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The Control of Leafy Spurge in Alberta

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Leafy Spurge

Botanical Name: Euphorbia Esula

Leafy Spurge is a perennial of European origin which has adapted itself well to our North American conditions. It has been known for several decades in the United States and was first introduced into Manitoba about 1910.

The heaviest infestations in Alberta are surrounding Calgary, Lethbridge and Pincher Creek. Scattered patches occur as far north as the Peace River block. The small patches in the central and northern part of the province should be eradicated at sight.

DESCRIPTION

Leafy Spurge is a deep-rooted persistent perennial. It reproduces itself both by horizontal root stocks and seeds. The roots are woody in nature and penetrate eight to fifteen feet.

The plant grows to two feet in height. Its main upright stem branches profusely, giving a clump-like appearance. It has long narrow smooth leaves. All are stalkless and scattered except those forming the whorl at the base of the flower cluster. The blooms borne in umbrella-like clusters are more like dense tufts of small leaves than ordinary flowers. At first the flowers are a distinct yellowish-green but become more yellow with maturity. The stems and leaves contain a thick, sticky milk-like sap.

DENSE GROWTH

Leafy Spurge starts growth early in the spring and maintains a heavy growth above ground throughout the year. The roots and root-stocks are also very dense. The forked tap root usually is found in the first two feet of soil but the branched roots often extend to 15 feet. The creeping root-stocks usually are 4 to 8 inches below the surface. The total underground parts together with the shading effect of the dense growth above ground explains why cultivated crops cannot compete against this weed.

CONTROL METHODS

A **soil sterilant** such as sodium chlorate or a commercial sodium chlorate product should be used to kill all small patches. The recommended rate is 2 to 4 pounds per 100 square feet for the sodium chlorate. For the commercial products the rate is higher since they usually contain only about 60% sodium chlorate. The remaining 40% consists of a fire inhibitor and inert material. Treatment should be extended at least six feet beyond the edges of the patch. Treated areas should be checked twice per season and if necessary, retreatments made to catch straggling plants.

Sodium chlorate products can be applied wet or dry. One pound of chlorate per gallon of water is satisfactory for spraying. All equipment should be thoroughly cleaned since chlorate corrodes most metals.

Sodium chlorate is flammable. Handle it according to instructions in the container.

CULTIVATION, GRASSES AND 2,4-D

Eradication by cultivation cannot be expected in one year. Repeated cultivation beyond one season leaves the land very vulnerable to erosion. Thus, seeding the infested area to grasses followed by repeated treatments with 2,4-D is cheaper and more practical than cultivation.

The stand can be weakened and thinned down by cultivation prior to establishing the grasses. A dense competitive turf can be obtained by seeding the grass at least $1\frac{1}{2}$ times heavier than the normal rate. Spray with an ester at 4 to 6 ounces acid per acre during the year the grass seedlings are being established. If necessary, clip to prevent seed setting. During the second and succeeding years, spray once or twice if necessary with one pound acid equivalent of ester per acre. The continued spraying together with the crowding effect of the grass usually will effect control in three to five years.

Re-infestations may occur from seeds in the ground after breaking a grass sod. Cereal crops following an eradication program should be sprayed with 10 ounces of ester. Seedling plants are easier to kill with 2,4-D than plants in an old established patch.

CONTROL BY CULTIVATION

Complete eradication of an established patch of Spurge should not be expected in one year. Commence operations early in the season. Cultivation should be frequent enough so that the plants are not allowed to store food supplies in the roots. Let the young plants grow to a height of 2 to 3 inches, or for three weeks if dry conditions prevail between operations. A young plant 2 to 3 inches high will have exhausted more stored foods from the roots than a plant $\frac{1}{2}$ inch above ground.

It is not necessary to cultivate deeply. A depth of three to four inches will be just as effective as eight inches and will also reduce the power and cost. All the roots must be cut off. A sharp, properly set tiller will work well for the first two or three operations. A duck foot, tool bar or blade cultivator can be used when the soil becomes loose.

Do not start new patches by dragging roots around the field.

The many cultivations needed for control will leave the soil very subject to erosion. Dividing the field in 20 rod strips and cultivating every alternate strip will minimize soil drifting.

The grass and 2,4-D combination is preferred to summerfallowing because it eliminates the erosion problem.

Fall rye is a good competitive crop. It can be seeded about September 1st of the second fallow year. It tends to smother the Spurge during the crop year and it can be removed early to allow fall cultivation. Spray any Spurge which may appear in the rye with 10 ounces of 2,4-D.

Fertilizing the cereal crops will help to smother any remaining Spurge plants.

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