30</td>
<td>x</td>
</tr>
<tr>
<td><em>Helianthella uniflora</em></td>
<td>Sunflower, oneflower</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-36</td>
<td>Medium</td>
<td>Medium</td>
<td>12-35</td>
<td>x</td>
</tr>
<tr>
<td><em>Penstemon spectabilis</em></td>
<td>Penstemon, showy</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>24-30</td>
<td>**</td>
<td>**</td>
<td>12-40</td>
<td>x</td>
</tr>
<tr>
<td>Latin Name</td>
<td>Common Name</td>
<td>Bloom Time and Color</td>
<td>Origin</td>
<td>Character</td>
<td>Height (in)</td>
<td>Seedling Vigor</td>
<td>Longevity</td>
<td>Precip. Range (in)</td>
<td>Fine</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------</td>
<td>----------------------</td>
<td>--------</td>
<td>-----------</td>
<td>-------------</td>
<td>----------------</td>
<td>-------------</td>
<td>-------------------</td>
<td>------</td>
</tr>
<tr>
<td><em>Medicago sativa</em></td>
<td>Alfalfa</td>
<td></td>
<td>I</td>
<td>Erect</td>
<td>24-36</td>
<td>Medium</td>
<td>Medium</td>
<td>12-65</td>
<td>x</td>
</tr>
<tr>
<td><em>Ipomopsis aggregate</em></td>
<td>Gilia, scarlet</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-36</td>
<td>Low</td>
<td>Biennial</td>
<td>13-40</td>
<td>x</td>
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<tr>
<td><em>Cleome serrulata</em></td>
<td>Beesflower, Rocky Mountain</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-72</td>
<td>Med.-Rapid</td>
<td>Annual</td>
<td>13-55</td>
<td>x</td>
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<tr>
<td><em>Balsamorhiza sagittata</em></td>
<td>Balsamroot, arrowleaf</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-24</td>
<td>V. Low</td>
<td>Long</td>
<td>14-18</td>
<td>x</td>
</tr>
<tr>
<td><em>Penstemon strictus</em></td>
<td>Penstemon, Rocky Mountain</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-36</td>
<td>V. Low</td>
<td>Medium</td>
<td>14-26</td>
<td>x</td>
</tr>
<tr>
<td><em>Lomatium dissectum</em></td>
<td>Biscuitroot, fernleaf</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>6-24</td>
<td>Medium</td>
<td>Long</td>
<td>14-30</td>
<td>x</td>
</tr>
<tr>
<td><em>Balsamorhiza macrophylla</em></td>
<td>Balsamroot, cutleaf</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-40</td>
<td>Low</td>
<td>Medium</td>
<td>14-60</td>
<td>x</td>
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<tr>
<td><em>Echinacea purpurea</em></td>
<td>Coneflower, purple</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>6-24</td>
<td>Medium</td>
<td>Medium</td>
<td>14-40</td>
<td>x</td>
</tr>
<tr>
<td><em>Onobrychis vicifolia</em></td>
<td>Sainfoin</td>
<td></td>
<td>I</td>
<td>Erect</td>
<td>24-60</td>
<td>Low-Med.</td>
<td>Medium</td>
<td>14-45</td>
<td>x</td>
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<tr>
<td><em>Symphyotrichum ascendens</em></td>
<td>Aster, western</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-40</td>
<td>Low</td>
<td>Medium</td>
<td>14-60</td>
<td>x</td>
</tr>
<tr>
<td><em>Sanguisorba minor</em></td>
<td>Burnet, small</td>
<td></td>
<td>I</td>
<td>Erect</td>
<td>12-30</td>
<td>Medium</td>
<td>Medium</td>
<td>15-25</td>
<td>x</td>
</tr>
<tr>
<td><em>Geranium viscosissimum</em></td>
<td>Geranium, sticky purple</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>24-36</td>
<td>Low</td>
<td>Short</td>
<td>16-20</td>
<td>x</td>
</tr>
<tr>
<td><em>Machaeranthera tanacetifolia</em></td>
<td>Tansyaster, tansyleaf</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>24-36</td>
<td>Medium</td>
<td>Annual</td>
<td>16-24</td>
<td>x</td>
</tr>
<tr>
<td><em>Heliomeris multiflora</em></td>
<td>Goldeneye, showy</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>8-39</td>
<td>Medium</td>
<td>Long</td>
<td>16-25</td>
<td>x</td>
</tr>
<tr>
<td><em>Asclepias speciosa</em></td>
<td>Milkweed, showy</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>36-48</td>
<td>Medium</td>
<td>Long</td>
<td>16-30</td>
<td>x</td>
</tr>
<tr>
<td><em>Gaillardia aristata</em></td>
<td>Blanketflower</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-18</td>
<td>Medium</td>
<td>Short</td>
<td>16-30</td>
<td>x</td>
</tr>
<tr>
<td><em>Ratibida columnifera</em></td>
<td>Coneflower, prairie or Mex hat</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-18</td>
<td>Medium</td>
<td>Medium</td>
<td>16-40</td>
<td>x</td>
</tr>
<tr>
<td><em>Astragalus cicer</em></td>
<td>Milkvetch, cicer</td>
<td></td>
<td>I</td>
<td>Erect</td>
<td>12-36</td>
<td>Low</td>
<td>Long</td>
<td>16-60</td>
<td>x</td>
</tr>
<tr>
<td><em>Solidago simplex/canadensis</em></td>
<td>Goldenrod</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>24-40</td>
<td>Medium</td>
<td>Long</td>
<td>16-60</td>
<td>x</td>
</tr>
<tr>
<td><em>Erigeron speciosus</em></td>
<td>Fleabane, aspen</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>24-36</td>
<td>**</td>
<td>**</td>
<td>18-25</td>
<td>x</td>
</tr>
<tr>
<td><em>Liatris punctata</em></td>
<td>Blazingstar, dotted</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>24-32</td>
<td>**</td>
<td>**</td>
<td>18-26</td>
<td>x</td>
</tr>
<tr>
<td><em>Phacelia sericea</em></td>
<td>Phacelia, silky</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-18</td>
<td>Low</td>
<td>Short</td>
<td>18-30</td>
<td></td>
</tr>
<tr>
<td><em>Agastache urticifolia</em></td>
<td>Hyssop, nettleleaf giant</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>30-36</td>
<td>Low</td>
<td>Long</td>
<td>18-36</td>
<td>x</td>
</tr>
<tr>
<td><em>Penstemon rydbergii</em></td>
<td>Penstemon, Rydberg's</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>24-36</td>
<td>Low</td>
<td>Medium</td>
<td>20-30</td>
<td>x</td>
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</table>
TABLE 2 (cont). FORB AND LEGUME CHARACTERISTICS LISTED BY PRECIPITATION REQUIREMENTS

<table>
<thead>
<tr>
<th>Latin Name</th>
<th>Common Name</th>
<th>Bloom Time and Color</th>
<th>Origin</th>
<th>Character</th>
<th>Height (in)</th>
<th>Seedling Vigor</th>
<th>Longevity</th>
<th>Soils</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Asclepias tuberosa</em></td>
<td>Milkweed, butterfly</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>12-36</td>
<td>Low</td>
<td>Medium</td>
<td>Fine</td>
</tr>
<tr>
<td><em>Lobelia cardinalis</em></td>
<td>Cardinalflower</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>48-60</td>
<td>High</td>
<td>Medium</td>
<td>Fine</td>
</tr>
<tr>
<td><em>Rudbeckia hirta</em></td>
<td>Blackeyed Susan</td>
<td></td>
<td>N</td>
<td>Erect</td>
<td>9-12</td>
<td>Rapid</td>
<td>Short</td>
<td>Fine</td>
</tr>
<tr>
<td><em>Seed readily available and easily established</em></td>
<td>** Information not available**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latin Name</td>
<td>Common Name</td>
<td>Seeding depth</td>
<td>Seeds/lb</td>
<td>Drill lb/ac</td>
<td>Releases-recommended are underlined</td>
<td>Pollinators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------</td>
<td>---------------</td>
<td>----------</td>
<td>-------------</td>
<td>-------------------------------------</td>
<td>------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achillea millefolium</td>
<td>Yarrow, western</td>
<td>0-1/8</td>
<td>4,400,000</td>
<td>0.5</td>
<td>Eagle, Yakima, Great Northern</td>
<td>butterflies, some bees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agastache pallidiflora</td>
<td>Hyssop, mountain giant</td>
<td>0-1/8</td>
<td>1,500,000</td>
<td>1</td>
<td>common</td>
<td>bees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agastache urticifolia</td>
<td>Hyssop, nettleleaf giant</td>
<td>0-1/8</td>
<td>1,400,000</td>
<td>1</td>
<td>common</td>
<td>bees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anaphilis margaritacea</td>
<td>Pearly everlasting, western</td>
<td>0-1/8</td>
<td>8,200,000</td>
<td>0.3</td>
<td>common</td>
<td>larval host plant of the Virginia lady (Vanessa virginiensis).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antennaria sp. (rosea)</td>
<td>Pussytoes</td>
<td>0-1/8</td>
<td>6,600,000</td>
<td>0.3</td>
<td>common</td>
<td>painted lady butterfly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquilegia caerulea</td>
<td>Columbine, Colorado</td>
<td>0-1/8</td>
<td>400,000</td>
<td>3</td>
<td>common</td>
<td>hummingbirds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asclepias speciosa</td>
<td>Milkweed, showy</td>
<td>1/8-1/2</td>
<td>72,000</td>
<td>15</td>
<td>common</td>
<td>butterflies; larval host of Monarch butterfly (Danaus plexippus).</td>
<td></td>
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<tr>
<td>Asclepias tuberosa</td>
<td>Milkweed, butterfly</td>
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<td>Aster glauces</td>
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<td>Milkvetch, cicer</td>
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<td>'Lutana', 'Monarch', 'Windsor'</td>
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<td>Balsamorhiza sagittata</td>
<td>Balsamroot, arrowleaf</td>
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<td>Dustymaiden, Douglas'</td>
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<td>Cleome lutea</td>
<td>Beeflower, yellow</td>
<td>0-1/4</td>
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<td>Cleome serrulata</td>
<td>Beeflower, Rocky Mountain</td>
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<td>Crepis acuminata</td>
<td>Hawksbeard, tapertip</td>
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<td>800,000</td>
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<td>Hawksbeard, largeflower</td>
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<td>Dalea candida</td>
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<td>Fleabane, aspen</td>
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<td>Heterotheca villosa</td>
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<td>Latin Name</td>
<td>Common Name</td>
<td>Seeding depth</td>
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<td>Releases-recommended are underlined</td>
<td>Pollinators</td>
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<td>Ipomopsis aggregata</td>
<td>Gilia, scarlet</td>
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<td>Iris, blue-flag</td>
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<td>Pea, fewflower</td>
<td>1/8-1/2</td>
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<td>bees, butterfly larval host</td>
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<td>Liatris punctata</td>
<td>Blazingstar, dotted</td>
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<td>139,000</td>
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<td>common</td>
<td>bees, butterflies</td>
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<tr>
<td>Linum lewisii</td>
<td>Flax, Lewis</td>
<td>0-1/8</td>
<td>260,000</td>
<td>4</td>
<td>Maple Grove</td>
<td>bees</td>
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<td>Linum perenne</td>
<td>Flax, blue</td>
<td>0-1/8</td>
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<td>4</td>
<td>‘Appar’</td>
<td>bees</td>
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<td>Lobelia cardinals</td>
<td>Cardinalflower</td>
<td>0-1/8</td>
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<td>common</td>
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<td>Lomatium dissectum</td>
<td>Biscuitroot, fernleaf</td>
<td>1/8-1/2</td>
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<td>Lomatium macrocarpum</td>
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<td>Machaeranthera tanacetifolia</td>
<td>Tansyaster, tansyleaf</td>
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<td>Medicago sativa</td>
<td>Alfalfa</td>
<td>1/8-1/2</td>
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<td>5</td>
<td>multiple, Trevois, Rambler, Spreador, Ladak</td>
<td>bees</td>
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<td>Medicago sativa falcata</td>
<td>Alfalfa, yellow blossom</td>
<td>1/8-1/2</td>
<td>211,000</td>
<td>5</td>
<td>‘Don’, Yellowhead, SD201</td>
<td>bees</td>
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<td>Melilotus alba</td>
<td>Sweetclover, white</td>
<td>1/8-1/2</td>
<td>260,000</td>
<td>4</td>
<td>recommend 1 lb/ac standard in mixture</td>
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<td>Melilotus officinalis</td>
<td>Sweetclover, yellow</td>
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<td>multiple</td>
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<tr>
<td>Monarda fistulosa</td>
<td>Bee balm (wild bergamot)</td>
<td>0-1/8</td>
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<tr>
<td>Penstemon acuminatus</td>
<td>Penstemon, sharpleaf</td>
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<td>400,000</td>
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<td>Penstemon angustifolius</td>
<td>Penstemon, broadleaf</td>
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<td>Penstemon eatonii</td>
<td>Penstemon, firecracker</td>
<td>0-1/8</td>
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<td>Richfield</td>
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<td>Penstemon, low</td>
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<td>Penstemon linarioides</td>
<td>Penstemon, toadflax</td>
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<td>Penstemon pachyphyllus</td>
<td>Penstemon, thickleaf</td>
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<td>Penstemon palmeri</td>
<td>Penstemon, Palmer’s</td>
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<td>294,000</td>
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<td>‘Cedar’</td>
<td>large bees</td>
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<td>Penstemon rydbergii</td>
<td>Penstemon, Rydberg’s</td>
<td>0-1/8</td>
<td>132,000</td>
<td>8</td>
<td>common</td>
<td>small bees</td>
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</tr>
<tr>
<td>Penstemon speciosus</td>
<td>Penstemon, royal</td>
<td>0-1/8</td>
<td>400,000</td>
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<td>common</td>
<td>bees, moths</td>
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<td>Penstemon spectabilis</td>
<td>Penstemon, showy</td>
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<td>750,000</td>
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<td>Penstemon strictus</td>
<td>Penstemon, Rocky Mountain</td>
<td>0-1/8</td>
<td>286,000</td>
<td>4</td>
<td>‘Bandera’</td>
<td>bees</td>
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## TABLE 3 (cont). FORB AND LEGUME SEEDING INFORMATION

<table>
<thead>
<tr>
<th>Latin Name</th>
<th>Common Name</th>
<th>Seeding depth</th>
<th>Seeds/lb</th>
<th>Drill lb/ac</th>
<th>Releases-recommended are underlined</th>
<th>Pollinators</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Phacelia hastata</em></td>
<td>Phacelia, silverleaf</td>
<td>1/8-1/4</td>
<td>450,000</td>
<td>2</td>
<td>common</td>
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<tr>
<td><em>Phacelia sericea</em></td>
<td>Phacelia, silky</td>
<td>0-1/8</td>
<td>450,000</td>
<td>2</td>
<td>common</td>
<td>bees</td>
</tr>
<tr>
<td><em>Potentilla arguta</em></td>
<td>Cinquefoil, tall</td>
<td>0-1/8</td>
<td>4,400,000</td>
<td>0.5</td>
<td>common</td>
<td>bees</td>
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<tr>
<td><em>Ratibida columnifera</em></td>
<td>Coneflower, prairie or Mex hat</td>
<td>1/4-1/2</td>
<td>740,000</td>
<td>3</td>
<td>common</td>
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<tr>
<td><em>Rudbeckia hirta</em></td>
<td>Blackeyed Susan</td>
<td>1/8-1/4</td>
<td>1,600,000</td>
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<td>common</td>
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<td><em>Sanguisorba minor</em></td>
<td>Burnet, small</td>
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<td>42,000</td>
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<td>'Delar'</td>
<td>bees</td>
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<tr>
<td><em>Solidago simplex/canadensis</em></td>
<td>Goldenrod</td>
<td>1/8-1/4</td>
<td>2,000,000</td>
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<td>common</td>
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<td>Globemallow, scarlet</td>
<td>1/4-1/2</td>
<td>500,000</td>
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<td>common</td>
<td>bees</td>
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<td><em>Sphaeralcea grossularifolia</em></td>
<td>Globemallow, gooseberryleaf</td>
<td>1/4-1/2</td>
<td>500,000</td>
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<td>common</td>
<td>bees</td>
</tr>
<tr>
<td><em>Sphaeralcea parvifolia</em></td>
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<tr>
<td><em>Symphyotrichum ascendens</em></td>
<td>Aster, western</td>
<td>0-1/4</td>
<td>2,000,000</td>
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<td>common</td>
<td>bees</td>
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<tr>
<td><em>Symphyotrichum laeve</em></td>
<td>Aster, smooth blue</td>
<td>0-1/8</td>
<td>1,000,000</td>
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<td>common</td>
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<td>Goldenbanner</td>
<td>1/4-1/2</td>
<td>30,600</td>
<td>36</td>
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<td>bees, bumblebees</td>
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<td>Clover, strawberry</td>
<td>1/8-1/4</td>
<td>300,000</td>
<td>4</td>
<td>common</td>
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<td><em>Trifolium hybridum</em></td>
<td>Clover, alsike</td>
<td>1/8-1/4</td>
<td>680,000</td>
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<td>common</td>
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<td>Clover, white</td>
<td>1/8-1/4</td>
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<td>Vetch, American</td>
<td>1.0-2.0</td>
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<td><em>Wyethia amplexicaulis</em></td>
<td>Mule's ears</td>
<td>0-1/8</td>
<td>28,000</td>
<td>39</td>
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### TABLE 4. GRASSES LISTED BY PRECIPITATION REQUIREMENTS

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<th>Latin Name</th>
<th>Common Name</th>
<th>Origin</th>
<th>Seeding Depth</th>
<th>Seeds/lb</th>
<th>drill lb/ac</th>
<th>Precip. Range (in)</th>
<th>Fine</th>
<th>Med</th>
<th>Course</th>
<th>Pollinator benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elymus glaucus</td>
<td>Wildrye, Mountain wildrye</td>
<td>N</td>
<td>1/2-3.0</td>
<td>162,000</td>
<td>8</td>
<td>6-14</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Nesting habitat</td>
</tr>
<tr>
<td>Bromus marginatus</td>
<td>Three-awn, purple</td>
<td>N</td>
<td>1/2-1.0</td>
<td>250,000</td>
<td>4</td>
<td>6-14</td>
<td>x</td>
<td>x</td>
<td>x</td>
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</tr>
<tr>
<td>Koeleria macrantha</td>
<td>Rabbitfoot</td>
<td>N</td>
<td>1/4-1/2</td>
<td>150,000</td>
<td>6</td>
<td>6-18</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Nesting habitat</td>
</tr>
<tr>
<td>Nassella viridula</td>
<td>Needlegrass, Letterman</td>
<td>N</td>
<td>1/4-1/2</td>
<td>270,000</td>
<td>4</td>
<td>6-18</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Festuca idahoensis</td>
<td>Idaho fescue</td>
<td>N</td>
<td>1/4-1/2</td>
<td>220,000</td>
<td>6</td>
<td>8-15</td>
<td>x</td>
<td>x</td>
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<td>Nesting habitat</td>
</tr>
<tr>
<td>Elymus canadensis</td>
<td>Bluegrass, Idaho fescue</td>
<td>N</td>
<td>1/4-1/2</td>
<td>139000</td>
<td>8</td>
<td>8-13</td>
<td>x</td>
<td>x</td>
<td>x</td>
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</tr>
<tr>
<td>Pascopyrum smithii</td>
<td>Wheatgrass, western</td>
<td>N</td>
<td>1/4-1/2</td>
<td>135,000</td>
<td>8</td>
<td>8-16</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Nesting habitat</td>
</tr>
<tr>
<td>Elymus trachycaulus</td>
<td>Bluegrass, bluebunch</td>
<td>N</td>
<td>1/4-1/2</td>
<td>139,000</td>
<td>8</td>
<td>10-20</td>
<td>x</td>
<td>x</td>
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</tr>
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<td>Elymus lanceolatus</td>
<td>Wheatgrass, streambank</td>
<td>N</td>
<td>1/4-1/2</td>
<td>135,000</td>
<td>8</td>
<td>8-16</td>
<td>x</td>
<td>x</td>
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</tr>
<tr>
<td>Poa secunda</td>
<td>Bluegrass, Sandberg</td>
<td>N</td>
<td>1/2-3/4</td>
<td>115,000</td>
<td>6</td>
<td>7-16</td>
<td>x</td>
<td>x</td>
<td>x</td>
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</tr>
<tr>
<td>Poa annua</td>
<td>Bluegrass, big</td>
<td>N</td>
<td>1/4-1/2</td>
<td>130,000</td>
<td>8</td>
<td>8-18</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Nesting habitat</td>
</tr>
<tr>
<td>Elymus wawawaiensis</td>
<td>Wheatgrass, Snake River</td>
<td>N</td>
<td>139000</td>
<td>8</td>
<td>8-13</td>
<td>8-13</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Nesting habitat</td>
</tr>
<tr>
<td>Elymus elymoides</td>
<td>Squirreltail, bottlebrush</td>
<td>N</td>
<td>1/4-1/2</td>
<td>220,000</td>
<td>6</td>
<td>8-15</td>
<td>x</td>
<td>x</td>
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<td>Nesting habitat</td>
</tr>
<tr>
<td>Elymus trachycaulus</td>
<td>Squirreltail, bottlebrush</td>
<td>N</td>
<td>1/4-1/2</td>
<td>139,000</td>
<td>8</td>
<td>10-20</td>
<td>x</td>
<td>x</td>
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<td>Nesting habitat</td>
</tr>
<tr>
<td>Achnatherum hymenoides</td>
<td>Ricegrass, Idaho fescue</td>
<td>N</td>
<td>1/4-1/2</td>
<td>91,400</td>
<td>12</td>
<td>12-20</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Documented larval host plant for <em>Oeneis jutta reducta</em> and <em>Oeneis chryxus</em></td>
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<tr>
<td>Achnatherum trachycaulus</td>
<td>Needlegrass, Letterman</td>
<td>N</td>
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<td>192,000</td>
<td>6</td>
<td>12-20</td>
<td>x</td>
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</tr>
<tr>
<td>Poa annua</td>
<td>Bluegrass, big</td>
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<td>1/4-1/2</td>
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<td>x</td>
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<td>Elymus canadensis</td>
<td>Wildrye, Canada</td>
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<td>1/4-1/2</td>
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<td>12-36</td>
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<td>x</td>
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<td>1/4-1/2</td>
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<td>12-45</td>
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<td>Elymus trachycaulus</td>
<td>Needlegrass, Letterman</td>
<td>N</td>
<td>1/4-1/2</td>
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<td>4</td>
<td>14-20</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Nesting habitat</td>
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<tr>
<td>Koeleria macrantha</td>
<td>Junegrass, prairie</td>
<td>N</td>
<td>1/4-1/2</td>
<td>2,135,000</td>
<td>1</td>
<td>14-20</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Nesting habitat</td>
</tr>
<tr>
<td>Nassella viridula</td>
<td>Needlegrass, green</td>
<td>N</td>
<td>1/4-1/2</td>
<td>180,000</td>
<td>6</td>
<td>14-24</td>
<td>x</td>
<td>x</td>
<td>x</td>
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</tr>
<tr>
<td>Bromus marginatus</td>
<td>Brome, mountain</td>
<td>N</td>
<td>1/4-1/2</td>
<td>80,000</td>
<td>10</td>
<td>16-25</td>
<td>x</td>
<td>x</td>
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<td>Nesting habitat</td>
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<tr>
<td>Elymus glaucus</td>
<td>Wildrye, blue</td>
<td>N</td>
<td>1/4-1/2</td>
<td>145,000</td>
<td>8</td>
<td>16-60</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Nesting habitat</td>
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## TABLE 5. TREES, SHRUBS AND HALF-SHRUBS LISTED BY PRECIPITATION REQUIREMENTS

<table>
<thead>
<tr>
<th>Latin Name</th>
<th>Common Name</th>
<th>Origin</th>
<th>Early Bloom</th>
<th>Mid Bloom</th>
<th>Late Bloom</th>
<th>Seedling Depth</th>
<th>Seeds/lb</th>
<th>Drill lb/ac</th>
<th>Precip Range (in)</th>
<th>Fine Gravels</th>
<th>Med Gravels</th>
<th>Coarse Gravels</th>
<th>Pollinators</th>
<th>Soils</th>
<th>Bloom Time and Color</th>
<th>Seedlings</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Purshia glandulosa</em></td>
<td>Buffaloberry</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>N/A N/A</td>
<td>5-12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bees</td>
<td></td>
<td>Early Color</td>
<td>N/A</td>
</tr>
<tr>
<td><em>Purshia mexicana</em></td>
<td>Cliffsrose, Mexican</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>N/A N/A</td>
<td>6-12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>bees</td>
<td></td>
<td>Mid Color</td>
<td>N/A</td>
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<tr>
<td><em>Artemisia nova</em></td>
<td>Sage, black</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>0-1/4</td>
<td>950,000</td>
<td>2</td>
<td>6-18</td>
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<td></td>
<td></td>
<td>habitat structure</td>
<td></td>
<td>x</td>
<td>x</td>
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<td><em>Krascheniokovia lanata</em></td>
<td>Winterfat</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>0-1/8</td>
<td>123,000</td>
<td>2</td>
<td>7-12</td>
<td></td>
<td></td>
<td></td>
<td>habitat structure</td>
<td></td>
<td></td>
<td>x</td>
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<tr>
<td><em>Chrysothamnus viscidiflorus</em></td>
<td>Rabbitbrush, yellow (green)</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>0-1/8 or Seedlings</td>
<td>782,000</td>
<td>0.25</td>
<td>7-15</td>
<td></td>
<td></td>
<td></td>
<td>butterflies</td>
<td></td>
<td></td>
<td>x</td>
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<tr>
<td><em>Ericameria nauseosa</em></td>
<td>Rabbitbrush, rubber</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>0-1/8 or Seedlings</td>
<td>693,000</td>
<td>0.25</td>
<td>7-16</td>
<td></td>
<td></td>
<td></td>
<td>butterflies, small bees</td>
<td></td>
<td></td>
<td>x x</td>
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<td><em>Yucca spp.</em></td>
<td>Yucca (soapweed)</td>
<td>N</td>
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<td></td>
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<td>25,000</td>
<td>44</td>
<td>7-60</td>
<td></td>
<td></td>
<td></td>
<td>moths</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td><em>Poliomintha incana</em></td>
<td>Mint, frosted</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>Seedlings</td>
<td>N/A N/A</td>
<td>N/A</td>
<td>8-12</td>
<td></td>
<td></td>
<td></td>
<td>bees</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td><em>Artemisia tridentata ssp. wyomingensis</em></td>
<td>Sagebrush, Wyoming big</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>0-1/8</td>
<td>1,700,000</td>
<td>0.5</td>
<td>8-13</td>
<td></td>
<td></td>
<td></td>
<td>habitat structure</td>
<td></td>
<td></td>
<td>x x</td>
</tr>
<tr>
<td><em>Atriplex canescens</em></td>
<td>Saltbush, fourwing</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>1/4-3/4</td>
<td>52,000</td>
<td>2</td>
<td>8-16</td>
<td></td>
<td></td>
<td></td>
<td>habitat structure</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td><em>Rhus trilobata</em></td>
<td>Sumac, skunkbush</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>Seedlings</td>
<td>N/A N/A</td>
<td>N/A</td>
<td>8-18</td>
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<td></td>
<td></td>
<td>x x x bees</td>
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<td></td>
<td>x</td>
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<td><em>Fallugia paradoxa</em></td>
<td>Apache plume</td>
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<td>N/A N/A</td>
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<td></td>
<td></td>
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<td></td>
<td>x x and butterflies</td>
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<tr>
<td><em>Artemisia tridentata ssp. tridentata</em></td>
<td>Sagebrush, basin big</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>0-1/8</td>
<td>1,700,000</td>
<td>0.5</td>
<td>9-15</td>
<td></td>
<td></td>
<td></td>
<td>habitat structure</td>
<td></td>
<td></td>
<td>x</td>
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<td>Stretchberry</td>
<td>N</td>
<td></td>
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<td>Seedlings</td>
<td>N/A N/A</td>
<td>N/A</td>
<td>9-24</td>
<td></td>
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<td></td>
<td>Early Color</td>
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<tr>
<td><em>Baccharis salicifolia</em></td>
<td>Mule-fat</td>
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<td></td>
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<td>Cuttings</td>
<td>N/A N/A</td>
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<td>10-15</td>
<td></td>
<td></td>
<td></td>
<td>butterflies</td>
<td></td>
<td>Mid Color</td>
<td>N/A</td>
</tr>
<tr>
<td><em>Purshia tridentata</em></td>
<td>Bitterbrush, antelope</td>
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<td></td>
<td>Seedlings</td>
<td>N/A N/A</td>
<td>N/A</td>
<td>10-15</td>
<td></td>
<td></td>
<td></td>
<td>bees, butterflies</td>
<td></td>
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<td><em>Opuntia spp.</em></td>
<td>Cactus, prickly pear</td>
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<td></td>
<td></td>
<td>0-1/8</td>
<td>145,000</td>
<td>8</td>
<td>10-20</td>
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<td>bees, beetles</td>
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<td><em>Holodiscus dulosus</em></td>
<td>Spiraea, rock</td>
<td>N</td>
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<td></td>
<td></td>
<td>Seedlings</td>
<td>N/A N/A</td>
<td>N/A</td>
<td>10-35</td>
<td></td>
<td></td>
<td></td>
<td>various insects</td>
<td></td>
<td></td>
<td>x x</td>
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<tr>
<td><em>Artemisia frigida</em></td>
<td>Sage, fringed</td>
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<td>0-1/8</td>
<td>4,500,000</td>
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<td>10-40</td>
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<td>x x</td>
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<td>Currant, golden</td>
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<td></td>
<td></td>
<td></td>
<td>Seedlings</td>
<td>N/A N/A</td>
<td>N/A</td>
<td>12-18</td>
<td></td>
<td></td>
<td></td>
<td>bees, bumblebees</td>
<td></td>
<td></td>
<td>x</td>
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<td><em>Amelanchier utahensis</em></td>
<td>Serviceberry, Utah</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>Seedlings</td>
<td>N/A N/A</td>
<td>N/A</td>
<td>12-20</td>
<td></td>
<td></td>
<td></td>
<td>Larval butterfly host plant of the white demohey's admiral (Limenitis weidemeyeri) and the Lorquin's admiral (L. lorquini).</td>
<td></td>
<td></td>
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<tr>
<td><em>Philadelphus microphyllus</em></td>
<td>Mockorange, littleleaf</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>Seedlings</td>
<td>N/A N/A</td>
<td>N/A</td>
<td>12-20</td>
<td></td>
<td></td>
<td></td>
<td>bees</td>
<td></td>
<td></td>
<td>x x</td>
</tr>
<tr>
<td><em>Shepherdia argentea</em></td>
<td>Buffaloberry, silver</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>Seedlings</td>
<td>N/A N/A</td>
<td>N/A</td>
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<td></td>
<td></td>
<td></td>
<td>bees, butterflies</td>
<td></td>
<td></td>
<td>x</td>
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</table>
### TABLE 5 (cont). TREES, SHRUBS AND HALF-SHRUBS LISTED BY PRECIPITATION REQUIREMENTS

<table>
<thead>
<tr>
<th>Latin Name</th>
<th>Common Name</th>
<th>Origin</th>
<th>Early</th>
<th>Mid</th>
<th>Late</th>
<th>Seeding depth</th>
<th>Seeds/lb</th>
<th>Drill lb/ac</th>
<th>Precip range (in)</th>
<th>Soils</th>
<th>Fine</th>
<th>Med.</th>
<th>Course</th>
<th>Pollinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eriogonum heracleoides</td>
<td>Buckwheat, parsnipflower</td>
<td>N</td>
<td>☜</td>
<td>☜</td>
<td>☜</td>
<td>0-1/8</td>
<td>170,000</td>
<td>6 or plants</td>
<td>12-25</td>
<td>☜ ☜</td>
<td>bees, butterflies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eriogonum umbellatum</td>
<td>Buckwheat, sulphurflower</td>
<td>N</td>
<td>☜</td>
<td>☜</td>
<td>☜</td>
<td>0-1/4</td>
<td>209,000</td>
<td>4 or plants</td>
<td>12-25</td>
<td>☜ ☜</td>
<td>bees, butterflies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rosa woodsii</td>
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<td>Ribes cereum</td>
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<td>0-1/8 or seedlings</td>
<td>144,000</td>
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<td>☜</td>
<td>0-1/8</td>
<td>1,700,000</td>
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<td>Prunus virginiana</td>
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REFERENCES


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