



Urea, the “white” fertilizer

What is urea?

Urea is a white chemical fertilizer and the most widely used Nitrogen (N) source. It is also sometimes used as an animal feed additive. Its main characteristics are:

- Nutrient content: 46-0-0 (46% of Nitrogen, no Phosphorus (P), no potassium (K))
- Mostly manufactured as granules (see picture on the right).
- Little to no fire or explosion hazard.
- Easy to handle, store, transport and apply since its high N content.
- Urea can be easily mixed with diammonium phosphate (DAP).



Note: So, a 50 kg bag of Urea contains 23 Kg Nitrogen.

Recommended Application Rates

Estimating fertilizer rates

$$\text{Urea rate (kg/ha)} = \frac{\text{N rate desired (kg/ha)}}{\text{Fertilizer N content (\%)}} \times 100$$

Example: For a desired rate of 40 kg N/ha, apply $\frac{40}{46} \times 100 = 87$ kg urea/ha

Estimating Nitrogen requirements. The “N requirements of Annual Crops” fact sheets provides estimates for a range of common crops in Afghanistan. See <http://eafghanag.ucdavis.edu>

How to apply

Urea can be applied before planting, at planting, and after planting. In Afghanistan, Urea is commonly broadcast on the surface and then tilled to incorporate with the soil. However, band applied Urea (i.e., Urea applied in a line just below or near to the seed line) will give the best results and maximize N recovery by crops.

Notes:

- In low moisture, coarse-textured (sandy loam) soils, urea at rates as low as 11 – 22 kg/ha can reduce both germination and crop yields (especially of maize).
- The best results are obtained when urea is applied to cold, dry soils and/or there is significant precipitation within the first 3 to 6 days following application.

Storage

- Store urea undercover in a dry area. Urea absorbs moisture from the air and tends to lump together in storage.

Reference: Havlin, J.L., et al., 2005. Soil Fertility and Fertilizers, an Introduction to Nutrient Management. 515 p.

<http://www.extension.umn.edu/distribution/cropsystems/dc0636.html>

Prepared by Nicholas Madden, Maria Paz Santibanez and Mark Bell, 2012

For more information visit: <http://ip.ucdavis.edu>

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