

**Template - Plant Propagation Protocol One: *Aquilegia formosa***  
**ESRM 412 – Native Plant Production JD Bakker Spring 2007**



Western columbine (*Aquilegia formosa*). Malheur National Forest. Oregon. From [http://www.fs.fed.us/wildflowers/regions/pacificnorthwest/images/aquilegia\\_formosa\\_lg.jpg](http://www.fs.fed.us/wildflowers/regions/pacificnorthwest/images/aquilegia_formosa_lg.jpg)  
Accessed April, 8. 2007.

**Scientific Name:** *Aquilegia Formosa*

**Family Scientific Name:** *Ranunculaceae*

**Family Common Name:** Buttercup

**Species Authority:** John Kartesz Biota of North America Project (BONAP), University of North Carolina

**Varieties and their authorities:**

*Aquilegia formosa* var. *communis* Boivin

*Aquilegia formosa* var. *fosteri* Welsh

*Aquilegia formosa* var. *hypolasia* (Greene) Munz

*Aquilegia formosa* var. *megalantha* Boivin

*Aquilegia formosa* var. *pauciflora* (Greene) Boothman

*Aquilegia formosa* var. *truncata* (Fisch. & C.A. Mey.) Baker

*Aquilegia formosa* var. *wawawensis* (Payson) St. John  
(USDA, 2007).

**Subspecies:** None found.

**Synonyms:** Varieties listed above as well as *Aquilegia mohavensis* Munz and *Aquilegia shockleyi* Eastw. (USDA, 2007).

**General Information:**

Hardy, deciduous, spring blooming perennial (Buczacki, 1992)

**Flowers:** Nodding red and yellow flowers are 1 ½-2 inches across with straight red spurs (Brenzel, 2007)

**Foliage:** Airy Stems, bluish-green, finely divided (Carter, et al., 2007)

Multiple Stems; erect; Short lived species (USDA, 2007)

Growth Height varies but is generally 1 to 3 feet high and 8 inches to 1 ½ feet wide (Byczynski, 1997; Brenzel, 2007; Carter, et al., 2007, USDA, 2007)

**Common Names:** Red Columbine, Western Columbine, Crimson Columbine, Granny's Bonnett (Carter, et al., 2007)

**USDA Species Code:** AQFO

**ITIS Taxonomic Serial No.:** 18738 (ITIS, 2007)

**Hardiness Zones:** 3-9 (Buczacki, 1992; Powell, 2004; Byczynski, 1997; Brenzel, 2007; Carter, et al., 2007)

**Distribution and Range:** Native Alaska to northern California, then along the coast and in the coastal mountains of Baja California. Found in high elevations in the Sierra Nevada Range. Equally distributed in the Cordillera and Pacific regions. Also found in Montana and Utah (Brenzel, 2007; Mytty, 2003; Carter, 2007)

**Local Distribution:** Native to Washington (Carter, et al., 2007). Common from the lowlands to the timber line. Mostly found in the meadows and sub-alpine forests in the Cascade and Olympic mountains of Washington State.

**Preferred Conditions:** Open to partly shaded moist sites. Found in forest glades, beaches, rocky slopes, stream-sides, meadows, roadsides, and woodland gardens (Myyty, 2003; Kruckeberg, 1996; Brenzel, 2007). Prefers to sunny areas with rich and moist soils (Myyty, 2003; DiSabato-Aust, 1998). Adapted to medium to coarse textured soil. Medium drought tolerance. Low fertility requirement. Minimum frost-free days: 100. Low hedge tolerance. Ph range varies from 6.1-6.5 (Myyty, 2003) to 6-7.5 (USDA, 2007). Precipitation 15-60 inches per year. Shade tolerant. Not salinity tolerant. Minimum temperature -23 degrees F (USDA, 2007)

**Plant Strategy/ Successional Stage:** Stress-tolerant competitor; weedy colonizer, early seral, late successional exposed moist sites (Myyty, 2003).

**Associated Species:** Paintbrush (*Castilleja spp.*), Tiger lily (*Lilium columbianum*), *Penstemon spp.*, *Azalias*, *Caltha*, *Iris cristata*, *Phlox stolonifera*, *Pulmonaria*, *Trillium*, *Viola* (Myyty, 2003; Powell, 2004)

**Propagation options:** This plant is a perennial and readily self sows and puts out many seeds. It spreads rapidly in a non-vegetative manner (Myyty, 2003; Buczacki, 1992). New plants produced the following year. Divide plants in the spring or sow seeds directly outdoors in fall or sow seeds into containers in spring or fall (Myyty, 2003; Powell, 2004)). Seeds Late Spring/Early Summer or mid to late winter Outdoors (Toogood, 1993).

**Seed Collection:** Not on threatened plant list. Collection is not restricted. Seeds mature June-August (Mytty, 2003). Hand harvested - uniquely shaped seed pods are easily identifiable in field. Follicles normally dry and split open when mature. To release the remaining seeds gently crush dried seed heads; clean with "office clipper" air-screen. The light, papery pod chaff is easily separated from seeds. (Trindle et al., 2003).

This species hybridizes easily with others, so it is important to have a reliable seed source and to avoid collecting seeds from plants of unknown origin.

**Seed Germination:** Comes well from seeds (Kruckeberg, 1996). Long, moist pre-chilling improves germination. Seeds require light so shallow sowing is best. A 3 day pre-chill minimum is preferred (Mytty, 2003; Trindle et al., 2007). Seeded cones may be stored for 6 months in a walk-in cooler. Soil surface should be kept moist (Trindle et al., 2003).

Germinate in 30-90 days (Powell, 2004). Length of establishment phase slow and takes about 3 months. Active growth occurs in the spring and summer (USDA, 2007). Slow crown development that is seasonally steady. Slow to moderate root growth. Plants do not recover well if allowed to become dry (Trindle, et al., 2003).

**Hardening:** Hardening phase August-September. No fertilizer is applied in August, and the watering intervals can be slowly increased once roots have developed adequately (Trindle, et al., 2003).

**Storage:** Seeds can be stored for up to 3 years in low humidity and temperature (34-38F) (Trindle et al., 2007; Mytty, 2003). Cones could over winter but spring re-growth is slow and the plants are easily outgrown by mosses and liverworts in wet and cool spring weather (Trindle et al., 2007).

**Guidelines for Out-planting:** Sow in spring and transplant seedlings as they appear with a planting density 1200-3450/ acre (Powell, 2004; USDA, 2007). The root system is delicate so care is required when handling. when removing them from the cones. You may consider cutting the cones open to avoid disturbing roots. In some cases cones were cut open to avoid disturbing the roots too much. Crowns must carefully be placed at soil surface. (Trindle, et al., 2003)

**Common Issues:** Aphids, Columbine leaf miners (Buczacki, 1992), overly wet soil could lead to crown rot. (DiSabato-Aust, 1998). Seeds are often relished by songbirds including Juncos and song sparrows (Brenzel, 2007). It also has a high palatability to grazers and browsers (USDA, 2007).

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