Growing SPRING BARLEY IN POLAND





KEY FINDINGS

An average 4% yield improvement

Grain number and weight increase

Higher revenue

POLY4 BENEFITS



Source of macro and micro nutrients



Sustained nutrient supply



Suitable for organic farming



Low CO₂ emissions



Compatible with other fertilizers and farm spreaders

A CASE FOR POLY4

- Barley is an important cereal crop in Poland with 1.1 million hectares harvested per year.
- Average barley yield is low (3.5 tonnes per hectare) compared with other European countries such as Germany that yields 6 to 7 tonnes per hectare.
- Soil fertility and the low use of fertilizers, particularly potassium, contribute to the poor yields seen in Poland.
- POLY4 supplies K, S, Mg and Ca in one product with a sustained nutrient delivery to meet crop demand.

| Treatments | Nutrients applied (kg ha ⁻¹) | | | | |
|------------------------|--|----|-----|-----|----|
| | K ₂ O | S | CaO | MgO | Cl |
| N + P (control) | 0 | 0 | 0 | 0 | 0 |
| MOP | 75 | 0 | 0 | 0 | 58 |
| MOP + AS | 75 | 30 | 0 | 0 | 58 |
| MOP + POLY4 (70:30) | 75 | 30 | 27 | 10 | 45 |

*All treatments received standard N and P fertilizer applications.

INCREASED GRAIN YIELD



Even though field trials were affected by drought in 2018, inclusion of POLY4 achieved higher grain yields in three trials and similar yields in two compared to MOP + AS. Across the five responsive sites POLY4 increased yield by an average of 4%. Higher yields improved revenue on average by US\$37/ha.



IMPROVED YIELD COMPONENTS



MOP + POLY4 fertilized barley had most grains. Thousand grain weight was also the highest after including POLY4 in the fertilizer programme.



Notes: 1) FAO (2003) Fertilizer use by crop in Poland; 2) Trials were considered responsive if MOP and/or MOP + POLY4 had significantly (P < 0.1) higher yield than N + P (control); Five out of eight spring barley trials conducted were responsive; 3) Five barley cultivars: Melius (Baborówko), KWS Vermont (Grabów site 1), Ella (Grabów site 2), Kucyk (Olawa County), and SOLDO (Pulki); 4) Ihitial soil tests at responsive sites: Baborówko site 1 H (water) 5.5, 115 mg K kg⁻¹, 980 mg Ca kg⁻¹, 32 mg Mg kg⁻¹; Grabów site 1 - pH (water) 6.0, 89 mg K kg⁻¹, 570 mg Ca kg⁻¹, 40 mg Mg kg⁻¹; Olawa County site 1 - pH (water) 6.1, 215 mg K kg⁻¹, 1180 mg Ca kg⁻¹, 63 mg Mg kg⁻¹; Pulki site 1 - pH (water) 5.9, 162 mg K kg⁻¹, 300 mg Ca kg⁻¹, 66 mg Mg kg⁻¹; Pulki site 2 - pH (water) 5.2, 201 mg K kg⁻¹, 1050 mg Ca kg⁻¹, 33 mg Mg kg⁻¹; 5) N and P applied as urea and DAP at 193 kg N ha⁻¹ and 50 kg P₂₀₅ ha⁻¹.

Source: Institute of Soil Science and Plant Cultivation, National Research Institute (2018), 49000-PUL-49011-17 (spring barley).



TRIAL FOCUS

To compare the effects of POLY4 fertilizer programme on spring barley to typical local alternatives at five K and/or S responsive sites.

PARTNER

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LOCATION

Baborówko, Grabów, Oława County, and Pulki, Poland



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