

# Urea deep placement: Nitrogen management for Efficient Rice Fertilization



AfricaRice

**Africa Rice Center**  
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Boost rice yields and save on fertilizer costs through efficient nitrogen management

Deep Urea Placement involves drilling urea granules into rice fields, optimizing nutrient uptake, soil fertility, and productivity. Placed 7 to 14 centimeters deep, it ensures consistent nitrogen supply, particularly suitable for lowland rice farming with clay soils.

This technology is **TAAT1 validated**.

Scaling readiness: idea maturity 8/9; level of use 8/9

Gender assessment

Climate impact

## Problem

- Inefficient Nitrogen Utilization.
- Environmental Pollution due to traditional urea application.
- Low Grain Productivity due to high nitrogen losses from current urea practices.
- High production costs without proportional yield increases.
- Limited irrigation in optimizing traditional urea application under varying rainfall.
- Climate disturbances causing by greenhouse gas emissions from conventional urea application.

## Solution

- Large granules release nitrogen slowly, optimizing absorption by rice crops, reducing waste, preserving the environment and preventing contamination.
- Direct nitrogen delivery enhances soil fertility, promoting healthier rice crops and higher yields.
- Subsoil placement contributes to increased drought resilience in farming systems.
- Single-season application reduces labor and overall production costs.
- Suited for diverse agroecologies, benefiting both subsistence and commercial rice farmers.

## Key points to design your project

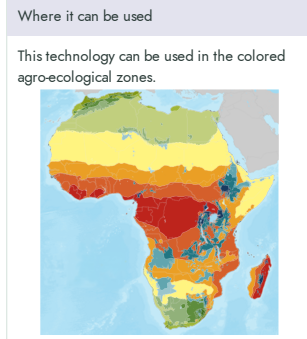
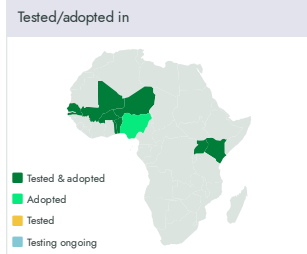
1. Evaluate the required product quantity and cost, considering USD 0.4-0.8 per kilogram and a recommended rate of 0.25 tons per hectare.
2. Consider the technology's supply location, factoring in delivery costs and potential import duties.
3. Trainers can provide support during installation; budget for training and post-training assistance.
4. Develop communication materials for technology promotion.
5. Enhance the improved maize variety with companion planting, foliar micronutrient addition, engineered irrigation, motorized weeders, and RiceAdvice digital support.
6. Collaborate with agricultural institutes and agro-dealers for nationwide implementation.

Technology from  
**ProPAS**

Commodities  
Rice

Sustainable Development Goals

Categories  
Production, Practices



Target groups  
Farmers

Cost: \$\$\$ **0.4—0.8 USD**  
per Kg

ROI: \$\$\$ **30 %**  
increase in yield

**0.25 ton**  
Recommended rate per Ha

**100—200 USD**  
Equivalence cost for the recommended rate per Ha

**10 USD**  
plunger-type applicator

**IP**  
Open source / open access



## Urea deep placement

<https://e-catalogs.taatafrica.org/gov/technologies/urea-deep-placement-nitrogen-management-for-efficient-rice-fertilization>

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