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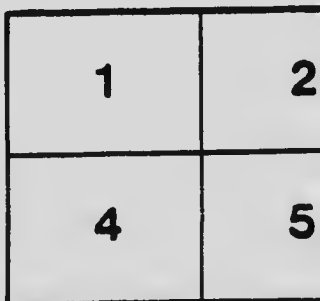
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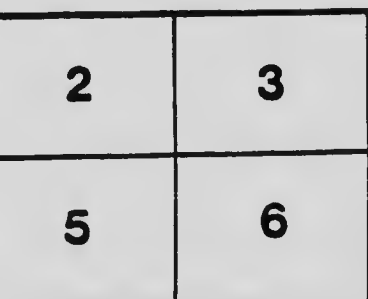
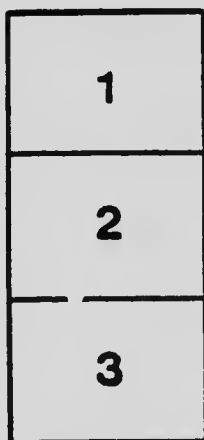
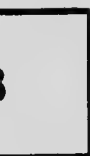
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DO YOU KNOW YOUR WEEDS?

BY

FAITH FYLES, B.A.,

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FIG. 1.

(a) Young plant of Canada Thistle (*Cirsium arvense* (L.) Scop.)
(b) Older plant, showing root and rootstocks with underground buds.
(c) Flower heads and escaping seeds. Drawn by F. FYLES.

As weeds and tares (darnel) have increasingly occupied the attention of agriculturists from early days, so the ground space occupied by weeds has steadily and surely increased. This is not entirely due to the extent of new land cleared and cultivated, nor is it due entirely to neglect, nor to a lack of literature on the subject of their eradication, as every agricultural pamphlet, paper, magazine and text-book has its chapter of advice on weeds.

It is knowledge of the weed itself that is wanting. No man who once recognizes a weed and its injuriousness would allow it to remain on his land undisturbed for a season. When the progressive farmer knows the weed, he will use every means at his disposal to exterminate it.

To know a weed, one must be able to recognize it in every stage of its development, to understand what harm it does and to know at what period of its growth it should be destroyed.

DOMINION EXPERIMENTAL FARMS.

J. H. GRISDALE, B.Agr.,
Director.

H. T. GÜSSOW,
Dominion Botanist.

EXHIBITION CIRCULAR No. 45.

(Revised January, 1916.)

There are two classes of weeds: those which are of definite duration, as annuals and biennials, and those of indefinite duration, as perennials. Among the annuals growing in the West are green foxtail, wild oats, wild buckwheat, redroot pigweed, tumbleweed, Russian pigweed, Russian thistle, cow cockle, purple cockle, ball mustard, false flax, hare's-ear-mustard, stinkweed, wild mustard, tumbling mustard, stickseed, fodder, great ragweed and many others. Among the biennials are squirrel-tail grass (erroneously called "foxtail" in the West), grey tansy mustard, green tansy mustard, biennial wormwood, etc. The perennials include sweet grass, couch grass, veined dock, broad-leaved pepper-grass, prairie rose, great willow herb, blue lettuce, skeleton weed, perennial sowthistle, Canada thistle, and others.

Eradication of Annuals and Biennials.

Annuals have only one means of reproduction, that is by seeds, and for this reason they yield an enormous quantity. One single plant of tumbling mustard will produce 1,500,000 seeds. Think what it means to allow one of these plants to mature its seed, to stand still until dry and be blown by the wind until its shallow foothold snaps or gives way altogether, sending the whole plant across the prairie to scatter its 1,500,000 seeds along the way! The second year there will be 1,500,000 new plants, and the third year 1,500,000 times 1,500,000! What a saving to cut one plant off before it seeds itself! What an advantage to know the plant before it flowers! Russian thistle, tumbleweed and stinkweed (French weed) are equally troublesome, and scatter their seeds in a similar manner. Land may be freed from annual weeds by any method which will kill them before they flower. The seeds already in the soil should be made to germinate, and the young seedlings destroyed by repeated cultivation.

Biennials should be treated as annuals when in the first year's growth, that is, they should be destroyed when in the form of a rosette or mat. If of the second year's growth, they should be cut off or spudded below the crown to prevent the formation of flowering shoots and seeds.

Method of Eradicating Perennials.

All perennials are capable of reproducing themselves by new shoots and roots as well as by seeds. There are two things then to be remembered in the eradication of perennials. First, they must not be allowed to seed themselves. Second, the roots and rootstocks must be destroyed. Reproduction by means of seeds is easily prevented by mowing the plants as soon as the flower buds appear; the destruction of the underground growth is easy only when the weed is scarce or where digging the roots up and burning them is practical, that is, when the first patch is discovered and recognized as a pest. Thorough and persistent cultivation, which will destroy the green part of the plant, will, if repeatedly practised, starve the rootstocks to death. Shallow or deep ploughing, according to the nature of the plant, to bring the rootstocks to the surface of the soil where they may be gathered and destroyed, is most effective if properly carried out. On no account should any method be used which would result in scattering the rootstocks, and thus stimulating them to new growth.

The illustration of Canada Thistle will show the futility of cutting off the tops and leaving the rootstocks in the soil to send up new shoots. The rootstock possesses great vitality, and every inch with a bud on it is capable of producing a new plant; hence to cut the rootstocks up and leave them on the ground is worse than useless. If the plant is known in a young state as in Fig 1 (a), it may be very easily killed, but if it is allowed to live till it is six or seven weeks old, as in Fig. 1 (b), then the rootstocks must be considered. Other deep-rooted perennials with similar rootstocks are sweet grass, prairie rose, broad-leaved peppergrass, veined dock, white evening primrose,

poverty weed and perennial sowthistle. With all of these, deep ploughing is necessary, but shallow ploughing will do for couch grass, as its rootstocks are nearer the surface of the soil.



FIG. 2.

- (a) Broad-leaved peppergrass (*LEPIDIUM DRABA* L.) with seed pods.
 (b) Woody perennial rootstock.
 (c) Small portion of flowering branch.
 (d) Leaf from young plant.
 (e) Seed natural size and enlarged. Drawn by F. FALES.

Advent of New Weeds.

The difficulty of the weed problem would be considerably lessened if native weeds alone were to be combated, but the list of weed-immigrants is continually increasing. These new weeds are indifferently noticed until they have usurped our food-supplying land. How much more simple the weed question would be in the West if couch grass, wild oats, Russian thistle, perennial sowthistle, the (so-called) Canada thistle, and other introduced weeds had not been allowed to establish themselves. At the present time there is another new-comer, equally injurious, doing its best to gain such a footing that in another ten years or so its claims as a naturalized weed will be undisputed. This is the hoary cress or broad-leaved peppergrass (*Lepidium Draba* L.).

It was first reported in 1896 by Mr. David Macoun from Indian Head, Sask., and from Brandon, Man., by the late Dr. Fletcher in 1904 and 1905, as having been found on waste land on the side of a street. It has also been reported from Portage la Prairie, Man., and last August (1914) it was found in large patches on stubble land at Indian Head.

Unlike the other peppergrasses in Canada, it is a perennial with a deep, woody, underground rootstock, rendering it extremely difficult of eradication. The accompanying illustration will help you to recognize it more readily than a written description can do. The leaves on plants two or three years old are rather short, thick, minutely hairy and slightly toothed. On younger plants they are much longer, thinner

and more coarsely toothed. This characteristic together with the white flowers and short, broad seed pods will help you to distinguish it from other members of the mustard family. *Dig this plant up now, while it is possible to do so. Do not wait till the land is so possessed by the tough, woody rootstocks, that the plough will be turned aside much more readily by it than the couch grass.*

Send all specimens with which you are unfamiliar, or about which you want fuller information, to the Dominion Botanist, Central Experimental Farm, Ottawa.

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