

*Editorial***A brief note on fertilizer****Xafir Ummul\***

Department of Agirculture, Bangladesh Agricultural University, Mymensingh, Bangladesh.

Accepted 19 May, 2021

**EDITORIAL NOTE**

A fertilizer is any material of natural or synthetic origin that is applied to soil or to plant tissues to supply plant nutrients. Fertilizers may be distinct from liming materials or other non-nutrient soil amendments. Many sources of fertilizer exist, both natural and industrially produced. For most modern agricultural practices, fertilization focuses on three main macro nutrients: Nitrogen (N), Phosphorus (P), and Potassium (K) with occasional addition of supplements like rock dust for micronutrients. Farmers apply these fertilizers in a variety of ways: through dry or pelletized or liquid application processes, using large agricultural equipment or hand-tool methods.

Historically fertilization came from natural or organic sources: Compost, animal manure, human manure, harvested minerals, crop rotations and byproducts of human-nature industries (fish processing waste, or bloodmeal from animal slaughter). However, starting in the 19<sup>th</sup> century, after innovations in plant nutrition, an agricultural industry developed around synthetically created fertilizers. This transition was important in transforming the global food system, allowing for larger-scale industrial agriculture with large crop yields. In particular nitrogen-fixing chemical processes such as the Haber process at the beginning of the 20<sup>th</sup> century, amplified by the production capacity created during World War II led to a boom in using nitrogen fertilizers. In the later half of the 20<sup>th</sup> century, increased use of nitrogen fertilizers (800% increase between 1961 and 2019) have been a crucial component of the increased productivity of conventional food systems (more than 30% per capita) as part of the so called “Green Revolution”.

Synthetic fertilizer used in agriculture has wide-reaching environmental consequences. According to the IPCC Special

Report on Climate Change and Land, production of these fertilizers and associated land use practices are key drivers of global warming. The use of fertilizer has also led to a number of direct environmental consequences: agricultural runoff which leads to downstream effects like ocean dead zones and waterway contamination, soil microbiome degradation, and accumulation of toxins in ecosystems. Additionally, use of synthetic fertilizers can have significant indirect environmental impacts as well: for example, the environmental impacts of fracking for natural gas used in the Haber process, the agricultural boom is partially responsible for the rapid growth in human population and large-scale industrial agricultural practices are associated with habitat destruction, pressure on biodiversity and agricultural soil loss. In order to mitigate environmental and food security concerns, the international community has included food systems in Sustainable Development Goal 2 which focuses on creating a climate-friendly and sustainable food production system. Most policy and regulatory approaches to address these issues focus on pivoting agricultural practices towards sustainable or regenerative agricultural practices that use less synthetic fertilizers, better soil management (i.e. no-till agriculture) and use more organic fertilizers.

**Classification of fertilizers**

Fertilizers are classified in several ways. They are classified according to whether they provide a single nutrient (K, P, or N), in which case they are classified as “straight fertilizers.” “Multinutrient fertilizers” (or “complex fertilizers”) provide two or more nutrients, for example N and P. Fertilizers are also sometimes classified as inorganic (the topic of most of this article) versus organic. Inorganic fertilizers exclude carbon-containing materials except ureas. Organic fertilizers are usually (recycled) plant- or animal-derived matter. Inorganic are sometimes called synthetic fertilizers since various chemical treatments are required for their manufacture

\*Corresponding author. Xafir Ummul, E-mail: [Xafirdroy57@gmail.com](mailto:Xafirdroy57@gmail.com).