

# 1st Farmer Harvest of TELA Maize in Nigeria:

## Enhancing Farm Level Yield and Revenues

February 2025

### 1.0 Introduction

Genetically modified crops can enhance resilience under adverse conditions like drought and pest pressure. This effectively reduces yield losses under biotic and abiotic stress, thereby increasing the potential of safeguarding yields. In Nigeria, four TELA maize hybrids were commercialized in 2024 that are drought tolerant, and insect protected. The four varieties are SAMMAZ 72T, SAMMAZ 73T, SAMMAZ 74T and SAMMAZ 75T.

### 2.0 Study objective

During the 2024 wet season, a study was conducted to assess the benefits of one variety, SAMMAZ 75T, among Nigerian farmers across four agro ecologies. These benefits include farm-level yields, resistance to crop damage against Fall Army Worm and Stemborers, revenues and overall farmer experience.

This brief presents one-season data on the performance of the drought-tolerant and insect-resistant TELA maize hybrid, cultivated by a pioneering group of farmers across these agroecological zones.

### 3.0 Approach

The study covered Derived Savannah (Oyo State), the Northern Guinea Savannah (Kaduna State), the Southern Guinea Savannah (Abuja, Nasarawa, and Niger States), and the Sudan Savannah (Kano State) agro ecologies. Data from 134 plots (94 TELA maize and 40 non-TELA maize plots) was collected from a sample of farmers including commercial farmers that had accessed SAMMAZ 72T. Crop-cutting yield estimation methods, partial budgeting, and thematic analysis techniques were employed.

### 4.0 Preliminary Findings

TELA maize demonstrated significantly higher yields, **averaging 5.85 MT/ha** compared to **3.11 MT/ha for non-TELA maize varieties** - an **88% yield advantage**.

It also demonstrated superior pest resistance, with

**93%**

of plots experiencing less than

**25%** crop damage compared to non-TELA maize plots.

Notably, TELA maize required fewer pesticide applications (an average of **one spray versus four for non-TELA maize plots**), reducing input costs.

Coupled with higher yield and reduction in variable cost considered during the study, a net revenue benefit of 137% was realised.



In addition, farmer testimonials indicated TELA maize showed good drought tolerance during the season's dry spell which was predominant during the season.

#### 4.1. Maize Yield: TELA Maize in Comparison with Non-TELA Maize Varieties

From the sampled farmer plots for both TELA and Non-TELA Maize plots, results showed that TELA maize had an overall mean yield of 5.85 MT/ha (Figure 1). In contrast, Non-TELA Maize varieties had a mean yield of 3.11 MT/ha. This gave an 88% yield advantage of TELA hybrids relative to non-TELA maize varieties. The composition of the non-TELA maize varieties for comparison was 63% hybrid maize.

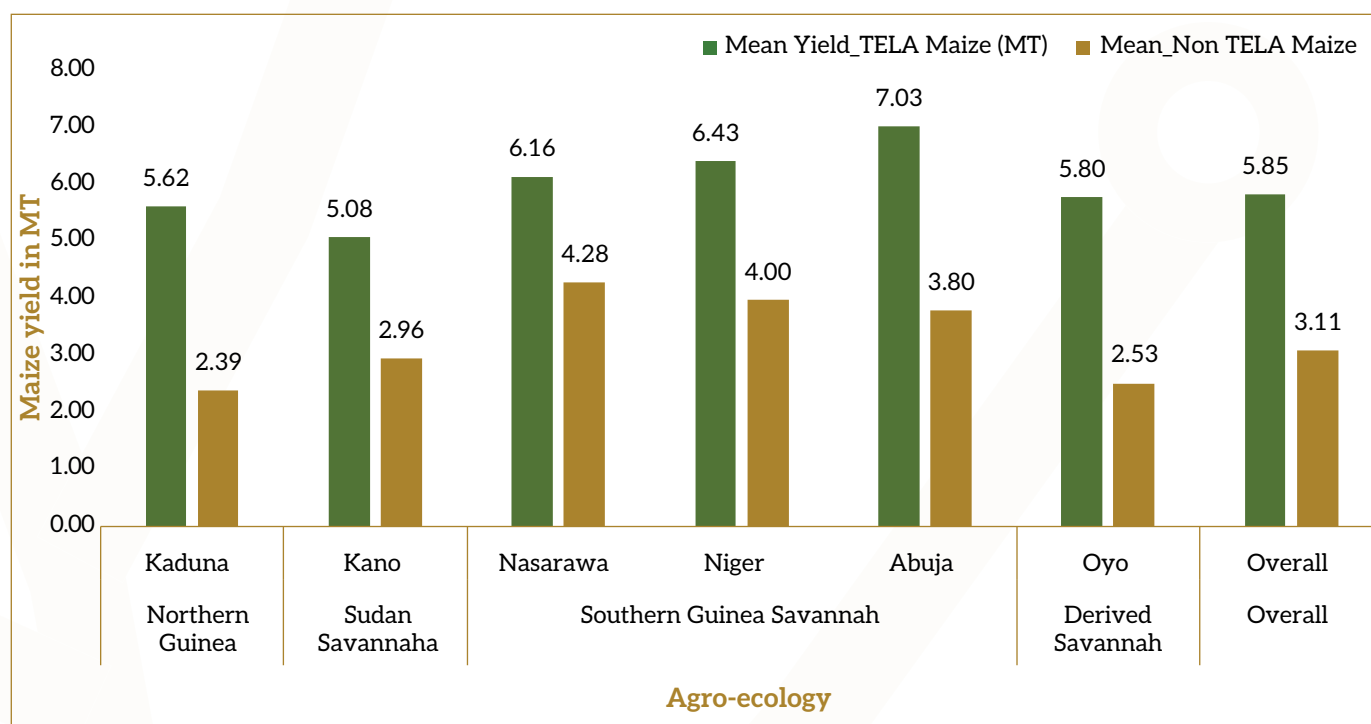


Figure 1: Yield Comparison between TELA maize and non-TELA Maize varieties in the 2024 wet season

#### 4.2. Extent of Crop Damage and Frequency of Chemical Sprays: TELA vs Non-TELA Maize Varieties

TELA maize demonstrated superior pest resistance, with 93% of plots experiencing less than 25% crop damage compared to non-TELA maize plots. Comparing the spraying regime under farmer practice for TELA maize versus non-TELA maize varieties, the data showed that plots under TELA maize used fewer pesticide applications than those under the non-TELA maize

varieties. For TELA maize, 82% of the farmers who sprayed reported spraying **their crops only once**. In contrast, plots with the non-TELA maize varieties had a higher frequency of pesticide application, with an **average of four sprays**. This demonstrates the economic benefits from reduction in pesticide use, its associated costs, and labour of TELA maize among the farmers.

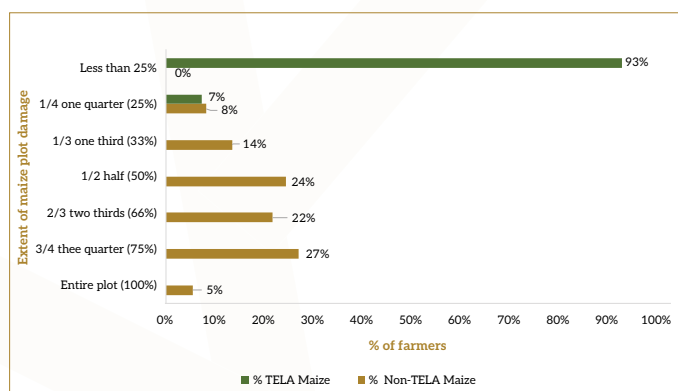


Figure 2: Extent of Crop Damage TELA Maize Vs Non-TELA maize

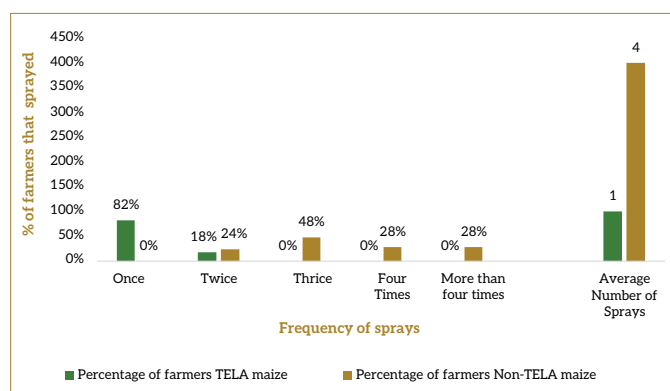


Figure 3: Spraying regime for TELA Maize Vs Non-TELA maize



### 4.3 Maize Revenue: TELA Maize Net Revenue in Comparison with Non-TELA Maize Varieties

In this study partial budgeting approach was used where, net revenue was calculated as the difference between total revenue (TR) and total variable costs (TVC), comprising seed, fertilizer, pesticide, herbicide, and spraying labour costs.

The total variable cost per hectare for TELA Maize was 336,016 Naira, 25.6% less than the 451,673 Naira for non-TELA maize varieties. It is worth noting that TELA maize had a slightly lower seed cost per ha at Naira 42,216.80 (USD 28.08) than other maize hybrids at 48,571 Naira (USD 32.31). Being a new technology the seeds were offered at promotional prices to kick-start commercialization. The other costs were captured as per farmer usage.

Coupled with a higher yield per hectare (5.85 MT/ha for TELA vs. 3.11 MT/ha for other maize) and the same market price per ton (480,000 Naira) (USD 319.36), this resulted in a net revenue per hectare of 2,471,983 Naira (USD 1653.6) for TELA, which is higher than 1,041,127 Naira (USD 692.70) for other maize varieties, demonstrating a **net revenue advantage of 137%**.



TELA maize (left) and Non-TELA maize (right) harvested from the same farm



## 4.4 Farmer Experience

A thematic analysis of farmers' experience with TELA Maize varieties highlighted several positive sentiments including:

- “Good Drought Tolerance”
- “The performance is very good, despite planting late coupled with drought spell, it performed very well.
- “It is a unique variety that is distinct from others. It resisted disease and tolerated drought for about 45 days.”
- “Good Performance”
- “Excellent despite the shortage of rainfall by 15 days.”
- “Despite little rain, the hybrid maize showed promising vegetative state despite the prolonged drought spells and the scorching heat”

## Conclusions

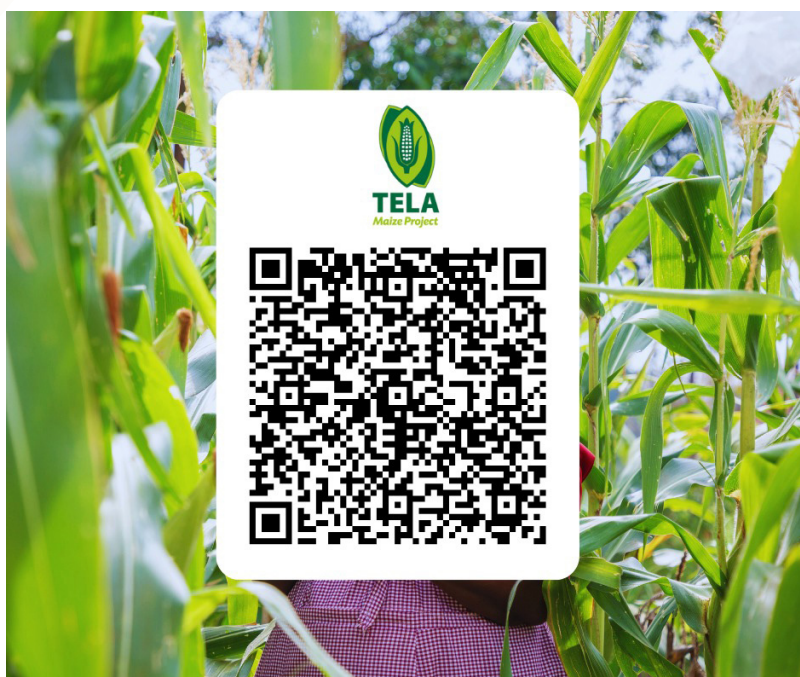
To ensure the long-term commercialization and widespread adoption of TELA maize in Nigeria, we need:

- Increased investment from seed companies to produce and distribute TELA hybrids, ensuring a sustainable and reliable seed supply.
- Stronger stakeholder support for TELA Maize as a vital technology to enhance food security
- Enhanced farmer awareness and accessibility to TELA maize seeds, driving adoption, higher yields, and increased farm revenues.

This study was undertaken under the auspices of the Biotech Maize Seed System project, a project coordinated by AATF. This study assessed maize farmers where selection was based on prior participation in an insect-resistant management study for TELA maize. The study covered only one planting cycle, limiting long-term productivity insights that can inform early commercialization plans. Profitability analysis excluded some fixed and variable costs. To enhance comparability, non-TELA farmers were chosen based on proximity and use of hybrid maize.

Future research could build on this study, which serves as an initial assessment and contributes to the grey literature on TELA maize performance among farmers. This includes exploring yield consistency, adoption barriers, and experimental designs for a more rigorous profitability assessment.

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