

## quackgrass

### *Elymus repens* (L.) Gould

Synonyms: *Agropyron junceum* var. *repens* (L.) M. Marsson, *A. repens* (L.) Beauv., *A. repens* var. *aristatum* (Döll) Roshev., *A. repens* f. *aristatum* (Schumach.) Holmb., *A. repens* f. *geniculatum* Farw., *A. repens* f. *heberhachis* Fernald, *A. repens* var. *nemorale* Andersson ex. Farw., *A. repens* var. *pilosum* Scribn., *A. repens* f. *pilosum* (Scribn.) Fernald, *A. repens* subvar. *pubescens* (Döll) Litard., *A. repens* var. *pubescens* (Döll) Tzvelev, *A. repens* var. *repens* (L.) P. Beauv., *A. repens* f. *repens* (L.) P. Beauv., *A. repens* f. *setiferum* Fernald, *A. repens* f. *stoloniferum* Farw., *A. repens* var. *subulatum* (Schweg. ex Schweigg. & Körte) Rchb., *A. repens* var. *subulatum* Roem. & Schult., *A. repens* f. *trichorrhachis* Rohlena, *A. repens* f. *vaillantianum* (Wulfen & Schreb.) Roem. & Schult., *A. repens* var. *vulgare* Döll, *A. sachalinense* Honda, *A. subulatum* (Schreb. ex Schweigg. & Körte) Herter, *A. vaillantianum* (Wulfen & Schreb.) Trautv., *Braconotia officinarum* Godr., *Elymus neogaeus* Steud., *E. repens* var. *aristatus* (Schreb. ex Baumg.) Melderis & D. C. McClint, *E. vaillantianus* (Wulfen & Schreb.) K. B. Jensen, *Elytrigia repens* (L.) Desv. ex Nevski, *E. repens* (L.) Desv. ex B. D. Jackson, *E. repens* var. *aristata* Prokudin, *E. repens* ssp. *caesia* (J. Presl. & C. Presl.) Dostál, *E. repens* var. *caesium* (J. Presl. & C. Presl.) Prokudin, *E. repens* var. *glauca* (Döll) Tzvelev, *E. repens* var. *pubescens* (Döll) Prokudin, *E. repens* var. *repens* (L.) Desv. B. D. Jackson, *E. repens* var. *subulatum* (Roem. & Schult.) Prokudin, *E. repens* var. *vaillantiana* (Wulfen & Schreb.) Prokudin, *E. repens* var. *vaillantianum* (Wulfen & Schreb.) Prokudin, *E. vaillantiana* (Wulfen & Schreb.) Beetle, *E. vaillantianum* (Wulfen & Schreb.) Beetle, *Trisetum repens* ssp. *magellanicum* (E. Desv.) Macloskie, *Triticum infestum* Salisb., *T. repens* L., *T. repens* var. *aristatum* Döll, *T. repens* var. *aristatum* Schumach., *T. repens* var. *caesium* Döll, *T. repens* f. *pubescens* Döll, *T. repens* var. *subulatum* (Roem. & Schult.) Nees, *T. repens* var. *vulgare* Döll, *T. subulatum* Schreb. ex Schweigg. & Körte, *T. vaillantianum* Wulfen & Schreb., *Zeia repens* (L.) Lunell

Other common name: dog grass, quickgrass, scotch, quitch, twitch

Family: Poaceae

**Invasiveness Rank:** 59 The invasiveness rank is calculated based on a species' ecological impacts, biological attributes, distribution, and response to control measures. The ranks are scaled from 0 to 100, with 0 representing a plant that poses no threat to native ecosystems and 100 representing a plant that poses a major threat to native ecosystems.

#### Description

Quackgrass is a strongly rhizomatous, perennial grass. Rhizomes are long, highly branched, yellow-white, sharply pointed, and somewhat fleshy. Stems are erect and usually grow between 30 ½ and 91 cm tall. Leaf blades are 6 to 13 mm wide, flat, and pointed. They often have slight constrictions at the tips, which is diagnostic. Quackgrass has small auricles at the junctions of the leaf blades and the sheaths. Blades are sparsely hairy above and hairless below. Spikelets are arranged in two long rows and are born flat-wise to the stem. Florets are awnless to short-awned. Seeds are elliptical and pale yellow to brown (Whitson et. al. 2000).

*Similar species:* A number of *Lolium*, *Agropyron*, and *Elymus* species can be confused with quackgrass. Quackgrass can be distinguished from similar species by the presence of rhizomes, solitary spikelets, and leaves that are broad, flat, and slightly constricted at the tips.

#### Ecological Impact

*Impact on community composition, structure, and interactions:* Quackgrass is a strong competitor with cultivated crops in agricultural fields and native grasses and forbs in prairies and grasslands. It forms dense stands that can limit the regeneration of native woody

species and hinder the restoration of croplands, rangelands, pastures, and native grasslands. Additionally, quackgrass reduces the availability of soil moisture and limiting nutrients. It can photosynthesize and grow during early spring, which may suppress species that photosynthesize and grow during the later, warmer part of season. This species is allelopathic; it produces ethylacetate extracts, cyclic hydroxamic acids, and several other phytotoxins. It exudes these toxins from its shoots and roots, suppressing the growth or reproductive vigor of surrounding vegetation (FEIS 1996, Royer and Dickinson 1999, Whitson et al. 2000). *Impact on ecosystem processes:* Quackgrass may alter patterns of secondary succession following fires. It can dominate recently burned areas (FEIS 1996).

#### Biology and Invasive Potential

*Reproductive potential:* Quackgrass is an aggressive perennial that reproduces sexually by seeds and vegetatively from a shallow mass of rhizomes. Each stem can produce up to 400 seeds, although a single stem normally produces between 20 and 40. Seeds can remain dormant in the soil for 2 to 3 years (Batcher 2002). Plants can spread up to 3 m per year from their rhizomes and can give rise to more than 200 new shoots (Royer and Dickinson 1999, Whitson et. al. 2000).

*Role of disturbance in establishment:* Quackgrass readily colonizes disturbed, bare ground but can also invade undisturbed, grassy habitats.



*Elymus repens* (L.) Gould. Photo by R. Old.

*Potential for long-distance dispersal:* Seed dispersal mechanisms for quackgrass are unknown. Seeds remain viable after passing through the digestive systems of many domestic animals (Batcher 2002).

*Potential to be spread by human activity:* Many palatable hybrid crosses between quackgrass and related species have been developed and planted as food for livestock. Quackgrass has been used to revegetate mine tailings (FEIS 1996).

*Germination requirements:* Seeds germinate in fall or spring. They require alternating temperatures, such as diurnal fluctuations from 15°C to 25°C, to germinate (Batcher 2002).

*Growth requirements:* Quackgrass is adapted to coarse, fine, and medium-textured soils with pH between 5.2 and 7.8. It is shade intolerant. This species can withstand temperatures as low as -42°C and requires only 90 frost-free days to grow and reproduce successfully. Optimal temperatures for growth are between 20°C and 25°C. Rhizome growth seems to be favored by low temperatures (10°C) and long days (18 hours) (FEIS 1996, USDA 2002).

*Congeneric weeds:* Siberian wild rye (*Elymus sibiricus*)

and Canada wild rye (*E. canadensis*) are non-native species known or suspected to occur in Alaska (AKEPIC 2010).

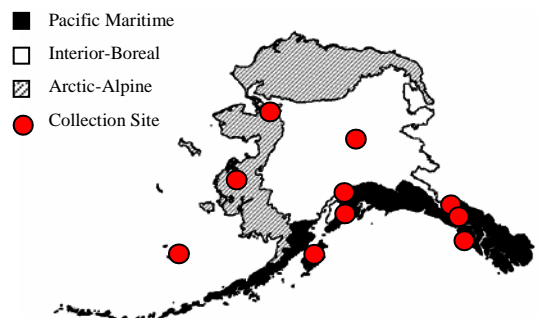
### Legal Listings

- Has not been declared noxious
- Listed noxious in Alaska
- Listed noxious by other states (AL, AZ, CA, CO, CT, HI, IA, IN, KS, KY, LA, MA, ME, MI, MS, NY, OK, OR, RI, TX, UT, VA, VT, WY)
- Federal noxious weed
- Listed noxious in Canada or other countries (BC, MB, QC, SK)

### Distribution and Abundance

Quackgrass was introduced to North America from Europe as a contaminant in hay or straw. It was first reported in North America in 1672. This invasive grass is found in numerous natural grassland communities as well as in agricultural fields in temperate North America. It invades gardens, yards, agricultural fields, roadsides, ditches, and other disturbed, moist areas. It can also colonize mixed-grass prairies and open woodlands. Species commonly associated with quackgrass include *Carex* spp., *Scirpus* spp., *Juncus* spp., *Bromus inermis*, *Poa pratensis*, and *Cirsium arvense* (FEIS 1996).

*Native and current distribution:* Quackgrass is native to temperate Europe, Afghanistan, India, and Pakistan. It grows in every state of the U.S. and throughout Canada (USDA 2002). It has also been introduced to Argentina, Chile, North Africa, Australia, New Zealand, and Indonesia (Hultén 1968, Batcher 2002). Quackgrass has been documented from all three ecogeographic regions of Alaska (Hultén 1968, Densmore et al. 2001, AKEPIC 2010, UAM 2010).



Distribution of quackgrass in Alaska.

### Management

Successful control measures currently include applying herbicides, burning, tilling, or any combinations of the three. Controlled areas should be monitored for two years after treatment has been completed (Batcher 2002).

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