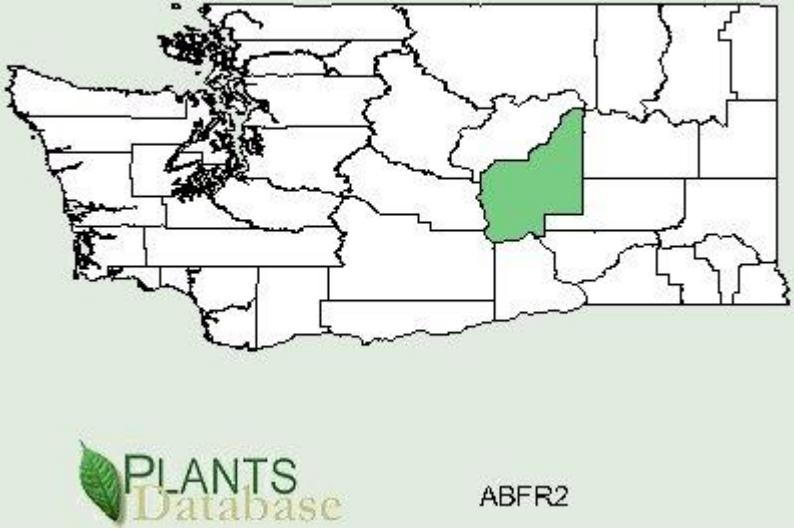


**Plant Propagation Protocol for
ESRM 412 – Native Plant Production**

TAXONOMY	
Family Names	
Family Scientific Name:	Nyctaginaceae
Family Common Name:	Four o'clock Family
Scientific Names	
Genus:	<i>Abronia</i>
Species:	<i>Abronia fragrans</i>
Species Authority:	Nutt. Ex Hook
Variety:	
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	
Common Synonym(s)	<i>Abronia fragrans</i> Nutt. ex Hook. var. <i>glaucescens</i> A. Nelson (3)
Common Name(s):	Snowball Sand Verbena
Species Code (as per USDA Plants database):	ABFR2
GENERAL INFORMATION	

<p>Geographical range (distribution maps for North America and Washington state)</p>	 <p>PLANTS Database ABFR2</p> <p>Found in Arizona, Colorado, Kansas, Montana, South Dakota, North Dakota, Nebraska, New Mexico, Oklahoma, Texas, Utah, Wyoming, and Washington. In Washington it is found in Grant County. (3)</p>
<p>Ecological distribution</p>	<p>Prairie, Plains, Meadows, Pastures, Savannahs, Woodland Edges, and Sandy Plains, and Semi-desert (2)</p>
<p>Climate and elevation range</p>	<p>4,500ft.-7,000ft. Does well in dry, hot areas. (7)</p>
<p>Local habitat and abundance</p>	<p>Often in sand and in desert shrub and pinyon-juniper communities (4)</p>
<p>Plant strategy type / successional stage</p>	<p>Not available</p>
<p>Plant characteristics</p>	<p><i>A. fragrans</i> is an herbaceous perennial with a taproot. The plant grows 6-12 inches in height, it is exposed to full sunlight and is white in color. It blooms between April and October and is said to smell sweetly. The plant also attracts butterflies. Leaves are opposite, fleshy, glabrous, 2-7cm long and abruptly narrow to a short petiole. The flowers are in “pedunculate heads subtended by 5 whitish, membranous, ovate to broadly lanceolate involucral bracts 8-18 mm. long and 4-12 mm. broad.” The fruit is achene 8-10 mm. long, pubescent, tapered at both ends or truncate at the top, wingless, or with 4-5 thick, hollow wings not as wide as the body.” (2, 4, 5, 6)</p>
<p>PROPAGATION DETAILS</p>	
<p>Ecotype (this is meant primarily for experimentall</p>	<p>Not available</p>

y derived protocols, and is a description of where the seed that was tested came from):	
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug) (8)
Stock Type:	Pots filled with sandy soil (8)
Time to Grow (from seeding until plants are ready to be outplanted):	Autumn to late Spring (After winter frost) (8)
Target Specifications:	6-12in. tall plant
Propagule Collection:	Seeds must pass through animals or be soaked in HCl in order to successfully germinate, otherwise, germination is incredibly difficult. (8)
Propagule Processing:	72,000 seeds per pound (9)
Pre-Planting Propagule Treatments:	Seed coat should be peeled off and seed should be soaked in warm water for 24 hrs. Usually germinates in 1-2 months. Once large enough to handle they should be placed in pots and put in a greenhouse for the first winter. After the winter frost they can be outplanted. (9)
Growing Area Preparation / Annual Practices for Perennial Crops:	Not available
Establishment Phase (from seeding to germination):	30-60 day cool moist stratification or plant outside fall to very early spring. plant to 1/8 inch deep (9)
Length of Establishment Phase:	Not available
Active Growth Phase:	Use of sandy soil is important.
Length of Active Growth Phase:	

Hardening Phase:	Not available
Length of Hardening Phase:	Not available
Harvesting, Storage and Shipping (of seedlings):	Not available
Length of Storage (of seedlings, between nursery and outplanting):	Autumn to late Spring (after winter frost) (8)
Guidelines for Outplanting / Performance on Typical Sites:	Plant 1/8 th in deep. A fertilizer mix of 3 parts N, 2 parts P, and 3 parts K. (9, 10)
Other Comments (including collection restrictions or guidelines, if available):	None

INFORMATION SOURCES

References (full citations):	<ol style="list-style-type: none"> 1. http://www.swcoloradowildflowers.com/White%20Enlarged%20Photo%20Pages/abronia%20fragrans.htm#Top 2. http://www.wildflower.org/plants/result.php?id_plant=ABFR2 3. http://plants.usda.gov/java/profile?symbol=ABFR2 4. http://www.nps.gov/archive/arch/flowers/Families/Common_names/Nyctaginaceae_Abronia_fragrans20.htm 5. http://davesgarden.com/guides/pf/go/73436/ 6. http://biology.burke.washington.edu/herbarium/imagecollection.php?Gen 7. http://www.nazflora.org/Nyctaginaceae.htm 8. http://www.pfaf.org/user/Plant.aspx?LatinName=Abronia%20fragrans
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	<p>9. http://www.westernnativeseed.com/wildflowersinfo.html</p> <p>10. http://www.plant-supplies.com/plants/abroniafragrans.htm</p>
Other Sources Consulted (but that contained no pertinent information) (full citations):	<p>1. http://www.nativeplantnetwork.org/Network/</p> <p>2. http://www.opsu.edu/Academics/SciMathNurs/NaturalScience/PlantsInsectsOfGoodwell/plants/pasturefiles/pasture20.html</p>
Protocol Author (First and last name):	Austin Sawhill
Date Protocol Created or Updated (MM/DD/YY) :	04/17/11

Note: This template was modified by J.D. Bakker from that available at:
<http://www.nativeplantnetwork.org/network/SampleBlankForm.asp>

Austin Sawhill

ESRM 412 Spring

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2. University of Texas. Native Plant Database. [http://www.wildflower.org/plants/result.php?id_plant=ABFR2]. Apr. 16, 2011.
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5. Dave's Garden. *Snowball Sand Verbena*. [<http://davesgarden.com/guides/pf/go/73436/>]. Apr. 15, 2011.
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9. Western Native Seed. *Native Plant Seed for the Rocky Mountains and Western Great Plains*. [<http://www.westernnativeseed.com/wildflowersinfo.html>]. Apr. 16, 2011.
10. Plant Supplies. *Abronia Fragrans*. [<http://www.plantsupplies.com/plants/abroniafragrans.htm>]. Apr. 16, 2011.

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2. Goodwell and Texhoma, Oklahoma Pasture and Roadside Plants. *Abronia Fragrans*.

[<http://www.opsu.edu/Academics/SciMathNurs/NaturalScience/PlantsInsectsOfGoodwell/plants/pasturefiles/pasture20.html>]. Apr. 16, 2011.