

article. Malt barley is beginning to become a commodity of considerable consequence with farmers and grain dealers. A lot of the best barley grown in Western Canada goes to the brewers in England and still more to the malting plants that are springing up all across the continent. From both these consuming classes complaints of negligence in handling barley come and both assure us that they are willing to pay a higher price for barley that has a larger percentage of germ kernels. The aim should be to produce the best and so raise the average quality of the whole product. This is an ideal that too many of our farmers ignore altogether, and one that form the basic principle of all improvement in conditions.

Some of Our Most Pernicious Weeds.

No prefatory remarks are ever necessary in this country in introducing a discussion on weeds. So we shall not inflict anything of that nature on our readers here. There are five weed pests to which we wish to give some attention, and of these, four are among the most pernicious our farmers have to contend with. They have all undoubtedly been written about before, but that is no reason why they should not be referred to again. The first is the Canadian thistle. This weed was introduced into this country from Europe, where it is known as the creeping or corn-thistle. It was brought to this country from Ontario and rapidly established itself. At present it is in some parts the second worst weed pest we have to contend with. It is a very hardy perennial; that is, it's a many year weed. It has a deep-seated root system, consisting of numerous underground stems which grow out horizontally from the main root stem, and seed shoots upwards into the air. It grows to a height of from two to five feet and bears leaves that are long and narrow, very prickly, crinkled in appearance, wavy at the edges, with the base of the leaf slightly clasping the stem. The under side of the leaf is woolly. The flower heads are numerous. They are oval, with light purple flowers which are from one-half to three-quarters of an inch across. An average plant will produce 3,500 seeds.

The aggressiveness, the rank growth, the ease of seed distribution, the increase of plant by underground stems, and the spiny leaves, make the Canada-thistle dreaded above nearly all other plants wherever found. It grows usually in dense patches and given a fair start in grain fields, it will choke out completely any of the cereal grains. Some farmers hold that this plant does not bear seeds capable of growing, but this is not a fact. The Canada thistles that grow in Manitoba are maturing all right. In fact, it is by seed that the plant mainly distributes itself. It produces its seed any time from July to September and care should be taken to prevent it from seeding.

There are several ways of eradicating this weed, but whatever method we follow for its destruction there is one fact that should be kept in mind, that this pest can only be destroyed by preventing it from producing green leaves above ground. It grows to a large extent from underground stems, but its life depends ultimately upon the green leaves it produces above ground. The leaf is the stomach of the plant. It is here the ingredients taken up by the roots from the soil, and the elements assimilated by the leaf from the air, are brought together and transformed into constituents capable of nourishing the plant. In the thistle at certain seasons a good portion of these nutrients which the leaf elaborates is stored in the underground stem as food material. Now, if the stems above ground, the aerial stems, we might call them to distinguish them from the underground root system, if these aerial stems are cut off the thistle plant draws upon this reserve food material which it has been storing in the roots, for the production of new leaves. These new leaves, just as soon as they come through the soil, immediately become manufacturers of food materials. However, if these stems are kept continually cut off, there comes a time when the reserve food material in the root is exhausted, and no more leaves can be produced. Every method of thistle killing ever practiced is based on this one principle; the plant is prevented from producing green leaves until its reserve food is used up. This may be done in three ways—by continuous cutting, by smothering and cultivation.

The first of these methods can only be followed where thistles are only beginning to gain a foothold, where only a few plants exist. But it's

a long and tedious operation and however important it may be, few farmers in this country can find the time necessary to handle thistles in this way. Then there is the smothering method, piling straw or manure on the patches where the pest is most firmly established. This is certain death to all the plants covered, but it is not by any means an eradicator of the weed. It is seldom the thistle is found in a field growing only in patches. They are usually more or less scattered and unless these scattering ones are attended to and prevented from producing seeds and leaves, the smothering method will be of small avail. For cutting these scattering plants in a field of grain, a spud (a chisel-like blade fixed into a long handle) is the most effective implement to use. When a field is badly infested there is only one method of eradication that can be employed. That is by thorough cultivation continued all through the growing season, by preventing the plants from developing above ground; that is by summer-fallowing, a few hints on which are given in another part of this article.

In Ontario we have seen the Canada thistle effectively eradicated by seeding down to clover, taking one or two crops for hay, plowing the clover sod shallow, immediately after the last cutting, and cultivating the field frequently during the fall. This method works fairly well down there. The thick growing clover smothers the thistle to some extent; the two cuttings of hay taken each year just at the time the plant is putting forth all its energy to the production of seed, decrease the vitality of the thistle to some extent and render its complete destruction after the last hay harvest all the easier. In the West, we shall have to develop the habit of growing clover before we can adopt this plan. The domestic grasses grown for hay in these provinces—timothy, brome, or western rye—will not check the growth of Canada thistles much more than their growth is now checked by the growing of cereal grains. For us at present there is one practical remedy; viz., the summer-fallow and to a limited extent root crops and clover growing. But a good deal depends on how thoroughly summer-fallowing is done.

PERENNIAL SOW THISTLE (*Sonchus arvensis*). It is only quite recently that this pest has made its appearance in this country, introduced no doubt with seed brought by immigrants from Eastern Canada or from Europe. Of the weeds that have gained a foothold in the West this is the most pernicious of them all. As a pest the Canadian thistle, however noxious it may be, wrought nothing like the mischief which the sow or milk thistle does. It is one of the most difficult weeds with which the British agriculturists have to deal. Those of us who ever met it there or who have ever farmed in some sections where it grows, know pretty well the deleterious characteristics of this pest. It has become fairly well established in some sections up here. It gained a good foothold before it was recognized, before the farmers realized what it was and how really injurious it could become. Fortunately, however, it is not yet general in all sections and in order that it may be readily recognized and distinguished from other plants somewhat similar to it in appearance, we describe it fully here.

There are two kinds of sow thistle, illustrations of which are given. The first of these, the common or annual variety, is only mildly noxious. It grows two or three feet high, has a fibrous root; that is, a root that does not penetrate very deeply, that is made up of a bunch of rootlets all nearly similar in size. A common example is the wheat plant. It has a leafy stem, flowers are numerous, pale yellow in color and about half an inch across. It is not so coarse a grower as the perennial. It doesn't make so serious a pest. The perennial variety has a strikingly different root system, as the illustration clearly shows. It has what is termed a creeping underground stem. In this respect it is similar to the Canadian, only the horizontal roots which it sends out are nearer the surface of the soil. The leaves are mostly near the base of the plant, decreasing both in size and number towards the top. They are rather long and narrow, slightly lobed, have short soft spines, that will not prick the hand, and where they join the main stem their base clasps about it. The plant grows from three to four feet high. Each stem branches and re-branches near the top and at the apex of these branchlets, the flower heads are borne. Some heads may be produced at the side of these branch stems, but the majority are borne at the apex.



PERENNIAL SOW THISTLE.



ANNUAL SOW THISTLE.



COUCH GRASS.