

of the necessary constituents, the rest being present in proper proportions. This is shown below.

Lime,	.29	*.32	*.40		
Magnesia,	*.21	*.18	*.16	*.12	
Potash,	.12	.10	.08	.06	.02
Soda,	.09	.03	.018		
Phosphoric acid,	.02	.01			
Organic matter,	.67				
Chlorine,	.003	.002			
Sulphuric acid,	.005	.008			
Silicia (sand,)	64.5	59.21			
Alumina,	1.	1.70	2.60		
Iron as per Oxide,	1.25	1.06	.69		

It is shown from the above that a very fertile soil may contain only eight-seven bushels of lime to the acre, to the depth of twelve inches, or only two one-thousandth of a bushel of chlorine, or as little as six bushels of potash, or three of phosphoric acid, to equal to about twelve of bone dust.

Hence on the examination of a soil, if we find the above proportion of any one of the necessary constituents, in a form capable of being used by plants, we must conclude that enough of that particular constituent is present. If the soil be unproductive we have to look for and counteract some other chemical or mechanical deficiency.

To retain the fertility of a soil already productive, it is necessary to add to it a quantity of fertilizing matter equal to that which is taken off by the crop, allowance being made for the portion which may be lost by percolation through the soil. By doing this we can in a very cheap manner always retain soils at whatever point of production, they may have, and even have their productiveness increased, a soil which from its texture, is particularly good for wheat, may thus be kept in a condition to produce a crop every year *without any rotation*. The same is true with regard to corn or any other crop.

SOIL.

By this term is understood in an agricultural sense that portion of the earth's surface which serves or may serve for the production of crops.

Under all circumstances where a blade of grass and the smallest seed are produced, there are *present all* of the necessary constituents of fertility.

The quantity of these things present, when taken in connection with its physical character determine the fertility of a soil.

In all soils which are not *absolutely* barren we have the following constituents they being in fact *the soil*, the things out of which the soil is made.

Those marked thus * are soils of our own State.