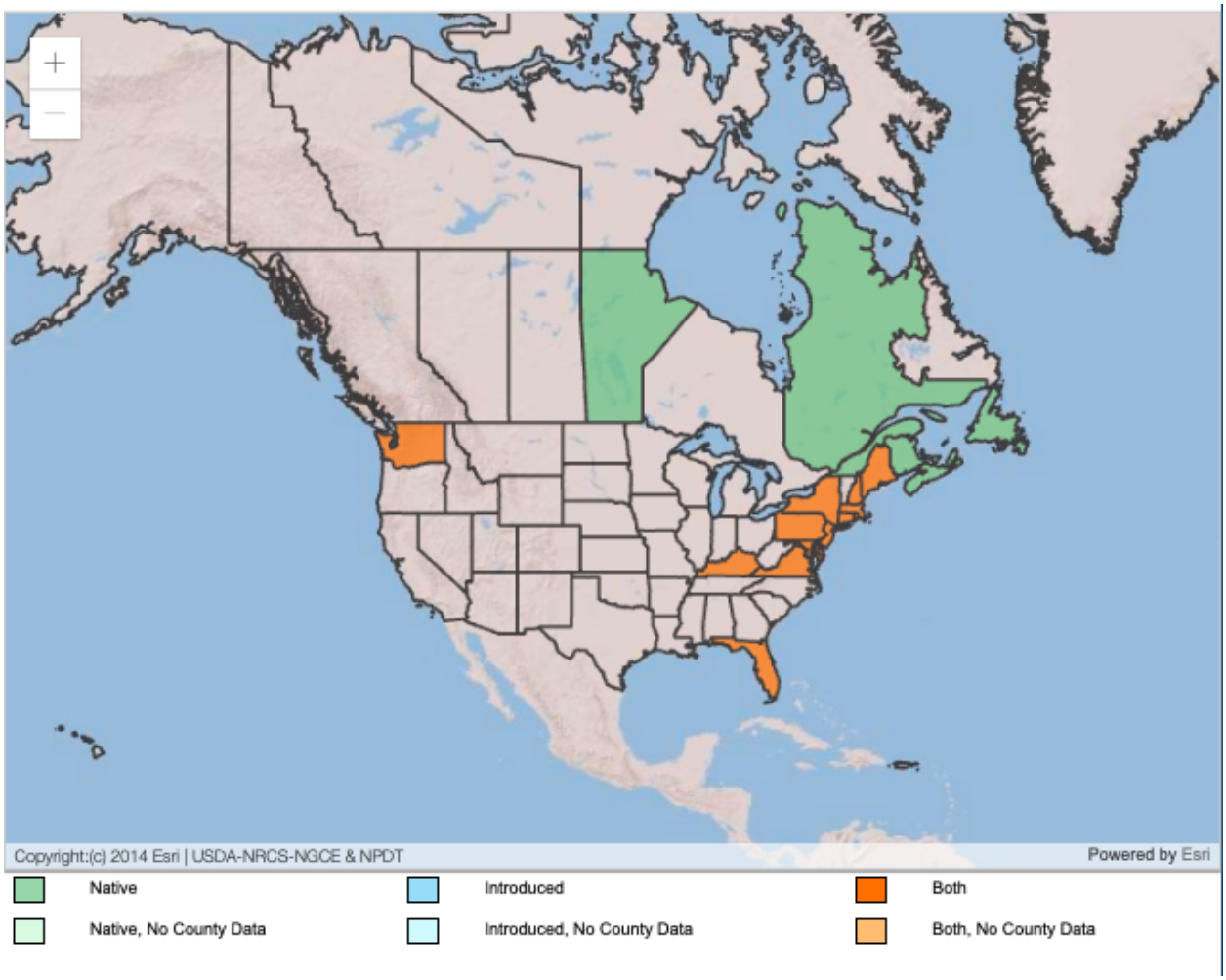
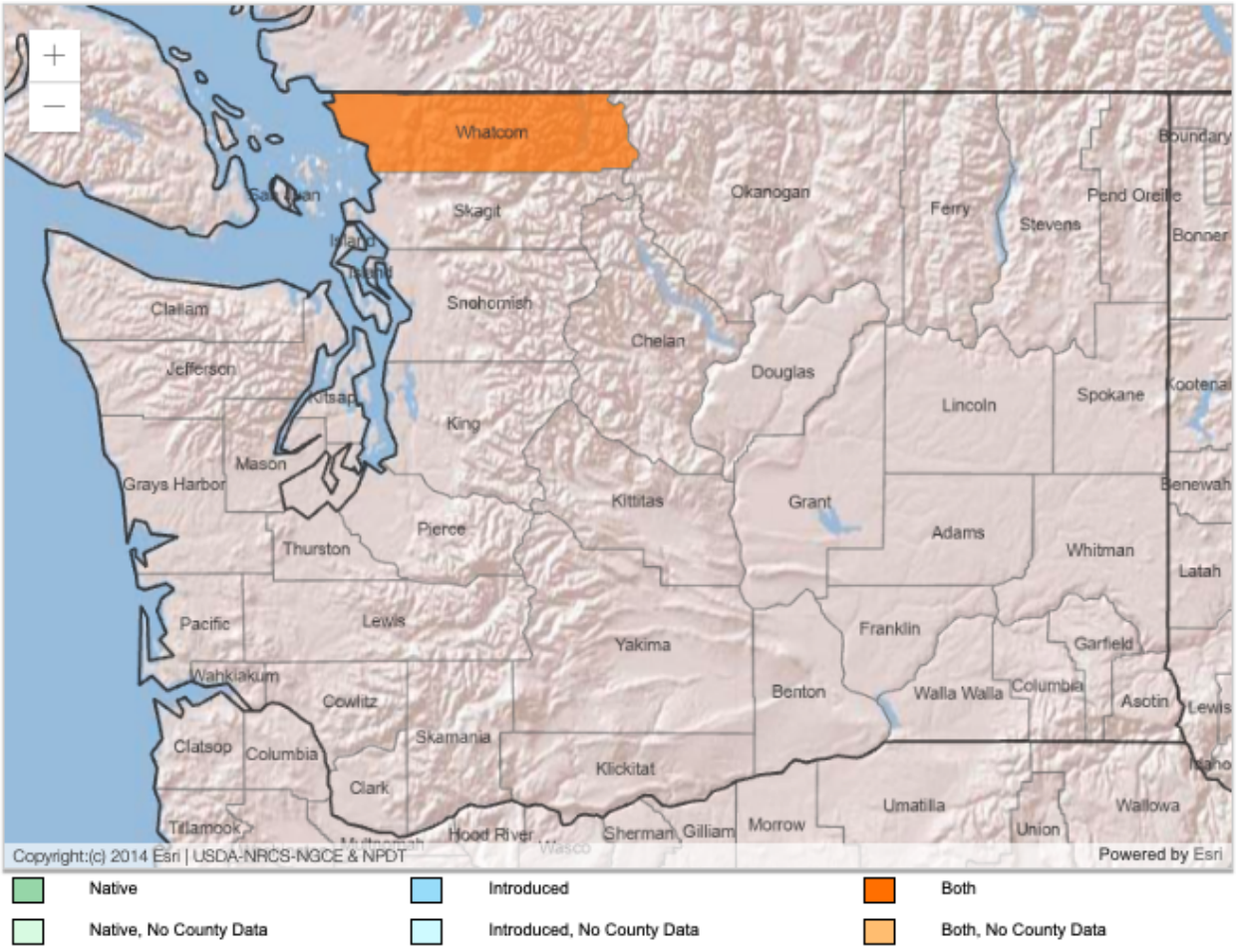
Plant Propagation Protocol for *[Suaeda Maritima]*
ESRM 412 – Native Plant Production
URL: https://courses.washington.edu/esrm412/protocols/*[2023]*/*[SUMA.pdf]*



Range in North America Provided by the USDA[1]



Range in Washington Provided by the USDA[1]

TAXONOMY	
Plant Family	
Family Scientific Name	*Chenopodiaceae* Vent.
Family Common Name	Goosefoot
Species Scientific Name	
Genus	*Suaeda Forssk. ex J.F. Gmel.*
Species	*Suaeda Maritima*
Species authority	(Linnaeus) Dumortier
Varieties	*Suaeda calceoliformis* (Hook.) Moq.
Sub-species	*Suaeda maritima* (L.) Dumort. ssp. *maritima* *Suaeda maritima* (L.) Dumort. ssp. *richii* (Fernald) Bassett & C.W. Crompton
Cultivar	

Common Synonym(s)	*Suaeda maritima* var. *aestuaria* (Dumort.) P.D.Sell *Suaeda maritima* subsp. *asiatica* H.Hara *Suaeda maritima* var. *bacciformis* (Dumort.) P.D.Sell *Suaeda maritima* var. *cavanillesiana* Lázaro Ibiza *Suaeda maritima* var. *erecta* (Moq.) P.D.Sell *Suaeda maritima* var. *flexilis* (Focke) Focke *Suaeda maritima* var. *humifusa* J.Boucaud *Suaeda maritima* subsp. *jacquinii* (Ten.) Nyman *Suaeda maritima* var. *macrocarpa* (Desv.) Moq. *Suaeda maritima* var. *perennans* Maire *Suaeda maritima* var. *prostrata* (Focke) Focke *Suaeda maritima* var. *purpurascens* P.D.Sell

	Suaeda maritima subsp. *richii* (Fernald) Bassett & Crompton *Suaeda richii* Fernald *Suaeda tortuosa* Moq.
Common Name(s)	Herbaceous seepweed Annual seablite
Species Code (as per USDA Plants database)	SUMA
GENERAL INFORMATION	
Geographical range	Central & E. Canada to E. U.S.A. and Washington, Europe to W. Siberia, Macaronesia, N. Africa to Indo-China. See Map above for North America and Washington State distribution.[2]
Ecological distribution	This plant resides in aquatic, terrestrial, and wetland habitats. But mainly in salt marshes and sea shores, usually below the high water mark.[3]
Climate and elevation range	Temperate climates near sea level
Local habitat and abundance	Variable habitat but likes full sunny locations in maritime regions, usually found on its own away from other plants.. Suitable for: light (sandy) and medium (loamy) soils. Suitable pH: neutral and basic (mildly alkaline) soils and can grow in very alkaline and saline soils. It cannot grow in the shade. It prefers moist soil. The plant can tolerate maritime exposure.[4]
Plant strategy type / successional stage	It is an early colonist of intertidal mud- and sand-flats, sometimes also occurring higher up in salt-pans and on drift-lines, on shell and shingle banks, and in thinly vegetated brackish areas behind sea-walls. Lowland.[5]
Plant characteristics	Suaeda maritima is a ANNUAL shrub/herb growing to 0.3 m (1ft). It is in flower from July to October, and the seeds ripen from August to October. The species is hermaphrodite (has both male and female organs) and is pollinated by Wind. The plant is self-fertile.[4]

PROPAGATION DETAILS	
Ecotype	mature seeds were collected from a salt marsh at Cuckmere Haven, East Sussex (UK, TQ515978) in mid-October 2004 and 2006.[6]
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Bareroot
Time to Grow	4-6 months
Target Specifications	Average plant height is 1 ft.
Propagule Collection Instructions	Dry plant at about 15 °C for 14 d to allow separation of seeds from the rest of the plant by hand.[6]
Propagule Processing/Propagule Characteristics	monomorphic, lenticular, 1-2.2 mm diam.; seed coat reddish brown or black, reticulate.[7]
Pre-Planting Propagule Treatments	Seeds can be stored dry at 4 °C or 17 °C for the full 20-week natural dormancy period[6] Seeds can be stored in a wet saline solution with low oxygen levels for the full 20-week natural dormancy period[6] High resistance to Salt stress[8] Severe hypoxia does not prevent good germination[9] Germination begins when the temperature rises above about 15 °C and the salinity is reduced.[6]
Growing Area Preparation / Annual Practices for Perennial Crops	Moist light (sandy) and medium (loamy) soils Suitable pH: neutral and basic (mildly alkaline) soils and can grow in very alkaline and saline soils.[4]
Establishment Phase Details	Cold seawater pretreatment required to break dormancy of seeds and for successful germination.[6]
Length of Establishment Phase	2-3 weeks
Active Growth Phase	March through October
Length of Active Growth Phase	8 Months
Hardening Phase	Based on species from its Genus it most likely hardens in winter and drops its extra foliage
Length of Hardening Phase	3-5 weeks
Harvesting, Storage and Shipping	Harvest ripen seeds from August to October where the detritus can be dried and then easily removed from the seed. [4] Store and dry seeds at 4 °C or 17 °C for the full 20-week natural dormancy period.[6]

	Seeds can also be stored in a wet saline solution with low oxygen levels for the full 20-week natural dormancy period.[6]
Length of Storage	20 weeks
Guidelines for Outplanting / Performance on Typical Sites	Plant in spring and expect flowering in July with fruiting in August through October.[4]
INFORMATION SOURCES	
References	See Below
Protocol Author	Kyle Costa
Date Protocol Created or Updated	(04/29/23)

[1] USDA plants database. (n.d.). Retrieved April 29, 2023, from https://plants.usda.gov/home/plantProfile?symbol=SUMA

[2] *Suaeda maritima (L.) Dumort.: Plants of the World Online: Kew Science*. Plants of the World Online. (n.d.). Retrieved April 29, 2023, from https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:1071140-2

[3] *Herbaceous seepweed (suaeda maritima)*. JungleDragon. (n.d.). Retrieved April 29, 2023, from https://www.jungledragon.com/specie/17982/herbaceous_seepweed.html

[4] Pfaf Plant Search. (n.d.). Retrieved April 29, 2023, from https://pfaf.org/USER/Plant.aspx?LatinName=Suaeda%2Bmaritima

[5] *Suaeda maritima* (L.) Dumort. in *BSBI Online Plant Atlas 2020*, eds P.A. Stroh, T. A. Humphrey, R.J. Burkmar, O.L. Pescott, D.B. Roy, & K.J. Walker. https://plantatlas2020.org/atlas/2cd4p9h.w3b [Accessed 29/04/2023]

[6] Wetson, A. M., Cassaniti, C., & Flowers, T. J. (2008). Do conditions during dormancy influence germination of Suaeda maritima? *Annals of Botany*, *101*(9), 1319–1327. https://doi.org/10.1093/aob/mcn041

[7] SEINet portal network - suaeda maritima. (n.d.). Retrieved April 29, 2023, from https://swbiodiversity.org/seinet/taxa/index.php?taxon=Suaeda+maritima

[8] Wang, S.-M., Zhang, J.-L., & Flowers, T. J. (2007). Low-affinity NA+ uptake in the halophyte *suaeda maritima* . *Plant Physiology*, *145*(2), 559–571. https://doi.org/10.1104/pp.107.104315

[9] Colmer, T. D., Pedersen, O., Wetson, A. M., & Flowers, T. J. (2013). Oxygen Dynamics in a salt-marsh soil and in Suaeda Maritima during tidal submergence. *Environmental and Experimental Botany*, *92*, 73–82. https://doi.org/10.1016/j.envexpbot.2012.07.002

[10] Ihm, B.S., Myung, H.H., Park, D.S. *et al.* Morphological and genetic variations in*Suaeda maritima* based on habitat. *J. Plant Biol.* 47, 221–229 (2004). https://doi.org/10.1007/BF03030512