

**Plant Propagation Protocol for *Bidens cernua***

ESRM 412 – Native Plant Production

URL: <https://courses.washington.edu/esrm412/protocols/2024/BICE.pdf>

**TAXONOMY**

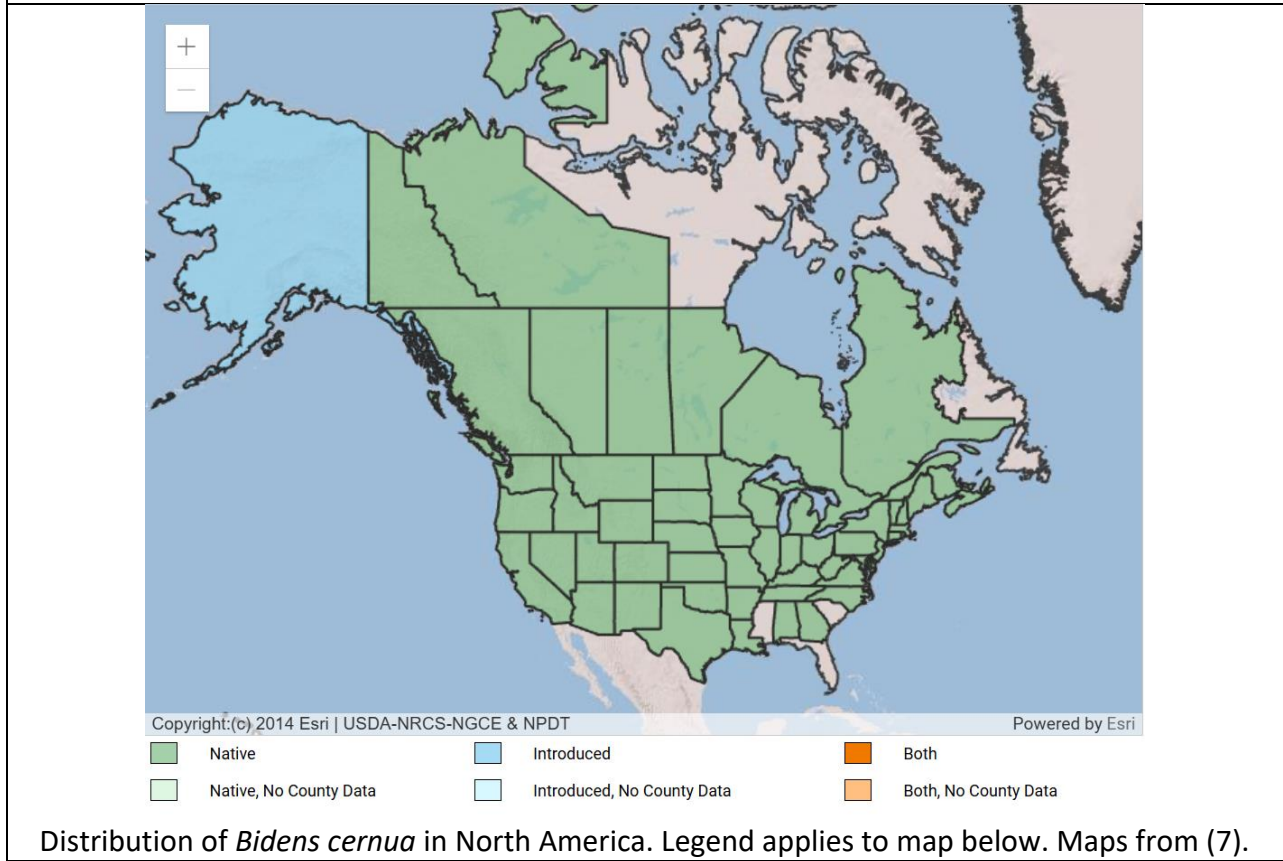


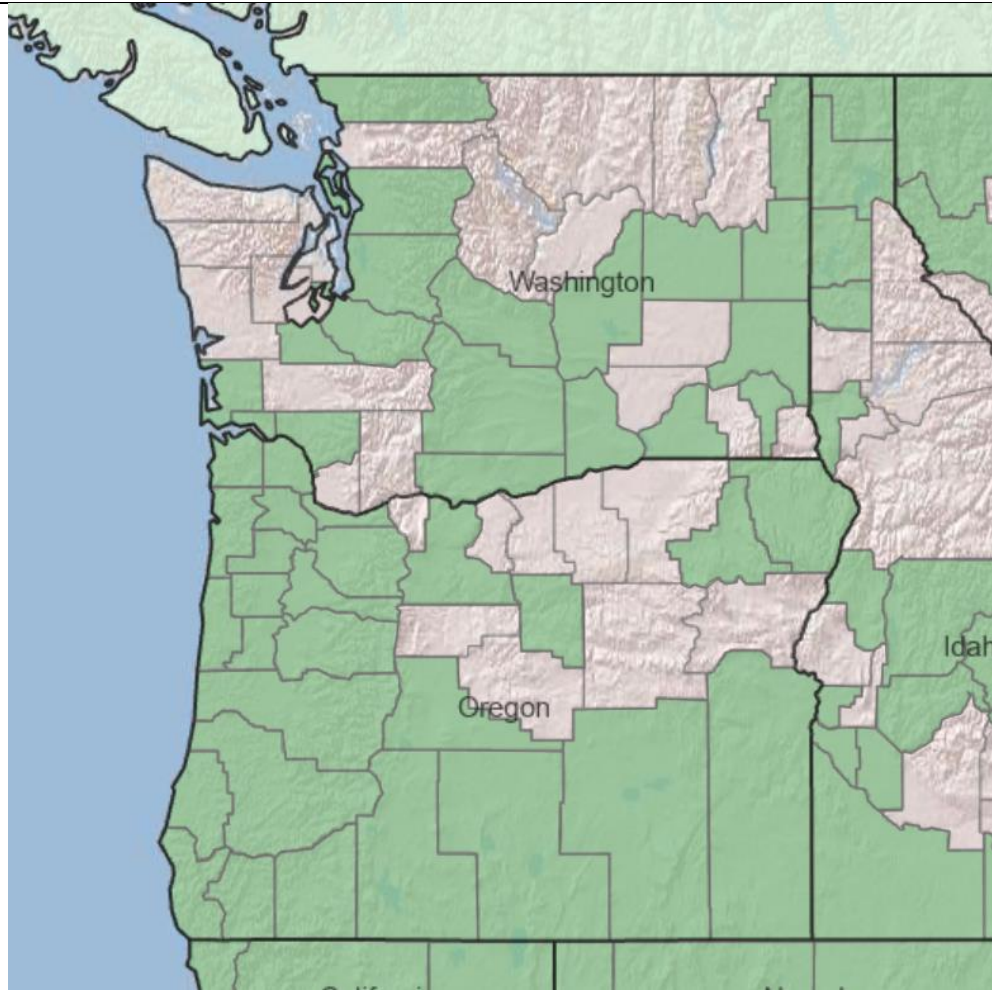
*Bidens cernua*. Image from (1), copyright Robert L. Carr

<b>Plant Family</b>	
Scientific Name	Asteraceae
Common Name	Aster family
<b>Species Scientific Name</b>	
Scientific Name	<i>Bidens cernua</i> L.
Varieties	<i>Bidens cernua</i> L. var. <i>cernua</i> <i>Bidens cernua</i> L. var. <i>dentata</i> (Nutt.) B. Boivin <i>Bidens cernua</i> L. var. <i>elliptica</i> Wiegand <i>Bidens cernua</i> L. var. <i>integra</i> Wiegand <i>Bidens cernua</i> L. var. <i>minima</i> (Huds.) Pursh <i>Bidens cernua</i> L. var. <i>oligodonta</i> Fernald & H. St. John <i>Bidens cernua</i> L. var. <i>radiata</i> DC. (7)
Sub-species	N/A
Cultivar	N/A

Common Synonym(s)	<i>Bidens glaucescens</i> Greene (7)
Common Name(s)	Nodding beggartick, nodding bur-marigold
Species Code (as per USDA Plants database)	BICE

**GENERAL INFORMATION**





Geographical range	<i>Bidens cernua</i> can be found widely on both sides of the Cascades in Washington, and is distributed from Alaska to California, eastward across North America and to the Atlantic Coast. (1)
Ecological distribution	<p>Low elevation riparian habitats such as stream banks and the edges of ponds and lakes; other wet habitats. (1)</p> <p>Sloughs, marshes, tidal channels, gravel bars, irrigation ditches (2)</p> <p>Wetlands/swamps (3)</p> <p>Prefers slightly acidic to neutral pH soil; requires minimum soil depth of 8 in; tolerates lowest temperature of 47F. (7)</p>
Climate and elevation range	0 – 1600 m (2)

	Because <i>Bidens cernua</i> is so widely distributed, it is adapted to a range of climates. Grows in full to partial sun and wet soil; less tolerant of dry conditions than other <i>Bidens</i> spp. Some flooding tolerated, but limited. (3)
Local habitat and abundance	Commonly associated species include <i>Phalaris arundinacea</i> (reed canary grass), <i>Typha latifolia</i> (cattail), <i>Euthamia</i> spp. (solidago), <i>Persicaria</i> spp. (knotweed), <i>Salix</i> spp. (willow). (6)  Often grows mixed with other <i>Bidens</i> spp. (9).
Plant strategy type / successional stage	Often found in degraded wetlands, meaning it can tolerate some stress and acts as a weedy colonizer, especially when found in sites like irrigation ditches and gravel bars. Sometimes found in higher-quality wetlands/moist sites. (3)
Plant characteristics	Forb/herb, annual, flowers from July to September (1) Grows up to 40 in tall, stems sometimes up to 12 ft long horizontally and rooting at proximal nodes. Has a tap root. (4)  Adaptable to different types of soil; tolerates sand, loam, and clay; form is upright to decumbent. (5)  Exhibits rapid growth. (7)
<b>PROPAGATION DETAILS: FROM SEED (Propagation details from a protocol by Carol and Jerry Baskin, Native Plant Network) (8)</b>	
Ecotype	N/A
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	No information could be found on stock type.
Time to Grow	No information in the protocol, but because <i>Bidens cernua</i> is an annual and has a rapid growth rate (7), it will almost grow to full size (see below) by summer if sown in the spring.

Target Specifications	No information in the protocol about target specifications, but maximum height is about 40 in/3 ft tall (4).
Propagule Collection Instructions	No information in the protocol about propagule collection instructions. Active growth phase ends in the fall, which is when seeds are mature, thus seeds should be collected in the fall. (7)
Propagule Processing/Propagule Characteristics	43,324 seeds per pound (7)
Pre-Planting Propagule Treatments	<p>From Baskin protocol: seeds are physiologically dormant. Seeds were cold stratified for 270 days, then germinated at alternate temperatures of 20 and 30C exposed to light.</p> <p>According to Hogue (10): prompt germination can be achieved if seeds receive 6-12 weeks of afterripening at 2C exposed to light. Without afterripening, seeds in achenes must be excised or clipped at the distal end, then germinated at 24C with light. This way, seeds germinate in about two weeks. For seeds to germinate in 7 days without afterripening, achenes should be clipped and treated with either gibberellic acid (GA) or N-6-benzyladenine (BA).</p>
Growing Area Preparation / Annual Practices for Perennial Crops	No information found in the protocol on growing area preparation. <i>Bidens cernua</i> is tolerant of all soil types, so it likely is not picky with media. However, it must be grown in partial to full sun and soil should constantly be moist to wet. Can withstand standing water to a limited extent, but should be avoided once the plant is more mature. (3)
Establishment Phase Details	See above, otherwise no information found in protocol about establishment phase details.
Length of Establishment Phase	No information could be found on length of establishment phase.
Active Growth Phase	Plants should be propped upright if horizontal spreading/rooting is not desired; when the plant droops onto the ground, rootlets will form at the nodes (3)
Length of Active Growth Phase	Active growth phase is spring, summer, and fall. (7)
Hardening Phase	No information found on hardening phase.

Length of Hardening Phase	N/A
Harvesting, Storage and Shipping	No information found on harvesting, storage, and shipping.
Length of Storage	No information found on length of storage.
Guidelines for Outplanting / Performance on Typical Sites	No information found for outplanting guidelines or performance on typical sites. It is worth noting that leaves turn purple or get powdery mildew with cool weather in the fall. (3)
Other Comments	None
<b>INFORMATION SOURCES</b>	
References	See below.
Other Sources Consulted	- " <i>Bidens cernua</i> (nodding beggar-ticks)." <i>Go Botany</i> , Native Plant Trust, <a href="https://www.nativeplanttrust.org/bidens-cernua-nodding-beggar-ticks">Bidens cernua (nodding beggar-ticks): Go Botany (nativeplanttrust.org)</a> . Accessed May 20 <sup>th</sup> , 2024.
Protocol Author	Jillian Rogers
Date Protocol Created or Updated	May 20 <sup>th</sup> , 2024

#### References

1. Knoke, Don and Giblin, David. "*Bidens cernua*." Burke Herbarium Image Collection, <https://burkeherbarium.org/imagecollection/taxon.php?Taxon=Bidens%20cernua>. Accessed May 20<sup>th</sup>, 2024.
2. "*Bidens cernua* L." *Oregon Flora*, Oregon State University (information originally found in *Flora of Oregon*, vol. 2, pg 203, Kenton Chambers), <https://oregonflora.org/taxa/index.php?taxon=3270>. Accessed May 20<sup>th</sup>, 2024.
3. "Nodding Bur-Marigold." *Illinois Wildflowers*, [https://www.illinoiswildflowers.info/wetland/plants/bur\\_marigold.htm](https://www.illinoiswildflowers.info/wetland/plants/bur_marigold.htm). Accessed May 20<sup>th</sup>, 2024.
4. "*Bidens cernua* (Nodding beggartick)." *Ladybird Johnson Wildflower Center*, University of Texas Austin, last modified Sept 18, 2022, [https://www.wildflower.org/plants/result.php?id\\_plant=bice](https://www.wildflower.org/plants/result.php?id_plant=bice). Accessed May 20<sup>th</sup>, 2024.
5. "Nodding Bur-marigold." *Calscape*, California Native Plant Society, [https://calscape.org/Bidens-cernua-\(Nodding-Bur-marigold\)](https://calscape.org/Bidens-cernua-(Nodding-Bur-marigold)). Accessed May 20<sup>th</sup>, 2024.
6. Query: Genus = bidens, Species = cernua, 859 matching records, consulted records 1-34, Consortium of Pacific Northwest Herbaria, <https://www.pnwherbaria.org/data/results.php?DisplayAs=WebPage&ExcludeCultivate>

[d=Y&GroupBy=ungrouped&SortBy=Year&SortOrder=DESC&SearchAllHerbaria=Y&QueryCount=1&IncludeSynonyms1=Y&Genus1=bidens&Species1=cernua&Zoom=4&Lat=55&Long=-135&PolygonCount=0](#). Accessed May 20<sup>th</sup>, 2024.

7. “*Bidens cernua* L.” *USDA Plants Database*, United States Department of Agriculture, <https://plants.usda.gov/home/plantProfile?symbol=BICE>. Accessed May 20<sup>th</sup>, 2024.
8. Baskin, Carol C.. 2003. “Propagation protocol for production of Container (plug) *Bidens cernua* L. plants.” University of Kentucky Lexington, Kentucky. In: Native Plant Network. URL: <https://nnp.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=asteraceae-bidens-2501>. US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. .” Accessed May 20<sup>th</sup>, 2024.
9. Klinkenburg, Brian (editor). *E-Flora BC: Electronic Atlas of the Plants of British Columbia* [eflora.bc.ca].” Lab for Advanced Spatial Analysis, Department of Geography, University of British Columbia, Vancouver, 2020, <https://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Bidens+cernua>. Accessed May 20<sup>th</sup>, 2024.
10. Hogue, E. J. “Seed Dormancy of Nodding Beggarticks (*Bidens cernua* L.).” *Weed Science*, Vol. 24, Issue 4, July 1976: 375–378, published online by Cambridge University Press 12 June 2017, <https://doi.org/10.1017/S0043174500066212>. Accessed May 20<sup>th</sup>, 2024.