

# Protocol Information



(Lagler 2003)



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Family Scientific Name:	Asteraceae or Compositae
Family Common Name:	Aster Family, Sunflower Family
Scientific Name	<i>Balsamorhiza deltoidea</i>
Genus:	<i>Balsamorhiza</i>
Species:	<i>deltoidea</i>
Species Authority:	Nutt.
Variety:	
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	
Common Synonym	
Genus:	
Species:	
Species Authority:	
Variety:	
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	
General Information	
Common Name:	Deltoid Balsamroot
Species Code:	BADE2 (USDA)
Ecotype:	
General Distribution:	Occurs from Southwestern British Columbia to California on the western slopes of the Cascade and Sierra Nevada Mountain ranges (Ryan and Douglas 1999).
Climate and Elevation:	Low elevations (Pojar 1994).

Local habitat and Abundance:	Occupies partially shaded, dry microsites, with shallow soils, often rocky slopes (Ryan and Douglas 1999). Associated with <i>Quercus garryana</i> , <i>Cytisus scoparius</i> and <i>Holodiscus discolor</i> (Ryan and Douglas 1999).
Strategy Type:	Late successional
Propagation Details	
Propagation Goal:	Plants
Propagation Method:	Seeds
Product Type:	Container (plug)
Stock Type:	
Time to Grow:	
Target Specifications:	20-100 cm tall, flower bright yellow with rays that are 2-5cm long (Ryan and Douglas 1999).
Propagule Collection:	
Propagule Processing/Propagule Characteristics:	Of the seeds produced in the head, few are viable (Ryan and Douglas 1999).
Pre-Planting Propagule Treatment:	Needs cold stratification. Keep sown seeds in refrigeration for 90 days at 35-40°F (Bartow 2006).
Growing Area Preparation/Annual Practices for Perennial Crops:	To minimize tap root disturbance, pot seeds initially in individual pots so transplanting will not be needed early on (Huxley 1999). Sow into containers filled with a soil-less peat based media, add micronutrients and slow-release fertilizer (Osmocote 14-14-14) and cover with poly-ethylene bag (Bartow 2006).
Establishment Phase:	Grow <i>Balsamorhiza</i> in deep, fertile, well drained soil with full sun exposure (Huxley 1999). Roots of young plants are prone to rot during summer months if kept too moist (Ryan and Douglas 1999).
Length of Establishment Phase:	
Active Growth Phase:	Ryan and Douglas had 12/25 seed germination by planting the seeds in pots covered with glass which were left outside and exposed to temperature fluctuations and freezing during the winter (1999).
Length of Active Growth Phase:	Germination begins in early spring, March and April (Ryan and Douglas 1999). Allow 2-6 days for germination at 18°C (NPN 2003).
Hardening Phase:	<i>Balsamorhiza</i> can withstand -25°C/-13°F unless combined with moisture (Huxley 1999).
Length of Hardening Phase:	Fall to late winter.
Harvesting, Storage and Shipping:	
Length of Storage:	
Guidelines for Outplanting /	

Performance on Typical Sites: Does poorly at damp sites in the West and does not transplant well (Kruckeberg 1982). Ryan and Douglas observed no flowering for 7 years (1999).

Other Comments: *B. deltoidea* is progressively becoming extremely rare in British Columbia due to habitat loss, invasive competition, and lack of natural fire regime (Ryan and Douglas 1999).

#### References:

- Bartow A. 2006. Native Plants Propagation Protocol Database. [cited 9 May 2007] [http://www.nativeplantnetwork.org/network/view.asp?protocol\\_id=3077](http://www.nativeplantnetwork.org/network/view.asp?protocol_id=3077)
- Huxley A. 1999. New Royal Horticultural Society Dictionary of Gardening. New York: Groves. 1:298-299p
- Kruckeberg AR. 1982. Gardening with Native Plants of the Pacific Northwest: An Illustrated Guide. Seattle: University of Washington. 166-167p
- Legler B [Internet]. Burke Museum of Natural History and Culture; c2003 [cited 7 May 2007]. Available at: <http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Balsamorhiza&Species=deltoidea>
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- Pojar J, MacKinnon A. 1994. Plants of the Pacific Northwest Coast: Washington, Oregon, British Columbia and Alaska. Vancouver, BC: Lone Line. 290p.
- Plants Database. [USDA] United States Department of Agriculture; [cited 9 May 2007]. Available at: <http://www.plants.usda.gov/java/profile?symbol=BADE2#>
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#### Other Sources Consulted

Hitchcock, LC, Cronquist A. 1973. Flora of the Pacific Northwest. Seattle and London: University of Washington.

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