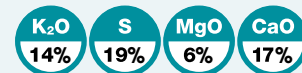


Growing ONIONS IN INDIA



POLY4



KEY FINDINGS

Up to 13 t ha⁻¹ yield advantage
over local practice

Increased bulb size and
marketable yield

Improved plant development



POLY4 BENEFITS



Source of macro nutrients



Plant available sulphate-sulphur



Sustained nutrient availability



Low chloride content



Suitable for organic farming

A CASE FOR POLY4

- Total onion production in India in 2018 was 23 million tonnes across 1.3 million hectares.
- The recommended practice is to apply N + P, MOP-K and S from elemental sulphur. However, many farmers only apply N + P + MOP-K, or only N + P.
- POLY4 provides a plant available sulphate-sulphur in addition to a low-chloride potassium, magnesium and calcium.

Treatments	Nutrients applied (kg ha ⁻¹)			
	K ₂ O	S	MgO	CaO
N + P (control)	0	0	0	0
MOP	60	0		
MOP + S	60	30	0	0
POLY4 (214 kg ha ⁻¹)	60	41	13	36
POLY4 (429 kg ha ⁻¹)	60	81	26	73

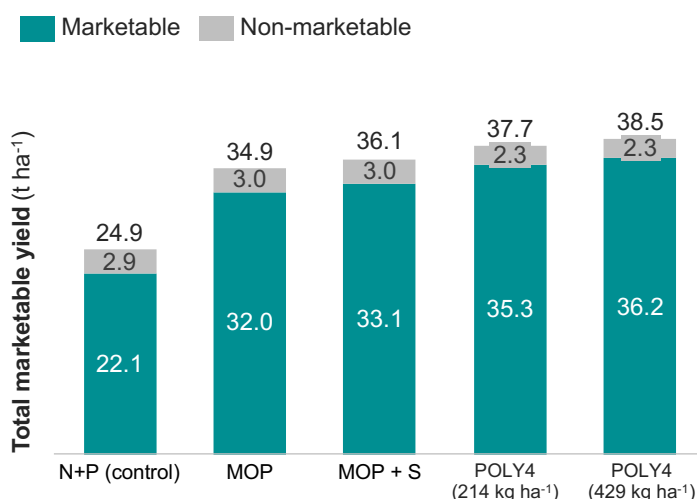
*All treatments received 120 kg N ha⁻¹ and 40 kg P₂O₅ ha⁻¹ from urea and DAP. POLY4 (214 kg ha⁻¹) treatment received half of K₂O from POLY4 and half from MOP. POLY4 (429 kg ha⁻¹) treatment received all K₂O from POLY4.

YIELD ADVANTAGE



MOP + POLY4 (214 kg ha⁻¹) improved yield by 2.2 t ha⁻¹ compared to MOP + S, 3.3 t ha⁻¹ compared to MOP, and 13 t ha⁻¹ compared to N + P. There was an additional yield benefit when POLY4 was used as the only K fertiliser (429 kg POLY4 ha⁻¹).

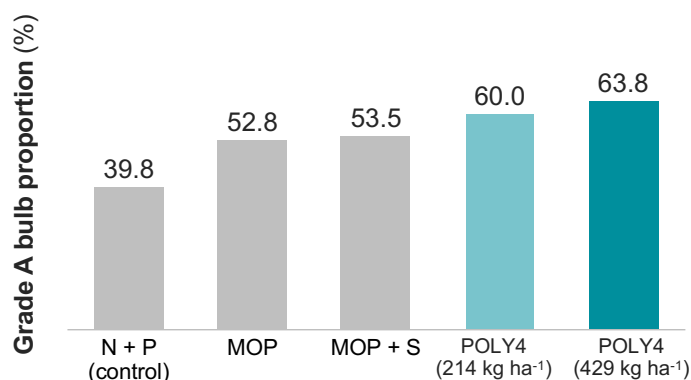
POLY4 treatments had the lowest proportion of non-marketable (smaller than 2.5 cm, with bulb rot or have bolted) onions by weight ensuring less produce was wasted and more was saleable.



INCREASED BULB WEIGHT



The bigger onions (over 4.5 cm in diameter) are the most valuable. As a proportion of total onion yield, POLY4 treatments had significantly more high-grade onions over standard practices.



TRIAL FOCUS

Compare onion yield and quality with POLY4 treatments against typical farmer practices and local fertiliser recommendations.

PARTNER

Chandra Shekhar Azad University of Agriculture and Technology, Kanpur

LOCATION

Uttar Pradesh, India

DATE

2019

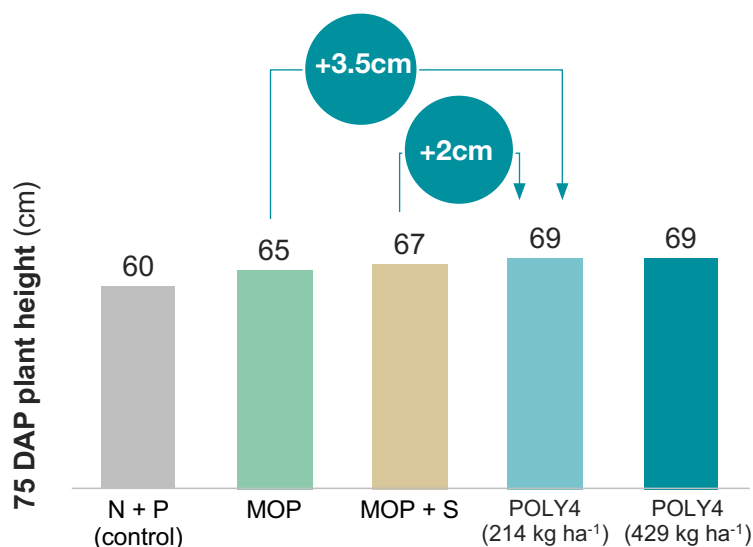
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IMPROVED PLANT GROWTH



Improved plant growth is important for the crop to gain a competitive advantage over weed species and for potentially greater bulb yields.



*DAP (days after planting)



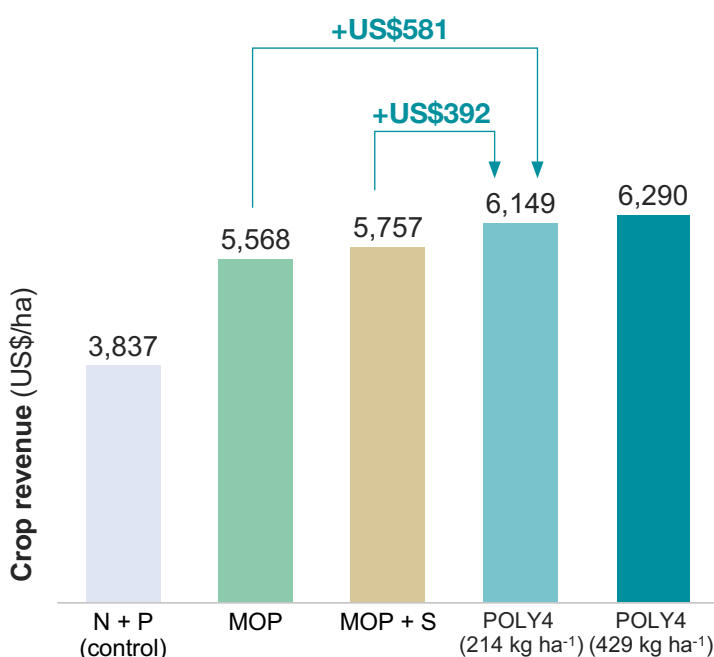
TRIAL FOCUS

Compare onion yield and quality with POLY4 treatments against typical farmer practices and local fertiliser recommendations.

BETTER CROP REVENUE



Income was increased by US\$392 with POLY4 (214 kg ha⁻¹) compared to the locally recommended MOP + S practice, and by US\$581 compared to MOP.



PARTNER

Chandra Shekhar Azad University of Agriculture and Technology, Kanpur

LOCATION

Uttar Pradesh, India

DATE

2019

Notes: Crop statistics from Horticulture Statistics Division, Department of Agriculture, Coop & Farmers Welfare. Trial was a RCBD with three replicates. Pre-trial soil analysis: pH 8.3, 6 mg P kg⁻¹, 91 mg K kg⁻¹, 840 mg Ca kg⁻¹, 31 mg Mg kg⁻¹, 5 mg S kg⁻¹. Data analysed by Genstat ANOVA with means separation by Fisher's LSD test at 10% significance level. Revenue is the crop price of US\$174/t onions multiplied by the yield.

Source: Chandra Shekhar Azad University of Agriculture and Technology (2019) 111000-CSAU-111011-18 (onion).

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