

Horsetail: Biology and Management

Horsetails are members of the genus *Equisetum*, the only genus in the family Equisetaceae. There are 15 species of equisetum found worldwide, but in Iowa, field horsetail (*Equisetum arvense*) is the most common. The plant has numerous common names, including scouring rush, snakeweed, skeletonweed and others. Horsetails are considered living fossils since they are relics of the Carboniferous geological period (325 million years ago). The remains of their ancient ancestors became the vast deposits of coal found throughout the world.

Biology In the plant world, horsetails are most closely related to ferns. Like the ferns, they do not produce seed, but rather reproduce sexually through the formation of spores. Short-lived, fertile shoots (2-12" tall) are produced in the spring and are topped with a spore-bearing cone. These stems are jointed and yellowish in color.

The hollow, jointed, unbranched stems of horsetail are the plant structure most people are familiar with. These stems reach heights of two feet. *Equisetum* species found in other continents with similar growth habits may reach heights of 25 feet. The leaves of horsetail are reduced to small scales at stem joints, and thus the stem is the primary photosynthetic organ. Horsetail stems contain high concentrations of silica and were once used to scour and clean various surfaces – hence the common name “scouring rush”. Short (<12" tall), branched stems having the shape of a Christmas tree often are produced in the summer or fall.



Jointed stems of horsetail shoots

Spores are relatively unimportant in the spread of horsetails. Horsetail produces an extensive underground rhizome system that can reach depths of four feet or more. Patches of equisetum expand radially as the rhizomes extend outward from the patch center. In the absence of soil disturbance that moves rhizome pieces, lateral spread of horsetail is relatively slow. Researchers in Canada found an average expansion of approximately 20 inches per growing season.

Horsetail is most commonly found in poorly drained areas, such as roadsides, wetlands and drainage ditches. The preference for wet areas is due to a requirement for a moist environment during reproduction with spores. However, horsetail may move into well-drained soils through vegetative reproduction. Horsetail slowly encroaches into crop fields from established patches in road right-of-ways.

Management In today's world where we have relatively quick fixes for most weed problems, horsetail is a plant for which no easy answer is available. Established horsetail patches cannot be eliminated with any single control tactic, whether tillage, mowing or herbicide application. There has been little, if any, recent research on management of horsetail, thus the information provided below should not be viewed as recommendations by Iowa State University. Some of the products listed below do not specifically mention horsetail on the label. While it is legal to use the herbicide to control a pest not specified on the label (as long as the weed is located in a labeled site), the manufacturer is not responsible for the performance of the product in these situations.

Non-cropland Repeated mowing or tillage can be used to control horsetail; however, no information is available on the optimum intensity, frequency or duration of disturbance. Studies with other creeping perennial weeds possessing deep reproductive structures suggest that at least two years of repeated disturbance would be required to eliminate an established patch. Regrowth of horsetail should be eliminated before it has an opportunity to replenish

energy reserves of the root system, thus remove new growth before it exceeds a height of 8 to 10 inches.

Few of the herbicides commonly used in Iowa agriculture have much activity on horsetail. In addition, care must be taken not to apply herbicides directly to standing water in ditches unless the product specifically allows it. None of the products mentioned below are registered for use in aquatic situations. MCPA, a phenoxy herbicide similar in activity to 2,4-D, is reported to provide suppression of horsetail, although horsetail is not listed on most MCPA labels. MCPA is cleared for use in grasslands and non-crop areas. Repeat applications of 2-3 pt/A are suggested to suppress horsetail. Casoron 4G (dichlobenil) is cleared for use in non-crop areas and specifies horsetail on its label. The label states to apply at 150 to 200 lbs/A in the late fall or early spring.

Telar (chlorsulfuron) is a sulfonylurea herbicide in the same family as Accent and Classic. The label recommends 1 to 3 oz/A for controlling horsetail. Telar is cleared for use in non-crop areas such as roadsides and fencerows. At the higher rates, Telar may cause significant injury to grasses present in these areas. Chlorsulfuron is a fairly persistent product, especially in high pH soils. Finally, SedgeHammer (halosulfuron) is another sulfonylurea herbicide with activity on horsetail. SedgeHammer is cleared for use on turf and non-crop areas.

Cropland The encroachment of horsetail into corn and soybean fields has become more common as roadside management has become less intensive and farmers have adopted conservation tillage systems. Eliminating horsetail from areas adjacent to the production field is likely the best management option, but this is easier said than done. Once horsetail has become established in a field, tillage is unlikely to have much impact on the weed due to the depth of the rhizome system. Tillage may actually increase the problem by spreading rhizome pieces throughout the field.



Horsetail in a soybean field

Researchers in Canada report products containing flumetsulam (Python, Hornet) have fair to good activity on horsetail. Python is labeled for both corn and soybean, whereas Hornet is registered for use in corn. The Permit (halosulfuron) label specifies postemergence control of horsetail in corn.

Although horsetail is slow-spreading and relatively non-competitive with crops, over time it can increase in density to the point of having negative impacts on crop production. In roadsides it may restrict water flow. There is no simple solution to eliminating an established stand of horsetail. Responding soon after new stands of horsetail are observed will greatly simplify horsetail management. When dealing with a well-established stand, persistence and patience are required in order to bring an infestation under control. It seems only fitting that a plant possessing traits allowing it to survive millions of years will not succumb easily to modern management strategies.

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Common chemical and trade names are used in this publication. The use of trade names is for clarity by the reader. Inclusion of a trade name does not imply endorsement of that particular brand of herbicide and exclusion does not imply nonapproval.