The Control of Toad Flax in Alberta

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Botanical Name — *Linaria Vulgaris*

Toad flax, sometimes called butter and eggs, snap-dragon and yellow toad flax was introduced from Europe. It is often confused with the ordinary harmless garden variety of snap-dragon. Toad flax is usually shorter and has much narrower leaves than the snap-dragon. The leaves are a distinguishing feature if the plants are observed side by side. As a result of this confusion toad flax has often been planted in farm gardens, parks and cemeteries throughout Alberta. It should be eradicated before it reaches the fields.

DESCRIPTION

Toad flax is a deep-rooted persistent perennial with short root stalks. It is a pale green plant growing one to three feet high. Its slender erect stem becomes wiry as it matures. The leaves are stalkless, with almost parallel sides and pointed at both ends. They are usually 1 to 1½ inches long and 1/10 to 1/5 of an inch wide. The flowers are pale yellow with orange lips and are nearly an inch long. They are borne in erect, dense racemes. Each flower has a two-lobed corolla which is closed and mouth-like. Gentle pressure to the sides of the corolla causes it to open and close like the muzzle of an animal.

The seed of toad flax is dark brown to black, flat, round or oval, disc-like, roughened and surrounded with a circular wing, as broad as the seed itself. The seed is about 1/12 of an inch in diameter.

Toad flax is very vigorous and persistent. It can establish itself in native or tame sod and will crowd out such grasses. **Small patches should be eradicated immediately.**

CHEMICAL CONTROL

Small patches of toad flax can and should be eradicated with a soil sterilant. Such chemicals should be applied to the infested area and at least six feet beyond the edges of the patch at recommended rates. Retreatments the following year may be necessary to kill stragling plants.

Sodium Chlorate at a rate of 2 to 4 pounds per 100 square feet can be applied in the dry form or in solution. Dry chlorate can be applied with a small pail in which nail holes are punched to give a salt shaker effect. If the wet method is desired, mix one pound per gallon of water and apply it with a knapsack sprayer. All leaf surface should be wetted with this solution.

Sodium Chlorate is flammable. Exercise caution and follow instructions supplied with the chemical.

Borate - Chlorate mixtures should be applied at 3 to 4 pounds per 100 square feet either in the dry form or one pound per gallon if the spray method is desired.

Borate 2,4-D complexes or concentrated borate compounds should be applied at 2 to 3 pounds (of product) per 100 square feet. The concentrated borate compounds will tend to control toad flax growing in grass without severe damage to the grass.

CMU (3-p-chlorophenyl -1, 1-dimethylurea) applied as a water spray at the rate of 1½ to 3 ounces per 100 square feet will give control.

Toad flax is quite resistant to 2,4-D and 2,4,5-T. Heavy applications of these chemicals (4 pounds acid equivalent per acre) will usually burn down top growth but regrowth is usually vigorous. 2,4-D may have a place during the crop year following intensive cultivation. The seed set of the weakened straggling plants growing in a crop following intensive cultivation may be reduced by an application of 2,4-D as heavy as the crop will tolerate.

WILL GRASSES AND LEGUMES CONTROL TOAD FLAX ?

Grasses and legumes will not establish themselves in thick stands of toad flax. On the other hand toad flax will establish itself in sods and even crowd out the grasses and legumes. They do, however, have a place in the toad flax control program. Fields infested with scattered patches too large to be controlled economically with Sodium Chlorate, or fields that may erode following cultivation should be seeded to grasses and legumes for a two- or three-year period. The forage crop can be harvested for hay before the toad flax sets seed even if two cuttings per year are necessary. If grasses are used the patches may be weakened by heavy applications (2 pounds acid per acre) of 2,4-D. Extra heavy applications (25 to 50 lbs. per acre) of 2,4-D in strong competitive grass sods for each of two years has eliminated this weed. Regrowth when the sod is broken might be expected.

CULTURAL PRACTICES

Toad flax stands can be reduced considerably by a thorough summer-fallowing. Eradication may require summer-fallowing for two successive years. The Dominion Experimental Station at Scott, Saskatchewan, reports a 90% reduction in stand by summer-fallowing for one season. It was necessary to cultivate the field 14 times.

Cultivation should start the fall preceding the summer-fallowing year. Tilling once after harvest and again just prior to freeze-up will weaken the stand. The next year cultivate every eight to ten days starting about May 20th. The cultivator, cable or rod weeder can be used after the

land has been tilled once or twice. Do not use machinery that will drag and scatter roots unless the whole field is infested. Patches should be cultivated independently and the machines thoroughly cleaned before moving on to the next one. Such patches should be clearly staked.

Many toad flax infestations are on light land which will drift badly following intensive cultivation. This problem can be overcome by dividing the field into 20 rod strips and summer-fallowing every other one. The long narrow strips should be at right angles to the prevailing winds.

Land in tame grass sod should be broken by July 30, worked until freeze-up and thoroughly summer-fallowed the following year.

CROPPING INFESTED FIELDS

Early maturing gains such as Olli or Gateway barley are good cereals following the summer-fallow. They can be seeded and harvested early, allowing for regular fall cultivations until freeze-up. They can be sprayed with 2,4-D at rates of 10 to 12 ozs. acid equivalent per acre to kill the toad flax which starts from short pieces of root-stocks or from seed.

Fall rye is a useful crop in checking toad flax. Start cultivations after harvest, then continue early in the following spring keeping the field black until September when fall rye is seeded. After the rye is harvested commence regular fall cultivations until freeze-up.

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