

NEWS & FEATURES

Demonstrating Agronomic Practices to Increase Soybean Yields in Tanzania - TSSI 2024 Field Results

Published: 18 July 2025

Tanzania Sustainable Soybean Initiative (TSSI)

Report: “Demonstrating Agronomic Practices to Farmers to Increase Soybean Yield - 2024”

Introduction

Soybean is a key crop for food security, soil health, and income generation in Tanzania. Yet, smallholder farmers continue to harvest well below potential—averaging just **0.5-0.6 tonnes per hectare (t/ha)**, compared to the crop’s genetic potential of **2.5-3 t/ha**. These yield gaps are primarily caused by poor soils, low input adoption, weak advisory services, and limited market access.

To address this challenge, the **Tanzania Sustainable Soybean Initiative (TSSI)** launched an ambitious national demonstration campaign in 2024, aimed at showcasing how simple, affordable agronomic interventions can dramatically improve productivity, profitability, and farmer confidence.

Demonstration Plot Approach

TSSI established **134 demonstration plots** across **seven major soybean-producing regions**:

Songwe, Rukwa, Ruvuma, Mbeya, Njombe, Iringa, and Morogoro. Each demo plot was **100 m²**, planted between **January and March 2024**, and managed in close partnership with local extension officers and farmers.

Treatments Tested:

At each site, the following treatments were applied:

- **T1 - Control:** No input (farmer practice)
- **T2 - Phosphorus only:** 20 kg P/ha (DAP)
- **T3 - Inoculant only:** 250g per 60kg of seed
- **T4 - P + Inoculant:** Combination of T2 and T3

On **five sites** with acidic soils (pH < 5.2), the same treatments were repeated **with and without lime** at **2 t/ha** to test lime’s effect on yield.

Each plot followed best agronomic practices: planting soybean at **50 cm between rows** and

10 cm within rows, with two seeds per hole.

Stakeholder Engagement and Farmer Reach

The initiative emphasized farmer learning and local ownership:

- **121 trained extension agents** (70 men, 51 women) co-managed plots
- **8,078 farmers reached**, including:
 - **5,023 farmers** (2,420 men, 2,603 women) who directly helped manage plots
 - **3,055 farmers** (1,608 men, 1,447 women) who attended field days

Farmers' names and mobile numbers were captured and uploaded to the TSSI digital dashboard for future engagement.

Yield Results

The impact of input use on yields was both **clear and significant**:

Top-performing regions included **Songwe (up to 2.9 t/ha)**, **Morogoro**, and **Iringa**. Lower yields in **Rukwa** and **Njombe** were attributed to excessive rainfall during the early growth phase.

Impact of Lime on Acidic Soils

At select sites in Njombe and Iringa with acidic soils, lime was tested. Results showed that **lime application increased yields by 5-10%**, highlighting its potential to improve soil pH and nutrient availability.

Economic Analysis

Soybean production with inputs was **economically profitable**. Summary of estimated returns per hectare:

The combination of **P + inoculant** offered the **highest profit gain**—an increase of over **TShs 530,000 per hectare** compared to traditional practices.

Key Lessons Learned

1. **Improved seed** alone can increase yield by 50% or more.
2. **Inoculant and phosphorus fertilizer**, when used together, consistently maximize yields and profits.
3. **Lime** is a promising solution for acidic soils—but more research is needed to determine optimal rates.
4. In areas already using P for maize, **inoculant alone** can significantly boost soybean yields.
5. **Early-maturing soybean varieties** are essential in zones with double cropping (e.g., Mbozi, Mbeya).
6. **Lead farmers**, especially youth, can fill extension gaps and support rapid data collection.
7. **Sharing yield data back with farmers** increases trust, motivation, and adoption of new

technologies.

The 2024 demonstration plots under TSSI confirm that **smallholder soybean productivity can be sustainably transformed** through affordable, science-based interventions. The next step is **scaling** these practices through farmer networks, extension systems, and local agri-businesses.

[Report on Demonstration Plots...Download](#)

Published 18 July 2025 · News & Features

Source: <https://agcot.org/2025/07/18/demonstrating-agronomic-practices-to-increase-soybean-yields-in-tanzania-tssi-2024-field-results/> · AGCOT Centre, Dar es Salaam