

Optimising sulphur management to maximise oilseed rape yields and farm profitability (OPTI-S)

Project number	216-0007		
Start date	01 August 2013	End date	30 September 2016

Project aim and objectives
To develop improved guidance for farmers on sulphur (S) management through additional S rate response field experiments and by quantifying the S supply from applications of organic materials.
Objective 1 (WP1) To determine optimum S rates from 4 additional field experiments on OSR
Objective 2 (WP2) To quantify the S supply from organic materials to OSR
Objective 3 (WP3) To characterise manure total and extractable S content

Key messages emerging from the project
<ul style="list-style-type: none"> Field experiments in 2014 at Frostenden and Woburn showed visual symptoms of S deficiency and a clear visual response to applied S (from both fertiliser and organic material applications) Sulphur response curves will be fitted to harvest data from both sites to determine optimum S rates and the crop availability of S from the applied organic materials

Summary of results from the reporting year
<p>Field experiments were with OSR established at two sites in 2013; at Frostenden, Suffolk (loamy sand) and Woburn, Bedfordshire (sandy loam). At each site, manufactured S fertiliser was applied at 6 S rates (0, 30, 60, 90, 120 and 150 kg/ha SO₃) and at two N rates (sufficient to achieve target yields of 3.5 and 5 t/ha, respectively), to determine optimum S rates and whether increasing the N rate increases the S requirement. In addition, at each site there were 10 organic material treatments, viz. – autumn applied cattle FYM, broiler litter and four biosolids products, and spring applied pig slurry, broiler litter and two biosolids products.</p> <p>Topsoil (0-15 cm) extractable S (7 mg/kg at both sites, sampled September 2013), was below the generally accepted level for S deficiency in soil of 10 mg/kg. Leaf samples taken from the zero S control treatments in April 2014 had a malate:sulphate ratio of 33:1 at Frostenden and 26:1 at Woburn indicating S deficiency (a ratio > 1.5:1 is commonly used to diagnose S deficiency).</p> <p>Both sites showed a clear visual response to applied S (in fertiliser and organic materials). The zero S control treatments showed symptoms of S deficiency including a thinner crop, diffuse yellowing on the leaves, paler flowers and reduced number of pods (Plate 1).</p> <p>An additional field experiment at High Mowthorpe (S response plots only) had to be abandoned</p>

The results described in this summary report are interim and relate to one year. In all cases, the reports refer to projects that extend over a number of years.

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due to weed competition (charlock and spring OSR volunteers), and will be repeated in 2015.



Plate 1a. Frostenden 8th April 2014



Plate 1b. Frostenden 25th April 2014



Plate 1c. Woburn 30th April 2014



Plate 1d. Frostenden 15th July 2014

Key issues to be addressed in the next year

- Analysis of 2014 harvest data from Frostenden and Woburn
- Additional field sites in 2015 at Gleadthorpe (S response and organic material treatments) and Rosemaund (S response)
- Collection and analysis of organic materials for WP3 (characterise manure total and extractable S content)

Lead partner	ADAS
Scientific partners	Rothamsted Research
Industry partners	GrowHow, Monsanto, Severn Trent Water, Anglian Water, Yorkshire Water, United Utilities, Geneco, DairyCo and EBLEX

Has your project featured in any knowledge transfer in the last year?

None as yet, as analyses of first year yield data are awaited.

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