

How can Nature-Based Solutions (NBS) make UK farming more resilient and resource-efficient?



Experiences from the British trans4num NBS sites at Rothamsted Research show that applying composted organic matter and recycling waste-based fertilisers can improve soil health, reduce emissions, and strengthen the resilience of food systems. These innovations bridge long-term agricultural research with real-world farm challenges under changing climate conditions.

Our field observations suggest several clear benefits:

- **Compost additions** increase soil organic carbon, enhance soil structure, and boost biodiversity within the soil ecosystem.
- **Reduced tillage** combined with diverse crop rotations helps retain moisture, improve weed control, and lower energy use.
- **Recycled phosphorus fertilisers** such as Thallo, produced from abattoir by-products, perform comparably to conventional mineral fertilisers while reducing reliance on imported rock phosphate.
- **Integrated modelling** links site-level data with national nutrient budgets, helping to identify sustainable nutrient flows under UK conditions.
- **Farmer engagement** events show growing interest in compost use and circular nutrient solutions, particularly in response to rising input costs.
- **Adopting NBS** practices directly supports the UK's net-zero and soil carbon targets.
- The research **highlights the importance** of adaptive management, using evidence-based tools to tailor NBS adoption to different soils, crops, and regional contexts.

Take-away message

Nature-based solutions offer UK farmers practical, proven ways to build soil carbon, recycle nutrients, and reduce dependence on imported fertilisers. By connecting long-term science with on-farm innovation, trans4num demonstrates how circular nutrient systems can drive a resilient, low-emission future for British agriculture.



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