POLY4
A SIRIUS MINERALS PRODUCT

TRIAL RESULTS

# CORN

## SOUTHERN HIGHLAND, TANZANIA (2015)

poly4.com

# TRIAL OBJECTIVE

To evaluate POLY4 as a multi-nutrient fertilizer for corn in the Southern Highland conditions of Tanzania and assess any difference in yield response by changing the potassium source from MOP to POLY4.

# HIGHLIGHTS

**SIX TRIALS ESTABLISHED ACROSS SOUTHERN HIGHLANDS OF TANZANIA**

**AVERAGE 9% YIELD IMPROVEMENT OVER RECOMMENDED N+P PRACTICE**

**AVERAGE 13% YIELD IMPROVEMENT OVER MOP**

# TRIAL DESIGN

**PARTNER:** AGRICULTURAL RESEARCH INSTITUTE – UYOLE

**LOCATION:** SOUTHERN HIGHLANDS, TANZANIA

**YEAR:** 2015

- Corn is the largest crop grown in Tanzania with 6.7 Mt produced, accounting for 24% of all crops grown.
- Around 80% of corn production is from small scale farmers with 65–80% of produced corn consumed within the household[1].
- The Southern Highlands produces approximately half of all corn in Tanzania[1].
- Although soil is fertile, fertilizer is required to prevent nutrient mining that would cause widening of the yield gap in the long term.
- Six trial sites were established across the Southern Highlands of Tanzania with a range of soil nutrient statuses.
- N was split applied at pre-planting and V6 growth stage with all P and K applied seven days before planting and incorporating.

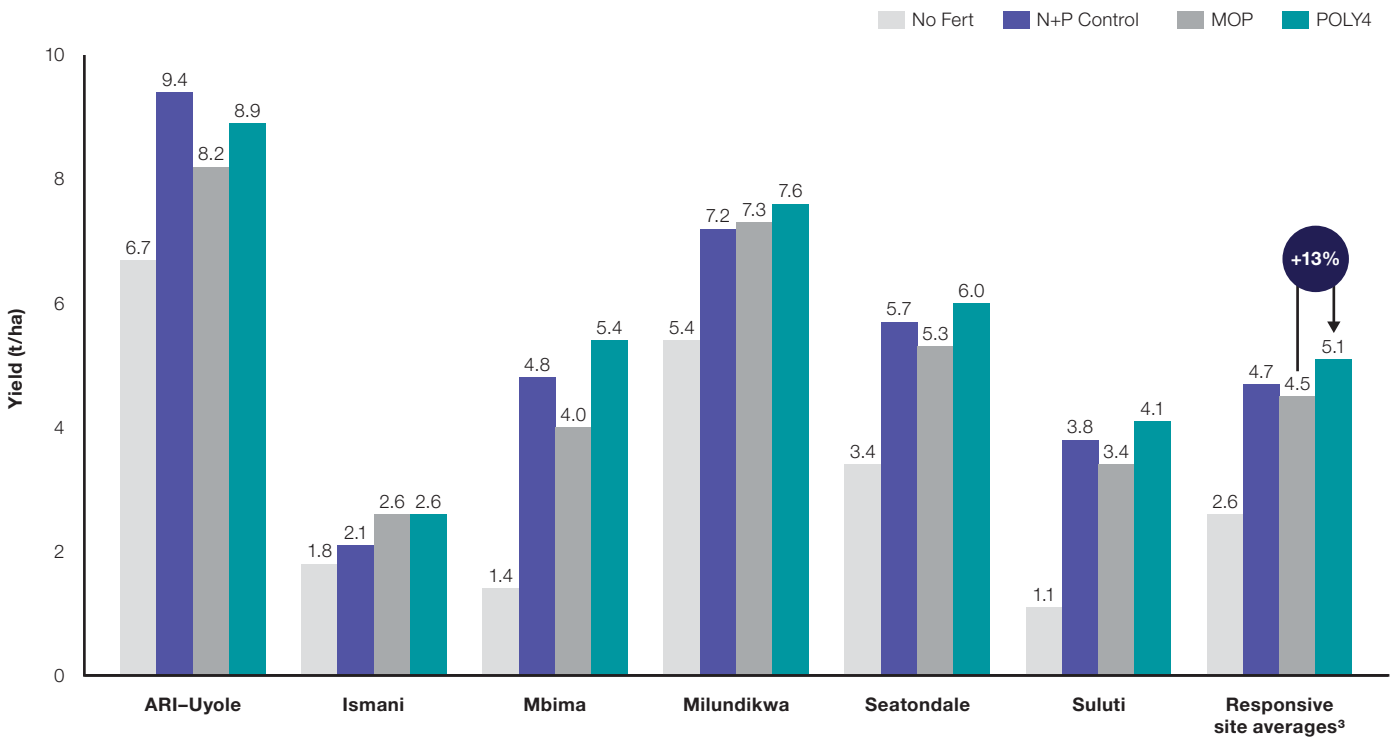
# TREATMENT TABLE

| TREATMENTS | NUTRIENTS APPLIED (kg ha$^{-1}$) AT ALL SITES | | | | | | |
|---|---|---|---|---|---|---|---|
| | N | $P_2O_5$ | $K_2O$ | MgO | CaO | S | Cl |
| Control | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NP | 120 | 30 | 0 | 0 | 0 | 0 | 0 |
| NP+MOP | 120 | 30 | 20 | 0 | 0 | 0 | 16 |
| NP+POLY4 | 120 | 30 | 20 | 24 | 9 | 28 | 4 |


# SOIL NUTRIENT STATUS (ALL SITES)

| SITE | SOIL PARAMETER | | | NUTRIENT CONTENT (mg/kg) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | pH | Organic Content (g/kg) | CEC (cmol/kg) | N | P | K | Ca | Mg | S |
| ARI–Uyole | 5.6 | 20 | 17.66 | 1650 | 2.06 | 917 | 1240 | 149 | 13.04 |
| Ismani | 5.6 | 8.4 | 14.86 | 2400 | 4.16 | 234 | 774 | 403 | 36 |
| Mbimba | 5.2 | 18.4 | 15.84 | 2200 | 5.22 | 246 | 394 | 149 | 15.73 |
| Milundikwa | 5.5 | 25.5 | 16.3 | 2530 | 5.17 | 445 | 944 | 257 | 9.18 |
| Seatondal | 5.5 | 6.1 | 4.88 | 1770 | 13.33 | 177 | 356 | 192 | 20.18 |
| Suluti | 5.3 | 6.2 | 12.08 | 2070 | 10.05 | 230 | 270 | 210 | 12.03 |

# CORN YIELD




- Application of potassium-based fertilizers prevents nutrient mining in the long term and aids crop growth.
- Across all locations in the Southern Highland region, corn responded positively to a multi-nutrient fertilizer plan.
- Nitrogen and phosphorus are recommended in Tanzania due to the high soil potassium content.
- Application of potassium fertilizer is valid in high proportion of the region.
- On average[4], the POLY4 option improved yield by 9% compared to N+P and 13% compared to MOP.
- At 67% of sites, MOP resulted in lower yields than the N+P control.

Notes: 1) Wilson and Lewis (2015); 2) Exception for Ismani sites where 80 kg N $ha^{-1}$ and 20 kg $P_2O_5$ $ha^{-1}$ but same K and S applied; 3) GENSTAT means; 4) AR –Uyole excluded from average due to high initial soil K.

Sources: Agricultural Research Institute – Uyole (2015) 25000-SOH-25010-14

**siriusminerals.com** | +44 1723 470 010 | commercial@siriusminerals.com

**Registered Address:** 3rd Floor Greener House, 66–68 Haymarket, London SW1Y 4RF, UK

**Company Registered Number:** 4948435

SIRIUS MINERALS PLC