AGRICULTURAL AND COMMERCIAL VALUES OF NITROGENOUS PLANT FOODS.¹

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By agricultural value, we may understand the value as measured by the increase in crop yields when results secured by different nitrogenous materials are compared with some one material taken as a standard. By commercial value, we would naturally understand the selling price of the different materials on a unit basis. One would suppose on first thought that commercial values would vary directly with the agricultural values. As a matter of fact, the situation may be just the opposite. If a nitrogenous raw material, or fertilizer, is high in price it does not necessarily follow that it will give high agricultural returns when compared with other materials.

It is highly desirable that such a relationship should exist, but there are certain reasons why it has not been so in the past, at least. A nitrogenous material may have a characteristic, or property, which is supposed to give it an advantage, or a disadvantage when compared with some other nitrogenous material.

To cite two examples: there was a time when some farmers believed that chemical salts like nitrate of soda had a stimulating effect which in the end was harmful to the soil. On the other hand, others have been inclined to assign an extra high value to organic nitrogenous materials on account of the organic matter which they supply, and also on the ground that they were believed to have more lasting effects than the soluble salts.

During the past quarter of a century the problem has been widely studied by both European and American investigators. These studies have thrown new light on the problem, and have cleared up a number of disputed points.

Nearly three quarters of a century of work at the Rothamsted experiment station has shown that chemical salts may be used

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