International Journal of Manures and Fertilizers ISSN 2756-3863 Vol. 10(3), p. 001, September, 2022.
Available online at www.internationalscholarsjournals.com © International Scholars Journals

Commentary

Role of phosphorus fertilizers in crop production

Mayra Chabra*

Department of Chemistry, University of Madras, Tamil Nadu, India.

Received: 06-Sep-2022, Manuscript No. IJMF-22-76662; Editor assigned: 08-Sep-2022, Pre QC No. IJMF-22-76662 (PQ); Reviewed: 23-Sep-2022, QC No. IJMF-22-76662; Revised: 30-Sep-2022, Manuscript No. IJMF-22-76662 (R); Published: 10-Oct-2022.

DESCRIPTION

A crucial component needed for plant growth is phosphorus. The growth of seeds, plants, and roots are all aided by it. Among the most crucial elements for plant life, phosphorus ranks with nitrogen and potassium. Phosphorus in soil is reduced for a number of reasons, including being carried away by rain. Thus, the usage of fertilizers based on phosphorus is necessary for modern agriculture.

Phosphate rock is used to make commercial phosphate fertilizers. Sedimentary and marine phosphate rock deposits provide over two thirds of the world's phosphate resources. In the past, soils were supplied with phosphorus using ground rock phosphate. However, the use of rock phosphate in agriculture has significantly decreased because to the low concentration of phosphorous in this natural material, high transportation costs, and poor crop responses. The most commonly used phosphatic fertilizers are Diammonium Phosphate (DAP), Monoammonium Phosphate (MAP), NPKs, and SSP.

Because it is caustic, phosphoric acid is typically not used directly as a fertilizer; instead, it is utilised to make other fertilizers. Triple superphosphate is produced when phosphoric acid reacts with rock phosphate that has been finely crushed. Soil phosphorus fertilizer has always been crucial. Large tracts of agricultural land may be in bad condition if the soil lacks enough phosphate (P). Phosphorus is the most immobile of the major plant nutrients, and plants cannot absorb it if it is not in a soluble state.

Generally speaking, phosphorus shortage in plants is more difficult to detect than deficiencies in many other minerals. A plant that lacks phosphorus is typically spindly, thin-stemmed, and stunted, although its leaves is frequently a dark, almost blue green colour. Therefore, phosphorus-deficient plants frequently appear relatively normal in appearance, unless many larger, healthy plants are present to make a comparison. A significant phosphorus deficit can result in the senescence and withering of leaves. Because phosphorus is highly mobile within the plant, when there is a shortage, it is mobilised from the older, slower-growing leaves and transported to the newer, faster-growing leaves. Thus, the older leaves show the purpling and early senescence associated with phosphorus shortage the most.

Phosphorus in soil

The phosphorus problem in soil fertility is threefold. First, the total phosphorus level of soils is low, usually no more than one-tenth to one-fourth that of nitrogen, and one twentieth that of potassium. The phosphorus content of soils ranges from 200 kg to 2000 kg phosphorus in the upper 15 cm of 1 ha of soil, with an average of about 1000 kg P. Second, because they are frequently highly insoluble, the phosphorus compounds that are frequently found in soils are generally not available for plant uptake. Third, soluble sources of phosphorus, like those found in fertilizers and manure, are fixed (converted into inaccessible forms) when they are applied to soils, eventually forming very insoluble compounds.

Only a limited portion (10% to 15%) of the phosphorus in fertilizers and manure may be absorbed by plants in the year after application due to fixation reactions in soils. As a result, those farmers who can afford to do so add two to four times as much phosphorus to their soil as they anticipate taking it out during crop harvest. Such procedures, when carried out repeatedly over a long period of time, have increased the level of accessible phosphorus in many agricultural soils and saturated their capacity to fix phosphorus. With such high quantities of soil phosphorus, it is no longer necessary to fertilise soils with more phosphorus than is withdrawn during harvest.

*Corresponding author. Mayra Chabra, E-mail: Mayrachabra23@yaooh.com.