



# Fertilizer Use in Afghanistan

## What kinds of fertilizer are used in Afghanistan?

Urea (46-0-0) ("white" fertilizer) and Diammonium Phosphate (DAP) (18-46-0) ("black" fertilizer) are the main types of chemical (inorganic) fertilizers used in Afghanistan. The numbers (e.g., 46-0-0 refer to the percent Nitrogen (N), Phosphorus Pentoxide ( $P_2O_5$ ) and Potassium Oxide ( $K_2O$ ) in a fertilizer. Most farmers also apply animal manure, while a few farmers use night soil (human manure).



## Fertilizer rates and application

**Inorganic sources.** Fertilizer rates vary widely. The ICARDA study found that on average, farmers with irrigation applied around 250 kg/ha of urea (115 kg N) and DAP (45 kg N and 115 kg  $P_2O_5$ ). Most farmers applied DAP at planting. Urea was usually applied to field crops, such as wheat, at planting and then again at tillering and flowering. Applications of urea as late as flowering suggest farmers lack knowledge of best management practices.

**Organic sources** The majority of farmers usually apply about 5 to 20 t/ha of animal manure (fresh weight) during the growing season, providing approximately 2.5 to 100 kg N/ha (if applied as fresh cattle manure). Rates would be slightly higher for poultry or sheep manure.

## Nutrient use and factors affecting response

For field crops (e.g., wheat), a quarter to half of the urea and all the DAP are best applied at planting. Overall, fertilizer rates are high, given the yields achieved. For example, applying 115 kg N/ha should give more than 3 MT wheat/ha, however wheat yields in Afghanistan average around 1.8 to 2.5 MT/ha. Poor response to fertilizers can be due to:

- Other production problems (such as weeds, poor plant stand, etc.) limiting growth,
- Poor irrigation practices- Too much irrigation causing nitrogen leaching in light to medium textured soils, or nitrogen loss in fields that are waterlogged,
- Poor timing of applications (e.g., late applications when yield potential has already been fixed)
- Other nutrients (other than nitrogen and phosphorus) limiting growth,
- High pH soils causing nutrient deficiencies, and
- Poor fertilizer quality

Farmers often limit fertilizer use because of inadequate irrigation, the lack of credit and/or high fertilizer prices.

## Fertilizer imports and quality

All DAP is imported to Afghanistan. DAP from the US and Australia is typically exported to Pakistan where it is repackaged and exported to Afghanistan. Urea is imported mostly from Pakistan, with smaller amounts from Tajikistan, Iran, and Uzbekistan. Afghanistan's only fertilizer factory, Kud Bergh, outside of Mazar-i-Sharif, produces about one third of its 105,000 MT urea annual capacity. FAO reports that sales of adulterated and low quality fertilizer occur.

**Reference:** ICARDA, FAO, Emerging-Asia

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