

There is, however, always a loss; good farming methods seek to constantly replenish the soil with humus and plant food. The point is, the richer we have our soils by the addition of manure the larger will be the inevitable loss due to natural farm operations. There is a limit to which we can enrich our soils, and that limit is determined probably by climatic conditions, and partly probably by soil conditions; there is a limit beyond which it would not pay to put plant food in the soil. We believe, therefore, there is a great economy in frequency of application, for thereby we reduce the natural waste of fertility. On light soils there is a greater waste from those natural processes than in heavy soils, heavy soils being more retentive and more conservative than light soils; to put in concrete form, we believe that 5 tons per acre every third year will give a better return than 10 tons every sixth year, simply because there will be less loss. Of course, the question of labour has to be considered in a matter of this kind; but having grasped the principle the farmer will be prepared to plan his work towards carrying it out in some degree at least. We think you may get some idea from this argument as to the reasons for our advice in this matter. It is briefly that comparatively small applications at short intervals are more effective than larger dressings applied less frequently.

POSITION OF MANURE IN THE SOIL.

We may now pass on to another point: that is, in regard to the position of manure in the soil. The larger number of the feeding roots of most of our crops lie fairly close to the surface; at least, that is, in humid districts. In arid and semi-arid countries there is a tendency for the roots to go down after moisture, and we may have, as I have seen in certain portions of this country, a dry earth mulch of six or eight inches in which there will be no feeding roots, or practically none. The roots of plants take in their food in the form of a solution, and therefore the roots must go down to water to get their food. Speaking of Eastern Canada, where there is an ample precipitation, usually, and this fairly well distributed throughout the season, we find the larger number of the feeding roots fairly close to the surface, say within the first six inches of soil. If such is the case, we want the food where the feeding roots are, where the moisture is; and consequently, we do not think there is any economy in deeply burying the manure. There will be a larger return from a limited amount of manure lightly turning it under, or by merely carrying it into the prepared surface, as by discing, than by burying it by deep ploughing. Of course, there are soils which need deepening, and that should be done gradually; and there is no doubt that the deeper the surface soil is the better condition the soil is in to conserve moisture. But we have to consider that we have only a limited amount of manure—and unfortunately it is in all too small quantities on the majority of our farms—and we have to make the most of it. Consequently, we think it is a more profitable practice to keep the manure comparatively near the surface.

FRESH VERSUS ROTTED MANURE.

We may now take up the question of fresh versus rotted manure, and we have made very careful and thorough experiments with regard to that phase of the subject. The results at first sight may seem very surprising, and difficult to explain, because we say that, weight by weight, our fresh manure has given yields almost equal to those obtained from rotted manure. It seems a remarkable result, but nevertheless it must be true, because we have tried it over and over again. We do not mask the fact that rotted manure, weight for weight, contains more plant food than fresh manure. That is, a ton of rotted manure will contain more plant food than a ton of fresh manure, and it is very easy to understand why this is the case; yet, nevertheless, when you make a practical field test you find that the yield from a ton of fresh manure is almost equal to the yield from a ton of rotted manure. Now many explanations could be advanced, but I am not quite sure that I could make those explanations altogether