TOWARDS NUTRITIONAL SECURITY THROUGH ORGANIC MANAGEMENT OF SOIL FERTILITY IN ORANGE-FLESHED SWEETPOTATO SYSTEMS

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1. Motivation

Optimized soil fertility management
to provide and replenish soil nutrients

This study investigates organic amendments and soil cultivation practices to determine their potential to ensure nutrient supply to:

- ❑ Improve yield
- ❑ Secure nutritional quality
- ❑ Replenish soil nutrient

→ Sustainable cultivation

2. Methods

➢ Field trials in Mozambique

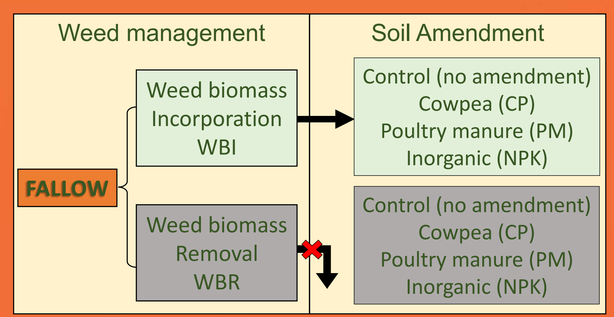

Diagram 1: Weed biomass management and soil amendment proposed for field trials.

➢ Soil fertility assessment

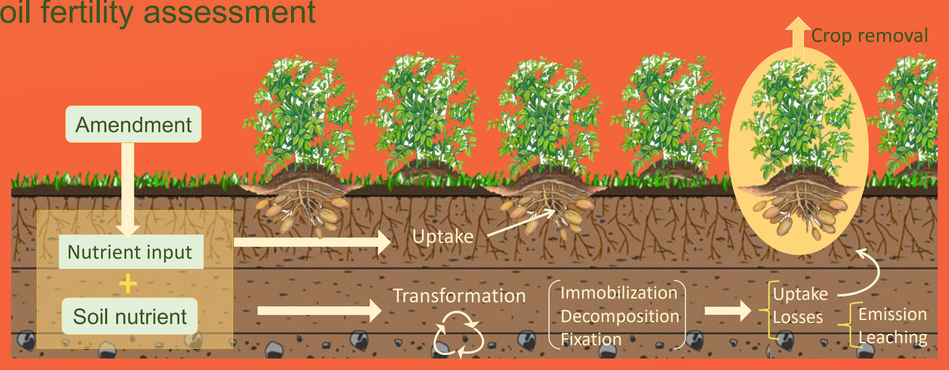

Diagram 2: Factors affecting soil fertility during the cropping season.

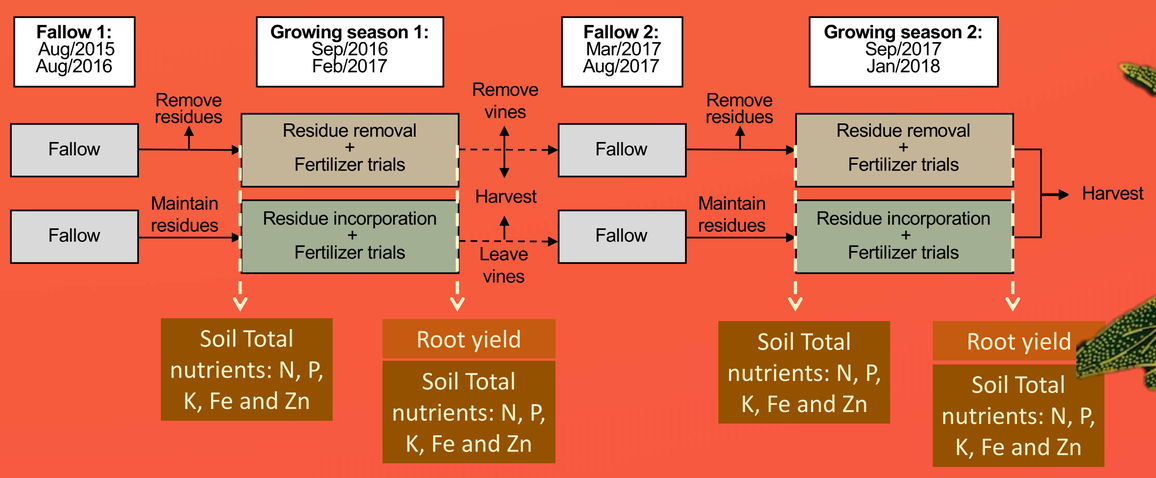

Diagram 3: Field experiment timeline. Dashed lines indicate soil and plant samplings.

3. Results

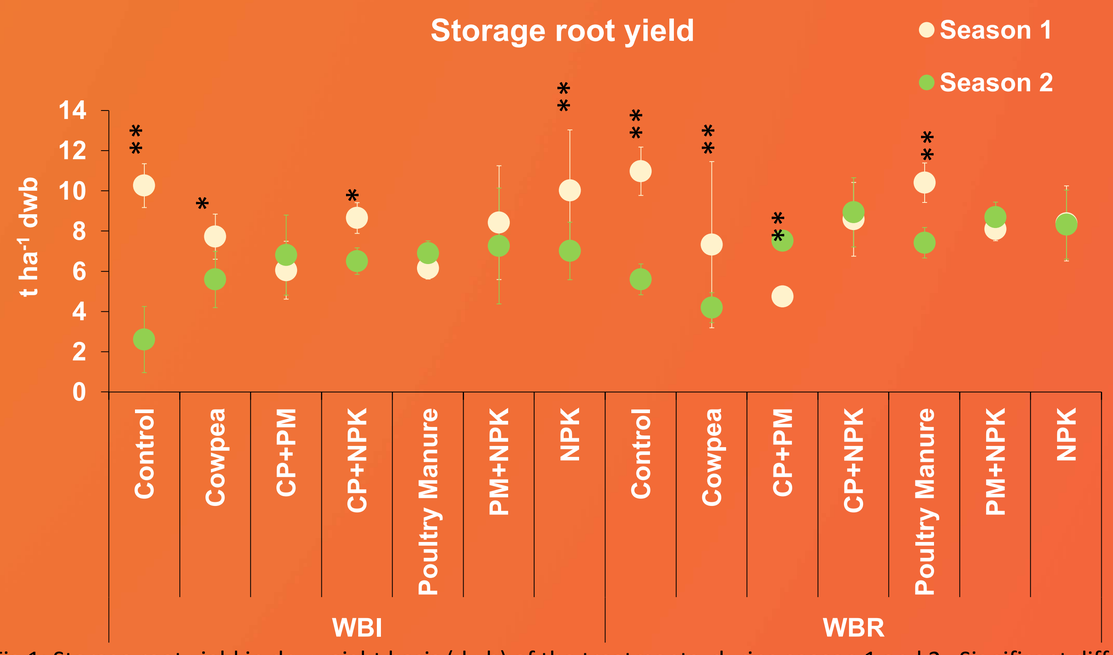

Fig 1: Storage root yield in dry weight basis (dwb) of the treatments, during season 1 and 2. Significant difference between season 1 (yellow) and season 2 (green) is represented by * ($p<0.5$) and ** ($p<0.01$)

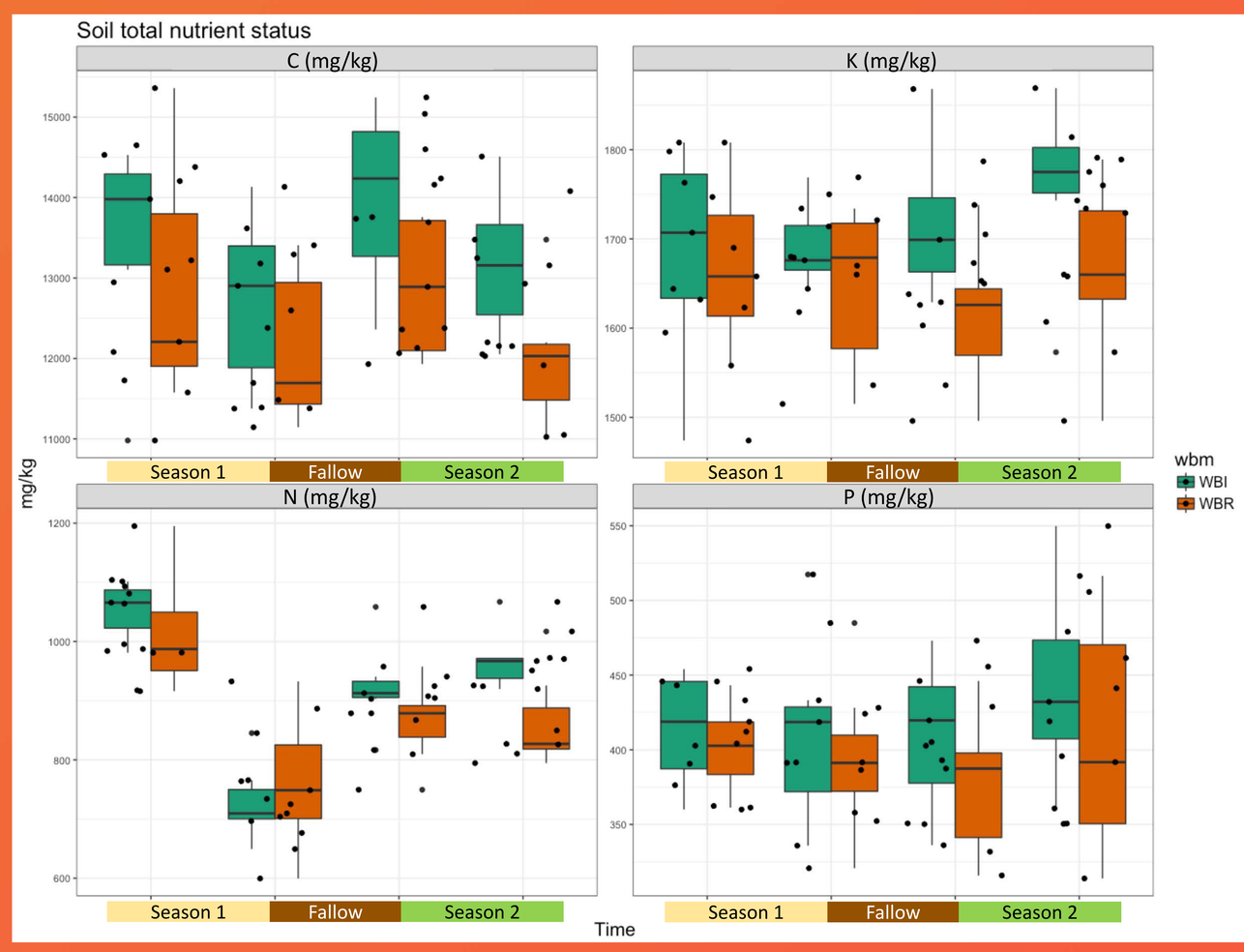

Fig 2: Soil total elemental concentration in mg kg-1, carbon (C), nitrogen (N), phosphorus (P) and potassium (K).

CARBON and NITROGEN
→ Recovered with fallow, specially in WBI
→ After season 2, WBI treatments showed higher concentration in soil, while WBR decreased

PHOSPHORUS and POTASSIUM
→ Accumulated after season 2, in WBI under poultry manure fertilization

4. Remarks

- After 2 seasons, treatments fertilized with organic amendments showed similar storage root yield as inorganic fertilization. Control treatments (without fertilizer) had the lowest yield rates.
- Weed biomass incorporation proved beneficial to soil nutrient accumulation, specially after fallow period.
- Following assessment: concentration of plant-available nutrients (in soil) during the growing season and plant nutrient uptake to determine if supply met plant's nutrient requirement.