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CANADA THISTLE IN IDAHO
AND HOW TO GET RID OF IT

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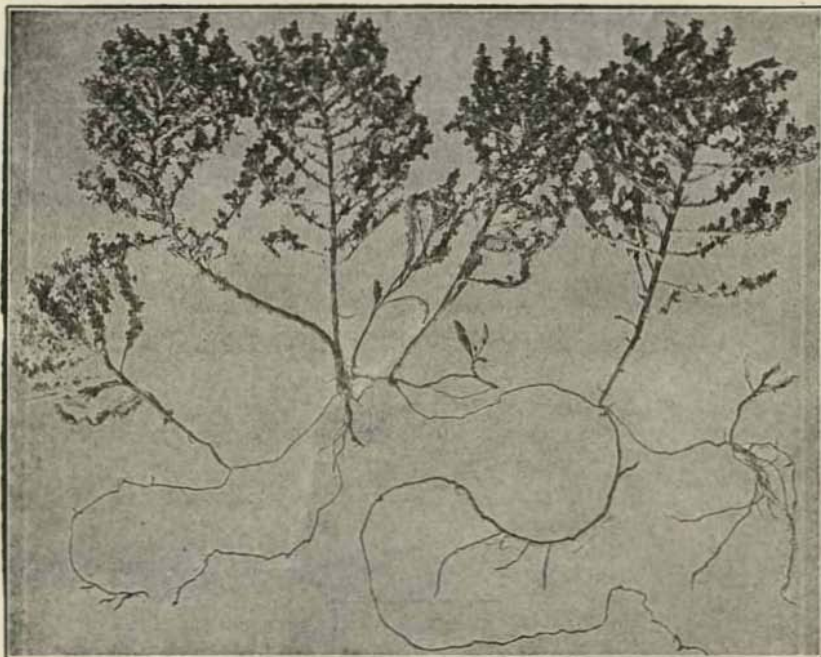
Thistle Points

CANADA THISTLE is one of Idaho's worst farm weeds.

When purchasing grass or clover seeds, be sure that seeds of Canada Thistle are not present.

Never let Canada Thistle go to seed.

One seed of Canada Thistle will produce a patch several acres in extent.



Courtesy U. S. Department of Agriculture

UNDERGROUND ROOTSTOCK SYSTEM OF CANADA THISTLE

Canada Thistle stores its food in underground rootstocks.

A plow or harrow carrying fragments of thistle rootstocks will spread the weed all over the farm.

Where flooding is possible, it is the easiest way to kill Canada Thistle.

A rod or knife weeder will greatly lessen the work of eradication on large areas.

CANADA THISTLE IN IDAHO

AND HOW TO GET RID OF IT

By PAUL A. WENGER*
Assistant Field Agronomist

THE CANADA THISTLE is a perennial weed, with erect stems ranging from one to three feet in height. It has a special system of roots, known as rootstocks, which run parallel with the surface of the ground. These vary in depth from six inches to three feet or more.

The leaves are of a pale, yellowish-green color and the blossoms are from one-half to one inch in diameter and are usually of purple color, tho they may vary to lighter shade, even to white. The flowering time is from June to September.

DIFFERENCE FROM BULL THISTLE

The most outstanding features which distinguish the Canada thistle from the Bull or common field thistle are these:

The Canada thistle has the underground rootstock rather than the single, tapering, tap root.

The stalk of the Canada thistle is small, smooth, bearing very few spines, and is branching at the top, each branch terminating in a flower, producing a cluster effect. The stalk of the Bull thistle is taller, larger, more rough, bearing a considerable number of spines, branching from the ground to the top of the plant, distributing flowers thruout its entire length.

The flowers of the Canada thistle are from one-half to one inch in diameter and are free from spines, while those of the Bull thistle are usually two inches or more in diameter and are heavily spined.

The leaves of the Canada thistle are usually not as spiny or as numerous on the stalk as are those of the Bull thistle. The top surface is practically smooth, of yellowish green color, and glossy when mature, whereas the Bull thistle is very hairy, coarse in appearance, and of a darker green color.

RAPIDLY SPREADING IN IDAHO

The Canada thistle probably was introduced into the state of Idaho from seeds found as an impurity in grass and clover seeds that were imported.

The seed may also have entered the state in hay and straw shipped in as feed, or as packing for fruit or furniture in immigrant cars.

Under our ideal climatic conditions for seed production, the Canada thistle is rapidly spreading from patches which are allowed to go to seed. Our wind velocity is high at some seasons of the year

* Resigned Sept. 1, 1919.

and the seed may be carried many miles. Seeds of plants allowed to go to seed along irrigation ditches are easily disseminated.

It is of great importance to have the seed which you buy for planting tested for the presence of the Canada thistle and other noxious weed seeds.

The state seed laboratory at Boise, or the branch laboratory at the University of Idaho at Moscow will make these tests free of charge to farmers of the state.

WHY CANADA THISTLE IS DANGEROUS

One seed of the Canada thistle is known to have produced a patch of thistles several acres in extent. This is accomplished by the underground root system, as shown by the illustration on page 2.



THISTLES DROP SEEDS IN DITCH WATER
Keep Banks Clean of Weeds to Prevent Infestation of Lower Fields

The underground rootstocks have buds at varying intervals, which are capable of producing new plants. Under proper soil conditions there is no limit to the extent to which these rootstocks will grow. This also accounts for Canada thistles usually being found in dense patches, as the underground rootstocks cross and recross each other.

When the stalk of the Canada thistle is cut off, new buds start growing from the underground parts and in a few days new plants will appear, to the great discouragement of the person undertaking the extermination of the thistle. In cultivation such as plowing or

harrowing, if any part of the rootstock bearing a bud is carried and transplanted to any part of the field and finds proper conditions it will grow and be the start of a new patch.

An instance was noted where a farmer having a Canada thistle patch located on a knoll decided that by removing the knoll he would not only be rid of the knoll, but of the thistles as well. The result of this was that he not only greatly stimulated the growth of thistles but scattered them all the way from knoll to barrow pit. Another instance was noted where a farmer had Canada thistles in one corner of his field, and while plowing and harrowing for wheat carried the thistles around his entire field because he did not stop to clean the plow or harrow after going thru the thistles.

WAYS TO KILL THE THISTLE

Its ability to store food in its underground roots enables the thistle to live from year to year. In order to secure complete eradication, the underground parts must be entirely killed.

The Canada thistle may be eradicated by one of the following methods: first, exposure of the roots; second, starvation; third, smothering; fourth, chemical action. Choice of method will be governed largely by climatic conditions and size of the patch.

ERADICATION ON SMALL AREAS

The spread of the thistle is so rapid in cultivated fields that small patches should be attacked and completely eradicated before the patch becomes large and costly to exterminate. It is not only the cost of labor that must be considered, but also loss of crops from the infested area. If the patch is very small with only a few stalks showing, digging out the plants, root and all, and exposing them, is sometimes the best method to be employed. The patch must be very closely watched, however, lest a part of the root may have remained in the ground.

Sometimes it is practical to use tar paper to smother the plant. The paper must have a wide lap and be extended not less than eight feet beyond the outermost thistle found. It is important that enough dirt cover the paper so that the wind will not disturb it. Also livestock must be kept away from the paper. The paper should be left on during the entire growing season. Another method of smothering is covering with a coating of rotted straw, manure, hay or any other such material. However, the thistle is known to have grown thru four feet of packed straw, which indicates that this method has not proven uniformly successful. It is evident that, whatever material is used, it must be of sufficient depth and must extend beyond the patch to a considerable distance.

ERADICATION BY FLOODING

In several of the irrigated sections of the state, the Canada thistle has become a real problem. Its dissemination has been rapid,

due in part to the fact that little attempt had been made to free the fields of it and also because plants growing along the ditch banks have been allowed to produce seed, which has been carried in the water to the cultivated fields. Farmers also have been hesitant to allow their infested land to remain idle for a season in order that the thistle might be combated.

In the summer of 1918, the possibility of eradicating the Canada thistle by flooding was called to the writer's attention.

Demonstrators were secured thru the farm bureau in Twin Falls county and the work was started. The results obtained proved highly satisfactory and this method of eradication is now becoming popular in the irrigated sections.

It was evident from the start that flooding could be used only where the land was comparatively level, where the area was not too large, and where sufficient water was available.

The patch of thistles to be flooded should first be cut close to the ground. A dike is then plowed up around the thistle patch, not less than eight feet beyond the outermost thistle and high enough so that the entire enclosure can be flooded to a depth of six inches or more. If the dike is too close to the edge of the patch one will find that the underground parts will be forced beyond the dike and this will cause new plants to spring up at various intervals outside of the dike.

To keep water in the enclosure during the flooding period, a ditch should be built along the side of the dike, and water should run in it continually. An opening is made from the ditch thru the dike, which keeps the water always at ditch level in the enclosure.

Three weeks of continuous flooding will, in most cases, kill the Canada thistle. However, if the water can be allowed to stand for a month or six weeks, destruction of the thistle is certain.

Thus far, no detrimental effects on the soil have been noted where thistles are killed by flooding.

This method has been used with success at all times during the growing season. However, the hot summer months are recommended.

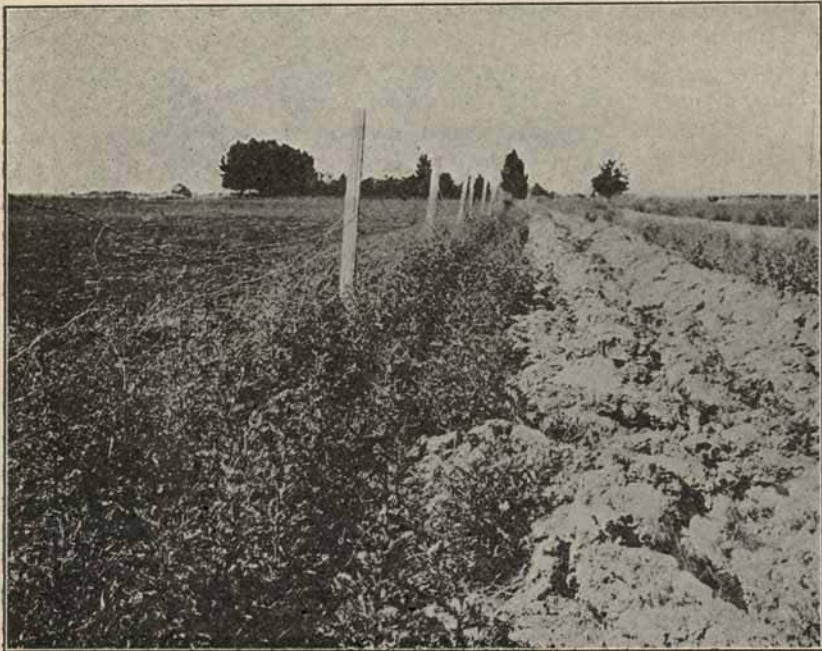
STARVATION BY CLEAN CULTIVATION

Where the thistles are very abundant, or in scattered patches, the bare fallow method may give the best results. It consists in frequent cutting of the green growth by means of a hoe, shovel, spud-pow, cultivator, disc-harrow, rod or knife weeder, or other cutting tool.

Fred Fisher, a farmer living near Rexburg, Idaho, completely killed out two Canada thistle patches by the fallow or clean cultivation method. Each patch consisted of about one-sixth of an acre, one being situated on high, dry soil, and the other on low, wet soil. The dry patch was plowed five times and the wet patch eight times in the course of the season. A hoe and shovel were used between

plowings to cut down all thistle sprouts that appeared. At no time during the season did the plants get two inches in height. These patches were planted to a cultivated crop in 1919 in order to complete the work. No sign of thistles was seen that year, a complete eradication in one season's work being indicated.

On Charles Francisco's ranch near Paul, Idaho, a patch of Canada thistle was plowed at a depth of four or five inches on July 19, 1919. Seven days later the thistles began to appear, at which time the patch was again plowed seven inches deep. Ten days later thistles again began to appear, and were given another plowing ten



UNPLOWED FENCE ROWS SPREAD THE THISTLE

This Field Was Cultivated to Eliminate the Pest but the Work Was Half Wasted by Leaving This Margin of Weeds

inches deep. For two weeks following this no thistles appeared; then a few stragglers began showing up. At this time, the ground was again plowed, each plowing being necessarily a little deeper than the preceding, so that the plow would scour. This plot will be watched in the spring of 1920 and will receive more attention if necessary. The past two seasons were exceptionally dry, thereby favoring extermination by the clean cultivation method. Large patches should be handled just as thoroly. The hand work and plowing can be greatly lessened by the use of rod and knife weeders which are used on summer fallowed land of the dry farm sections. A

blue print of such a weeder may be had from the University Extension Division, Boise, Idaho, upon request.

The best time to attack a thistle patch is when it begins to bloom. Unless the work is planned carefully and carried out conscientiously, eradication by this method is sure to fail, and usually serves as a cultivation which stimulates the growth of the thistles, so that they become more numerous than when the work was started.

ERADICATION BY POISONING

In places such as ditch banks, fence corners and rocky points, where it is almost impossible to kill the thistle by methods mentioned above, it is found that sodium arsenite when properly applied will kill the Canada thistle. Because sodium arsenite is a rank poison, livestock should be kept away from where it is used. It is somewhat expensive, which fact detracts from its usefulness.

Experiments were carried on in co-operation with County Agent W. B. Tucker of Ada County at Boise on the use of arsenic compounds for the eradication of the Canada thistle. On August 13, 1919, on the farm of E. F. Crawford near Boise three plats of three by six feet were sprayed with three different arsenic solutions. Plat No. 1 was sprayed with crude arsenic. Plat No. 2 was sprayed with sodium arsenite. Plat No. 3 was sprayed with white arsenic. The solutions were mixed in proportions of ten ounces of poison to two and one-half gallons of water. A hand sprayer was used. The ground was saturated to the depth of one inch.

Three days later the plats were inspected and all the thistle tops were apparently dead. Fifteen days after date of spraying, plats Nos. 1 and 3 were sending up new shoots, while plat No. 2, which was sprayed with the arsenite solution, showed no visible growth on the surface. Plats Nos. 1 and 3 were again sprayed with the same solution of the same strength as had been used before. Sodium arsenite which was used on No. 2 was tried on a new plat, No. 4. On September 16, 13 days later, plats Nos. 1 and 3 were again sending up new shoots, which looked vigorous and healthy. Plats Nos. 2 and 4 showed no signs of growth. The rootstocks were dug up on No. 4 and were found to be dead. Plats Nos. 1 and 3 were given the third spraying with the same solution and a new plat was again selected for sodium arsenite. Four days later all top growth on the plats was dead. In fifteen days new shoots were appearing on plats Nos. 1 and 3, but seemed somewhat stunted. No Canada thistle growth was found on plats Nos. 2 and 4 and 5, but blue grass was beginning to appear on plat No. 2 and apparently the spray had no lasting harmful effect on the soil.

These experiments will be continued for the season of 1920 for more definite results.

Salt brine, gasoline and kerosene have been used with varying success.