

fertility could not be considered without reference to their biological aspects which are really the fundaments.

THE PREVENTION OF LOSSES INCIDENT TO THE PRODUCTS  
OF THE SOIL.

Having taken all the means that are necessary to conserve the fertility of the soil, we are faced, in the production of our crops, whether they may be farm or fruit crops, with serious factors which, if not contended, will more than counterbalance the advantage gained in such conservation. Therefore the combatting of those factors adverse to successful cultivation and production is an integral and essential part of conservation. Of such adverse factors, the chief are plant diseases and insect pests, and I shall consider the latter more particularly as we have at present more accurate data and statistics with regard to their depredations. The immense losses which insects and plant diseases incur are chiefly due to the disturbance of natural conditions brought about when man cultivates the soil and provides large quantities of eminently suitable food for insects often previously subsisting on wild plants. It is generally conceded that a ten per cent. basis may be taken as the average loss on farm crops due to injurious insects, and those who have given their continued attention to the question consider that this is the minimum. On that basis Marlatt estimates that the annual loss in plant products of the farm in the United States, due to insects, is \$650,000,000, and on the same basis our annual loss in Canada would be over \$50,000,000 worth of farm crops. In fruit production insects make a tax of at least thirty per cent. and Chittenden puts the total losses, plus the cost of treatment, at over \$66,000,000 in the United States. To the ordinary person these figures seem incomprehensible, but this loss is capable of estimation on the basis of experience, and those of us who are dealing with these losses daily have no hesitation in maintaining that ten per cent. is a minimum average loss. This is omitting the losses, which are no less serious, due to plant diseases, and those which are due to weeds. It is safe to say that, even with our present knowledge of the methods of combatting these pests, we can effect a saving of at least thirty per cent., and with the increase of such knowledge, which can only be gained by scientific investigation, that percentage will gradually increase. It is necessary that it shall increase, for the soil of Canada supplies the food not only of our own people but of other nations who are looking to the new world and the west for their food supplies.

The conservation of the soil, therefore, rests on two principles