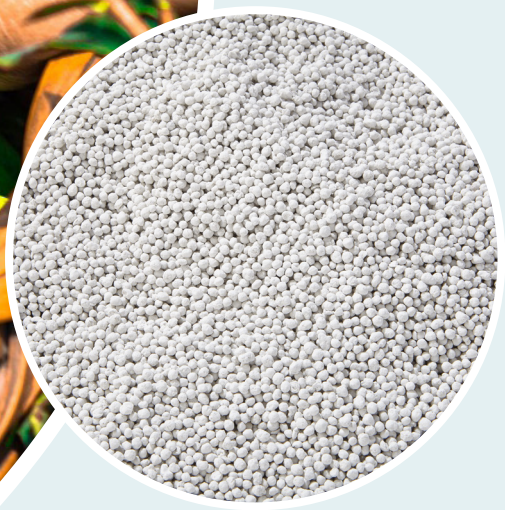
Growing TEA IN INDIA

POLY4
A SIRIUS MINERALS PRODUCT

K_2O 14% | S 19% | MgO 6% | CaO 17%



KEY FINDINGS

12% greater yield

Improved tea quality and flavour

Enhanced soil nutrient legacy and fertility

A CASE FOR POLY4

- In 2017 India produced 1.3 million tonnes of tea from 620,000 ha.
- Assam and Northern Bengal are two of the major Indian tea growing regions. The soils in these regions are often calcium and magnesium deficient and strongly acidic because of extensive leaching caused by heavy rainfall (2400-3500 mm yr^{-1}).
- Standard local practice is to apply MOP-K and elemental S mixed with bentonite. Elemental S acidifies soils as it is oxidised to sulphate. This process makes the sulphate available to plants but delays nutrient availability.
- Tea is a perennial crop that is picked several times per year. Sustained nutrient delivery from POLY4 can better meet crop demand throughout the growing season and helps to build soil nutrient reserves.

POLY4 BENEFITS

- Source of macro and micro nutrients
- Plant available sulphate-S
- Sustained nutrient delivery
- pH neutral
- Suitable for organic tea cultivation

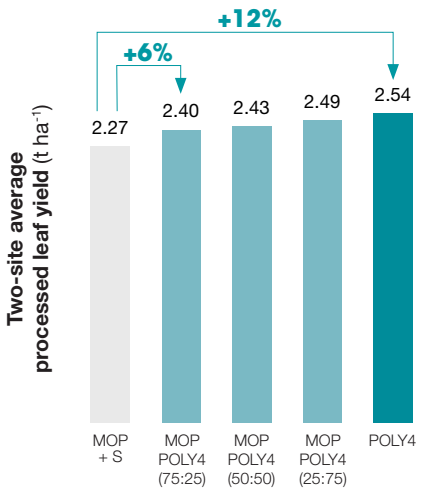
poly4.com

Treatments	Nutrients applied (kg ha^{-1})				
	K_2O from POLY4	K_2O	S	CaO	MgO
MOP + S	0	120	43	53	0
MOP + POLY4 (75:25)	25%	120	63	89	13
MOP + POLY4 (50:50)	50%	120	104	125	26
MOP + POLY4 (25:75)	75%	120	145	162	39
POLY4	100%	120	185	198	51

*All treatments received N and P at 120 kg N ha^{-1} and 30 kg P_2O_5 ha^{-1} from urea and single superphosphate (SSP). SSP also supplied 23 kg S ha^{-1} and 53 kg CaO ha^{-1}.

SIGNIFICANTLY GREATER YIELD

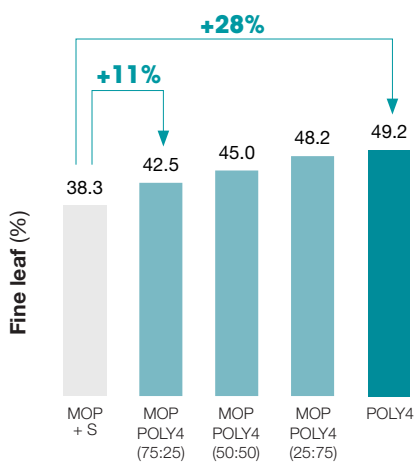
Compared to the local practice of MOP + S, POLY4 treatments achieved significantly greater yields of processed tea leaf at both sites. The maximum yield was achieved from applying POLY4 as the only K source.

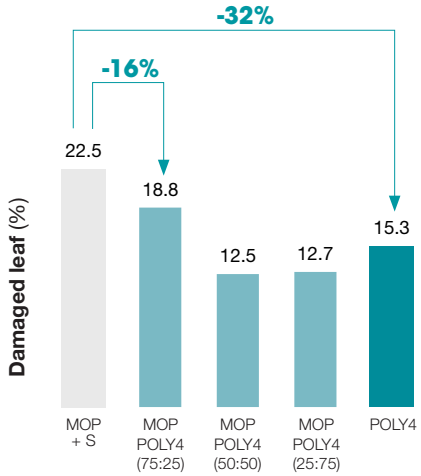


IMPROVED TEA QUALITY AND FLAVOUR

At Assam, tea was sorted into fine leaf (high quality composed of the bud and one or two leaves), coarse leaf (medium quality), and damaged leaf (low quality leaves which are broken during harvest.

POLY4-fertilized tea had a greater proportion of high-quality, fine leaf tea and reduced susceptibility to physical damage during harvest.





TRIAL FOCUS

To measure tea yield and quality after application of K and S fertilizer by mixtures of MOP + POLY4.

PARTNER

Tocklai Tea Research Institute

LOCATION

Assam and Northern Bengal India

DATE

2018

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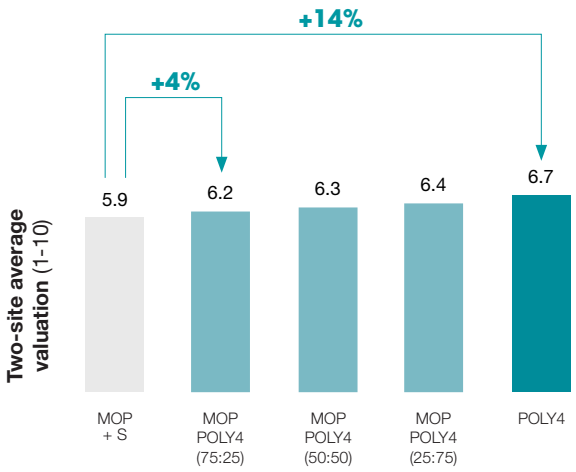
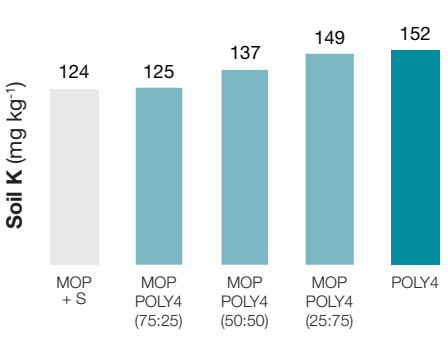
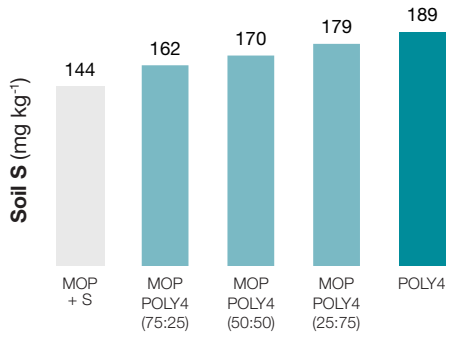
Fine teas like Darjeeling, Assam, Nilgiris and Kangra are produced in India and are famous for their delicate flavour, strength and brightness. Organoleptic quality is evaluated by tasters who assess brightness, briskness and strength. This evaluation determines overall quality and market value of tea. POLY4-treated tea performed well and improved taste valuation score at both sites.

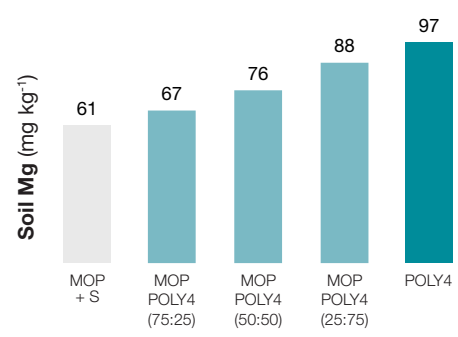


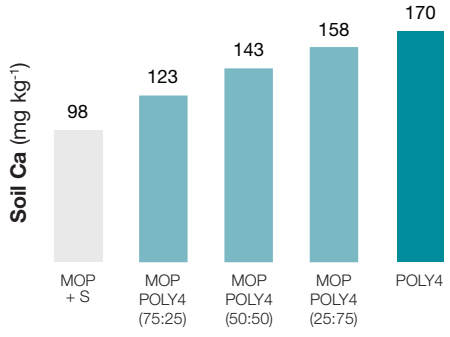
ENHANCED SOIL NUTRIENT LEGACY

Soil nutrients were measured after the final harvest. As POLY4 replaced greater proportions of MOP, residual Mg, K, Ca and S in the soil increased. Improved soil fertility may increase yields in subsequent crops in local soils that are deficient of magnesium and calcium.









Notes: 1) FAOSTAT 2017; 2) N and P applied with urea and SSP at 120 kg N ha^{-1} and 30 kg P_2O_5 ha^{-1}. Each treatment included 23 kg ha^{-1} S and 53 kg ha^{-1} CaO from SSP. MOP+S received 20 kg ha^{-1} elemental S. SSP was applied as a base fertilizer at the beginning of trial in June 2018. Other fertilizers were split applied in June and September 2018; 3) Cultivars were TV-23 at Assam (planted 2009) and TV-25 at North Bengal (planted 2000); 4) Initial soil test at North Bengal: pH 4.2, organic C 1.9%, 87 mg P kg^{-1}, 125 mg K kg^{-1}, 148 mg S kg^{-1}, 109 mg Ca kg^{-1}, 67 mg Mg kg^{-1}. Initial soil test at Assam: pH 4.5, 28 mg P kg^{-1}, 95 mg K kg^{-1}, 18 mg S kg^{-1}, 240 mg Ca kg^{-1}, 85 mg Mg kg^{-1}.

Source: Tocklai Tea Research Institute (2018), 87000-TTRI-87010-17 (tea).

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