

on being buried, or mixed with the surface soil, break down and have a very appreciable effect upon both the physical condition and the fertility or plant food content of the soil.

Good Physical Condition.

Crop returns depend very largely upon the physical condition, that is, upon the friability and fineness, upon the firmness and moisture-containing powers of the soil, as well as upon the supply of plant food contained. The physical condition of a soil depends to a very large extent upon residues left by recently grown crops. Crop residues when breaking down or decaying form humus, the most important of all the various elements entering into the make up or composition of any surface soil. Soils rich in humus and at the same time in good physical condition are likely to give large returns in the way of root, leaf and stem, whatever the crop grown. Soils from which some part of the humus has been removed, that is utilized, or which are more solid and firmly packed, seem better fitted for the production of plant seeds or grain.

Crops Needed by the Farmer.

Farmers in Canada require to grow some crops likely to give profitable returns in the form of seeds, that is, grain crops. At the same time they need large quantities of forage, that is, such crops as yield rough feed suitable for live stock must be grown, for instance, clover, timothy, roots and corn for ensilage.

Effects of Certain Crops on Succeeding Crops.

Clover or pasturo sods, when turned under, leave the soil in most excellent condition for the production of forage crops, such as roots and corn. Soils which have been occupied by roots or corn have lost by the end of the season a considerable proportion of the humus they contained at seeding time. They are, however, compacted and in most excellent shape for growing grain. The grain crops grown upon fields which have been under some hoed crop the previous year are likely to give large yields of seed with a comparatively small proportion of straw, the ideal condition for most profitable returns.

It is evident, therefore, that each crop affects the condition of the soil in its own peculiar way, and that the condition in which a soil finds itself, after having borne a certain crop, is nearly always the condition best suited for the production of some other crop.

Having observed the peculiarities of crops as to food requirements, conditions of growth and residual effects upon the soil, it is evident that it should be possible to work out a succession of crops where the soil condition after each would be such as best suited the growth of the next. Arranging crops in this way is called 'Rotation of Crops.'

ROTATION OF CROPS.

Rotation of crops means the following of one crop with another in a regular and ever recurring or repeated succession. Rotation comes from the word 'rotare,' mean-