URI CELS Outreach Center

Common Reed (*Phragmites australis*) Control Fact Sheet

About *Phragmites australis*

Characteristics

Phragmites australis, or Common Reed, is a large perennial rhizomatous grass that grows 5 to 20 feet (1.5 to 3 meters) tall. Its leaves are broad and sheath like, 0.4-1.6 inches (1-4 cm) wide at their base. *Phragmites* has gray-green foliage during the growing season. New stems grow in the spring, and its rhizomes spread horizontally during the growing season. It flowers in late June, with bushy panicles and seeds forming by August to early fall. During this time, energy stores are translocated from the leaves and stems to the rhizomes of the plant.

Phragmites australis is a strong colonizer, producing an abundance of wind-dispersed seeds, though its seed viability is typically low and it exhibits an interannual variation in fecundity. In the United States, *Phragmites* is thought to spread mainly through vegetative means via rhizome and stolon fragments. Once introduced, it has the ability to take over marsh communities producing dense mats, which crowd out native plant species, alter marsh hydrology and habitat and increase fire potential.

History and Habitat

Phragmites australis is found throughout the temperate regions of North America, mainly in riparian areas, brackish and freshwater marsh, riverbanks and lakeshores. It does not tolerate rapidly moving water, has a salinity tolerance of 0 to 18ppt, and can survive in poorly aerated sediments.

Recent research suggests that there are populations native to North America. To see a list of the morphological differences between native and invasive *Phragmites* visit: www.invasiveplants.net /Phragmites/morphology.htm

Management

Phragmites is a particularly difficult plant to eradicate and it is likely that reinvasion will occur if a management strategy is not maintained. It has proven most effective to use chemical methods (when appropriate) as an initial treatment, with mechanical methods as a follow-up. Mechanical treatments should be used at least two weeks after chemical methods, so there is enough time for plants to absorb the herbicides.

Herbicide treatment can be used in subsequent years to spot-treat remaining plants. It is most effective to create stresses through a regime of multiple treatments. Special care must be taken to avoid native species. See below for more information on chemical methods. Currently, there are no effective biological control methods for *Phragmites australis*.

Mechanical Methods

When chemical methods are not appropriate, and isolated or low density stands exist, harvesting or mowing alone can reduce plant biomass and increase sunlight available to other species. Mowing should be carried out once per season during the late summer/fall (September to the first killing frost) when the plants are using most of their energy for seed and flower production and when it is least likely that nesting birds will be disturbed.

Mowing a stand one month after herbicide treatment and repeating for a three-year period can eradicate *Phragmites australis* and reduce shading to allow for the reestablishment of native species. The *Phragmites* plants that remain living after herbicide treatment will re-colonize the dead *Phragmites* area within three to five years if the remaining dead stalks are not removed by mechanical treatment.

Burning is a method that should be used only in combination with chemical treatments, as burning by itself will only encourage more vigorous growth. Burning is recommended for large dense stands and should be carried out the year following herbicide treatment in late summer (mid-July through August) or winter (January until before the spring green-up).

Smothering *Phragmites australis* plants with a layer of plastic for a minimum of three growing seasons is somewhat effective at controlling growth and damaging seed beds and seedlings. It helps to first cut the stand to less than 4 inches (10 cm) before covering. This method can be difficult to carry out, as the plants tend to puncture plastic sheeting.

Phragmites is **intolerant** of salt water with a salinity above 18 parts per thousand, thus, the reintroduction of salt water to coastal marsh areas results in the gradual (ten to twenty years) replacement of *Phragmites*

australis with native vegetation. *Phragmites australis* is tolerant of freshwater flooding, thus, fresh water inundation is an ineffective management method. Maintaining a water level of greater than 1 ft (30 cm) may suppress seedlings and hand cutting 1 ft (30 cm) below the water level so that the shoot bases are flooded may eradicate a stand.

Chemical Methods

IMPORTANT: Read and follow all herbicide labels carefully before use. Glyphosate (Rodeo™), imazapyr (Habitat™) and triclopyr (Renovate 3™) are the herbicides used most frequently to control *Phragmites australis*. Spraying is most effective during the summer, after the seed head has formed, up to the first frost. Spray should be applied to wet the leaves and flower plumes (when present), but not to the point of dripping. A state-approved nonionic surfactant must be used in conjunction with the herbicides to ensure that the herbicide is taken up by the plants.

The cut stem method has also been used for *Phragmites* control, especially in sensitive areas. For this method, stems are cut below the lowest leaf leaving a 4 inch (10 cm) or shorter stump, and the remaining stem treated by hand (using a squeeze bottle or sponge applicator) with herbicide.

Wicking is a method in which herbicide is applied by wiping the tops of the plants with a canvas-covered applicator attached to a boom on each side of a boat or low ground pressure application equipment. This method can bend or break the stems of the plant, reducing the effectiveness of the herbicide, and making a second application necessary.

Herbicide application will cause gradual wilting, yellowing, browning and deterioration of the plant. If the herbicide concentration used is too high, top kill of the plants can occur, preventing translocation of the chemical to the rhizome system. Repeat herbicide treatments may be necessary to maintain control of a *Phragmites australis* stand.

Special care should be taken to avoid impact to native species as imazapyr and glyphosate are non-selective and will enter through contact with the stems and leaves of any species. While the cost of imazapyr can be significantly higher than glyphosate, recent studies suggest that when imazapyr is used alone or in combination with glyphosate, it can control *Phragmites australis* for a longer period of time.

***See tables 1 and 2 below for concentrations and application methods for imazapyr and glyphosate suggested by Avers et al.**

The Connecticut Department of Environmental Protection (DEP) applies 1.5% glyphosate (Rodeo™) directly to the foliage at concentrations of 4 ½ - 8 pints of glyphosate per acre. The CT DEP uses a 3% concentration of triclopyr (Renovate3™) mixed with water in their *Phragmites* control regime as well as 1.5%, 3% and 5% imazapyr (Habitat™) concentrations mixed with water.

NOTE: Not all glyphosate formulations are labeled for use with the cut stem and stem injection control methods. Be sure to use an herbicide that is approved and legal to use for the control method that you choose (e.g. Rodeo™, Renovate™ and Habitat ™ are approved and legal to use for these methods in RI). The label is the law. Be sure to secure the required permits from the appropriate regulatory agency before applying herbicides.

Mention of pesticide products in this document does not constitute endorsement of any material.

Table 1. Herbicide Application Information

	Imazapyr	Glyphosate	Combination
Treatment Timing	Apply to actively growing green foliage after full leaf elongation and up to the first killing frost (i.e. June up to the first killing frost)	Apply after plants are in full bloom in the late summer up to the first killing frost (i.e. late August up to the first killing frost)	Apply after plants are in full bloom in the late summer up to the first killing frost (i.e., late August up to the first killing frost)
Herbicide Rate	1-1.5% solution	1-1.5% solution	No recommended rates available
Cost	High	Low	Medium
Effectiveness	High Allows treatment earlier in the growing season	Medium Good results where water level management is available	Highly recommended for most sites

Table 2. Herbicide Application Methods

Method	Phragmites Stand Characteristics	Site Conditions	Treatment Technique	Precautions
Injecting Stems	Scattered or isolated	Effective in areas where impacts to desirable, native plant species must be avoided	Cut plants to waist height. Add one drop of herbicide to hollow stems with a squirt bottle or syringe	Seed heads should be removed from the site after cutting to prevent seed spread
Hand Swiping	Scattered or isolated	Effective in areas where impacts to desirable, native species must be avoided	Cover (wipe) each individual stem using a cotton wicking glove worn over a chemical resistant glove	Use care not to over-saturate or drip herbicide on native vegetation
Backpack Sprayer	Scattered to moderately dense stands	Use on low-wind days to prevent drift outside the treatment area. Use carefully to avoid native plants.	Spray close to leaves using low pressure.	Utilize flat fan nozzles to minimize non-target exposure
Wick or Dauber	Moderately dense to dense stands greater than 1 acre	Targets *Phragmites* without impacting shorter plant species. Useful when complete eradication of all plants is not desired	Saturate absorbent material with low pressure sprayers attached to an ATV or tractor. The area must be covered twice, in opposite directions.	Herbicide will not be effective on stems broken or damaged by the equipment

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