

These are facts which a farmer should be familiar with in order that he may intelligently manure the soil and plan the rotation of crops he wishes to grow in a manner that will give the best possible results.

THE SOIL.

A knowledge of the plant and its requirements alone is not sufficient; it is equally important that the farmer should know something about the constituents of the soil and the manner in which they may be brought into solution.

Soils are formed from rock by the prolonged action of water, frost, and air, combined with that of vegetable and animal life and their products. It is not necessary to go into details regarding the action of these various agencies. It is sufficient to point out that through their combined action, extending over thousands of years, the rocks have been broken down and their materials more or less separated by water into gravelly, sandy and clayey soils, and all the mixtures so commonly found throughout the Province. In these soils there is already all the potash and phosphoric acid that was present in the original rocks. They are differently distributed, as, for instance, clays are richer in potash than sands; but the rocks are the sole source of the natural supply of these and the other ash constituents essential for the growth of plants.

DRAINAGE.

It must not be forgotten that the soil is the home of the plant, and if the plant is to make good growth, the home must be congenial. The factors that affect so are an abundance of readily available food, water, air, and a suitable temperature. To secure this good drainage is of primary importance. No soil can be warm or well aerated that is full of water. Nor will the organisms that are busy about the decay of the organic matter exist in such a soil. Hence, good drainage must precede all other work in endeavoring to get the maximum results from the soil.

DECAYING ORGANIC MATTER.

Nitrogen is derived from the air and is incorporated into the soil largely by means of plants. Consequently, the natural richness of a soil in nitrogen is almost entirely dependent upon the amount of decaying organic matter present. Through careless cultivation, this original supply of nitrogen may be depleted; but by growing plants, particularly legumes, the nitrogen gatherers, it may be increased. There is an almost unlimited supply of nitrogen in the atmosphere, and man has been given the means of gathering this and incorporating it in the land. As a result, the amount of this element in the soil, more than any other plant food constituent, is within the control of the farmer. Moreover, the addition of organic matter to a soil has a very much wider bearing than the simple addition of nitrogen; for, in its decay the vegetable acids and the carbon dioxide formed tend to bring the insoluble potash and phosphoric acid into an available form. Humus, which has such a wonderful effect on the mechanical condition of the soil, and which so increases its water-holding capacity, is also a product of the decay of organic matter. In fact, the presence of an abundance