

Gypsum: Reducing Phosphate Loss in Herefordshire Soils

29.04.26

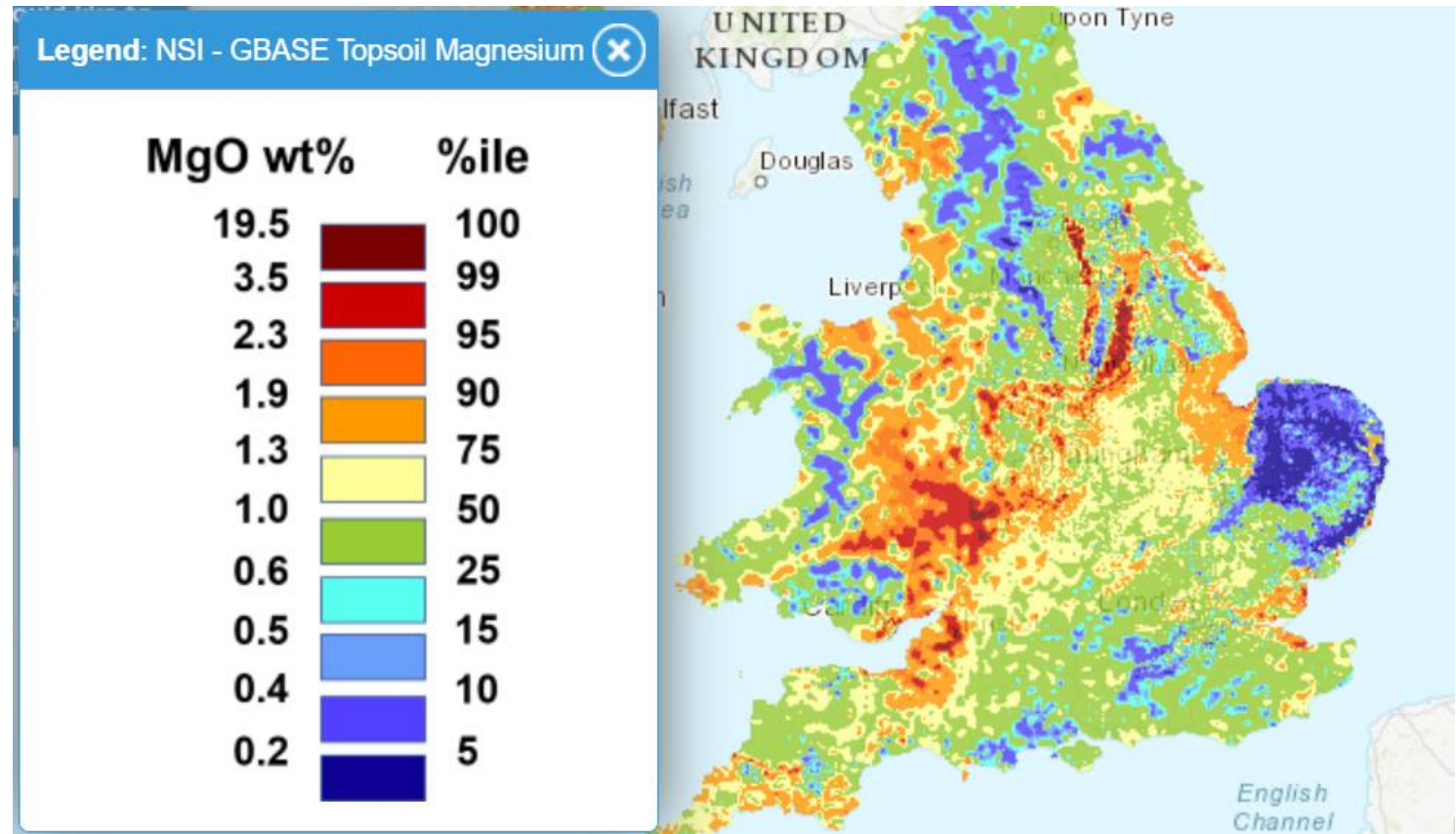
Nutrient Management Board

Gypsum

- Calcium sulfate dihydrate
- Available as a mined product or recycled from plasterboard

Herefordshire

- Magnesium rich, calcium poor
- High legacy phosphorous



[UK Soil Observatory](https://www.uksoilobservatory.org/)

International evidence base

- [Transport of P decreased by 35 and 54% in soils amended with 4.5 and 9.0 M.T./ha gypsum](#)
- [Gypsum amendments as a potential tool for slowing P loss from agricultural areas with high P loss potential](#)
- [Gypsum \(\$\text{CaSO}_4 \cdot 2\text{H}_2\text{O}\$ \) amendment can reduce phosphorus \(P\) export from agricultural fields and protect water quality.](#)

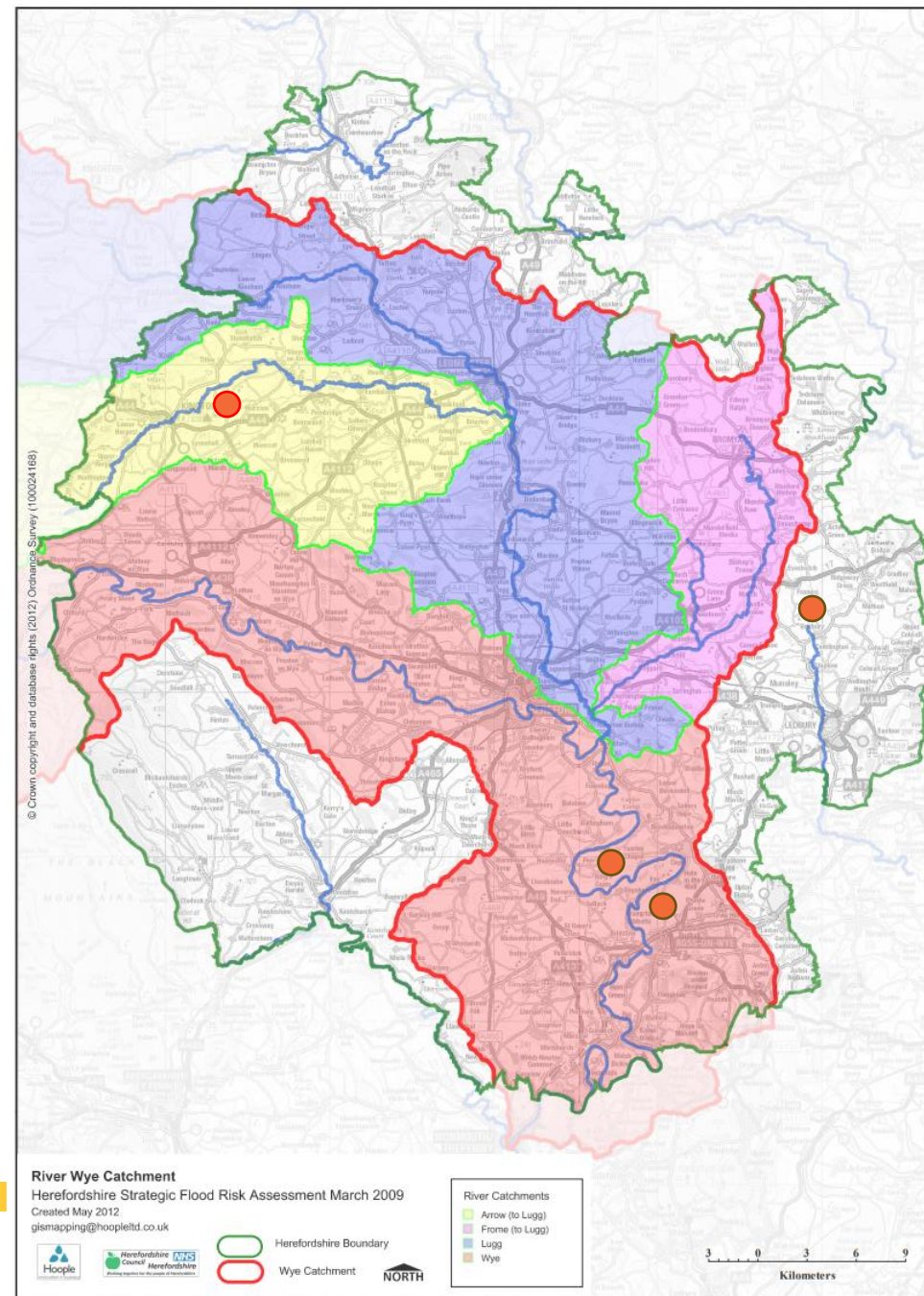


[GYPREG - Interreg Baltic Sea Region](#)

The project GYPREG brings together national and public authorities, NGOs, farmers and farmers' associations to increase the uptake of gypsum treatment of agricultural fields to reduce phosphorus losses from agriculture.

Rapid analysis of Herefordshire soils

- Partnership with Lancaster University
- 4 soil types from 4 farms spanning the county
 - Sandy Loam
 - Sandy Silt Loam
 - Silty Clay Loam
 - Clay Loam



Rapid analysis of Herefordshire Soils



- Utilising recycled gypsum
- 3 application rates:
 - 1 tonne/ha
 - 3 tonne/ha
 - 5 tonne/ha
- Analysis pre and post application
 - Water extractable phosphate
 - Plant available phosphate

Outcomes

Measurable and statistically significant reductions in water-extractable phosphorus

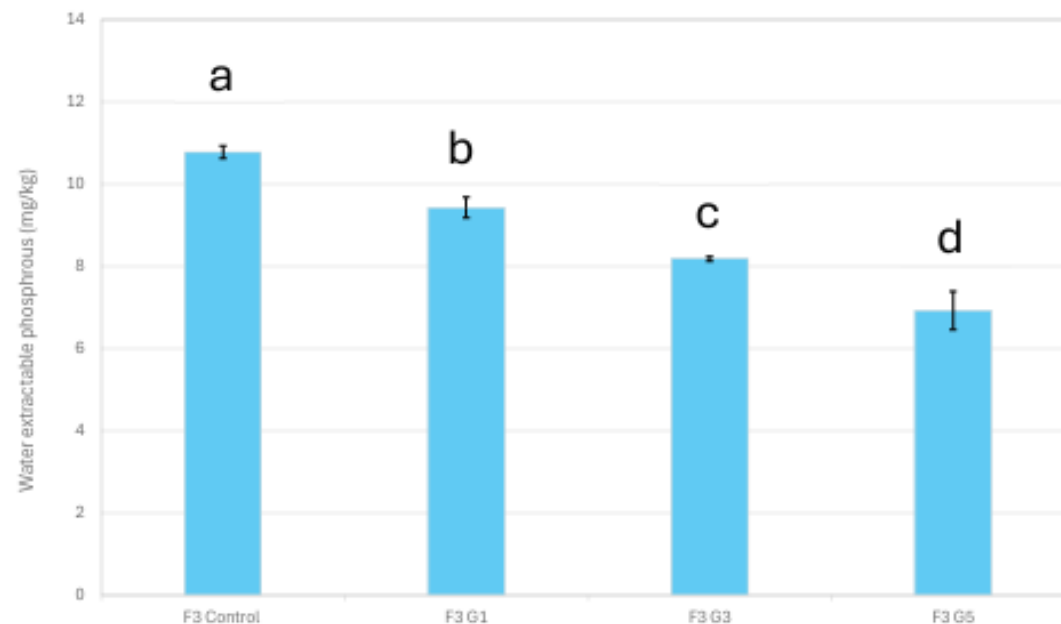
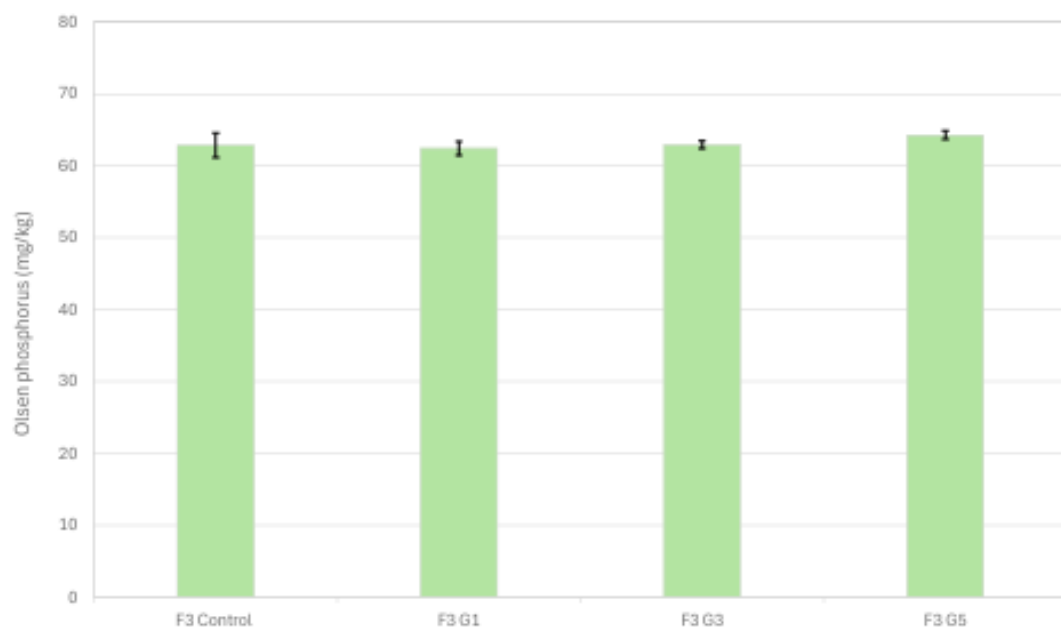


Figure 3. Olsen extractable phosphorus and water extractable phosphorus concentrations for F3 soil

Outcomes

Water extractable phosphorous

- 1 tonne/ha
 - 2.6 – 12.5 % reduction
- 3 tonne/ha
 - 13.4 – 25.8% reduction
- 5 tonne/ha
 - 18.3 – 35.8% reduction

No significant change in plant available phosphorous

- Most significant reduction in WEP seen in soils with high baseline phosphorous content
- Other factors at play:
 - Soil type
 - C:Mg ratio
 - Calcium content

Next steps

Field scale trial:

- 12-month trial
- Single application
- 5 sampling events
- Additional analyses
 - PH
 - Total P/ N/ Carbon
 - C:Mg ratio
 - Infiltration rates



Many thanks