

the corn belt; hence, you should be interested in any soil addition which will assist in making it possible to hasten the crop to maturity within the days free of frost at your disposal.

Phosphoric acid seems also to have an important effect on the filling of the kernels of wheat, oats, corn and other cereals. A soil notably short in phosphoric acid produces poorly filled cereals.

POTASH.

Potash comes in for a lot of discussion during these war times. Pure potassium, as you have already seen could not be used in its elemental form on account of its extreme activity when it comes in contact with water. Potash is used in some soluble salt forms. The duties of this substance are numerous. It seems to have an important bearing upon the power of the plant to take up the nitrogen of the soil. It also seems to influence the laying down of starch. A soil which is sufficiently supplied with potash, as well as with other plantfood constituents, produces a strong growing plant which seems to have maximum power to resist plant diseases.

SOURCES OF PLANTFOOD.

The essential constituents of plantfood,—nitrogen, phosphoric acid and potash—are first found in Nature's great storehouse, the soil. When the founders of this country first began to till its soils, they could produce heavy yielding crops of excellent quality simply by planting the seed and harvesting the ripened crop. This, indeed, is the story of Western Canada at the present time, where another generation of pioneers are fast depleting the store of plantfood which Nature has stored up. There comes a time, however, when by continuous cropping both the supply and the balance of the plantfood are seriously interfered with,

and the result is that smaller yields of inferior quality are produced. For a hundred years past farmers in general have recognized the value of plantfood in stock manure. Yet, as I go up and down various parts of this continent, I observe farmers throwing stock manure out under the eaves of the barn where every rain can wash through, carrying off its brown stream from the manure heap. This brown stream contains over half of the soluble nitrogen and potash of the manure. In order to get best results from manure, it should be carefully protected from rain and snow, and compacted to prevent burning.

Manure is weak in one plantfood constituent. You will notice by the analysis, as shown on the chart that it has a considerable amount of nitrogen and potash, but it is deficient in phosphoric acid the plant ripener. For a cereal crop,—that is for wheat, oats, barley, corn, etc.,—manure should be supplemented by acid phosphate. Dir. Thorne of Ohio, whose careful work has extended over a quarter of a century, reports in his Bulletin 144 that the use of 40 pounds of acid phosphate per ton returns a good profit on investment and results in a larger yield of better quality crop.

NITROGEN FROM LEGUMES.

A great deal is being said these days about the discovery of Hellriegel and Wilfarth, announced to the world in 1886, demonstrating that legumes, by virtue of the bacteria living within the nodules on their roots, have the power of absorbing nitrogen from the air that circulates between the soil particles, and of fixing this nitrogen in the soil so that the soil is richer in nitrogen after growing legumes than it was before. This is serviceable knowledge, yet the limitations of legumes to affix sufficient nitrogen for normal large crops of