

Urea

Properties

It is a granular, white coloured, highly soluble fertilizer and contains the highest nitrogen among all nitrogenous fertilizers. It supplies the nitrogen need of plants through either soil or foliar application.

Its chemical formula is $\text{CO}(\text{NH}_2)_2$ and contains 46% N (nitrogen). Since it contains carbon (C) and nitrogen in the form of NH_2 , it is known as an organic nitrogen source. Although it is highly soluble in water, its nitrogen (NH_2) content cannot be directly taken up by plant roots. In order for its nitrogen content to become available for plants, the urease enzyme (found in numerous soil microorganisms) in soils should convert urea into ammonium (NH_4) nitrogen form through enzymatic reaction. That's why; soil temperature and activity of microorganisms in the soil are important. Therefore, urea fertilizer is considered as a slow release fertilizer.

Agricultural Use

In order to supply plants with sufficient nitrogen, urea is very useful for almost all crops and for the fertilization of tobacco seedlings. When the plants are not supplied with sufficient nitrogen, the plant growth decelerates; leaves turn yellow, and yield decreases. Urea has a unique property that it can be used in all plant developmental stages.

Application

Besides as a starter (base) fertilizer during or prior to seed sowing, urea can be applied as a top dressing fertilizer, as well. Where, in both cases, soil is too sandy and light, the most part of urea fertilizer drains away deep in soil due to excessive rainfall or improper irrigation. Therefore, such soils must be carefully irrigated when urea is preferred as nitrogen source.

Where the urea fertilizer is broadcasted on the soil surface as a top dressing fertilizer in plants such as wheat and barley, it hydrolyses with higher temperatures particularly in calcareous soils with high pH and this may cause 30-40% nitrogen loss. Less nitrogen loss occurs when urea fertilizer is applied to soil and then mixed with it.

Compound fertilizers with two (20.20.0) and three (15.15.15) nutrients generally, but not always, contain nitrogen in urea form. However, the nitrogen in foliar fertilizers is preferred in urea form, since its absorption by leaves and effect on plant are much faster. For further information, please refer to "Fertilization Recommendations" on our website.