

3. Remove all smut balls from the seed. The spores contained by them are not killed by practicable methods of treatment.

4. It is necessary to sow a somewhat larger quantity of treated seed per acre than of untreated. Allowance must be made for the swelling of the grain, and for a certain proportion killed by the solution used.

5. Sow as soon after treatment as is practicable.

6. Dry rapidly. Plan the time of treatment, so that the drying will begin early in the day. Then spread out the grain on the floor or in the sun on canvas sheets (sterilized as indicated in precaution 1) in a layer not more than three inches deep, and shovel over frequently.

In conclusion, there can be no question as to the desirability of maintaining a breeding plot for hand selected seed¹ on every farm. Their adoption would result in an increased yield, improved seed, uniform and pure stock, and would go far towards the solution of the smut problem, especially if there were persistence in careful, scientific treatment of the seed before sowing.

Part II.—A Summary of Investigations.

For many years agriculturists have made a practice of treating seed wheat for smut, with the result that there has been a diminution of this pest. But it has not been eradicated. Indeed, it has been estimated that for the last few years six per cent. of the crop of Western Canada that has been officially inspected has been rejected on account of smut, and this represents a part only of the loss from this cause.

Through the generosity of the Governors of the University of Toronto and the western railway companies, I was enabled, in response to a request to investigate the smut problem, to visit several places in Southern Manitoba, Saskatchewan, and Southern Alberta.

Material has been very kindly supplied to me by Messrs. D. D. Campbell of Winnipeg, Angus McKay of Indian Head, and John A. Mooney of Valley River, Manitoba, and from Ontario, through the office of the Field Experimentalist. Mr. G. H. Clark, the Dominion Seed Commissioner, has co-operated at every stage of the investigation, and has very graciously placed his seed laboratory at my disposal, and his practical knowledge of agriculture and the conditions in Western Canada.

Two species of stinking smut (*Tilletia foetens*, (B & C), Trel., and *Tilletia tritici* (Bjerk) Wint.), attack the wheat, both spring and fall, throughout Canada. *T. tritici* (Bjerk) Wint. is much more prevalent than has been heretofore supposed, in some places distinctly predominating.

¹Directions for conducting these plots are printed and supplied free of charge by the Seed Commissioner, Department of Agriculture, Ottawa.