DODDER

Dodder, once established, is a singularly conspicuous, twining weed of the "Morning Glory" family, but is unlike other members of the family in that it lacks green colour, leaves and roots. It is one of the few parasitic flowering plants, which secures its nourishment entirely from the food manufactured by the plant upon which it lives (i.e. its host plant) and soon produces large quantities of small, rounded, brownish seeds.

The seed on germination gives rise to a tiny almost colourless seedling, the tip of which goes through a revolving motion until it comes into contact with a neighbouring plant to which it quickly attaches itself by coiling around the stem. Soon curious, sucker-like organs (haustoria) develop where the dodder touches the host plant. These organs penetrate the plant and serve the dodder as a means of obtaining its food supply. In the accompanying illustration, the dodder is shown on a flax plant.

Recognition of Dodder in the Field.—Not until the seedling plants have attained some degree of development will they attract attention in the field. Then they will be recognized by the lighter coloured patches which they form in the midst of the dark green of the crop plant. In these patches the twisted strands of naked, yellowish to reddish-orange dodder stems entangle the plants attacked, the whole resembling handfuls of corn silk scattered over the crop.

By July tiny, creamy-white or pale-yellowish flowers, bunched in numerous clusters, appear along the stems. Each individual flower gives rise to a capsule or pod containing up to four seeds. The seeds are similar in size and shape to those of clover, with which they may be harvested, and their detection and removal is most difficult.

The Dodder Problem.—Dodder, where in abundance, has always constituted a serious problem. Although by no means a new weed in Canada, and long classified as noxious in weed control Acts, dodder has recently gained prominence as an agricultural pest of first rank. Its occurrence in clover fields has been serious enough, but lately it has made its appearance in fibre flax fields both in Quebec and Ontario. In 1940 many such fields were infested. In fibre flax this weed is particularly unwelcome, since wherever the suckers penetrate the flax stem, the valuable fibre is either weakened or completely destroyed, thus becoming practically useless for spinning.

...hed by Authority of Honourable J. G. GARDINER, Minister of Agriculture, Ottawa.
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Crops infested with dodder suffer not only in yield but also in quality. The seed of the dodder is harvested with the crop plant. Flax seed, so contaminated, must be processed for oil instead of helping to supply the keen demand for seed. The presence of dodder seed in clover or alfalfa seed disqualifies it for domestic or export use since many countries demand certificates guaranteeing freedom from dodder.

The botanist recognizes over 150 species of dodder some of which limit their attack to one or a few host plants and some of which will attack almost any plant that is available. For example, clover dodder prefers clover and alfalfa; flax dodder prefers flax. But even these dodders will attack other plants if their preferred host is not available. The field dodder encountered in Canadian flax thrives on a wide variety of wild and cultivated plants. This materially adds to the problem of bringing it under control.

Recommendations for the Control of Dodder.—Specific control measures will depend on factors such as the extent of the outbreak, the crop affected, and the farm economy, but certain general precautions are applicable in any case. The district agricultural representative should be consulted regarding regulations concerning dodder under any Weed Control Act.

Clean Seed.—The first precaution to be taken is to use seed entirely free from dodder. In practice this means seed from dodder-free fields. The seeds of this pest cannot be completely separated from those of flax except by use of special equipment which only an up-to-date seed cleaning mill would be likely to have. From those of clovers they are even less easily separable. Unless seed is absolutely free from dodder, it is not good enough. If there is any doubt a sample should be sent to the nearest seed testing laboratory of the Dominion Department of Agriculture:

Box 220, Sackville, N.B.
503 Customs Building, Montreal, Que.
251 Besserer St., Ottawa, Ont.
86 Collier St., Toronto, Ont.
730 Dominion Public Building, Winnipeg, Man.
523 Federal Building, Saskatoon, Sask.
Immigration Building, Calgary, Alta.
Postal Station "C", Vancouver, B.C.

As a matter of fact protection is afforded the purchaser of seeds under the Dominion Seeds Act and its regulations regarding sale of seeds by grade. Dodder is a prohibited noxious weed under this Act, therefore BUY ONLY GRADED SEED.

Keeping a Clean Field Clean.—If dodder exists in neighbouring fields the utmost care is needed to prevent its transfer into a clean field. Even without seed any small piece of dodder carried from an infected field into a clean one may coil around a new plant and start an infestation which may spread rapidly. Animals feeding on maturing dodder can subsequently pollute clean fields since the dodder seeds may pass through the digestive tract and a number remain alive. The manure pile may thus prove a source of infestation. Workmen's clothing and boots, farm implements and machinery of all kinds may spread dodder seeds or fragments of stem and infest clean fields. Surface water, flooding, or soil drifting may also transport seed or even shoots. KEEP YOUR CLEAN FIELDS CLEAN BY MAKING CERTAIN THAT NO SEEDS OR FRAGMENTS OF DODDER ARE CARRIED ABOUT.

Explanation of Plate.—Thread-like orange-coloured stems of field dodder coiling around flax plant. Lower centre: Young dodder plant emerging from seed. Lower left: Flax seedlings attacked by dodder.

See foot of opposite page for explanation.

Eradication of Small Patches of Dodder.—The earlier an infestation of dodder is discovered the better are the chances of successfully eradicating it. When growing seed crops of legumes or flax, the grower should inspect his crop regularly and watch carefully for any sign of dodder. Obviously, when a small patch only is discovered, pull it up by hand; if the patch is larger, cut it, starting from a safe margin and working toward its centre. Spread the plants in the centre of the patch and when dry burn them, if necessary sprinkling straw or fuel oil over them to ensure thorough destruction of the dodder. Even immature seeds can germinate, so the ground where the weeds were burned should be hoed lightly to induce immediate germination. Dodder seedlings unable to find living plants on which to attach themselves, eventually become exhausted and die. Since so-called "hard seeds" occur in dodder, resulting in delayed germination, the spot should be marked with a stake and kept under observation. In all these operations the utmost care should be taken to see that the workman does not transport dodder seeds or shoots to clean areas in the field. Initial infestations if promptly dealt with can be exterminated without danger to a crop which is being grown for seed.

Extensive Infestations.—Seed crops from fields showing general infestation are useless since it is scarcely economical to free such seed from dodder. If the crop has forage value it should be cut and fed in the field, or grazed, provided that a careful watch is kept for weeds and other herbage avoided by the stock so that these may be cut and burned. Stubble of perennial crops, like alfalfa, may possibly carry dodder infestation over the winter and should be carefully watched the following spring.

In the case of general infestation in flax, the seed should be processed immediately and all refuse should be finely ground so that it may be safely used for the manufacture of feeding cake. Dodder seeds, not so treated, may remain alive. As already mentioned, the fibre from badly infested flax fields is useless for any kind of spinning. Arrangements should be made for the manufacture of the flax into upholsterer's tow, preferably before shipping, and great care should be taken lest the baled tow should still carry dodder seeds and serve to distribute the weed further.

After the dodder-infested crop and crop refuse have been destroyed or dealt with as outlined above, the growing of clovers, alfalfa or flax should be discontinued for a period of at least five years. Instead, the use of annual crops such as cereals, cut when green for hay or pasture, root crops, or corn planted in hills for cross cultivation is recommended. These crops may be rotated or not as found suitable. Necessary tillage should be shallow, especially at first. AVOID PLOUGHING DOWN DODDER SEEDS.

It is to be emphasized that there is no guarantee that eradication of the dodder will be accomplished by the end of the suggested five-year period. This will depend largely upon the thoroughness with which the recommendations have been followed. Only by watching regularly each year for any recurrence of dodder in the crop and promptly destroying it can success be assured. As a final precaution, before returning to the growing of susceptible crops, have an authorized inspector certify the field as to freedom from dodder.

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