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Opinion Article

A brief note on fertilizers and its mechanism

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OVERVIEW

Fertilizers help plants grow faster. This goal can be achieved in two ways. The first is through the use of nutrient-rich additives. The second mechanism by which certain fertilisers work is to improve the soil's efficacy by altering water retention and aeration. The nutritional aspect is emphasised in this essay, as it is in many others on fertilisers. Fertilizers usually contain a variety of nutrients in varied amounts.

Mechanism

Fertilizers contain three major macronutrients: Nitrogen is required for leaf growth. Phosphorus is required for the growth of roots, blooms, seeds, and fruit. Potassium is needed for strong stem growth, water circulation in plants, and flowering and fruiting [1]. Calcium (Ca), magnesium (Mg), and sulphur (S) are three secondary macronutrients found in fertilisers. Copper (Cu), iron (Fe), manganese (Mn), molybdenum (Mo), zinc (Zn), and boron (B) are micronutrients (B). Silicon (Si), cobalt (Co), and vanadium (Va) are rare metals (V). The elements are used to classify the nutrients required for good plant life, but they are not utilised as fertilisers. Instead, fertilisers are made up of compounds containing these elements. The macronutrients are ingested in greater amounts and are found in plant tissue in amounts ranging from 0.15 percent to 6.0 percent dry matter (0 percent moisture) [2]. Hydrogen, oxygen, carbon, and nitrogen are the four primary elements found in plants. Water and carbon dioxide are abundant sources of carbon, hydrogen, and oxygen. Despite the fact that nitrogen makes up the majority of the atmosphere, it is in a form that plants cannot use. Because nitrogen is found in proteins, DNA, and other components, it is the most important fertiliser (e.g., chlorophyll). Nitrogen must be made available in a "fixed" form to be nutrient to plants. Only a few microorganisms and their host plants (most notably legumes) can fix nitrogen (N_2) in the atmosphere by converting it to ammonia [3]. Phosphate is essential for the creation of DNA, ATP (the cell's principal energy carrier), and some lipids. Although organic and mineral fertilisers have long been used to boost crop yields in agriculture, industrial fertilisers are a more recent invention. Despite this, industrial fertilisers are currently the most extensively used fertilisers [4].

Nitrogen-containing fertilizers

Nitrogen is a nutrient that all living things (microorganisms, plants, and animals) require in order to flourish. Although there is a lot of nitrogen everywhere around us (it makes up 78 percent of the air we breathe), the majority of nitrogen on Earth is in the form of a colourless, odourless gas known as nitrogen gas (N_2) [5]. Plants and animals, unfortunately, are unable to utilise nitrogen gas directly. We receive our nitrogen from the food we eat as humans. Nitrogen is abundant in high-protein meals such as meat, fish, nuts, and legumes. Plants obtain nitrogen from the soil, and nitrogen deficiency is the most common nutrient that stunts plant growth. There are two natural processes by which nitrogen gas is converted or "fixed" into nitrogen-containing molecules that might end up in soil. Lightning strikes have enough energy to split nitrogen gas in the atmosphere, resulting in nitrogen-containing molecules in the soil [6].

Biological nitrogen fixation: Nitrogen gas can be used directly as a nutrient by some microbes. Nitrogen fixers are specialist bacteria that convert nitrogen gas to ammonium (NH_4^+). Some nitrogen-fixing bacteria dwell in soil, and others can create intimate bonds with the roots of plants such as beans or clover.

REFERENCES

1. Adams E, Shin R (2014). Transport, signaling, and homeostasis of potassium and sodium in plants. J Integr Plant Biol. 56: 231–249.
2. Aneja VP, Blunden J, James K, Schlesinger WH, Knighton R, Gilliam W, Jennings G, et, al (2008). Ammonia assessment from agriculture: US status and needs. J Environ Qual. 37(2):515-20.

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3. Kitchen NR, Goulding KWT, Shanahan JF (2008). Proven practices and innovative technologies for on-farm crop nitrogen management. In: Follett RF, Hatfield JL. Nitrogen in the environment: Sources, problems, and management. Elsevier, Amsterdam.483–517.

4. Mishima S, Taniguchi S, Komada M (2006). Recent trends in nitrogen and phosphate use and balance on Japanese farmland. Soil Sci Plant Nutr. 52:556–563.

5. Mosier AR, Syers JK, Freney JR (2004). Assessing the impacts of fertilizer use on food production and the environment. SCOPE 65, Island Press; Washington (DC).

6. Pilon-Smits EAH, Quinn CF, Tapken W, Malagoli M, Schiavon M (2009). Physiological functions of beneficial elements. Curr Opin Plant Biol.12: 267–274.