SMART Farm Trials

Results from Malawi - Kasungu: Limbe Leaf 2022-2023

FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

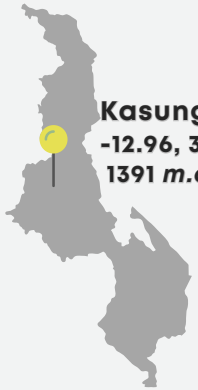
OVERVIEW

16 **Randomized Treatment Groups**

Germination Test
95%

Planting Date
21-Dec-22

Harvest Date
12-Apr-23



Average Monthly Weather

	Min Temp (°C)	Max Temp (°C)	Rainfall (mm)
December	18.3	25.9	137.9
January	17.0	23.5	209.0
February	17.6	23.9	100.4
March	17.4	23.3	52.8
April	16.2	23.8	14.7

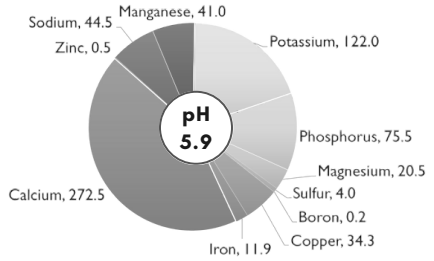
= left to right: Minimum and Maximum Temperature

The input omission trial is comprised of 16 treatment combinations of inoculant (I), lime (L), phosphorus (P), and potassium (K). Each set of 16 treatments were randomized and replicated 4 times. The "Tikolore" variety (S) was planted in 3 x 5 m plots with a 5cm seed spacing. Each plot contained 4 rows with a 75cm row spacing. Seeds were treated with Rizoliq 1 hour prior to planting. Lime was broadcasted on the soil surface and incorporated into the soil before planting. Single super phosphate (SSP) was placed in a band 5 cm over and 5 cm down from the seed. Muriate of potash (MOP) was broadcasted on the soil surface after planting.

BACKGROUND

Soil Analysis

Units in ppm



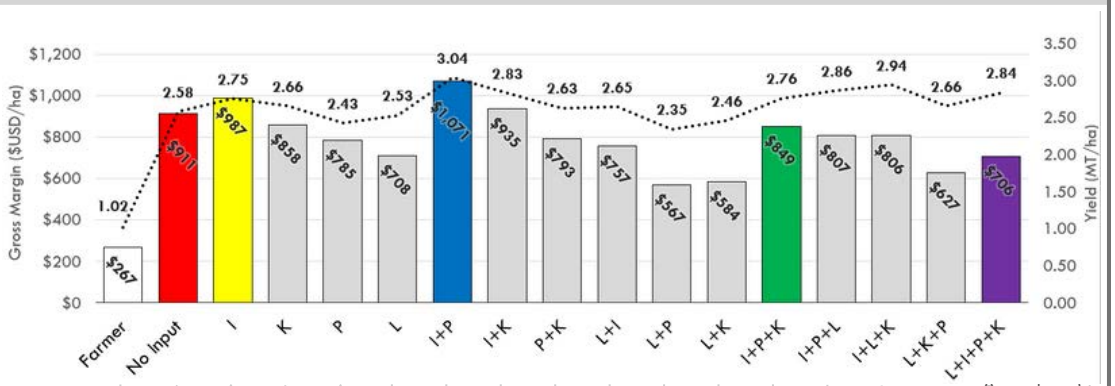
0.83% Organic Matter

62.0 µS/cm Total Exchange Capacity

Trial Inputs

	Product	Source	Application Rate
I	Rizoliq	Rizobacter	2 mL/kg
L	Ag Lime	Zalewa Agricultural Lime	1,00kg/ha
P	Single Super Phosphate	-	10 kg ai/ha
K	Muriate of Potash	-	60 kg ai/ha
S	Tikolore	SeedCo	320,000 seeds/ha

RESULTS



	Farmer	No Input	I	K	P	L	I+P	I+K	P+K	L+I	L+P	L+K	I+P+K	I+P+L	I+L+K	L+K+P	L+I+P+K	AVG	LSD	CV%
V2 Stand Count (cm)	180	178	185	182	175	190	181	184	184	185	173	164	186	187	186	179	181.1	18.6	7.2
R1 Height (cm)	31.4	33.1	31.0	30.7	29.8	37.4	33.5	32.9	37.8	30.2	31.9	34.9	37.2	36.0	32.7	36.6	33.6	3.1	9.7
R8 Stand Count (cm)	166	172	176	185	166	179	173	179	172	175	173	160	179	180	174	161	173.0	21.4	8.6
R8 Height (cm)	63.7	62.7	66.6	65.5	63.3	72.1	67.1	70.1	71.0	65.3	63.2	67.2	67.9	67.2	69.1	69.2	67.0	4.9	6.2
100 Seed Weight (g)	17.5	17.5	18.3	18.0	19.3	17.5	18.0	19.0	18.5	18.3	17.3	18.3	17.0	17.8	17.5	18.5	18.0	1.5	6.1
Seed Moisture (%)	13.7	13.9	13.8	14.0	13.8	13.5	13.9	13.7	13.7	13.6	13.8	13.5	13.6	13.0	13.8	13.6	13.7	0.7	3.7

CONCLUSION

The **Blue Bundle** is recommended for the Kasungu location. This includes the usage of certified soybean seeds, best management practices (early planting, planting in rows, increased seed population, and timely weeding), and application of rhizobium inoculum and phosphorus. The Blue Bundle generated an average gross margin of **$1,071 USD**, a marginal ratio increases of 1.18 compared to the Red Bundle and **yielded 3.04 MT per hectare**. This produces a **2.66 x** return on inoculum and phosphorus costs and provides an implicit wage of **$4.84 USD** for every $1.00 USD of labor spent (a **384% increase in wages** compared to the typical farmer).

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Interested to learn more? Let us know!

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Soybean Innovation Lab