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Nano Urea: Best Fertilizer for our Agricultural Crops & Plants

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Introduction:

Chemical fertilizers contribute to over 40% of our agriculture food grain production; however their indiscriminate and imbalanced application has environmental and ecological consequences. Losses of nutrients from agricultural field due to leaching (NO^-_3) and gaseous emission (NH_3 and N_20) have been the leading causes of environmental pollution and one of the factors responsible for climate change.

Nitrogen use efficiency in the range of 20&50% is affecting the sustainability of our agriculture production system.

IFFCO has introduced its nono technology based product it liquid Nono-urea fertilizer, which is the alternative to urea fertilizer to meet the nitrogen requirement during growth stages of the crop. Nano – structured fertilizer are Characterized by high surface are owing to smaller size of nano particles (1-100 nm) and have high reactivity, solubility in water and enhance the fertilizer response, crop yield and quality parameters with nutrient use efficiency while minimizing the cost of production and the potential negative ettects associated with overdosing shich reduces the frequency of the application, thus, contribute towards agricultural sustainability (Kottegoda et al. 2011).

IFFCO introduced the first Nano – Urea, a breakthrough solution for the drawbacks observed while using urea, The innovative product was degined in Kalol, Gujarat at IFFC's Nano Biotechnalog Research Center (NBRc).

Nano urea (liquid) has been notified under Fertilizer Control order, 1985 (FCO,1985) Government of India. It contains 4% N and has a shelf – life of about 2 yeaes. India has become the first country globally to start commercial production of Nano urea. One bottle of Nano – Urea (500ml) is equivalent to a bag of urea fertilizer (45 kg), which is 10% lower cost than a bag of conventional urea.

Application of Nano Urea

Mix 2 to 4ml of nono urea in one liter of water and spray on crop leaves at active growth stages. For best results apply 2 foliar sprays, Ist spray at active tillering / branching

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stage (30 – 35 days after transplanting). IInd spray 20 – 25 days after 1st spray or befre flowering in the crop.

Number of sprays of nano urea can be increased depending upon crop and its nitrogen requirement.

Benefits of Nano Urea

1. Reduces the need for traditional Urea by at least 50%.
2. Required less and produces more: Efficacy of one bottle of Nano urea (500 ml) is equivalent to one bag of urea.
3. Nano Urea is applied @ 1250 ml ha-1 at initial growth stage and before flowering , when sprayed on leaves initially it gets absorbed easily and also enters through stomata and other pores.
4. Less expensive them regular urea.
5. Environmentally friendly product that can improve said, air and water quality, so assisting in addressing global warming and in meeting the UNSDGs (United Nations Sustained Development Goals)
6. Nano urea liquid will increase the production of crops with improved nutritional quality.
7. Reduce input cost to tarmers, leads to increase in farmer's income.
8. Improves crop productivity, soil helth and nutritional quality of produce.

Limitations

1. It is recommended only for foliar application to meet the nitrogen requirement of crops during active growth stages of crop.
2. Crop response to liquid Nano – Urea was found meager as compared to conventional nitrogen fertilizer.
3. Not popular as conventional urea among the farming community.

Conclusion

Nano urea is a sustainable option for farmers towards smart agriculture and combat elimate change. Its application increases nitrogen availability to crop by more than 80% resulting in higher Nutrient Use efficiency. In addition to this, nano urea help in minimizing the environmental footprint by reducing the los of nutrients from agriculture fields in the form of leaching and gaseous emission which used to cause environmental pollution and climate change. The new form of urea would prove to be boon for the sector as farmers would get high yield at a reduced cost of fertilizers.

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