SUGGESTIONS FOR WILD OATS AND MUSTARD CONTROL

The problem of weeds on many farms is becoming increasingly serious and needs attention. More generous summer rains in the last few years, which resulted in splendid crops of wheat and other grains, also made possible the rapid increase of many annual weeds. A few weeds allowed to reproduce seed, which shatters to the ground, results in a more serious infestation the following year. Before long the soil is heavily infested with weed seeds.

Weeds compete aggressively with crop plants for available moisture, fertility and sunlight. As a result, maximum crop yields are not realized. Weeds add to the cost of harvesting, threshing and handling a crop and in case of inseparable seeds, can lessen its market value.

One of the worst of the annual weeds now appearing in many grain fields is wild oats. Another is the common mustard. Both produce seed abundantly, ripen early and their seed shatters readily, greatly increasing the infestation the next year.

To control any weed successfully one should know its habits and means of spreading. Then, and how, can it be most easily destroyed? Annual weeds can reproduce themselves only by producing new seed. Preventing seed production and reseeding is, therefore, a first principle in their successful control.
CONTROLLING WILD OATS

Once a soil is infested with seeds of wild oats there are only about two ways of getting rid of them. 
(1) Develop favorable conditions for the seed to sprout and then destroy the plants before they reproduce seed. 
(2) Bury the seeds leaving them to rot in the soil. The first way is the most practical. How this can be done most effectively is suggested in the following paragraphs.

Fall germination of wild oats seed is usually not very general. The seed has a fairly long dormancy period, differing in this respect from tame oats. No large proportion of the seed is therefore, likely to sprout in the fall, even when fall moisture conditions for sprouting are favorable.

Such plants do start are eventually destroyed by fall frost. A light disking to cover the seed may cause more of them to start than if not covered, but this method by itself will not be a means of eliminating or controlling the weed.

All seeds have a most favorable temperature for germination. Wild oats germinate most readily in the early spring. Therefore, a light early spring tillage is recommended to break up the crust and allow the soil to warm up more rapidly, also to cover any uncovered seed.

At this time of the year moisture conditions are usually good, the temperature for germination favorable, and seeds near the surface should sprout readily. The young plants which come up usually in late April or early May, can then be easily destroyed by cultivation.

Now, if all the seeds had sprouted, this might have been all the cultivation necessary. Usually, however, this is not the case. The seeds are not all near the surface, but in a badly infested field are distributed in the soil the full plow depth. Where they are not near the surface, the soil around the seed does not warm up quickly and they sprout slower, or not at all.

The cultivation necessary to destroy the first growth can be expected to bring towards the surface many of these still un-sprouted seeds. Therefore, if moisture conditions are favorable, there may be further emergence and another "crop" to destroy in about 10 days or two weeks. Two and sometimes three distinct "crops" can be destroyed in this manner.

Seeds which have not sprouted by early June, when soil temperatures have increased considerably, are not likely to sprout that year. In such a case another season may be required to completely eliminate the problem.

If it is desired to crop a field handled in this manner, the choice of crops to use is limited. In years when summer rains are plentiful, late sown crops like proso millet, buckwheat or flax can be sown. Corn or sorghum for fodder, and hay millet or sudan grass, likewise might be used. "Vigorous" stands of millet, sudan grass or buckwheat can also be effective in smothering new plants which might start.

If conditions for a late sow crop do not seem favorable, the field might be treated as fallow the rest of the season, thus also making possible the destruction of such other weeds that do not start until late spring or early summer. Even when the field is intended for summerfallow the early light cultivations are recommended to cause as many of the seeds to sprout as possible while conditions are favorable.

Earlier sown oats, cut for hay before wild oats have developed viable seed, can be effective in destroying a "crop" of wild oats and also to furnish a source of roughage. However, since not all the wild oats germinate at one time, this practice by itself will not likely result in their complete elimination.

Plowing deep to bury the seed rarely solves the problem satisfactorily. Rotting of the seed is rather uncertain, especially in the drier soils, and so many live seeds may be turned up a few years later, ready to sprout and reseed the field.

In fields that now have only a light scattering of wild oats it is urgent that control measures begin early, promoting as prompt germination of the seed as possible and then destroying the plants before new seed can be produced.

GETTING RID OF MUSTARD

Getting rid of mustard in a field is more difficult than cleaning up wild oats. Mustard seeds may live in the soil, without sprouting or rotting, for many years.

Keeping mustard out usually is easier and less costly than getting rid of it once the soil is infested with the seed.

In a field where only scattered plants appear these should be rogued out so no new seed can be produced. One strong, vigorous mustard plant may produce as many as 2,500 seeds. These ripen early and shatter readily.

Heavy infested fields should be handled to promote as prompt germination of the seed as possible, and to destroy the plants before new seed is set. Again, early shallow spring tillage to break the crust, cover the seed and hinder warming up of the soil, is recommended. The seeds will sprout under relatively low soil temperature.

After many plants have started, deeper cultivation to destroy these and to bring near the surface other seeds is advisable. Where there is a heavy infestation the land preferably should be treated as follow the balance of the season. If other mustard
-ENCOURAGE WEED SEEDS TO SPROUT—THEN DESTROY

Seeds germinate in the fall as the young plants should be destroyed as they sometimes winter over.

Usually such a fallow field may be sown to wheat or other small grains next year, sowing early and after only a shallow cultivation. There is a strong likelihood, however, that other live seeds are still in the soil and control measures, therefore, may have to be extended another year. In such instances delayed seeding the second year, to permit destruction of new plants, will be advisable and then sowing to some fast growing smother crop, such as millet, sudan grass, proso or buckwheat. An intertilled crop like corn might also be used if kept clean by cultivation.

Deen plowing to bury the seed is not advisable since such seed may remain alive in the soil for many years, germinating when they are later brought to the surface by another deep plowing or cultivation.

Selective chemicals, which can destroy mustard (and some other broad leaved annual plants) with a minimum of injury to flax, other small grains and grass weeds, have been developed and are being experimented with.

The reason that a chemical can be "selective", destroying certain weeds and not seriously injuring the crop in which the weeds are growing, appears to be due mainly to the difference in the leaves of the plants.

Plants like mustard wet easily and the chemical enters the plant readily. On the other hand, flax and other commonly grown small grain plants have a narrow leaf and more waxy surface that tends to shed the spray, so that entrance by the chemical is not so readily gained. (Young sweet clover plants, especially, and to a less extent alfalfa and red clover seedlings, are readily injured by this chemical). To be most effective the spraying must be done when

-The seeds and crop plants are relatively young.

The chemical most commonly used for this purpose now in this area is a yellow dye derived from coal tar, identified as a sodium salt of dinitro-ortho-cresol. (A form of this is sold under the name of Sinox). In practice 1 gallon of this chemical in solution with 80 to 160 gallons of water is applied to the acre. An activator like ammonium sulfate is usually added to the solution to make the spray more effective.

Selective sprays are helpful and can be expected to have increasing use. However, they should not be considered as taking the place of good soil and field management that have for their purpose the maintenance of good soil tilth, destroying and holding down the spread of all weeds.

No method of field management or tillage can satisfactorily control weeds unless the seed used in sowing the fields is free from weed seeds.

Precautions too are sometimes necessary against seeds blowing in from weedy areas by strong winter and early spring winds, also seeds which in some years may be carried in with flood waters. These all can be sources of new infestations.

For a more complete discussion of these and other weeds, their habits and control, see North Dakota Extension Service Circular 156.

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