Niab Plant Science into Practice

SAXMUNDHAM: MODERN P MANAGEMENT LEARNINGS

THE MORLEY AGRICULTURAL FOUNDATION

The Saxmundham Experimental Site is delivering new guidance on soil management since the introduction of the new treatments.

Soil organic matter

- In 2025, soil organic matter was ~0.7% higher in the FYM plots than in plots receiving no organic amendments (Figure 1).
- While 0.7% may seem small for over a century of manure applications, it is a 18% relative increase, likely contributing to improvements in soil structure, water holding capacity and other nutrient availability.
- Green Waste Compost (GWC), first applied in autumn 2019, has led to a detectable increase in organic matter, in 2025 a ~0.4% increase in soil organic matter compared to PK plots. Detectable increases in soil organic matter can be achieved with regular additions of organic amendments.

Yield response

Historic yield comparisons across the seven treatments are in Figure 2. Yield results are based on the mean of four cropping years with updated treatments since 2019 (2019-2022 and 2025; wheat, barley, beans, wheat), with 2023 and 2024 fallowed for black-grass control.

- No yield response was observed from mineral K fertiliser; likely due to the soil's inherent K-releasing (untreated plots remain around Index 2–).
- A significant yield increase over the untreated control was observed from foliar-applied P in 2025. However, since 2020, responses have generally been small and inconsistent.
- Applying mineral P to maintain Index 1 resulted in a 23% increase in yield compared with the K-only treatment. Similar improvements were observed with GWC applications, indicating that organic amendments can deliver a rapid response were soil function needs improvement.
- Maintaining soil P at Index 2 using mineral fertiliser increased yield by 35% compared with Index 0, highlighting the importance of regular soil testing and appropriate P management.
- Regular FYM applications increased yield by a further 18% compared with mineral P and K alone at Index 2, demonstrating benefits beyond nutrient supply.
- This additional response from FYM is likely driven by improved soil structure, enhanced availability of nitrogen and micronutrients, and better water-holding capacity and drainage.

Figure 1. Soil organic matter since 2017
------ = indicates treatment updates

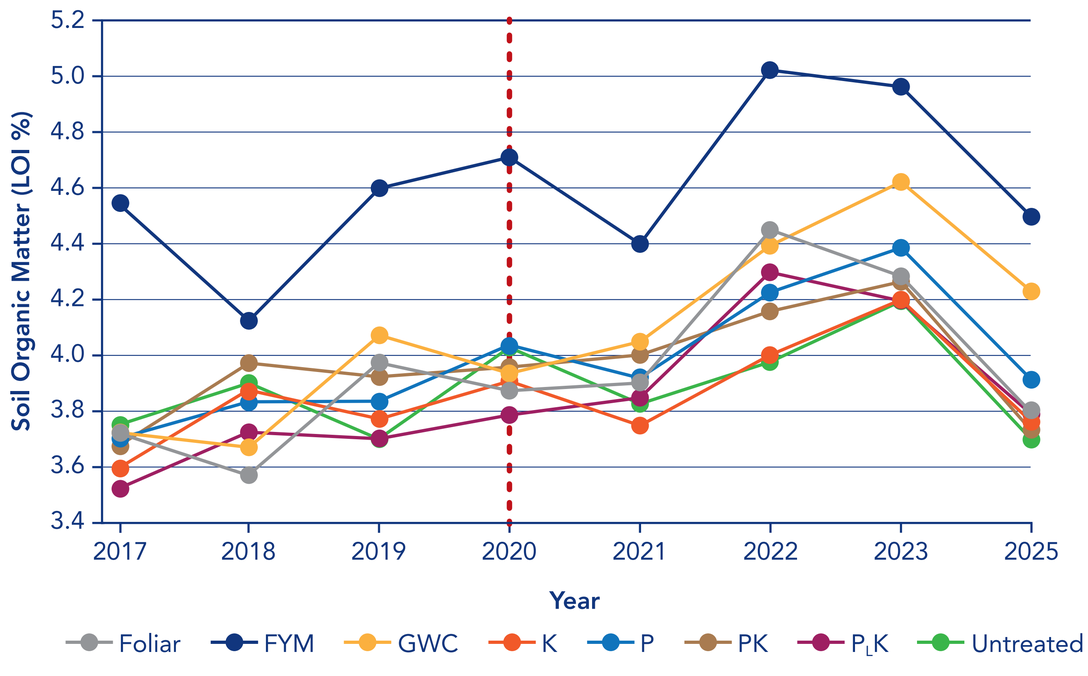

Figure 2. Yield response to various P treatments (2004-2024). ------ = indicates treatment updates