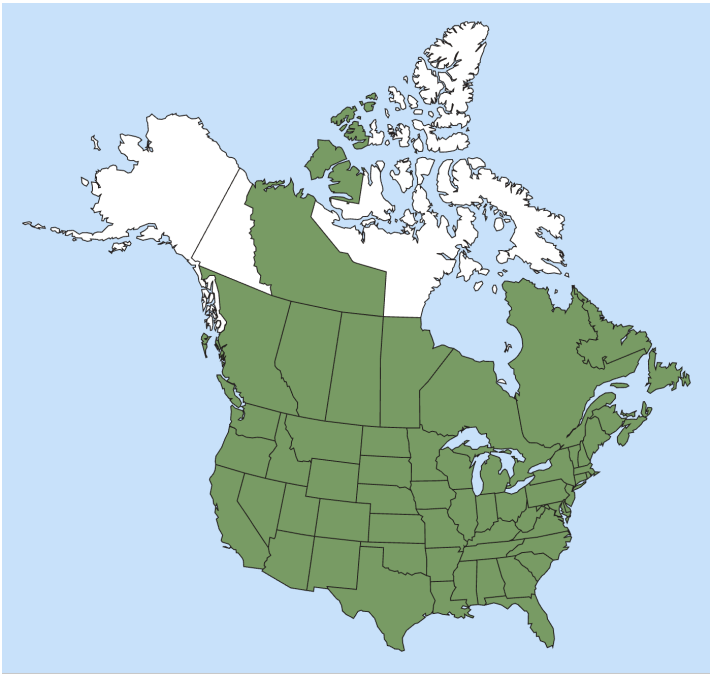
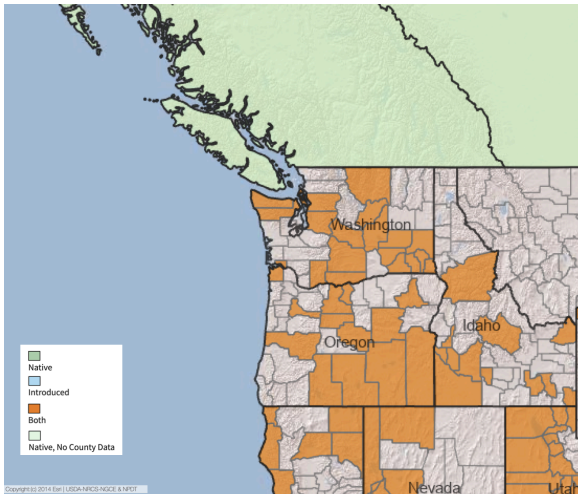
Plant Propagation Protocol for Common Reed *(Phragmites australis)*

ESRM 412 – Native Plant Production

URL: https://courses.washington.edu/esrm412/protocols/2026/PHAU7.pdf

TAXONOMY	
Plant Family	
Scientific Name	Poaceae
Common Name	Grass family
Scientific Names	
Scientific Name	*Phragmites australis* (Cav.) Trin. ex Steud.
Varieties	*Phragmites australis* var. *berlandieri* (Fourn.) C.F. Reed
Sub-species	*Phragmites australis* (Cav.) Trin. ex Steud. ssp. *americanus* Saltonst., P.M. Peterson & Soreng [1] *Phragmites australis* ssp. *australis* (Cav.) Trin. ex Steud. [1] *Phragmites australis* (Cav.) Trin. ex Steud. ssp. *berlandieri* (E. Fourn.) Saltonst. & Hauber [1]
Cultivars	'Shoreline' Selected at the James E. "Bud" Smith Plant Materials Center (Texas); released in 1978 for shoreline stabilization, erosion control, and high salinity and wave tolerance. Originally collected from a railroad right-of-way in Lawrence, Texas (1970).[1]

	'Southwind' Released in 1988 by the NRCS Manhattan Plant Materials Center and Kansas State University; selected for streambank stabilization, constructed wetlands, and tolerance of polluted or nutrient-rich waters. Recommended for use in Kansas, Nebraska, and Oklahoma. [1]
Common Synonyms	*Phragmites communis* Trin. [1] *Phragmites phragmites* (L.) Karst. [1] *Arundo phragmites* L. [1] *Phragmites karka* (Retz.) Trin. ex Steud.[2]
Common Names	Common reed Reed grass
Species Code	PHAU7
GENERAL INFORMATION	
Geographical range	 [2]

	 [1]
Ecological distribution	*Phragmites australis* occurs in alkaline, brackish, acidic, and freshwater systems (pH range 5.2–9.1). [4] Its distribution is also controlled by salinity, with a tolerance range of approximately 12–40 ppt. [3] Deep roots and rhizomes can extend up to 2 meters belowground and allow the species to persist in poorly aerated wetlands or to access low lying groundwater. However, the species has relatively low tolerance to strong waves and currents which can easily damage culms and inhibit rhizome bud development. [2]
Climate and elevation range	Occurs in temperate to boreal climates across North America from estuaries at sea level to montane wetlands (-51 to 2050 meters). [4]
Local habitat and abundance	Phragmites australis occurs in freshwater to saline wetlands, typically at the marsh–upland interface where it can form dense, continuous stands. The species is also commonly abundant in disturbed or fluctuating wetland systems such as along roadsides, rail corridors and ditches where shallow depressions retain water. It co-occurs with other wetland plant genera such as *Spartina*, *Salix, Carex*, *Typha*, *Glyceria*, *Juncus*, *Myrica*, *Triglochin*, *Calamagrostis*, *Galium*, and *Phalaris*.[3,9,5]

Plant strategy type / successional stage	Phragmites australis is highly competitive and stress-tolerant with adaptations that allow it to persist across a wide range of wetland conditions. It is best described as an early to mid-successional species because once established, it can persist into later successional stages by forming dense stands that suppress other vegetation. [3]
Plant characteristics	*Phragmites australis* is a perennial graminoid (grass) that commonly reaches ~1.5–4 m in height, though it can grow taller under favorable conditions. It forms dense, colony-forming stands composed of annual vertical stems (canes) that emerge each spring from an extensive network of perennial underground rhizomes. Aboveground shoots die back annually in late autumn after flowering, while belowground rhizomes persist and store biomass. Dead standing canes may remain for 1–2 years and contribute to aeration of the rhizome system. It can produce a conspicuous purple-to-gray inflorescence but reproduction occurs primarily through rhizome spread rather than consistent seed production.[6,7]
PROPAGATION DETAILS: FROM SEED	
Ecotype	Seeds collected using this protocol were from native and introduced populations in Ontario, Rhode Island, Maryland, and Delaware.
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	Container-grown seedlings in 5 × 5 cm peat pots. [8]
Time to Grow	Approximately 6 months from germination to outplanting. [7]
Target Specifications	Seedlings should be at least 30 cm tall with more than 5 stems and active rhizome production prior to outplanting.[7]

Propagule Collection Instructions	Seed is collected from mature flowering heads during winter and early spring. Seed set varies annually and some flowering heads may be sterile, so collection during productive seed years is recommended.[7,8]
Propagule Processing/Propagule Characteristics	Seeds are extremely lightweight, with approximately 5,000 seeds per gram (~5,000,000 seeds/kg or ~2,267,960 seeds/lb). [10] Seed viability may persist for several years under storage. Viability can be assessed through dissection or germination testing. Seed may be sown directly within fragmented seed heads or threshed and concentrated through water separation methods.[7,8]
Pre-Planting Propagule Treatments	Seeds were cold-moist stratified in wet sand at 4°C for 6 weeks prior to germination. [8]
Growing Area Preparation / Annual Practices for Perennial Crops	Seeds were germinated on commercial potting soil. Seedlings received daily watering and weekly applications of dilute fertilizer solution. [8]
Establishment Phase Details	Seeds were germinated indoors on potting soil under laboratory conditions. Seedlings were watered daily and fertilized weekly with dilute balanced fertilizer. Seedlings were transplanted approximately 3 weeks after emergence. [8]
Length of Establishment Phase	~3 weeks until transplant stage [7,8]
Active Growth Phase	Seedlings grown in potting media require frequent irrigation and may be fertilized regularly to promote rapid stem and rhizome development. [7]
Length of Active Growth Phase	6 months to reach outplanting size. [7]
Hardening Phase	Seedlings were placed outdoors following transplanting to acclimate to outdoor environmental conditions. [8]

Length of Hardening Phase	Not specified
Harvesting, Storage and Shipping (of seedlings)	Not specified
Length of Storage	Not specified
Guidelines for Outplanting / Performance on Typical Sites	Outplanting is most successful in saturated soils or shallow water and minimal competition.[7]
Other Comments	This protocol uses the general species code PHAU7, which does not distinguish between native (ssp. americanus) and introduced (ssp. australis) lineages. For restoration purposes, native material is preferred.
PROPAGATION DETAILS: VEGETATIVE	
Ecotype	Source material should be collected from sites with hydrologic conditions similar to the planting location, as populations are locally adapted to freshwater vs. saline and flowing vs. still water environments. [7]
Propagation Goal	Plants
Propagation Method	Vegetative
Product Type	Container (plug)

Stock Type	Rhizome segments approximately 15–45 cm in length with developing shoots used as propagules. [15]
Time to Grow	Approximately 2 months to produce outplant-ready propagules under greenhouse conditions, though full stand development may require 1–3 growing seasons after outplanting. [7,15]
Target Specifications	Mature plants with actively growing rhizomes and established shoots capable of rapid vegetative spread. [7]
Propagule Collection Instructions	Rhizomes are excavated from donor stands using backhoe or hand tools and separated into individual sections or clumps. [7]
Propagule Processing/Propagule Characteristics	Propagules selected for uniformity, consisting of rhizome segments with 2–3 nodes and a developing shoot. [14]
Pre-Planting Propagule Treatments	Rhizome and cutting material may be temporarily stored and transported prior to planting but should be kept moist and protected from desiccation. For cuttings, pre-rooting in water for 3–5 weeks can improve establishment success before potting. [7]
Growing Area Preparation / Annual Practices for Perennial Crops	Propagules can be grown in 1-L plastic pots, longer rhizomes can be grown in rectangular trays to accommodate root development. [7,15] The substrate can be a mixture of river sand and peat (2:1 v/v) and should be kept waterlogged using ground water. [16]
Establishment Phase Details	Initial establishment occurs within a single growing season, with visible shoot emergence occurring shortly after planting. [7]

Length of Establishment Phase	Not explicitly defined in sources.
Active Growth Phase	Once established, propagules grow through rhizome expansion and shoot production and can be enhanced under nutrient-rich, saturated conditions. [7,15]
Length of Active Growth Phase	Not explicitly defined in sources.
Hardening Phase	Plants were grown outdoors for extended periods prior to experimental use, allowing acclimation to field conditions.
Length of Hardening Phase	Not explicitly defined in sources.
Harvesting, Storage and Shipping	Rhizomes and buds are brittle and must be handled carefully to avoid damage.Material should be kept moist and protected during transport. [7]
Length of Storage	Short-term only, material should be used as soon as possible [7]
Guidelines for Outplanting / Performance on Typical Sites	Best establishment occurs in wet mud or shallow water with stable hydrology in late winter to early spring or late autumn depending on flow regimes. Sites with rapid water level fluctuations, or exposure to strong wave/current action can reduce establishment success. [7]
Other Comments	This protocol uses the general species code PHAU7, which does not distinguish between native (ssp. americanus) and introduced (ssp. australis) lineages. For restoration purposes, native material is preferred.
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References	[1] United States Department of Agriculture, Natural Resources Conservation Service (USDA NRCS). 2026. The PLANTS

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