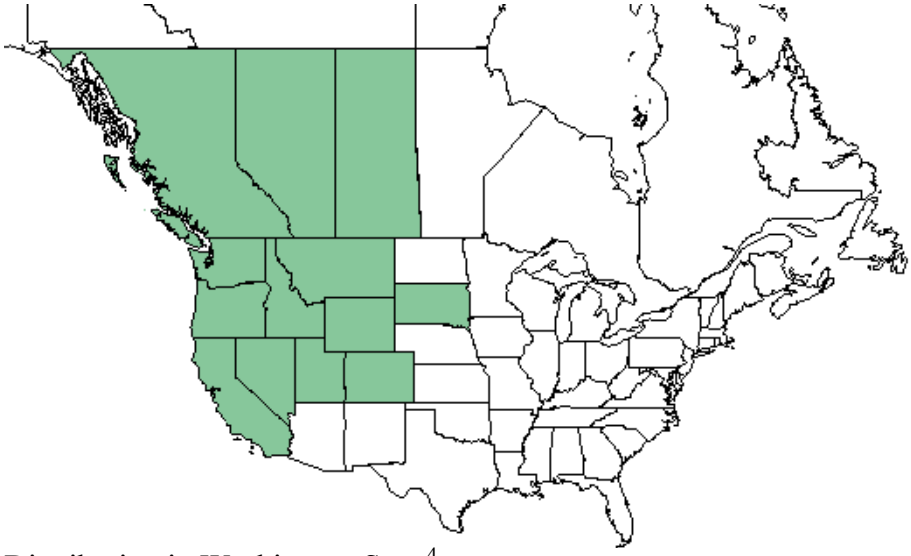
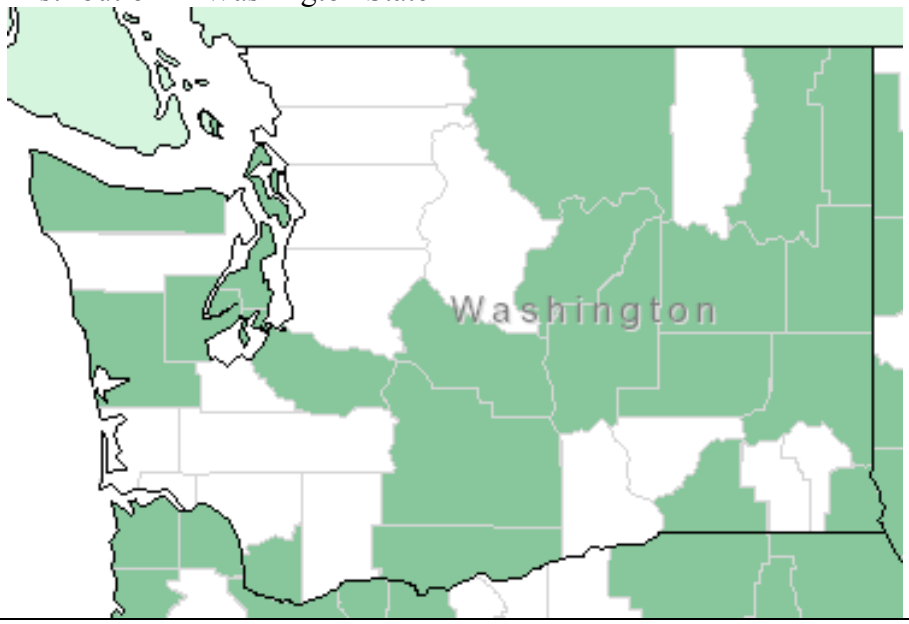
Plant Propagation Protocol for *Perideridia gairdneri*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/PEGA3.pdf

Photo Credit: Lynda Boyer of Heritage Seedlings

TAXONOMY	
Plant Family	
Scientific Name	*Apiaceae*[2] *(Umbelliferae)*[3]
Common Name	Parsley[3]
Species Scientific Name	
Scientific Name	*Perideridia gairdneri* (Hook. & Arn.) Mathias[4]
Varieties	
Sub-species	*Perideridia gairdneri* (Hook. & Arn.) Mathias ssp. *borealis* T.I. Chuang & Constance[4] *Perideridia gairdneri* (Hook. & Arn.) Mathias ssp. *gairdneri*[4]
Cultivar	
Common Synonym(s)	*Carum gairdneri* (Hook. & Arn.) Gray[5]
Common Name(s)	Gardner's Yampah, Gairdner's Yampah, Yampah, Common Yampah[2,4]
Species Code (as per USDA Plants database)	PEGA3[4]

GENERAL INFORMATION	
Geographical range	North American Distribution[4]  Distribution in Washington State[4] 
Ecological distribution	Found in sunny, well-drained nitrogen medium soils of forest openings and vernally wet meadows. Shade intolerant. [2,6–8]
Climate and elevation range	From low elevation to sub-alpine communities.[6,7]
Local habitat and abundance	Widely distributed throughout Washington where appropriate habitat exists, from the Puget trough to the sagebrush steppe. Often forms extensive populations where present.[2,8] Commonly associated with *Quercus garryana, Populus tremuloides, Pseudotsuga menzesii, Pinus ponderosa, Festuca idahoensis, Achillea millefolium, Lupinus sp., Atremisia sp.*[9,10]
Plant strategy type / successional stage	A climax species in drier sites, seral on moister sites.[6,9]

Plant characteristics	A delicate perennial forb with tuberous root, pinnately compound leaves of narrow leaflets, topped by white compound umbels. [9]
PROPAGATION DETAILS	
Ecotype	Paradise Creek drainage near Pullman, Washington[11], rough fescue grassland[5], and Lane Co., Oregon near Eugene[12].
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	
Time to Grow	2 years.[11]
Target Specifications	5 cm tall, 4 to 6 true leaves, and a small taproot in conetainer.[5]
Propagule Collection Instructions	Seed is collected from mid September to early November.[1] The dry, brown seeds can be stripped from the inflorescence and stored in a paper bag at room temperature until cleaned. Viability of wild collected seed varies, presumably due to early frosts occurring before seed maturity.[11]
Propagule Processing/Propagule Characteristics	400,000 seeds/lb.[11]
Pre-Planting Propagule Treatments	Seeds are rubbed from the inflorescence by hand and then separated from chaff by an air column separator, or simply hand-cleaned.[5,11] Germination will be very low without stratification, and will increase, approaching 100% germination, with increasing duration of stratification. 90 days or more of cold moist stratification recommended; fluctuating outdoor temperatures may also contribute to breaking dormancy. [1,5,11,12]
Growing Area Preparation / Annual Practices for Perennial Crops	Sow seeds in 10 cu.in. Ray Leach conetainers filled with Sunshine #4 or a peat, perlite, vermiculite mix with Osmocote (13N:13P2O5:13K2O; 8 to 9 month release rate at 21C) and Micromax fertilizer (12%S, 0.1%B, 0.5%Cu, 12%Fe, 2.5%Mn, 0.05%Mo, 1%Zn). [5,11]
Establishment Phase Details	Seeds germinated readily after sufficient cold moist stratification, and once daytime temperatures reach 21-24C (with 13-15C nights). True leaves were evident 7 days after germination. Medium is kept moist during germination. [5,11,12]
Length of Establishment Phase	Up to 21 days long.[5,11,12]
Active Growth Phase	Seedlings should be watered deeply every 1-2 days during the growing season.[11] Seedlings should be allowed to dry down slightly between irrigations.[5] Fertilizer should be applied regularly during the active growth phase. Seedlings will only reach the 2-4 true leaf stage before senescing in late summer. Senescent plants should only be given enough water to keep the medium from drying completely. Plants should be protected during their first winter, and then allowed another full growing season, before being planted the next fall. [5,11]
Length of Active	10 weeks active growth, 9 months senescence, then 10 more weeks

Growth Phase	active growth. [5,11]
Hardening Phase	A 10-20-20 NPK liquid fertilizer at 200 ppm is used to promote root development during July and August. Irrigation is gradually reduced in September-October. Plants are leached with clear water before winterization.[5]
Length of Hardening Phase	10 weeks.[5]
Harvesting, Storage and Shipping	Harvest in September. Overwinter in outdoor nursery under insulating foam cover and snow.[5]
Length of Storage	5 months.[5]
Guidelines for Outplanting / Performance on Typical Sites	Transplant in October, using an electric drill and generator to drill 1.5" holes at the planting site. Transplants survived well (90%) without competing vegetation. Competing vegetation reduced survival depending on weather following planting. Flowering will often occur in the second year, but not vigorously. [5,11]
Other Comments	This is a taprooted species. Medium may fall away from the roots during outplanting.[5]
PROPAGATION DETAILS	
Ecotype	
Propagation Goal	Seed, Plants
Propagation Method	Seed
Product Type	Propagules (seed) and Bareroot (field grown)
Stock Type	
Time to Grow	
Target Specifications	
Propagule Collection Instructions	Collect seed from late September to November 1st.[13] Early fall rains can make seed collection difficult. [1]
Propagule Processing/Propagule Characteristics	Strip off seeds by hand.[13]
Pre-Planting Propagule Treatments	Stratification can be accomplished with fluctuating outdoor temperatures between October and February. 12 weeks of cold moist stratification in a cooler, followed by direct sowing, should also work. [1,13]
Growing Area Preparation / Annual Practices for Perennial Crops	Direct sow seeds from late October to January. Seed will germinate in late February or early March. [1,13]
Establishment Phase Details	
Length of Establishment Phase	
Active Growth Phase	Year one: Plants will only have a few true leaves before mid-summer senescence. Year two: Plants will form pinnately compound leaves, and

	flower, but not robustly. They flower in August and the seed is ripe in October. Year three: Plants are larger and produce more seed.[1]
Length of Active Growth Phase	
Hardening Phase	
Length of Hardening Phase	
Harvesting, Storage and Shipping	Roots can be harvested and shipped in late October.[1,13] Seed can be harvested when mature, stored dry, and then shipped.
Length of Storage	Tubers can be stored for at least one week in sawdust.[14] Seeds remain viable in a dry, sealed container stored at 1C for up to 5 years.[5]
Guidelines for Outplanting / Performance on Typical Sites	1200 tubers planted in a 30" tall (5' wide x 32' long) raised bed filled with 75% sandy loam, 25% fine garden compost with 6-7% pumice added are seeing robust growth in the first season after transplanting.[14]  Photo credit: Peter Moore, Institute for Applied Ecology
Other Comments	This species is difficult in standard production due to late maturation of the seed. Aphid infestations, fungal infections, and *Lygus hesperis* predation have all contributed to low seed yields. Low soil fertility might also contribute to plants' susceptibility to these pests.[1]
INFORMATION SOURCES	
References	See below
Protocol Author	Kelly Broadlick
Date Protocol Created or Updated	05/19/15

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