

DARNEL

Lolium temulentum L.

(Aka Poison ryegrass)



Habitat:

Darnel is an annual weed found mostly in winter crops, preferring locations with low temperatures (15-20°C) and high soil moisture. It requires moderate to low temperatures for germination and growth, but can tolerate extremely low temperatures.

Identification:

L. temulentum is an annual plant with a fibrous root system. Culms tufted, solitary, ascending, erect, 60-90 cm tall, glabrous and smooth, or rough at the top.

Leaves are lanceolate, simple with a shiny surface, leaf blades narrowly linear, not contracted at the base, acute at apex, with smooth or scabrid margins, somewhat rough above, glabrous and smooth beneath, 10-30 cm long, 3-10 mm wide, young leaves with involute margins, ligule 1-2 mm long.

Inflorescence is a terminal spike, rigidly erect, 12-30 cm long with 6-30 spikelets, dorsally placed in shallow excavations along a non-articulate rachis with a zigzag

shape. Spikelets 12-30 mm in length, usually with 4-10 flowers. Outer glume of the lateral spikelets usually 2.5 cm in length, as long as or longer than the entire spikelets, 7-9-nerved, thinly coriaceous with narrow membranous margins. Flowering glumes are shorter and broader, oblong, usually obtuse with an awn as long as or longer than the glume itself. Some specimens may have awnless glumes or in rare instances the whole spikelet is without awns. The lemmas are up to 8 mm long, obtuse with awns 6-12 mm long. Palea two-keeled. Seeds elliptic-oblong in shape, grooved.

Prevention:

Maintain desirable plant cover in pastures in dry environments by not overgrazing and do diligent monitoring of disturbed, high traffic areas for African rue establishment. Most seeds fall near the parent plant and are then carried by water flow or in mud attached to human, animal, or vehicle movement.

Control:

Cultural: Long rotations, considerable soil disturbance and high fertilizer applications reduced infestations of this weed. Preventive measures, such as sowing clean seed and preventing seed formation are important.

Handweeding twice at 30 and 60 days after sowing in wheat and at 40 and 70 days after sowing in gobhi sarson was found effective to control grassy weeds including *L. temulentum*. Small scale farmers use this practice as they can then use the weed for fodder purposes. However, handweeding can be difficult in the vegetative stages as cereals and the weed closely resemble each other. Bidirectional sowing at a row to row spacing of 15 cm has also been found effective to reduce populations of this weed. A stale seed bed in wheat can reduce *L. temulentum* populations.

Burning resulted in a reduction of viable seeds of *L. temulentum* by 99.7 and 97.7% when practised in December and January, respectively.

Chemical: Effective treatments in wheat include: a post-emergence application of methabenzthiazuron; isoproturon with and without a surfactant; pre-planting application of triallate; post-emergence application of diclofop methyl; diclofop plus a surfactant; metribuzin pre-emergence; pendimethalin pre-emergence; metoxuron post-emergence; diclofop methyl followed by ioxynil 10 days later; quizalofop; and chlorazifop.

L. temulentum can effectively be controlled in barley with pre-sowing application of triallate or metoxuron.

In flax, applications of bromoxynil 25-28 days after sowing, MCPA 30 days after sowing, isoproturon, haloxyfop methyl, and fluazifop butyl post-emergence, and oxyfluorfen or pendimethalin pre-emergence have all been found effective.

Pre emergence application of linuron and prometryn may

be used to control *L. temulentum* in cumin.

In broccoli, trifluralin or nitrofen pre-transplanting gave effective control of *L. temulentum*, whereas control of this and other grassy weeds in spinach may be obtained with a pre-planting treatment of cycloate, pre-emergence chlorbufam + cycluron.

In sunflower, effective control of *L. temulentum* was obtained with pre-emergence treatments of fluchloralin + metolachlor, metobromuron + prometryn and metribuzin.

Fayed et al. (1989) in laboratory studies found that whereas EPTC, vernolate, pendimethalin and trifluralin resulted in the lowest germination rate, radicle and plumule length, fresh and dry weight of *L. temulentum*, fluometuron was more effective in reducing plumule and radicle length, as well as the fresh and dry weight of weed seedlings.

Biological: Because of the importance of *L. temulentum* and related species as forage grasses, there has been no serious consideration of biological control methods.

