

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Historical Materials from University of
Nebraska-Lincoln Extension

Extension

1969

EC69-186 Know and Control Leafy Spurge in Nebraska

Larry Jeffery

Laren Robison

Follow this and additional works at: <https://digitalcommons.unl.edu/extensionhist>

Jeffery, Larry and Robison, Laren, "EC69-186 Know and Control Leafy Spurge in Nebraska" (1969).
Historical Materials from University of Nebraska-Lincoln Extension. 3910.
<https://digitalcommons.unl.edu/extensionhist/3910>

This Article is brought to you for free and open access by the Extension at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Historical Materials from University of Nebraska-Lincoln Extension by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

AGRI
3
85
E7
#69-186
C.2

E.C. 69-186



RECEIVED

DEC 17 1970

COLLEGE OF AGRICULTURE
LIBRARY

know and control

LEAFY SPURGE in Nebraska



Cooperative Extension Service, University of Nebraska
College of Agriculture and Home Economics,
and U.S. Department of Agriculture Cooperating
E. F. Frolik, Dean J. L. Adams, Director

Know and Control LEAFY SPURGE in Nebraska

Larry S. Jeffery and Laren R. Robison^{1/}

Leafy spurge (*Euphorbia esula* L.), a native of Eurasia, has become established in almost every Nebraska county (Figure 1). It was introduced into the state before 1923 and is most common in the northern and eastern counties. Nebraska has about 46,000 acres of infested roadsides, meadows, rangeland and cropland. The counties in the southern and western parts of the state are relatively free of leafy spurge.

Leafy spurge is considered a noxious weed because of its aggressive competitive ability, and its resistance to common weed control practices. The Nebraska noxious weed law and related regulations prohibit the sale or transport of crop seed, grain, livestock feed or any other material containing seed or vegetative portions of leafy spurge except in accordance with specific restrictions.

Plant Description

Leafy spurge is a persistent deep-rooted perennial which reproduces by seeds and roots. The stems are 8 to 36 inches tall and are stiff and woody at maturity. The main stem may be surrounded by 8 to 10 secondary stems which have grown from a common crown giving a clumplike appearance. The stems are green in the summer and may turn red in the fall. New stems are produced in the spring from pink buds at the base of the crown (Figure 2) or on the roots (Figure 3).

Leaves: The bluish-green leaves are long and narrow with smooth or slightly wavy margins. They are alternate along the stem but many times form a whorl at the base of the umbel-shaped inflorescence stalk.

Flowers and Seeds: The small, inconspicuous flowers are borne on a short stalk above two large showy heart-shaped bracts which are generally mistaken for flower petals (Figure 4). Three seeds may be produced in each flower which literally explodes on maturity, throwing the seeds as far as 15 feet. Leafy spurge seeds may vary in color from yellow to reddish-brown to mottled gray. The seeds have a yellowish appendage on the proximal tip and a dark line down one side (Figure 5). The seed may remain viable for at least five years. Seedling plants generally do not flower the first year.

^{1/} Extension Agronomists, (Weed Control), Cooperative Extension Service, University of Nebraska, Lincoln, Nebraska.

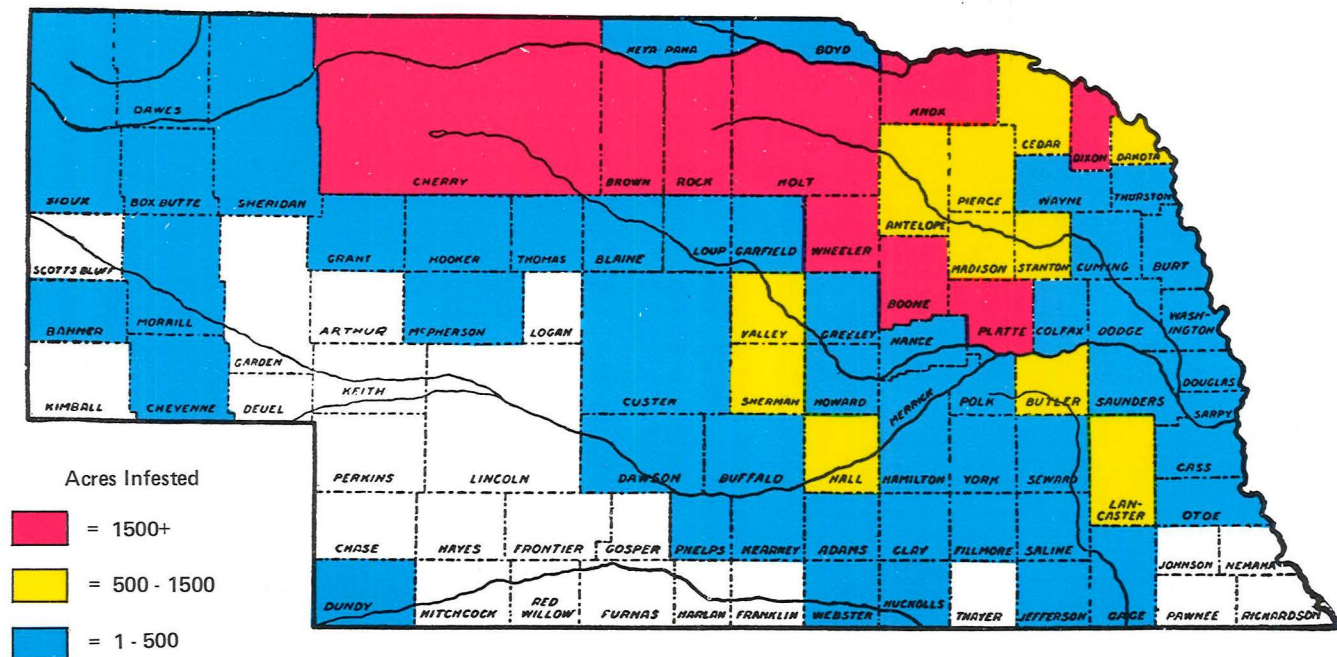


Figure 1. Leafy spurge infestation in Nebraska.



Figure 2. Crown of a leafy spurge plant showing numerous stems and pink buds which will produce new shoots the following year.



Figure 3. A section of leafy spurge root with numerous buds which will produce stems.



Figure 4. Flowers of leafy spurge.

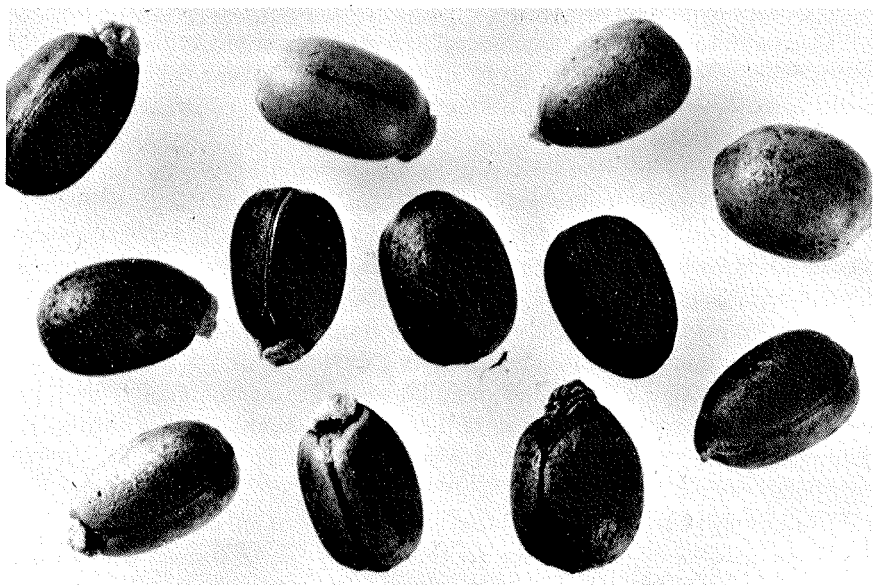


Figure 5. Leafy spurge seed.

Root: The main tap root may penetrate 4 to 12 inches into the soil before producing horizontal secondary roots. Some roots may penetrate to depths of 12 feet. The reddish-brown roots produce a multitude of conspicuous pink buds which are capable of producing new plants up to 3 feet away from the mother plant. Sections of root as short as 1/2 inch may give rise to new plants. All parts of the plant contain a milky sap which may cause severe irritation to human skin.

Control

Leafy spurge is very difficult to control. Therefore, a well-planned program must be followed if adequate control or eradication is to be obtained. The most important parts of any program are to prevent seed production, seedling establishment and keep new root growth to a minimum.

Cropland: Leafy spurge in cropland can generally be eradicated by two years of continuous cultivation. The infested areas should be cultivated 3 to 4 inches deep every time the leafy spurge is 3 to 4 inches tall (maximum) or about every 2 to 3 weeks depending on growing conditions.

Cultivations should continue from early spring to freeze-up in the fall. Care should be exercised that small pieces of roots are not carried to uninfested areas. Cultivation should be done on hot days whenever possible as roots will be killed if exposed to temperatures of 96 F at the soil surface (air temperature of 86 F at 36 inches above surface) for 3 hours.

Clean cultivation may be impractical in areas of water or wind erosion. If so, modify the cultivation system. Spray applications of 3/4 lb/A of 2,4-D may be substituted for every second cultivation but the following cultivation should be not more than 2 weeks after spraying.

A combination of crop rotations, cultivation and herbicides can provide good control of leafy spurge but not eradication. Derscheid and co-workers in South Dakota recommend the following four-year crop rotations: (1) a short season of intensive cultivation, a mid-August seeding of alfalfa, a crop of alfalfa, spring wheat sprayed with 1/2 lb/A of 2,4-D ester, three postharvest cultivations, corn sprayed with 1/3 lb/A of 2,4-D; (2) a short season of intensive cultivation, a mid-August seeding of bromegrass sprayed with 1 lb/A of 2,4-D in early June and mid-August during the second and third years, and a crop of corn the fourth year; (3) spring oats sprayed with 1/3 lb/A of 2,4-D ester and three postharvest cultivations, three spring cultivations, a close-drilled crop of sudangrass and fall cultivation, spring wheat sprayed with 1/2 lb/A of 2,4-D ester and three fall cultivations, and a crop of corn sprayed with 1/3 lb/A of 2,4-D.

If the patches of leafy spurge are small, 2,4-D can be applied with a hand sprayer at 3 week intervals throughout the growing season in fields of corn and sorghum. Several years of patient spraying will eradicate the infestations.

Whenever an infestation has been controlled, the area should be inspected spring and fall for several years to prevent reinfestation by leafy spurge seedlings.

Pastureland: Repeated applications of 2,4-D over a 4 to 5 year period will substantially reduce a leafy spurge infestation. Seed production can be prevented by two applications of 2,4-D at 1 lb/A; once in the spring when the plants reach the early bud stage (about May 1 to 10) and again in mid-summer (about July 15). The plants should always be sprayed before they reach the flowering stage to prevent seed production. Sometimes a third application of 2,4-D will be required. This method will gradually decrease the population. Applications of 2 lb/A of 2,4-D ester in the fall and repeated in the early bud stage in the spring have been effective in giving 80% control. Seedling establishment in the spring must be prevented, however, if any lasting headway is to be made. Failure to control seedlings will result in a population re-establishment as great or greater than the original. It will take several years to eradicate leafy spurge.

It may not be possible to make two applications of 2,4-D per year because of economics or other reasons. A leafy spurge infestation may be held in check and may be reduced by a single application of 2 lb/A of 2,4-D on a yearly basis. This is best applied in the spring when leafy spurge is in the early bud stage and new seedlings are still young and susceptible to 2,4-D.

Pastures should never be overgrazed as a thick stand of healthy grass provides good competition against leafy spurge.

Other chemicals which show promise for controlling leafy spurge in pastureland are picloram (Tordon) and dicamba (Banvel). At present Tordon is not registered for use, and therefore should not be used until such registration is obtained.

Non-cropland, Non-pasture: These areas include utility, highway, pipeline and railroad right-of-ways, industrial sites, fence rows and around farm buildings. If these areas are treated, livestock should not be allowed to graze them. Extreme caution should be exercised to prevent spray drift to susceptible crops. Two applications of 2 lb/A of 2,4-D should be applied, one in the spring at time of bud formation and again in mid-summer before the regrowth flowers.

Tordon 212 (a mixture of picloram and 2,4-D) can be applied at 1 gal/A in either the fall or the spring to vigorously growing plants. Extreme caution should be exercised with this chemical that water supplies are not contaminated. Also, dicamba at a 10 lb/A rate can be applied in either the spring or fall.

Shelterbelts: In shelterbelt areas where trees represent years of patience and hard work, extreme care must be taken to prevent tree injury. Leafy spurge can be controlled in these areas by cultivating over a 2-year period with a rototiller at 2 1/2 week intervals from very early spring until freeze-up. The spurge should never be allowed to reach 4 inches height without being cultivated. Cultivations of 3 to 4 inches in depth are adequate.

Dichlobenil (Casaron), at rates of 4 to 6 lb/A, can be applied in the early spring before the leafy spurge emerges. Most shelterbelt species are resistant to Casaron damage but some injury may occur to trees on soils with low organic matter. Applications in two consecutive years will be needed to adequately

control leafy spurge. An area of 10 to 15 feet wide should be treated around the edge of the patch to control any new sprout which may arise from the roots.

Amitrole (Amitrole or Amitrole T) can also be applied in shelterbelts but the spray should never be allowed to hit any of the above-ground portions of the tree. Applications of Amitrole at 4 lb/A should be made in the spring when the leafy spurge plants are approaching the bud stage. Regrowth should be sprayed with the same rate of Amitrole at any time it starts to bud. Flower and seed production may be prevented.

Soil Sterilants: Where patches of leafy spurge are small and confined, soil sterilants can be applied to prevent the patch from increasing in size. An additional 10 to 15 foot area should be treated on all sides of the patch to control stragglers or new sprouts. Soil sterilants may render the soil void of vegetation for a period of 2 to 5 years depending upon the soil type, rate applied, and climatic conditions.

Hormone type soil sterilants such as 2,4-D or Tordon should never be used in areas where they may be leached into water supplies or the root zone of trees. Livestock should never be allowed to graze in the treated areas. Soil sterilants are not registered for cropland use.

The following compounds and rates can be used as soil sterilants to control leafy spurge in non-crop areas:

2,4-D at 40-60 lb/A applied in the late fall just before freeze-up; TBA (Trysben 200 or Benzac 1281) at 20 lb/A soon after the leafy spurge emerges in the spring; granular TBA (Benzabör) at 1 to 1 1/2 lbs/square rod when the plants are small in the spring; fenac (Fenac or Tri-Fen) at 15 to 20 lb/A in periods of rainfall to move the chemical into the root zone; and AMS (Ammate or Ammate X) at 1/2 to 1 lb/square rod. AMS must be applied with a spreader-sticker in order to get good results.

Caution: Always read the label. Keep chemicals out of the reach of children.

Cover photograph courtesy of the Weed and Seed Division, State Department of Agriculture, Nebraska.