INTEGRATED PEST MANAGEMENT PRESCRIPTION

Horsetail-Scouring rush *(Equisetum spp.)*

Description:

Horsetail is in a family of plants containing about 35 species within the genus Equisetum. More than 230 million years ago, the horsetail family was one of the most dominant plants in the world, with some species reaching 100 feet tall. The remains of these giants contributed greatly to the formation of coal beds around most of the world. Horsetail species are natives nearly everywhere, the few exceptions being Australia, New Zealand, and Antarctica. They are found in great abundance in the Pacific Northwest, which is home to nearly half the world's species.

Three common Equisetum species in Thurston County are:

- Field horsetail *(Equisetum arvense)* is a perennial with a spreading rhizome system that produces numerous shoots and tubers. It has two types of stems; the leafless, fertile, cone bearing stems that grow 6 to 12 inches tall, and the sterile, hollow, vegetative stems that grow to 2 feet tall with whorls of branches growing form banded joints. Fertile stems are few in number, tan colored, and die back shortly after the pale green spores are shed. The vegetative stems all die back in the fall.
- Giant horsetail *(Equisetum telmateia)* is very similar to field horsetail only taller, more robust, and produces an abundance of fertile stems.
- Scouring rush *(Equisetum hyemale)* is evergreen, with leafless, hollow, segmented stems with ash-colored bands. Stems grow to about 1/2 inch in diameter and reach up to five feet tall. They grow from aggressively spreading rhizomes and each stem is fertile, having small rounded cones containing reproductive spores at the tips. Because the stems are rough and durable (due to their high silica content) they were called "scouring rushes" because early pioneers used them to scrub pots and pans.

Both scouring rush and horsetail prefer moist soil, but either will tolerate fairly dry soil after they become established. Scouring rush tends to be a water lover in Western Washington and can be found growing along stream banks and wet ditches. Horsetail is common along roadsides as well. Both horsetail and scouring rush spread by spores and rhizomes.

Impacts:

Horsetail is so invasive and difficult to control that it is very important to prevent it from becoming established. If not controlled, horsetail can become a persistent weed on cultivated land, pastures, and roadsides. Horsetail is toxic to livestock and can kill animals that eat large amounts of it. While it is rare for an animal to consume sufficient quantities of fresh horsetail or scouring rush to cause serious illness or death, it is much more common when cut and dried in hay. In high densities, horsetail reduces crop yields by producing chemicals that suppress the growth of neighboring plants. Along roadsides it can restrict water flow, cause pooling, and increase ditch maintenance costs.

Control Options:

Thurston County's Integrated Pest Management emphasizes cultural, biological, and manual control methods to keep pests and vegetation problems low enough to prevent damage. The goal of Thurston County is to minimize the use of pesticides by utilizing and providing information about the most effective control options that are available and practical.

► Cultural / Habitat

Lasting control of horsetails is difficult to achieve because of the high level of food reserves stored in the rhizome. Prevent spread and establishment of horsetails by using only clean soil in your landscape and by checking nursery stock for unwanted plants.

Horsetail stems are without functional leaves, so they don't tolerate much shading. Densely plant areas with horsetail to shade them out and reduce spore germination.

Use of landscape fabric can help horsetail from getting established in an area because germinating spores can't grow through the fabric. Covering an infested area with fabric can help suppress re-growth but, because of their aggressive rhizomes, they often run to the edge of the fabric and emerge there. Layers of bark mulch, sawdust, or other plant material will not control horsetail.

► Biological

There are currently no biological control methods available for controlling horsetail.

► Manual / Mechanical

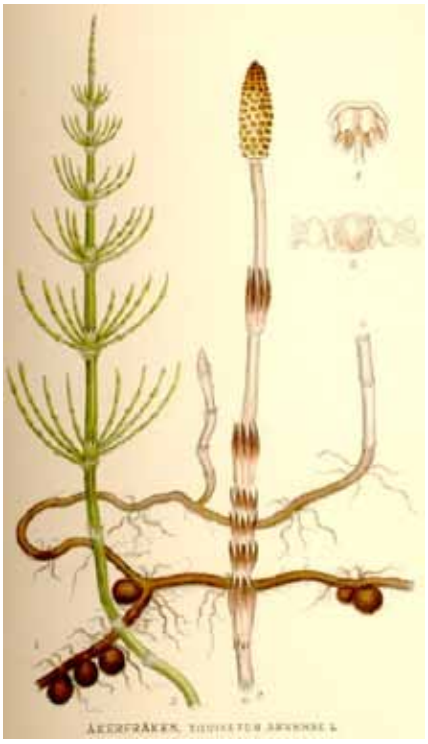
For established patches, efforts should be directed at depleting the food reserves in the rhizomes. Complete removal of the tops about 2 weeks after each emergence for 3 to 4 years has provided effective control. Tilling can make the problem worse by spreading the rhizomes into new areas. In a study in Quebec, Canada, horsetail was removed by hoeing 16 times, but had no impact on re-growth.

Robert H. Mohlenbrock @ USDA-NRCS PLANTS Database / USDA SCS. 1989.

► Chemical

Because of it's hard, waxy cuticle, high silica content, and aggressive rhizomes, horsetail is very difficult to control with herbicides. Currently, glyphosate is the only systemic herbicide active ingredient that is effective in horsetail control and is considered "low in hazard" by Thurston County's pesticide review process. Spot treatment applications with a 2% glyphosate concentration can be used with some success, though one should expect that re-treatment will be necessary. Many herbicide products have an initial glyphosate concentration of 41% (example: Roundup Pro®, Glyfos ®, etc.). Follow the label directions to dilute to a 2% concentration. Pre-mixed, ready to use glyphosate products do not contain enough active ingredient to control horsetail. Use a hand-held or backpack sprayer to spray the plants until they are wet but not dripping. Before spraying, trampling or dragging a rake across plants to bruise the cuticle will assist herbicide penetration. Glyphosate is non-selective, and will injure any plants that it comes in contact with, including grass.

Somewhat more effective, though more labor intensive, is the injection method found on the Roundup Pro®, supplemental label. With the 41% concentration, the label instructs: Inject one segment above the root crown with 0.6 ml per stem with RoundUp Pro® using a small syringe that calibrates to this rate. Be sure to follow the directions on the supplemental label, including having the label in your possession at the time of application. This method is useful for treating plants in tight spaces because it minimizes the chance to injure nearby vegetation.



Herbicides containing the active ingredient halosulfuron-methyl (Sedgehammer®, Sandea®, etc.) are effective in the control or suppression of horsetail. Thurston County considers halosulfuron-methyl to be "moderate in hazard" due to its potential for mobility and persistence. Products containing halosulfuron are best suited for large areas, agricultural and industrial uses and are not readily available for homeowner use. Halosulfuron is selective, however, and can be used in established turf grass and around well established woody ornamentals. Check the product label to ensure that area you want to use it is listed.

Herbicide spraying within 50 feet of a water body requires the use of an aquatic herbicide. Horsetail is often found growing near water bodies, so aquatic herbicides containing glyphosate are recommended for those sites. Use of aquatic herbicides in Washington State is restricted to WSDA licensed applicators.

Timing:

Removal of fertile stems as soon as they appear will help to reduce spread by spores. In order to deplete rhizomes, manual or mechanical control should be done as soon after emergence as possible. Herbicide applications are most effective when plants are 6 inches tall or less.

READ AND FOLLOW ALL PESTICIDE LABEL DIRECTIONS AND RESTRICTIONS.

Obey all label precautions and safety measures. Always use personal protective equipment that includes coveralls, waterproof gloves, shoes plus socks, and protective eyewear. Use of brand names does not connote endorsement and is for reference only; other formulations of the same herbicides may be available under other names. Information provided is current as of the date of the prescription. Pesticide product registration is renewed annually and product names and formulations may vary from year to year.

REFERENCES:

Weeds of the West, 9th Edition, 2001

Purdue University Extension Weed Science bulletin WS-29-W, The Ancient Horsetail. Glenn Nice & Peter Sikelma

PNW Extension Publication #105, Field Horsetail and Related Species, L.C. Burrill and R. Parker, Revised July 1994

Ontario Ministry of Agriculture, Food and Rural Affaires Factsheet "Toxicity of Equisetum to Horses" A. Bebbington and B. Wright, Agdex 460/666

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