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EFFECTS OF SPRAY SOLUTION ON WEEDS IN GROWING CROPS

James Laughland, B. S. A., District Representative, Simcoe Co., Ont.

Wild Mustard Can be Killed by Spraying. Perennial Sow Thistle and Bind Weed Checked by the Spray Fluid

TO successfully combat weeds by means of cultivation, it is sometimes necessary to omit a crop from the land for a year or two. This practice, however, is expensive, particularly so on high priced land. In order to crop the land every year and successfully fight the weeds at the same time, other means than commonly practised for destroying weeds are necessary. This means we have in spraying.

Considerable experimenting has been done to determine if weeds can be killed by spraying with chemical solutions. Reports from the different experiment stations carrying on such work, go to show that certain weeds readily succumb to such treatment. In order to test the effectiveness of spraying solutions on weeds in Simcoe Co., Ont., Mr. I. F. Metcalf, then District Representative of the Department of Agriculture for the county, held demonstrations in different parts of Nottawasaga and Sunnidale Townships during the summer of 1910. Two acre plots of grain that were badly infested with wild mustard, were sprayed on farms at Collingwood, Southampton, Brentwood, and Sunnidale Corners. The demonstrations were held on set days, and farmers who were interested in the work gathered to see how the solutions were made and applied.

The apparatus used to apply the solutions was a simple one. An ordinary spray barrel and pump was mounted on a cart made out of a pair of cultivator wheels, and an axle, which supported the platform for the barrel. A brass tube was attached across the rear of the platform, and connected with the pump by a hose. There were three nozzles on the tube, one at each end and one in the centre, the distance between them being about 18 inches. The tube could be raised or lowered by means of a lever, and the nozzles could be adjusted to throw the spray downwards or towards the rear. The cart was drawn by one horse.

There was not much grain trampled on by the horse, or broken down by the wheels of the cart. No damage to the grain was perceptible a few days after the spraying had been done or afterwards. A spray pump such as the one used, with two men on the handle, would give ample pressure for six nozzles, and with this number of nozzles the machine would cover a considerable area in a short time.

SPRAY MATERIALS USED

The materials used in the spraying solutions were iron sulphate (copperas), and bluestone. The iron sulphate was supplied by the Colling-

wood Wire and Nail Works. This material somewhat resembles bluestone, but is greenish in color. It may be purchased either in the crystal or granulated form. It is a by-product in the manufacture of wire, and can be purchased for about one cent a lb. A solution of iron sulphate for weed spraying is a little more difficult to prepare than bluestone owing to the larger quantity required. A 20 per cent. solution of iron sulphate is necessary where a two and a half per cent. solution of bluestone is sufficient. In 40 gallons of water, therefore, 80 lbs. of iron sulphate would be required while 10 lbs. of bluestone would be sufficient for a like amount of water. The bluestone can readily be dissolved in

with bluestone at 10 cents a pound the cost would be one dollar.

The spraying was done just when most of the mustard was in bloom, which was some time before the grain headed out. Parts of some of the fields were sprayed about a week later, but results were not so good as from the earlier spraying.

It appears from the last season's work that spraying with iron sulphate (copperas), is a very inexpensive and quick way of killing wild mustard and many other weeds. In the fields that were sprayed all the young mustard plants turned black and the leaves fell off. Some of the older plants that were further advanced had more energy stored in them; consequently they offered more resistance to the spray solution. But even these old plants seemed to become hollow in the stem from the treatment. Any seed that was already on them would hardly mature enough to germinate.

The spraying done on a dull day was more effective than that done on a bright, sunny day. On a bright day, when the atmosphere is very dry, the solution passes into the air before it has had time to kill the weeds. But although a dull day is the best kind of a day for the spraying, it should not be done when there are prospects of rain falling immediately, or the solution will be washed off, and its effect be greatly diminished.

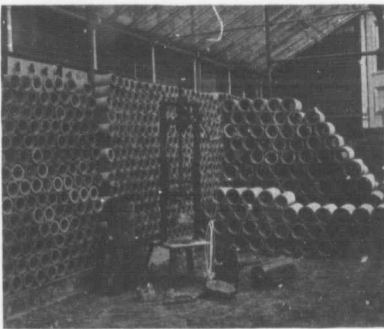
Mustard is most difficult to keep from going to seed in spring grain. Our experiments show that if the infested fields of spring grains are sprayed before the grain heads out, that the mustard can be largely prevented from going to seed. Although some of the mustard plants were too far advanced to be completely killed when the spraying was done last year, the younger plants were easily killed. If the mustard were sprayed just when it was coming into blossom, all of it could be killed.

CLEAN LAND AT LITTLE EXPENSE

This treatment is cheap, and it does not interfere with the regular cropping of the land. Mustard spraying comes on at a time when work is rather slack on the farm, and by spending a few days at this work for a couple of years, the mustard can be largely kept from going to seed. The greater portion of the seed that is on the ground will germinate in a couple of seasons, and soon the land will become so nearly clean that hand-pulling will be all that is necessary.

In addition to the mustard spraying, which was done with the large apparatus mentioned, a knapsack sprayer was used to test the solutions on other weeds. From the experiments carried out, it appears that most annual weeds can be killed by spraying with a solution of iron sulphate. Annual weeds are those that grow, pro-

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Underdraining Aids Greatly in Combatting Noxious Weeds

Weeds flourish on undrained soils where crops are poor to fair; but on well drained, well tilled, fertile land the crops grow so luxuriously that weeds have little chance. Now that tile may be made at home with cement, tile draining has been given considerable impetus, since tile are now available where before they could not be got. Experiments in making cement tile with a hand machine, as here illustrated at the Guelph College, proved these tile to be satisfactory although it is recommended that good clay tile or power machine tile be used where available.

a small quantity of water and diluted to 40 gallons. In dissolving the iron sulphate, however, a large quantity of water must be used; otherwise the water will become saturated and the crystals will remain undissolved at the bottom. Some tests made in this connection show that one gallon of cold water will dissolve 2.25 lbs. of iron sulphate, while a gallon of hot water will dissolve four lbs. of the material. The best way to bring iron sulphate into solution is to put it into a large vessel with the required amount of water and agitate it.

Forty gallons of the spray material is sufficient to cover an acre of ground. To spray an acre of weeds, therefore, with iron sulphate at one cent a pound, would cost 80 cents for material, while