

Enhancing Rice Markets in Uganda through Smart Micronutrient Fertilization (ENRICH)

- **Research Objectives:**

Increase food, nutrition and income security of smallholder lowland rice farmers through evaluating and recommending best fertilizer (micro and macro [NPK] nutrients) options for optimizing yield and produce nutritional quality.

- **Research Problem:**

- Low fertilizer use, and poor crop response to NPK fertilization across Africa due to soil micronutrients (MN) deficiency.
- MNs improve NPK uptake, grain yield and nutritional quality, and tolerance to abiotic/biotic stresses.



- **Approach:**

- Field experiments: omission trials of different nutrient combinations; different application methods (soil vs. foliar); two agro-ecological zones; participation of Farmers' Research Groups (FRGs).
- On-farm trials: to demonstrate NPK fertilization and good agricultural practices (GAP) as approaches for rice intensification in the Ugandan lowlands.

Research Outputs

- **Field experiments**

- Strong yield gains with NPK fertilization: 33% & 92%, in Yr. 1 & Yr. 2, respectively.
- Less strong yield gains due to micronutrient addition: 7% & 26%, in Yr. 1 & Yr. 2, respectively.
- Minimal improvement in grain zinc contents due to micronutrient addition: 23% & 11% Zn, in Yr. 1 & Yr. 2

- **On-farm trials - preliminary outputs**

- 11% yield gain obtained with GAP, compared to farmers' practice.
- 16% additional yield increase realized with GAP + fertilizer application.

Outcomes

- Adoption of recommended practices due to farmers' (and other stakeholders') participation, + demos during Fields Days and workshops.
 - Farmers' Research Group (FRG) now apply knowledge gained from project participation and trainings. Positive results already noted:
 - up to 275% rice yield gain reported by farmers upon using NPK with GAP.
 - 57% of beneficiary farmers have adopted line transplanting (one GAP demonstrated in project) instead of random transplanting.
 - Some FRGs already adapting knowledge gained in rice to maize production:
 - Maize yields doubled based on adapted knowledge.
- **Activities to continue beyond WOTRO funding.**
 - On-farm trials to reach more farmers and more agro-ecological zones.
 - Follow-up with farmers (beneficiary and non-beneficiary) to document project impact in terms of change in farmers' crop production practices and crop yields.

Areas for Future Collaboration

- Further training for farmers in areas of sustainable production practices.
- Providing mechanization services.
- Providing quality agro inputs, especially fertilizers.
- Value addition.
- Marketing.
- Access to credit/finance.