

# QUACKGRASS



QUACKGRASS — *Agropyron repens*—Showing foliage, nature of root growth, seedheads, section of leaf illustrating auricle, and two views of seed. (Seed magnified two diameters.)

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# QUACKGRASS

*Agropyron repens*

Other names: Couchgrass, Wheatgrass, Witchgrass

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## Description

QUACKGRASS is found in all sections of the state and adapts itself to almost all soil types. It is not an arid-climate weed, however, and is seldom found in Oregon in areas with less than 12 inches of rain, except on creek bottoms or subirrigated land. It is a grass that produces a fair quality of forage and hay, and is one of the best soil binders. Quackgrass is a serious weed where not wanted because it spreads rapidly and tends to take possession of any field once it becomes established.

The Oregon Seed Law classes quackgrass as a prohibited noxious weed. Vegetable and crop seeds containing quackgrass seed cannot be sold in the state.

Quackgrass is a long-lived perennial plant reproducing from both creeping rootstocks and seeds. Its root systems develop from 2 to 8 inches deep. Most of the roots are found at the 4-inch level. At each joint of the rootstock there is a tough, brownish sheath having a scaly appearance. Branches are produced at nearly every joint. The ends of the rootstock are often very sharp. This sharp growing point will penetrate potatoes and similar objects. Stems are  $1\frac{1}{2}$  to 3 feet tall.

They are usually smooth and with 3 to 6 joints. Leaves have auricles (claw-like fingers) which clasp the stem and ligules (paper-like growths between leaf and stem)  $1/32$  inch long. Leaves are often covered with whitish bloom.

Seedheads resemble those of ryegrass but the groups of seeds (grain), like wheat, are attached with their flat side against the stem. Heads vary from 3 to 10 inches in length. Quackgrass seeds (grain), because of similar size, are difficult to remove from ryegrass, orchardgrass, fescue, and most wheatgrasses.

## Method of spread

Quackgrass spreads by seeds and rootstocks. The most common method of spread is by planting quackgrass seed with impure grain or forage seeds. Once established in the field, it is readily spread by the dragging of rootstocks with farm machinery. Pasture fields containing quackgrass should be clipped early if the clipped forage is to be fed. When quackgrass forage is used for either hay or bedding, quackgrass seeds are spread to clean fields with manure.

## Methods of Control

### Cultivation

Cultivation is a practical and economical way of controlling large infestations of quackgrass on cropland. Two common methods of control by cultivation are (1) dry plowing, followed by delayed cross harrowing and (2) normal plowing and frequent discing or rototilling. Choice of method depends on the kind of tillage equipment available.

**Control by dry plowing.** Crop residue should be removed for hay silage, or the

area should be pastured before the field is plowed. Plow the field in such a manner that the furrow slice is left on edge. This is best accomplished by plowing with a moldboard plow.

Plowed fields should be left rough for 3 to 4 weeks, exposing roots of quackgrass to the sun and wind. After 3 to 4 weeks, the quackgrass area should be cross-harrowed, using a spring-tooth type harrow. Do not use a disc. The harrow pulls the plant roots to the surface, exposing them to

further drying. If the roots are numerous, they should be raked and burned. Reharrow the area as often as quackgrass makes regrowth. Each harrowing should be done at right angles to the previous harrowing.

**Control by discing or rototilling.** Discing or rototilling cuts the quackgrass roots in small pieces which cannot be pulled to the soil surface for drying. When this method of tillage is used, the field is plowed shallowly and worked down with a disc or other cutting implement. Soil moisture is maintained to encourage rapid growth of the cut quackgrass root sections. The area should be reworked every time the new growth is 10 days old. Continued working kills the new growth.

The cultivated field, whether dry plowed or normally worked, should be seeded in the early fall to adapted grain or forage crops. The crop planted should be seeded approximately 30% heavier than for normal planting. Actual nitrogen at 20 to 30 pounds per acre, applied at the time of planting, will increase the growth of the planted crop and provide more competition for the quackgrass. The planted crop should be removed for either hay or silage in the following spring. Immediately after the crop is removed, the land should be tilled in a manner similar to the previous year's treatment.

Dry plowing following the harvesting of fall-sown crops helps control light infestations of quackgrass. With this control method, the field should be plowed immediately after harvest, and the surface should be left rough, thus exposing the quackgrass roots. The field should be cross-harrowed in approximately 3 weeks. Straw from harvested crops must be removed before plowing, otherwise it will be difficult to pull the quackgrass roots to the surface by harrowing.

## Chemical control

Chemical control is usually limited to spot application, but some chemicals show real possibilities of selective control when used in a cropping program with spray-tolerant crops. Most chemicals give better control in mineral soils than on peat-type soils. More respraying is needed on peat soils.

**Dalapon.** Quackgrass can be controlled with dalapon. The quackgrass should be

sprayed while there is enough soil moisture to provide active plant growth. An application of 10 pounds of dalapon per acre in 10 or more gallons of water is recommended. For spot treating use 1 pound in 10 gallons of water. For eradication, the patch should be resprayed with 5 pounds of dalapon per acre. This respraying should be done as often as green growth shows on the sprayed quackgrass. It is important to add a commercial wetting agent to the spray material. If crops are to be grown in the dalapon-treated area, the area should be plowed 1 to 2 weeks after treatment and not planted for at least 4 weeks after treatment.

**Amitrole T (Amitrole or Cytrol).** Like dalapon, amitrole T does not completely control quackgrass with one application. Use 2 gallons (4 pounds) of amitrole T in 10 gallons of water when applied with a boom sprayer. Use  $\frac{1}{2}$  pound (1 quart) in 10 gallons of water for spot treatment. Add a commercial wetting agent to the amitrole T spray.

Amitrole T can be applied any time there is green foliage present. Best results experimentally in western Oregon and irrigated sections of eastern Oregon have been obtained from early fall treatment.

## Selective control

**Amitrole T.** Two gallons (4 pounds) of amitrole T (Cytrol, Amitrole) can be used as a preplanting treatment for corn. The area should be sprayed 10 to 14 days before the field is plowed. Corn can be planted immediately after plowing. Livestock should be kept out of the treated area.

**Dalapon.** Dalapon at 8 pounds per acre is effective for controlling quackgrass when used before planting corn. Spray the quackgrass when it is from 4 to 6 inches tall, then wait 4 to 6 days after spraying before plowing. The corn should not be planted for 4 to 5 weeks after plowing. Longer periods are needed between plowing and corn planting when the soil is excessively dry.

**Atrazine.** Atrazine is effective in selectively controlling quackgrass in sweet and field corn fields. For best control, 3 pounds of the 80% atrazine should be sprayed on the quackgrass-infested field 3 weeks prior to plowing. Good control has been obtained when 3 pounds of atrazine has been worked into previously plowed land before corn was

planted. A second application of 2 pounds of 80% atrazine after planting kills surface germinating weed seeds and helps control the more persistent quackgrass plants. Many crop plants are damaged from residues of 3 to 5 pounds of atrazine. For effective quackgrass control on corn land, it is advisable to grow corn for 3 consecutive years. The field should be treated the first and second years with atrazine, as previously outlined. No treatment should be made the third year. During the third year, atrazine soil residues disappear, leaving the soil safe for planting to sensitive crops such as oats, sugar beets, and many vegetables.

**Amitrole T and atrazine.** A combination of amitrole T and atrazine has given almost complete control of quackgrass in corn. Use 2 pounds (1 gallon) of amitrole T. This should be applied when the quackgrass is 4 to 8 inches tall and growing actively. The infested field should be plowed 1 to 2 weeks after the application of the amitrole T and after the quackgrass has turned yellow or white. Corn may be planted immediately after plowing. If corn is not planted immediately after plowing, the soil should be worked to prevent any regrowth of quackgrass. Atrazine at 2 pounds of product per acre should be applied on the corn as a pre-emergent or very early post-emergent treatment of the corn. This is the same atrazine treatment that is recommended for annual weed control. For maximum control, one cultivation is recommended when the corn is 4 to 8 inches tall.

**Eptam.** Eptam is effective in quackgrass control when thoroughly incorporated into the soil before resistant crops are seeded. Crops resistant to 4 pounds (5.3 pints) per acre are alfalfa, red clover, beans, and potatoes. Eptam should be applied to a dry soil surface and incorporated 5 to 6 inches deep in the soil. Discs are more effective for deep incorporation than are rototillers. Harrows should not be used when incorporating Eptam for quackgrass control. The treated area should be disced twice. The second discing should be at right angles to the first discing. The chemicals should be applied with 20 to 100 gallons of water per acre and incorporated immediately. Alfalfa, red clover, beans, or potatoes can be planted immediately after treatment. There will be a slight retarding

effect on the planted crop, but resistant crops soon recover from the effect of the Eptam treatment.

### Soil sterilants

Karmex diuron, Telvar monuron, simazine, or atrazine are effective chemicals at heavy rates for eradication of quackgrass. These chemicals should be applied at the rate of 30 pounds of the 80% chemical in 20 or more gallons of water per acre. For spot spraying, use  $\frac{1}{4}$  pound per gallon of water for each square rod treated. Promotone at 32 pounds (16 gallons) has given effective quackgrass control on peat soils in the Klamath Falls area. This material controls quackgrass on both peat and mineral soils in low rainfall areas. These chemicals kill quackgrass slowly, and result in sterile soil for 2 to 5 years. The length of soil sterility depends on the rainfall or irrigation in the area treated.

Sodium chlorate and borate combinations are effective for spot removal of quackgrass. The rate varies from 4 pounds per square rod with chlorates to 12 pounds per square rod with borates. Users should follow the recommendations on containers. Sodium chlorate is inflammable and should be applied dry. Clothes and equipment should be thoroughly cleaned immediately after treatment.

### Soil fumigants

Methyl bromide and carbon bisulphide are excellent chemicals for the control of quackgrass. Their use is confined to intensive areas such as lawns, nursery beds, etc. Methyl bromide requires covering of the treated area at the time of application. Carbon bisulphide is injected directly into the soil with special equipment. Areas treated with both of these materials can be seeded within 2 weeks.

### Smothering

Quackgrass can be eradicated by flooding with water or by covering the infested areas with paper, canvas, or similar material. The covering must be kept over the quackgrass plants for at least one year.

Flooding is practical where large quantities of water are available and where infested areas are level enough so that dikes can be made to hold water. The quackgrass must be completely under water for 12 to 15 months for effective eradication.