(e). Organic matter forms a home for soil bacteria.

(f) Organic matter forms the food of soil bacteria.

When these minute forms of life, known as bacteria develop they break down soil particles and organic matter within the soil into such forms that it will dissolve in water and can be used as plantfood. These tiny forms of life require a drained soil, yet one with a sufficient amount of moisture in it. They also require free circulation of air within the soil.

Soils Must Be Kept Sweet.

One of the conditions essential to the growth of soil bacteria is that the soil must be sweet. This requirement is equally true for the free bacteria that live within the organic matter of the soil, and for those tiny forms of microscopic life which live in the little knots or nodules on the roots of legumes such as peas, alfalfa, and common red clover. Soils under tillage tend to become sour. In fact, hundreds of acres in almost any locality clearly indicate this condition by the lack of wild clover in the sod which covers the soil, and by the presence of sheep sorrel and moss growing in the sod. If, however, you wish to make absolutely certain whether the soil is sour or not, it is easy to obtain a small book of litmus paper. Under normal sweet conditions litmus paper is purple in color. As soon as it comes in contact with anything that is of a sour nature, such as vinegar or acid of any sort, the purple color turns to a sort of bright pink. In order to test the soil bury a leaf of this paper about three or four inches deep. Leave it buried for 15 or 20 minutes. When the leaf is removed, if it has turned pink, there is indication that the soil where it was buried is sour. Soil which turns litmus paper pink is in need of lime. Lime is a corrector, not a plantfood. This is a point that is well to keep in mind at all times. Not a few men are applying lime to their soils and feeling that all that is necessary to be done has been done; whereas, by adding lime to the soil, they have simply made conditions perfect, as far as the sweetness of the soil is concerned, for the growth of plant life, which includes the tiny microscopic life known as bacteria. While, for best results in the soil, it is absolutely necessary to keep it sweet, one should always keep in mind that lime does not add plantfood, but makes the re-action of the soil perfect for plant growth. Lime may be added in any one of four or five forms. It may be purchased in the form of raw ground limestone, air-slaked burnt lime, hydrated lime, marl or agricultural lime. In any and all of these forms it corrects soil acidity. On soil which is normally rich in organic matter, it is most satisfactory to use ground limestone or marl since these correct soil sourness and do not tend to deplete the organic matter of the soil. On the other hand, if air-slaked burnt lime is added to a heavy clay soil, it tends to draw the tiny particles of soil together and to make the crumb of the soil coarser. This is a distinct advantage, because one of the outstanding difficulties of