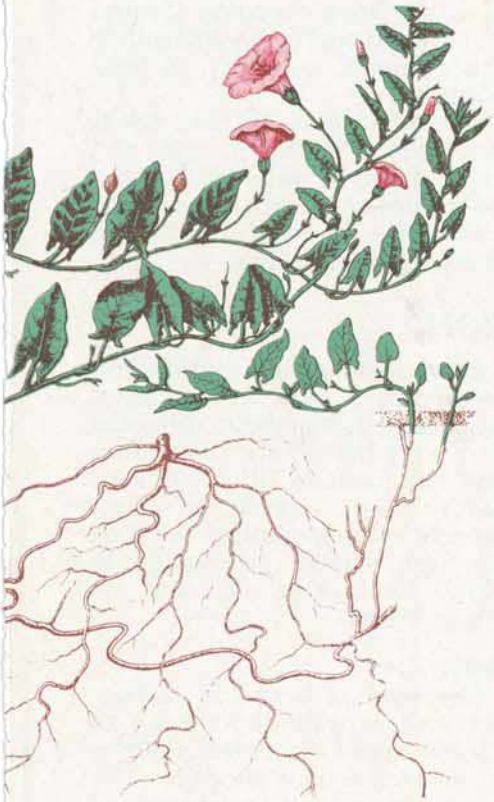
d. 4.3
359

UNIVERSITY OF IDAHO
College of Agriculture



FIELD BINDWEED

Identification and Control

Robert E. Higgins and Clarence I. Seely

IDAHO Agricultural Extension Service

BULLETIN 359
April 1961

JUN 24 '61
UNIVERSITY OF HAWAII LIBRARY

FIELD BINDWEED

ROBERT E. HIGGINS AND CLARENCE I. SEELY*

Field bindweed *(Convolvulus arvensis L.)* is one of the most common primary noxious weeds in Idaho. It was introduced from Europe and was found in Virginia in 1739. By 1900 it was established in all of the western states. In 1955 a survey showed the weed to be present in every county in Idaho with nearly 140,000 acres of land infested. This is exceeded only by the acreage of Canada thistle. Field bindweed is the most difficult perennial noxious weed to control in Idaho. Bindweed is known by many other names, such as wild morning glory and creeping Jenny, but to avoid confusion with other plants should be known as field bindweed.

Several strains of field bindweed which differ in size and shape of leaves, color of flowers, and nature of growth are present in the state. The majority fit the following description:

DESCRIPTION

General

Field bindweed is a weak-stemmed creeping perennial. When growing alone the plant lies flat on the ground but when upright plants are growing with it, it climbs up on these plants. It normally grows in a circular patch but cultivation may destroy this pattern.

Leaves

The leaves of field bindweed are shaped like an arrowhead and are borne on a stalk. The leaf blade is usually blunt but in some strains is sharp pointed. The leaves are dark green and vary from smooth to slightly hairy. They are usually ½ to 1 inch long but vary in size and shape depending upon the strain and growing conditions.

Flowers

The flowers are funnel shaped and are borne at the junction of the leaf and the stem. They vary in color from pink to white and are about 1 inch in diameter. Blooming starts about 4 weeks after emergence and continues until the plant is killed by frost. Mature seed is produced about 3 weeks after blooming but seed has been known to germinate within 10 days of the time the flower opens.

Seed

The seed is borne in a two-sectioned capsule and from 1 to 4 seeds may be formed. Four is the most frequent number. The shape of the seed is determined by the number formed. When 4 seeds are formed they have 2 flat and 1 rounded side, but when only 2 seeds are formed they have only 1 flat side. Occasionally single seeds occur and these do not have a flattened side. The seeds are about ⅛ of inch long and this combined with their variable shape makes them very difficult to remove from wheat and barley seed. As

* Extension Agronomist, University of Idaho Agricultural Extension Service, and Agronomist, University of Idaho Agricultural Experiment Station, respectively.

Figure 1.—Seeding wheat infested with bindweed is one way to spread this pest. As many as 20 seeds per pound have been found in cleaned and treated wheat and barley seed.

a result, field bindweed is a common adulterant in these crops. The seeds are grayish-brown to black in color and have a rough pebbled surface and hence are readily visible in cereal grains. Field bindweed is a fair seed producer and a production of 22,000,000 seeds per acre has been measured in pure stands.

Field bindweed seeds have a hard, impervious seed coat that enables the seed to remain dormant in the soil for many years. Tests have shown that about half of the seed in the soil at the beginning of any year are removed during that year but where large quantities of seed are present this dormant seed is an important factor in eradication. One test in Kansas showed 800 seedlings per acre after 20 years without seed production. The prevention of seed production is essential for both control and eradication.

Seedlings

Bindweed seedlings are easily identified by their two heart-shaped seed leaves. The seedlings develop a deep tap root and behave as perennials in about 6 weeks. They then develop lateral roots which in turn produce new plants and tap roots. The seedlings can be controlled readily by cutting or spraying until they are about 6 weeks old. After the lateral roots are developed they respond to control measures like a perennial but usually are not difficult to control until they are two to three years old.

SPREAD

The primary means of spread is through seed but once a seedling becomes established the patch spreads by the extension of lateral roots. The spreading root system enables undisturbed patches to enlarge 6 to 10 feet per year. Under favorable conditions sections of the roots of field bindweed when carried to clean portions of the field may start new patches. It is always advisable to stay away from bindweed patches except when actual control operations are in progress since the seed may be carried in infested seed, feed, and on machinery. Grains or forage containing mature field bindweed seeds should not be fed to animals without grinding or other processing to destroy the seed since the seed can pass through the stomachs of animals with little or no damage.

SEED LAW

The Idaho Pure Seed Law prohibits the sale of any seed containing any primary noxious weeds. Field bindweed is one of them. All crop seed offered for sale in Idaho must be tagged to show it is free of these pests. The tags also give the percent purity and germination of the crop seed. Good clean seed of adapted varieties is always a good investment.

CONTROL

Bindweed can be controlled and eradicated with chemicals, cultivation, and by combining these methods with selected cropping practices. The best methods and materials depend on the size of the infestation and the conditions under which the weed is growing.

Cropping Control

A selective spray of 2,4-D amine is the most economical chemical control of large infestations. Cereals, grasses and corn may be sprayed selectively with 2,4-D without serious injury to the crop.

In irrigated areas spring-sown barley or wheat is a good competing crop. In this case spray the grain with 2 pounds of 2,4-D amine in from 30 to 50 gallons of water per acre. Apply the spray after the grain is tillered but before booting. If weather conditions prevent this control application, make the same spray application at the soft dough stage of the grain. After harvest the excess straw should be removed and the field should be irrigated. When the regrowth is 8 to 12 inches long spray again with 2 pounds of 2,4-D amine. For effective selective spraying use a crop rotation which includes at least 3 consecutive years of wheat or barley so that spraying can be done each year.

Under dry-land conditions the use of 2,4-D in grain is not as successful as it is under irrigation. Winter wheat usually reaches the boot stage before the bindweed is advanced enough for most effective spraying. However, spray with 2 pounds of 2,4-D amine no later than when the winter wheat is starting into the boot. After harvest wait for weed emergence and if good

growth is obtained spray again with 2 pounds of 2,4-D amine.

In established grass pasture, spray with 2 pounds of 2,4-D amine when the bindweed starts to bloom. The application should be repeated whenever there is sufficient growth. Producing dairy cows should be kept out of the pasture during spraying and for 2 weeks after application.

When growing commercial beans under irrigation the 2,4-D should be applied before the beans are planted. The bindweed should be allowed to make good growth in the spring and then be sprayed with 2 pounds of 2,4-D per acre. The sprayed area should be irrigated as soon as possible. After spraying wait at least two weeks then plow, prepare the seed bed and plant. The field should be irrigated after harvest and when the bindweed vines are 8 to 12 inches long the area should be sprayed again at the same rate. The pre-planting treatment with 2,4-D should not be used on beans to be used for seed. In this case, only the after-harvest spray should be applied.

With corn the same pre-plowing treatment used on beans may be used. Most corn will also tolerate selective spraying with 2,4-D. Some varieties, however, may be severely injured by a selective spray. Consult your corn dealer or contractor before applying 2,4-D to corn.

To control bindweed in late commercial potatoes the weeds should be permitted to grow and then be sprayed with 2 pounds of 2,4-D two weeks before planting. Irrigation should follow the spraying as soon as possible. Before planting the soil should be worked deep with a duckfoot cultivator but should not be plowed. After the potato vines have been killed by frost in the fall the bindweed should again be sprayed with 2 pounds of 2,4-D per acre. The potatoes should not be harvested until at least 10 days after this second spraying.

Caution must be used when applying 2,4-D in orchards but with care bindweed can be treated under these circumstances. Spray with 2 pounds of 2,4-D amine when the first bloom appears on the bindweed. Use 50 to 80 gallons of water per acre and low pressures. Respray new growth again in the fall. Avoid the use of esters and do not make applications on windy or hot days. Do not allow any 2,4-D to contact any part of the trees.

Alfalfa can be used to hold bindweed in check but it will not crowd it out. It may, however, be used as a soil building crop in a rotation designed to control bindweed by other means. This may be especially useful under dry land conditions.

In order to obtain maximum benefits from any cropping method good crops must be grown. To produce maximum crops have soil tests made and apply the necessary commercial fertilizer to the crop. This will not only improve the crop but also help in the control of the bindweed (See: A Fertilizer Guide for Idaho Farmers, Ext. Bulletin 325).

Cultivation

Bindweed requires 2 to 3 years of persistent cultivation for complete eradication. This weed has very high food reserves in the roots and will only yield to a thorough cultivation program. The best time to start a cultivation program is immediately after harvest. For the initial cultivation plow 6 inches