

obtainable the next best carrier is dry, air-slaked lime. The powder should be applied early in the morning while the dew is on and when there is no wind blowing, at the rate of five pounds of the arsenate of lead per acre on large tobacco or three and one-half pounds per acre on small tobacco.

In purchasing the arsenate of lead, the buyer should demand the form having at least 30 per cent arsenic oxide; other forms with a smaller arsenic oxide content are too slow in their action to give the best results. It is also important that the powder does not have more than 1 per cent of the arsenic oxide in a free or water-soluble state, as a higher percentage of water-soluble arsenic oxide may cause the spray to burn the tobacco.

If the paste form is used, the amounts previously mentioned should be doubled, as this form contains only one-half the strength of the powder.

Grasshoppers.—Some years, grasshoppers are a source of considerable loss to the grower. These pests fly from one plant to another, eating small holes in the leaves, and in a short while cause the whole field of tobacco to have a very ragged appearance. Very little can be done towards combatting the grasshoppers after they reach the winged stage. Scattering the poisoned bran mixture previously recommended for cutworms, to which the juice of six oranges or lemons has been added, around the edges of the field while they are still in the hopping stage will be found very helpful. Where possible, it is also beneficial to plant several rows of corn around the tobacco field. These pests pass the winter in old fence rows, meadow lands, and weedy fields, and fall ploughing of such lands will serve to decrease their numbers appreciably.

DISEASES OF TOBACCO.

Tobacco root rot.—The tobacco root rot, caused by the fungus *Thielavia basicola* (B. & Br.) (Zopf.), is one of the most common diseases of tobacco in Canada. This disease causes the growers thousands of dollars in losses annually, due to decreased yields, inferior quality, and, in some cases, total failure of the crop.

This fungus attacks the entire root system, especially the young fibrous roots of the plant, causing them to decay; whereupon these roots cease to function as food carriers and, as a result, the plant is starved. The degree of starvation depends upon the extent to which the plant and field are infected, the climatic conditions, prevailing at the time of transplanting, and the robustness of the plant. Some plants may die; however, with the majority, the roots apparently function just long enough before becoming diseased to keep the plant living but not long enough to enable it to make any growth. The diseased plants generally remain small until late in the season when they may begin to grow; however, such plants never attain the size which a normal plant does and usually must be harvested green.

This disease attacks the plant in both the field and the plant bed. In the plant bed, the plant usually has a yellow, unthrifty appearance and its growth is comparatively slow; however, this is not always the case. Often, upon examination, plants which have a good colour and are making satisfactory growth in the bed, will be found to be infected. In the field the plants show the same unthrifty appearance and lack of growth and often the field will have a checkered appearance, there being several small plants followed by large, healthy plants. This condition may prevail throughout the field. In either case, upon carefully pulling up the plant and examining the fine roots, it will be seen that they have turned black and are rotten.

After the plant has become infected no amount of cultivation or fertilizing appears to be of value in starting it to grow; however, if healthy, robust plants are transplanted in slightly diseased fields, which have been thoroughly prepared, and climatic conditions are favourable to quick growth, the plants are apparently capable of resisting the disease and making a normal growth. On the other hand, a continued wet spell