

**Plant Propagation Protocol for *Iris tenax***

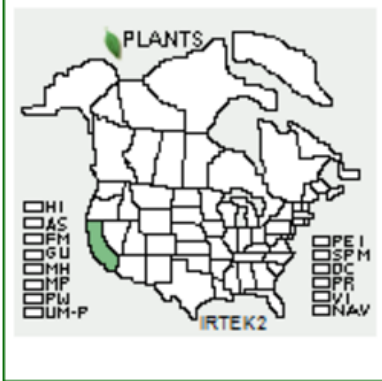
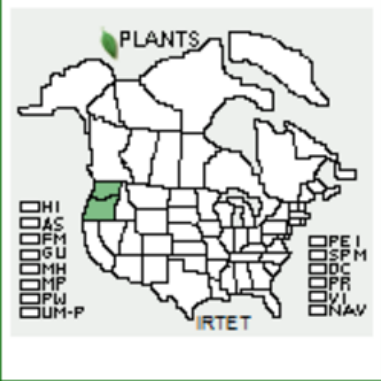
ESRM 412 – Native Plant Production

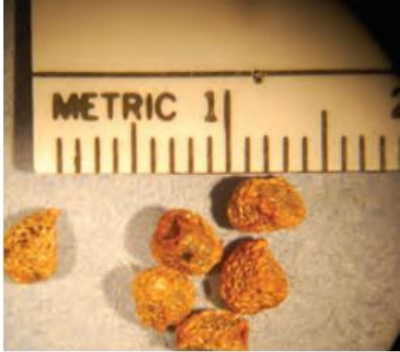
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<b>TAXONOMY</b>	
Plant Family	
Scientific Name	Iridaceae
Common Name	Iris
Species Scientific Name	
Scientific Name	<i>Iris tenax</i> Douglas ex Lindl.
Varieties	
Sub-species	Klamath iris Toughleaf iris
Cultivar	
Common Synonym(s)	<i>Iris tenax</i> Douglas ex Lindl. ssp. <i>klamathensis</i> Lenz <i>Iris tenax</i> Douglas ex Lindl. ssp. <i>tenax</i> <i>Iris tenax</i> Douglas ex Lindl. ssp. <i>gormanii</i> Piper <i>Iris tenax</i> Douglas ex Lindl. var. <i>gormanii</i> (Piper) R.C. Foster
Common Name(s)	Toughleaf iris, Oregon iris, Oregon flag
Species Code	IRTE

## GENERAL INFORMATION

<p>Geographical range</p>	<p>Common in the cascades of western Oregon and southwestern Washington with a subspecies (ssp. <i>klamathensis</i>) in the Klamath Mts. of northern California.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><i>Iris tenax ssp. klamathensis</i> Klamath iris</p> </div> <div style="text-align: center;">  <p><i>Iris tenax ssp. tenax</i> toughleaf iris</p> </div> </div>
<p>Ecological distribution</p>	<p>Prairies, meadows, and pastures; land disturbed from logging; roadsides; open oak and conifer forests/woodlands.</p>
<p>Climate and elevation range</p>	<p>Mediterranean climate- dry summers and wet winters (16”-60” rain/year), low to mid elevations (0-2000 ft).</p>
<p>Local habitat and abundance</p>	<p>Prairies and meadows. Preferred pH ranges from 6-8. Prefers moist, but well drained sandy and/or loamy soils. Tolerates partial shade to full sun. Pollinated by various butterflies and long tongued bees.</p>
<p>Plant strategy type / successional stage</p>	<p>Seral, clumping perennial herb often found in disturbed areas. Resistant to frost and tolerates fire.</p>
<p>Plant characteristics</p>	<p>Perennial forb/herb exhibiting rhizomatous growth. Height when mature is 8–14 inches. Flowers can be purple, pink, lavender, cream, yellow, or rarely white.</p>
<h3>SEED PROPAGATION DETAILS</h3>	
<p>Ecotype</p>	<p>Native and commercial populations of <i>Iris tenax</i> in northwest Oregon were tested for these propagation protocols.</p>
<p>Propagation Goal</p>	<p>Plants</p>
<p>Propagation Method</p>	<p>Seed</p>
<p>Product Type</p>	<p>Container (plug)</p>
<p>Stock Type</p>	

Time to Grow	6 months to 9 year from seed to flower, including stratification.
Target Specifications	Developed crowns and rhizomatous roots growth throughout the container.
Propagule Collection Instructions	Seeds are small brown and wrinkled, and collected from capsules inside the flower. Seeds are best collect in the summer when pods turn from light green to brown.
Propagule Processing/Propagule Characteristics	Seeds can be cleaned using a hammer mill or thresher, and the chaff can be removed using an air screen machine. Seed density is 46,000 seeds/lb. 
Pre-Planting Propagule Treatments	Warm moist stratification (20/30 degrees C) for 4 months followed by 12 weeks of cold moist stratification (5 degrees C) yields the highest germination rates. Soaking the seeds over night before plants can help break dormancy.
Growing Area Preparation / Annual Practices for Perennial Crops	<i>Iris tenax</i> is known as the toughleaf iris and is not very picky about media types, however soils that can hold a lot of moisture and have higher cation exchange capabilities will be better for germinating and growing seedlings. Seeds can be sown in flats, or prepared in small 500 mL containers (smaller containers will still work). No pruning or trimming is required, as the plants will naturally senesce. Plants can only be divided and moved in the fall once new roots have started to grow, as the plants resent disturbance in their dormant season in the summer. Wet feet can kill this plant.
Establishment Phase Details	Outplant when seedling is still young (no more than 6") when there is no chance of frost.
Length of Establishment Phase	1-2 months (Late winter/Early Spring)
Active Growth Phase	Spring
Length of Active Growth Phase	3-4 months.
Hardening Phase	Summer

Length of Hardening Phase	3 months.
Harvesting, Storage and Shipping	Seeds can be stored in cool, dry places. Plants can only be divided and moved in the fall once new roots have started to grow, as the plants resent disturbance in their dormant season in the summer.
Length of Storage	Seeds can be stored for up to 5 years without noticeable loss of viability- as long as they are stored according to commercial seed standards.
Guidelines for Outplanting / Performance on Typical Sites	Outplant in spring before the seedlings grow too tall, as they do not transfer well in their dormant season (summer). Plugs have been reported to have the highest success rates. Use 9” – 15” spacing.
Other Comments	<i>Iris tenax</i> hybridizes with <i>I. bracteata</i> , <i>I. chrysophylla</i> , <i>I. douglasiana</i> , <i>I. hartwegii</i> , <i>I. innominata</i> , <i>I. macrosiphon</i> , <i>I. purdyi</i> , and <i>I. tenuissima</i> .

### INFORMATION SOURCES

References	<p>Douglas. "Iris Tenax." <i>Pfaf Plant Search</i>. N.p., n.d. Web. 26 Apr. 2017. &lt;<a href="http://www.pfaf.org/user/Plant.aspx?LatinName=Iris%2Btenax">http://www.pfaf.org/user/Plant.aspx?LatinName=Iris%2Btenax</a>&gt;.</p> <p>"Iris tenax" <i>Iris Tenax in Flora of North America @ Efloras.org</i>. N.p., n.d. Web. 26 Apr. 2017. &lt;<a href="http://www.efloras.org/florataxon.aspx?flora_id=1&amp;taxon_id=242101717">http://www.efloras.org/florataxon.aspx?flora_id=1&amp;taxon_id=242101717</a>&gt;.</p> <p>TWC Staff. "Plant Database." <i>Lady Bird Johnson Wildflower Center - The University of Texas at Austin</i>. N.p., 04 Mar. 2009. Web. 26 Apr. 2017. &lt;<a href="https://www.wildflower.org/plants/result.php?id_plant=irte">https://www.wildflower.org/plants/result.php?id_plant=irte</a>&gt;.</p> <p>"Iris Tenax Douglas Ex Lindl. Toughleaf Iris." <i>Conservation Plant Characteristics for ScientificName (CommonName)   USDA PLANTS</i>. N.p., n.d. Web. 26 Apr. 2017. &lt;<a href="https://plants.usda.gov/java/charProfile?symbol=IRTE">https://plants.usda.gov/java/charProfile?symbol=IRTE</a>&gt;.</p> <p>Teashon, Debbie. "Iris Tenax." <i>Iris Tenax - OREGON IRIS</i>. N.p., n.d. Web. 26 Apr. 2017. &lt;<a href="http://www.rainyside.com/plant_gallery/natives/Iris_tenax.html">http://www.rainyside.com/plant_gallery/natives/Iris_tenax.html</a>&gt;.</p> <p>Jones, Katherine D., and Thomas N. Kaye. "Factors Influencing Germination of a Functionally Important Grassland Plant, Iris Tenax." <i>PLoS ONE</i> 9.2 (2014): n. pag. Web.</p> <p>Katherine, Jones D. "Factors Affecting Establishment and Germination of Upland Prairie Species of Conservation Concern in the Willamette Valley, Oregon." <i>ScholarsArchive@OSU</i>. OSU Libraries, 19 Mar. 2012. Web. 26 Apr. 2017. &lt;<a href="https://ir.library.oregonstate.edu/xmlui/handle/1957/29047">https://ir.library.oregonstate.edu/xmlui/handle/1957/29047</a>&gt;.</p> <p>"Iris Tenax." <i>Native Seed Production Manual for the Pacific Northwest</i>. Seattle, WA: International Plant Propagators' Society, 2004. N. pag. Print.</p>
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<p>Other Sources Consulted</p>	<p>"PlantFiles: Tough-leaf Iris, Oregon Iris." <i>Dave's Garden</i>. N.p., n.d. Web. 26 Apr. 2017. &lt;<a href="http://davesgarden.com/guides/pf/go/80105/">http://davesgarden.com/guides/pf/go/80105/</a>&gt;.</p> <p>"Iris Tenax (Oregon Iris) Wildflower Seeds." <i>Iris Tenax (Oregon Iris) Wildflower Seed</i>. N.p., n.d. Web. 26 Apr. 2017. &lt;<a href="http://www.everwilde.com/store/Iris-tenax-WildFlower-Seed.html">http://www.everwilde.com/store/Iris-tenax-WildFlower-Seed.html</a>&gt;.</p> <p>"Iris Tenax." <i>View Plant   Great Plant Picks</i>. N.p., n.d. Web. 26 Apr. 2017. &lt;<a href="http://www.greatplantpicks.org/plantlists/view/1764">http://www.greatplantpicks.org/plantlists/view/1764</a>&gt;.</p>
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