



# Hort Notes

An educational newsletter with research-based information for businesses and individuals involved in selling, planning, designing, servicing, and enjoying landscapes and gardens.

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**Current Monitoring Checklist: EARLY AUGUST**

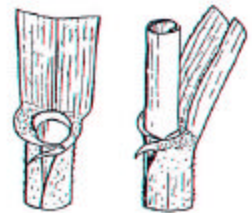
[http://www.umassgreeninfo.org/fact\\_sheets/ipmtools/1700\\_1999\\_GDD.html](http://www.umassgreeninfo.org/fact_sheets/ipmtools/1700_1999_GDD.html)

**PLANT PHENOLOGY: BETWEEN 1700 - 1999 GROWING DEGREE DAYS**

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## Quackgrass

Quackgrass (*Elytrigia repens* (L.) Nevski.) is a cool-season perennial and a member of the grass family, Poaceae. Other names include *Agropyron repens* (L.) Beauv. (former scientific name), couchgrass, wheatgrass and devil=s grass. Quackgrass is native to Europe and Western Asia and is found in the United States north of a line that extends through North Carolina, Oklahoma and southern California. The species is commonly found in open areas and will not survive under conditions of continuous shade. The species is a common weed of most agronomic and horticultural crops as well as landscapes and nurseries. Quackgrass is considered allelopathic; decaying plant material releases water-soluble germination inhibitors. Quackgrass is not without some desirable characteristics. It can be utilized as a pasture or hay crop and is an effective soil stabilizer, preventing wind and water erosion.



Quackgrass is silvery-green in color and may reach a height of 3 to 4 feet when in flower. Leaf blades are flat with a rough upper surface, smooth below and a pointed tip. The upper surfaces of the blade may or may not have hairs and lower surfaces are always hairless. The ligule is membranous and sheaths are smooth. Auricles (claw-like protrusions at the base of the leaf blade) clasp the stem (Figure 1). Auricles can help readily distinguish this species from other grasses with the exception of tall fescue (*Festuca arundinacea*), annual ryegrass (*Lolium multiflorum*), and perennial ryegrass (*Lolium perenne*) which also have auricles. When the leaves are cut or crushed they emit an odor very similar to

wheat.

The seedhead is a 2 to 8 inch, stiff spike of many spikelets. Spikelets contain 4 to 6 seeds and are arranged in two rows along the spike axis.

Propagation is by seed and rhizomes. Rhizomes are yellowish-white, sharp-pointed and may grow at the rate of an inch per day. A unique characteristic of quackgrass rhizomes is a ring of root hairs every 3/4 to 1 inch along the structure (Figure 2). Despite being fairly flexible, rhizomes are very strong and can penetrate compacted soils. Rhizomes easily grow through potato tubers and result in decreased marketability.

The aggressive rhizomes of quackgrass make it a very difficult weed to control. Quackgrass that is hand-pulled usually breaks off at the soil surface, leaving roots and rhizomes to regrow. Cultivation is generally ineffective and can result in the spread of rhizome fragments that readily produce new plants. However, if hand-pulling and cultivation are carried out repeatedly, some control may be achieved. In turf areas, decreasing the mowing height to 1.5 inches can be an effective way to eliminate quackgrass. This shorter height of cut on a residential or commercial lawn should be avoided during dry summer periods. Mowing height should be returned to 2.5 to 3 inches once quackgrass is not present. Pigs grazed in quackgrass infested areas uproot and devour rhizomes providing effective control; unfortunately, this method is difficult to implement in a landscape.

Several herbicides effectively control quackgrass in the landscape or nursery, including clethodim, fluazifop, sethoxydim, pronamide, glufosinate and glyphosate (Roundup)\*. Roundup is most effective if applied when quackgrass is at least 6 inches tall. Unlike Roundup, products containing clethodim, fluazifop, sethoxydim and pronamide can be applied over-the-top to certain ornamentals. Check product label for application rates and tolerance of desirable plants before using.

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Disclaimer: Where trade names (\*) are used for identification, no product endorsement is implied nor is discrimination intended against similar materials. The authors have assembled the most reliable information available at time of printing. Due to constantly changing laws and regulations, UMass Extension can assume no liability for recommendations.

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### **Questions from You**

*Q. I am removing a black walnut and want to plant an oak in its place. Do I have to remove all*

*of the black walnut roots to prevent juglone toxicity to the oak? How long does juglone remain active in the soil?*

A. These questions are not as easy to answer as they may seem. We do know that juglone is the chemical, or at least the prime chemical, responsible for allelopathy in black walnuts. Allelopathy is the phenomenon in which release of a chemical or chemicals by one plant affect the growth and survival of other plants. Though the effect may be positive or negative, we generally consider only the harmful effects of allelopathic chemicals.

The allelopathic effect of juglone has been extensively studied but some questions still remain. Juglone is found in all parts of black walnut as well as butternut and hickory, but the highest concentrations are reported to be in the roots. Root exudates of juglone are primarily responsible for the inhibitory effect of black walnut on the growth of other plants. Not all plants are equally sensitive to juglone. Different species respond to different concentrations of juglone and it is thought that there may be a threshold level for response by a given species. Also, the amount of juglone produced by black walnut roots will vary with the growing conditions prevalent in a particular season. In some years, the amount of juglone produced and exuded may be so small that even sensitive species may not be affected.

While live roots synthesize juglone, dead roots do not, but dead roots will release existing juglone as they decay. For this reason, juglone may occur in the soil even after a tree has been removed. Juglone is not very soluble in water; therefore, it does not readily leach from the soil nor does it travel far from the roots. To be affected by juglone, the roots of other plants must be growing quite close or inter-mingled with those of black walnut.

There is seemingly conflicting information on how long juglone remains active in the soil. While some sources state that juglone will remain in the soil for several years after removal of a black walnut tree, other sources state that juglone does not persist for more than a few months. The discrepancies may relate to soil conditions. In well-aerated soils with high level of biological activity, juglone will break down more rapidly than in poorly drained soils that are low in organic matter. Planting of species that are not sensitive to juglone, such as oak, can be done any time after a black walnut is removed, but sensitive species should not be planted in the same location until a year later.

*Q. What are some of the juglone-sensitive plant species and the juglone-tolerant species?*

A. Sensitive species include: many vegetables (asparagus, cabbage, tomato, pepper, eggplant, potato), some fruit (apple, blueberry, pear), landscape plants (azalea, bass-wood, white birch, cotoneaster, lilac, magnolia, mountain laurel, pine, rhododendron), and flowers (*Baptisia*, columbine, fall crocus, lily-of-the-valley, peony, petunia).

Some tolerant species are: Trees and shrubs (American arborvitae, white ash, American beech, 'Heritage' river birch, crabapple, daphne, flowering dogwood, elm, forsythia, fringetree, hemlock, hickory, holly, hydrangea, lilac, maple, Eastern red cedar, redbud, serviceberry, Carolina silverbell, tulip tree, witchhazel) and flowers and vines (anemone, astilbe, bee balm, begonia, calendula, clematis, coral

bells, daffodil, daylily, fern, hardy geraniums, hosta, Siberian iris, phlox, *Rudbeckia*, trillium, and violet).

The list of tolerant species was taken from: *Trees for Problem Landscape Sites - The Walnut Tree: Allelopathic Effects and Tolerant Plants* by Bonnie Appleton, Extension Specialist, Hampton Roads AREC, Virginia Tech, and others, Publication Number 430-021, posted January 2000.

Caution should be taken when using lists as given above. There are some contradictions among lists. As mentioned in the first question, soil variables play a big part in the effects of juglone on the growth of other plants.

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**Urban Forestry Diagnostic Lab Report Particularly interesting examples of diseases and abiotic disorders received at the diagnostic lab for the period, July 2 - July 13, 2001**

*Green ash* - curled leaves with scattered spots/blotches and dropping off prematurely; ash anthracnose

*Japanese maple* - tree developed browning leaves earlier in spring and now branches are dying back; Verticillium wilt

*Rhododendron species* - branch tips and buds dying back along with leaves browning from the petiole out on several nursery container and B&B plants; Phytophthora dieback

*Walnut* - tips of green shoots are blackened and dying back/same symptoms led to death of branch tips last several seasons; bacterial (*Xanthomonas*) blight of walnut

*Hemlock* - scattered needles turning brown with white-yellow, tube-like structures coming out of the underside of the needles; hemlock-hydrangea (*Pucciniastrum*) rust

*Boxwood* - established hedge around parking area with scattered shoots with yellow-tan leaves, dropping prematurely on otherwise healthy plants; dehydrated leaves due to sun, wind, and heat exposure worsened by *Volutella* fungus infection

*Sycamore* - scattered twig dieback noted early in season/now brown blotches on leaves; sycamore anthracnose

*White oak* - scattered leaf spots/blotches/some new growth significantly browned; oak anthracnose

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