

SPRAYING FOR MUSTARD.

By Frank T. Shutt, M.A., Chemist, Dominion Experimental Farms.

One of the most persistent weeds that farmers in many parts of Canada have to contend with is mustard, commonly known in Europe as charlock. Though an annual, it is most difficult to eradicate from fields in which it has become established, owing to the fact that the seeds—of which a large number is formed—are endowed with a strong vitality and are preserved, by the oil they contain, from decay until favorable conditions for sprouting occur.

Pulling the mustard when it appears among the grain or keeping the weed from seeding by working the land (as under a hoed crop) are the two methods which have hitherto been in vogue to exterminate this pest, and when the work is done thoroughly they may be considered satisfactory and efficient. The former however, is always costly, and the latter is sometimes not convenient. When, therefore, it was announced in the *Agricultural Press* that spraying, with certain solutions of sulphate of iron and sulphate of copper, had been tried successfully in England and France, it was deemed advisable to make similar experiments here. We should then be in a position to furnish information at first hand on this subject.

The fields of the Experimental Farm being free from this weed it became necessary to make the trials upon an adjoining farm, and for this purpose a field of barley was selected which showed a considerable amount of mustard. The size of the plot treated in each case was one-tenth of an acre, and the quantity of solution uniformly supplied to each area was five gallons or at the rate of 50 gallons per acre. The date of spraying was June 26th, the grain being from fifteen to twenty inches high and the mustard practically the same height and just coming into flower. The chief data may be briefly stated as follows:

"Sulphate of iron, 5 per cent.:" No effect upon barley. The leaves were practically all stripped from the stems of the mustard, but the weed was not killed, as evidenced by new leaves subsequently starting, the plant flowering and the seeds-pods filling out and matur-

ing. The leafless stems were quite green a fortnight after the spraying and were, apparently, furnishing nourishment to the seed.

"Sulphate of iron, 10 per cent.:" A slight scorching of some of the leaves of the barley was to be noticed. A fortnight after the spraying this was not discernible, and though this spray may have "slightly" retarded growth it is not probable that the yield of grain was affected.

"Sulphate of copper, 2 per cent.:" A certain amount of injury to the leaves of the barley resulted, evidently retarding growth to a somewhat greater degree than the 10 per cent. iron sulphate solution. At the end of two weeks, however, this effect had practically all disappeared, and it became doubtful if there were any permanent injury to the grain. The mustard very quickly and markedly showed the effect of the spraying, both the stems and the leaves dying without allowing the plant to vital.

Though the effect upon mustard was more pronounced than in the foregoing instance, as noticed by the "spotting" on the stems it was not sufficiently strong to prevent flowering and the ripening of the seeds, a large proportion of which proved, upon testing, to be seed. Two weeks after spraying, a few living mustard plants were found in the plot, but it is believed they had escaped the solution owing to the height and overshadowing of the barley.

"Sulphate of copper, 5 per cent.:" This solution damaged the barley in a much more pronounced manner than the preceding solution; in all probability it somewhat lessened the yield of grain, though, as the ground was very uneven in character, no comparative data on this point could be obtained.

The mustard was all killed; an inspection two weeks after the spraying did not reveal any living plants.

In order to ascertain the effect of these solutions upon this weed at a younger stage of growth than that just reported upon, mustard seed was grown in rows in a plot upon the Experimental Farm. When the mustard plants had reached the height of six to nine inches they were sprayed as follows:—July 20th: "Sulphate of iron, 5 per cent.:" Not all