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NEED OF PLANT FOODS IN SOIL

Elementary Facts about Fertilizer Materials

"The Use of Commercial Fertilizers" was the subject of an address given before the Commission of Conservation some time ago by H. J. Wheeler, Ph.D., D.Sc., an American agriculturist. The address is published in bulletin form by the Commission. The following extract on the subject of plant foods is taken from the bulletin:

"Plant growth is dependent upon the elements, nitrogen, phosphorous, sulphur, carbon, hydrogen, oxygen, potassium, calcium, magnesium, and iron. Of these, iron, sulphur, carbon, magnesium, calcium, potassium, phosphorus, and most of the nitrogen come from the soil, hydrogen and oxygen from water and carbon, and oxygen from the carbonic acid gas absorbed from the air by the leaves. The legumes, for instance, and a few other plants, may take nitrogen from the air; nevertheless, a considerable part of what they contain is taken up in combined form from the soil. Nitrogen, phosphoric acid, and potash are the three plant foods which are most likely to become deficient in the soil. . . . Various materials are employed to furnish the necessary nitro-

gen, potash, and phosphoric acid. Our supply of nitrogen comes largely from nitrates, such as nitrate of potash, nitrate of soda and nitrate of lime, calcium cyanamide, sulphate of ammonia and various organic substances, such as fish, tankage, blood, hair, wool waste, cottonseed meal, meal and similar materials. Probably the best organic form in which nitrogen may be secured, can be secured, is dried blood, but the total quantity available is very small. Next, perhaps, are fish waste and tankage. Then follow a large number of nitrogen, the waste from various seeds after the removal of the oil, seaweeds, wool waste, etc.

Potash is present in considerable quantities in wood ashes and seaweeds, but the chief supply is usually secured in potash salts. This briefly covers the general question of fertilizer materials. "In a new country which is just being developed, the natural tendency is to devote a large portion of the land to grazing, but as the population increases, and the demand for human food becomes greater, a more intensive form of agriculture involving the tilling of the soil, becomes necessary. When these grazing lands, unusully enriched by the vegetable accumulations of untold centuries, are first brought under the plough, there is little need of additional plant food, and crops can be produced so abundantly and cheaply that the use of fertilizers would be uneconomical. Usually, however, farmers continue cropping in the same manner many years longer than they should, with the result that the land becomes deficient in one or more of the essential plant foods."