APPENDIX 1

PLANT PORTRAITS FOR SELECTED PLANTS FROM THE BLOOM LIST

By Jennifer Thompson

Plants are ordered by bloom time. For more details, refer to the complete bloom list, “Planning a landscape with a continual supply of flowering plants,” on page 34, which lists plants ordered from spring blooming to fall.

More information on a variety of plants is available by visiting the Barnyards & Backyards website, www.barnyardsandbackyards.com, and clicking on “Landscaping.”

PLANT TOXICITY

Many plants have some level of toxicity to animals (including us). This includes plants from elsewhere in the world (introduced plants) and those native to the Rocky Mountain region. Many plants likely contain toxic compounds as a way to keep herbivores (rabbits, deer, insects, etc.) from eating them. Any threat these plants pose depends on several factors:

- Toxicity varies by plant species (and plant varieties within species) and the plant part eaten.
- The environment the plant is growing in and what growth stage the plant is at can affect the levels of toxic compounds.
- What animal species is consuming the plant. Not all animals are similarly susceptible to the toxic compounds in any particular plant species. Just because cattle or wildlife are eating a plant does not mean they are safe for humans to eat!
- How toxic they are to the animal species consuming them. Toxicity ranges from highly toxic in which a minute amount can kill an animal to minimally toxic when an animal must consume very large amounts to have any effect.
- How likely they are to be eaten. Many (but not all) of our poisonous native plants are not very palatable (animals do not like to eat them), and they won’t be consumed unless the animal has little choice (such as in overgrazed pastures).

A little information is provided here on some commonly known plants with toxic properties. This does not mean others listed are not toxic as well. If concerned with these issues, research the plant in question.

Never eat or allow others whom you supervise (such as children) to eat any plant you haven’t positively identified or which you don’t know (100 percent) to be safe to eat.

Additional plant toxicity resources


University of California Agriculture and Natural Resources. “Toxic Plants (by Scientific Name).” Safe and Poisonous Garden Plants, ucanr.edu/sites/poisonous_safe_plants/Toxic_Plants_by_Scientific_Name_/685/.

Spring meadow saffron
*Bulbocodium vernum* (also known as *Colchicum bulbocodium*)
Height: 3–4 inches
Width: 1–2+ inches
Small, raggedy looking but very early blooming little bulb. Critter resistant. All parts toxic.
Photo: RukiMedia/shutterstock.com

Crocus
(Many varieties)
Height: 3–4 inches
Width: 2+ inches
Hardy, small, early flowering bulb. Wide variety of colors. Flowers and foliage might be eaten by rodents, rabbits, and deer.

Snow iris
*Iris reticulata*
Height: under 6 inches
Width: 3 inches
An early-blooming dwarf iris bulb. Clumps will increase by offsets in size over time if happy with their location. Leaves grow taller after blooming until dormancy. ‘Pixie’ pictured.

Pasqueflower
*Pulsatilla vulgaris*, *Pulsatilla patens* (pictured)
Height: 6–12 inches
Width: 12 inches
*P. patens* (left) is native to Wyoming, *P. vulgaris* (right) is not. Blooms very early followed by feathery seed heads. All parts are toxic.

Note: All Appendix 1 photos courtesy Jennifer Thompson unless otherwise noted.
**Daffodils**  
*Narcissus*  
‘Jetfire’, ‘King Alfred’  
Height: up to 16 inches  
Width: clump size depends on number of bulbs planted  
‘Jetfire’ (pictured) is a shorter, smaller type of daffodil. ‘King Alfred’ is a classic daffodil type. All parts toxic.

**Glory-of-the-snow**  
*Chionodoxa forbesii*  
Height: 4–6 inches  
Width: 3–6 inches  
A spring-blooming bulb. It will often spread via seed and bulb offsets.  
Photo, right: Diane E. Irwin/shutterstock.com

**Tulips**  
*Tulipa Species* (botanical-type)  
These tulips are generally shorter and have smaller flowers than regular tulips. Clumps will expand over time if happy with their location. Tulip flowers and foliage are eaten by many wildlife. ‘Little Beauty’ (left).

**Grape Hyacinth**  
*Muscari*  
Height: 6–8 inches  
A cheerful spring-blooming bulb. Leaves also grow out in the fall. *Muscari armeniacum* can reseed a lot. Plant another species or deadhead to avoid reseeding.

**Thymes**  
*Thymus*  
Height: generally under 10 inches  
Width: varies  
Many different types; some can be used as groundcover. ‘Elfin’ (left).
**Sugarbowl clematis**  
*Clematis scottii*  
Height: 12 inches  
Width: 18 inches  
Native bush clematis. A bit floppy. It takes a little while to bulk up from small plants. Amusing seed heads. Bumble bees push themselves into the urn-shaped flowers.  
Photo, right: Hanjo Hellman/shutterstock.com

**Hall’s penstemon**  
*Penstemon hallii*  
Height: to 8 inches  
Width: 12+ inches  
Adaptable, early-blooming penstemon from higher elevations in Colorado. Relatively easy to start from seed; plants are not common in nurseries.

**White-tufted evening primrose**  
*Oenothera caespitosa*  
Height: approximately 12 inches  
Width: 12–24 inches.  
Native. Short-lived (a couple of years.) Reseeds; can reseed a lot depending on location. Some kinds spread underground. Fragrant flowers. Jackrabbits like to eat it. A larval and nectar food for hawkmoths.

**‘Kannah Creek’ sulfur buckwheat**  
*Eriogonum umbellatum*  
Height: 6–12 inches  
Width: 8–12 inches.  
Native. Long season of interest. Flowers turn rusty orange color later in summer.

**Coral bells**  
*Heuchera sanguinea*  
Height: up to 16 inches in bloom  
Width: up to 15 inches  
‘Ruby Bells’ (left) is a cultivar of this plant native to the Southwest. Coral bells tend to grow in places such as on canyon walls. Probably will do better in part shade in hot areas. Attractive to hummingbirds.  
Photo, right: Alina Kuptsova/shutterstock.com
‘Walker’s Low’
catmint
_Nepeta_
Height: 15–18 inches
Width: 2–3 feet
Long bloom time. Can rebloom if deadheaded. Purchase only sterile, vegetatively propagated types to minimize reseeding. Extremely attractive to a wide variety of pollinators.

Firecracker & Beardlip penstemon
_Penstemon eatonii, Penstemon barbatus_
Height: up to 3 feet in bloom
Width: 12–18 inches
Native to Utah and Colorado. _P. eatonii_ (left) tends to bloom before _P. barbatus_ (right). Attractive to hummingbirds. Can reseed.

‘May Night’ salvia
_Salvia nemorosa_
Height: 18–24 inches
Width: 12–18 inches

Large beardtongue
_Penstemon grandiflorus_
Height: 2–3 feet
Width: 8–12 inches
Native. Large showy blooms (right). Reseeds moderately. Short bloom period of approximately 2 weeks. Can be short-lived (1–2 years).

Desert princesplume
_Stanleya pinnata_
Height: up to 3 feet
Width: 18–24 inches
Native. Can be short-lived. Concentrates selenium, can be toxic to livestock if they are without adequate other forage sources. Can reseed.
**Rocky Mountain penstemon**  
*Penstemon strictus*  
Height: 18–24 inches  
Width: 12–18 inches  
Native. Easy to grow. Susceptible to powdery mildew in shadier acres. Prolific reseeder; deadhead to avoid reseeding.

**Purple prairie clover**  
*Petalostemon purpureus* (also *Dalea purpurea*)  
Height: 2–3 feet  
Width: 1–2 feet  
Native. Nitrogen-fixing plants. Slow growing from seedlings. Takes a couple of years to bulk up. Likes some irrigation. Very attractive to some bees.

**Palmer’s beardtongue**  
*Penstemon palmeri* (also known as pink wild snapdragon)  
Height: 2–4 feet  
Width: 18–24 inches  
Native to Utah. Large, showy fragrant blooms. Short-lived but reseeds when happy.

**Blanket flower**  
*Gaillardia*  
Height: 12–18 inches  
Width: 12–18 inches  
Many varieties available. Can reseed a fair amount and be short-lived. Native *Gaillardia aristata* (right) has rhizomatous tendencies and is susceptible to powdery mildew.

**Prairie coneflower**  
*Ratibida columnifera* (also known as upright prairie coneflower)  
Height: 18–24 inches  
Width: 18–24 inches  
Native. Long bloom period. Short-lived plant but reseeds moderately. Flowers can be yellow or burnt orange. Some interesting native bees, such as digger bees, visit this plant.
Garrett’s firechalice
Zauschneria garrettii
Height: 18 inches
Width: 18–24 inches
Native. Late summer color. Spreads underground and can cover a large area in time. The red-orange tubular flowers (right) are visited by hummingbirds.

Poppy mallow
Callirhoe involucrata
Height: 6–12 inches
Width: 2–3 feet
Does not transplant well when older due to taproot. Reseeds.

Hollyhock
Alcea
Height: 3–8 feet
Width: 2+ feet
Tall plants range from biennials to short-lived perennials. Visited by many bees. Leafcutter bees cut circles out of the petals to use in their nests (right).

Black-eyed Susan
Rudbeckia hirta
Height: approximately 24 inches
Width: approximately 24 inches

Agastache
Height: 2–3 feet
Width: 18+ inches
A. foeniculum is native. Other species and varieties also available. Some are cold-hardier than others. Visited by bees and hummingbirds.
Narrow-leaf coneflower
*Echinacea angustifolia*
Height: 18–24 inches
Width: 12–18 inches
Native. More drought-tolerant than *E. purpurea* (below) but not as large and showy. Reseeds. Takes a few years to bulk up. May need to grow from seed.

Purple coneflower
*Echinacea purpurea*
Height: 2–3 feet
Width: 18–24 inches
Late-summer blooms. Not a xeric plant in some areas of Wyoming. Performs better with supplemental water.

Beebalm
*Monarda didyma*
Height: up to 24 inches. Dwarf ‘Petite Delight’ (right) is 12–15 inches.
Width: 18–24 inches
Susceptible to powdery mildew. Choose resistant cultivars. ‘Fireball’ (left).

Spike speedwell
*Veronica spicata*
Height: 12+ inches
Width: up to 18 inches
Various varieties. Visited by bees. Subspecies *incana* pictured.

Milkweed
*Asclepias spp.*
Height: 20–30 inches
Width: 6–8 inches at base; wider at top when in bloom.
Oregano
*Origanum*
Height: 18 inches
Width: 24+ inches over time
Many different types of bees, syrphids, and other pollinators can cover the flowers of this herb for as long as it blooms in late summer. Winter hardiness varies among cultivars.

Colorado four o’clock
*Mirabilis multiflora* (also known as wild four o’ clock)
Height: 1–3 feet
Width: 2–4 feet
Long-lived. Does not transplant well when larger due to taproot. Reseeds.

Goldenrod
*Solidago spp.*
Height: 18–24 inches
Width: 16 inches
‘Golden Baby’ is a hybrid goldenrod highly attractive to bees. Good source of late summer and fall food for a variety of bees. It forms a clump. Many goldenrods are vigorous rhizomatous spreaders.

Gentians
*Gentiana parryi, G. septemfida* hybrids
Height: 6–8 inches
Width: 12 inches.
Native and non-native cross. Bumblebees like to squeeze inside these late-blooming flowers. Plants like moisture. Can be planted near downspouts. Some gentian species bloom in spring.

Scarlet gilia
*Ipomopsis aggregata*
Height: up to 3+ feet
Width: 24 inches
Native. Biennial or short-lived perennial. Favorite of hummingbirds. Takes up little room in the garden until it bursts into bloom in late summer. Can reseed.
Dotted blazing star
*Liatris punctata* (also known as Gayfeather)
Height: 12–18 inches
Width: 6–12 inches
Native. More drought-tolerant than some other liatris species. Takes a few years to bulk up from a seedling. Long-lasting flower heads attractive to butterflies and bees.

‘Autumn Joy’ sedum
*Sedum*
Height: 18–24 inches
Width: 12–18 inches
Long, late-summer bloom time. Bee favorite.

Blue Sage
*Salvia azurea* (also known as Prairie sage)
Height: 40 inches
Width: 20 inches
Regional native in Colorado and Nebraska. Very late bloomer so may not have time to bloom in more exposed or high altitude areas. Tall and can flop a bit. Visited by hawkmoths, hummingbirds and other pollinators.

‘Purple dome’ aster
*Aster novi-belgii*
Height: 18–24 inches
Width: 18–24 inches
Later summer/fall bloom time. Excellent resource for bees late in the season.
Shrubs

**Colchicum**
Height: up to 8 inches
Width: 5+ inches
One of the latest flowers to bloom in the fall. Huge flowers on many varieties. Animal resistant. Taller leaves come up in spring before going dormant. All parts toxic.

**Serviceberry**
*Amelanchier alnifolia*
Height: 6–10 feet
Width: 5–8 feet
A spring-blooming shrub. Blooms followed by edible blue-black berries. Can experience winter dieback in some locations.
Photo, left: HES Photography/shutterstock.com; right: ArgenLant/shutterstock.com

**Sand cherry**
*Prunus besseyi*
Height: 4–6 feet
Width: 4–6 feet
A native shrub that provides food for wildlife. Susceptible to powdery mildew on the leaves. Blooms smell sweet. Some suckers. Fruit can be very nice tasting or very astringent.

**Golden currant**
*Ribes aureum*
Height: 4–6 feet
Width: 4–6 feet
Native plant. Sweet smelling yellow blooms. Spreads by suckers or reseeding.
Photo, right: Murasaki Izumi, shutterstock.com
Three-leaf sumac
*Rhus trilobata*
Height: 3–12 feet
Width: 4–10 feet
Native shrub. Glossy leaves. Inconspicuous flowers and red berries. Fall foliage colors can be nice. Can sucker.

Lewis mock orange
*Philadelphus lewisii*
Height: 4–9 feet
Width: 4–9 feet
Covered with sweet-smelling white flowers in early summer. Native to Montana and the Northwest.
Photo: right: LagunaticPhoto, shutterstock.com

Silver buffaloberry
*Shepherdia argentea*
Height: up to 12 feet
Width: 12+ feet
Native, spring-blooming shrub. Very attractive to bees. Male and female flowers are on separate plants. Can form thickets.
Photo: Andrey Kozymtsev/Shutterstock.com

Wood’s rose
*Rosa woodsii*
Height: 3–6 feet
Width: 3–6 feet
Native with fragrant flowers. Can quickly spread to form thickets.
Photo: cjchiker/Shutterstock.com

Raspberry
*Rubus*
Height: up to 6 feet
Width: 4+ feet
Delicious fruit. Bees love the flowers. Old stalks are used by some native bees that create their nests in the pithy middles.
**Potentilla**  
*Potentilla fruticosa*  
Height: 2–4 feet  
Width: 2–4 feet  
Tough shrub. Long summer bloom period.

**Fernbush**  
*Chamaebatiaria millefolium*  
Height: up to 6 feet  
Width: 6 feet  
Native in Idaho and Utah.  
Aromatic with rounded form.  
Visited by bees, syrphids, etc.  
Brittle stems; avoid planting where it will get crushed by snow falling off roofs.

**Blue mist spirea**  
*Caryopteris x clandonensis*  
Height: 2–3 feet  
Width: 3 feet  
Late summer bloomer. Can cut back in early spring. Bees visit it heavily.
**BUTTERFLY MILKWEED**

A note on the *Asclepias* species (butterfly milkweed). Milkweeds have received a lot of press in recent years due to concerns with monarch butterfly populations. *Asclepias* species serve as food sources for the caterpillars of these butterflies. The caterpillars consume leaves and concentrate toxic substances within the plants apparently as a means of defense (birds who eat the caterpillars throw up). *Asclepias* are toxic to some livestock.

The species most often reported to be of concern to livestock are *Asclepias labriformis*, *A. subverticillata*, *A. eriocarpa*, and *A. fascicularis* (You can find out which species are native to the state on the Plants USDA website [https://plants.usda.gov](https://plants.usda.gov)). In part, this is reported to be due to their presence in harvested hay. Their thin leaves are hard for animals to discern in dried hay and avoid eating them. They are also a concern where animals are trailed or where they have no other forage. *Asclepias speciosa* is native to Wyoming and has been declared noxious in some counties in the state. This plant is not recommended for landscape beds as it is also a highly vigorous spreader. Some of the other *Asclepias* can also spread vigorously.

There is some debate amongst the scientific community on the importance of planting milkweeds as a caterpillar food source for monarchs. Drought in places such as Texas that reduces nectar sources along their migration routes, has been implicated by some studies as playing a large role in the health of monarch populations. Further studies may clarify the situation.

For more detailed information on toxicity see *Toxic Plants of North America*, George E. Burrows and Ronald J. Tyrl.
APPENDIX 3
EXAMPLE SEED MIX FOR POLLINATOR PLANTINGS

The decision process for creating a pollinator seed mix can be somewhat complex. The following are some factors to consider:

- Most guidelines suggest choosing three species of flowers to bloom in each bloom period for a total of nine species. (Note: the example mix is short one late-blooming species.) There are several USDA-NRCS publications that can help you look at choices. Visit bit.ly/wypollinators for links.
- No more that 30 percent of seed should be grasses (bunch grasses are preferred to rhizomatous since they are less likely to out-compete the flowers)
- Do you want just native plants? How “native”? Native to the U.S.? Native to the region? Native to Wyoming? Native to your county? Visit https://plants.usda.gov/ to see maps (zoom in to see your county) on each plant’s page that shows whether the NRCS considers the plant to be native to the area. (These designations are not always cut-and-dried.)
- Is seed available for this plant from a seed company? (Some sources listed on http://wyomingnativegardens.org/index.php/resources/seed-sources/)
- How much will the seed cost?

This example seed mixture is calculated on a very heavy seeding rate used for broadcast application by hand. It is four times the amount of seed recommended by USDA-NRCS for use with seed drills. Calculations are based on seeding half an acre.

<table>
<thead>
<tr>
<th>Plant common name</th>
<th>Plant scientific name</th>
<th>Seeds/lb</th>
<th>% mix</th>
<th>Pounds PLS needed</th>
<th>Seeds/ft²</th>
<th>Example cost per pound ($)</th>
<th>Cost of seed ($)</th>
<th>Seedling depth (inches)</th>
<th>Bloom period</th>
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<tr>
<td>Indian ricegrass</td>
<td>Achnatherum hymenoides</td>
<td>162,000</td>
<td>10%</td>
<td>1.6</td>
<td>11.90</td>
<td>12.00</td>
<td>19.20</td>
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<td>Bottlebrush squirreltail (grass)</td>
<td>Elymus elymoides</td>
<td>220,000</td>
<td>10%</td>
<td>1.2</td>
<td>12.12</td>
<td>14.00</td>
<td>16.80</td>
<td>¼–½</td>
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<tr>
<td>Sandberg’s Bluegrass</td>
<td>Poa secunda</td>
<td>1,000,000</td>
<td>10%</td>
<td>0.4</td>
<td>18.37</td>
<td>5.00</td>
<td>2.00</td>
<td>0–¼</td>
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<td>Beeflower, Rocky Mountain</td>
<td>Cleome serrulata</td>
<td>64,000</td>
<td>10%</td>
<td>3.4</td>
<td>9.99</td>
<td>64.00</td>
<td>217.60</td>
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<td>early–mid</td>
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<td>Utah Sweetvetch</td>
<td>Hedysarum boreale</td>
<td>46,000</td>
<td>5%</td>
<td>2.4</td>
<td>5.07</td>
<td>150.00</td>
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<td>Penstemon, Rocky Mountain</td>
<td>Penstemon strictus</td>
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<td>10%</td>
<td>0.8</td>
<td>10.51</td>
<td>70.00</td>
<td>56.00</td>
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<td>Blanketflower</td>
<td>Gailardia aristata</td>
<td>200,000</td>
<td>10%</td>
<td>1.0</td>
<td>9.18</td>
<td>52.00</td>
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<td>Prairie clover, white</td>
<td>Dalea candida</td>
<td>448,000</td>
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<td>0.4</td>
<td>8.23</td>
<td>70.00</td>
<td>28.00</td>
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<td>Sunflower, annual</td>
<td>Helianthus annuus</td>
<td>45,000</td>
<td>10%</td>
<td>4.8</td>
<td>9.92</td>
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<td>mid-late</td>
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<td>Coneflower, prairie or Mexican hat</td>
<td>Ratibida columnifera</td>
<td>740,000</td>
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1 PLS stands for pure live seed. Read this article to gain a better understanding of what that means. http://www.uwyo.edu/barnbackyard/_files/documents/magazine/2013/fall/092013bbseedlabel.pdf
2 These are just example prices to demonstrate some of the variability (though some of the more expensive ones, $500 per pound, were not included). Seed prices can vary widely year-to-year based on supply and demand.