The River Camel and Tributaries Sulphur inputs on silage swards can increase efficient nutrient use

Sulphur (S) deficiency has become widespread in many countries in Europe since the 1980s due to a massive decrease in the atmospheric deposition of sulphur. Yield responses to sulphur of between 5 and 30% are common in Ireland, the UK and other countries.

ECSFDI established farm demonstration plots in three catchments including the River Camel and tributaries (plate 1) to show the effects of applying sulphur fertiliser to silage swards post 1st cut.

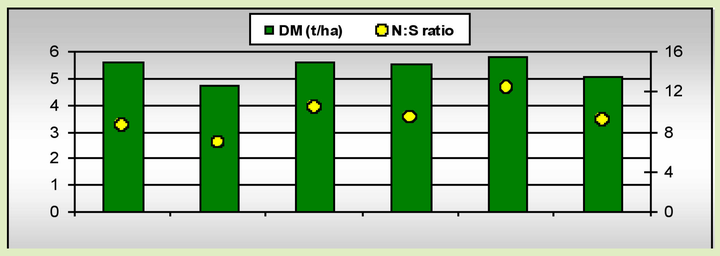
Treatments:

1. the farmer's usual application of fertiliser (plate 2)
2. the same application rates of nitrogen and potash plus:

- If sulphur is used in 1- no sulphur added,
- If no sulphur is used in 1 - this treatment would contain sulphur.

Results and discussion:

Fig. 1: The DM and N:S ratio at each site on plots applied N+ S fertiliser and N only



NB: C- Camel; T – Tamar; WCC –West Cornwall Catchments

Fig 1 shows the yields and N:S ratio at each demonstration site. The N:S ratio in the foliage indicates the nitrogen to sulphur balance which is important for healthy crop growth. The optimum varies between crops and can indicate whether there is a sulphur deficiency. The critical level in grass is N:S ratio greater than 13 (Fertiliser Recommendations RB209, (DEFRA, 2000). However, when sulphur deficiency is moderate, the analysis may indicate sufficient levels when in fact the addition of sulphur can increase the yield (see fig.1) and quality of the grass.

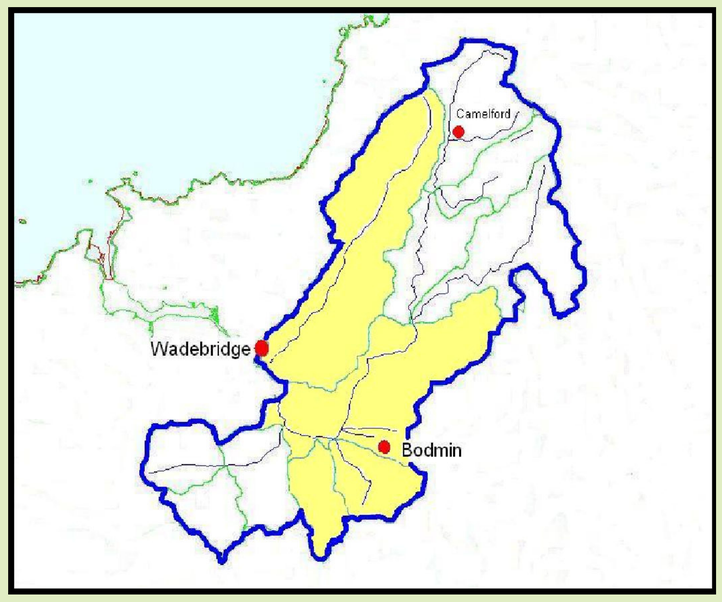
The additional yield, protein and value is shown in Table 1. The cost of including sulphur in the fertiliser was approximately £3/ha.

Table 1: Additional yield, protein and value when N+S fertiliser treatment was applied

	Additional Yield (DM t/ha)	% Yield increase	Additional Protein (Kg/ha)	% Protein increase	Value @ £40/t
Camel	0.91	19	488	58	36
WCC	0.76	15	38	8	30
Tamar	No measurable difference		240	22	0

Conclusion:

- Where the soil supply of sulphur has not been sufficient there has been a substantial economic yield response to applied sulphur (Fertiliser Recommendations RB209, (DEFRA , 2000)



suggests applications of 25–40 kg/ha SO3 as a sulphate containing fertiliser, at the start of growth before each cut).

- There was an economic increase in grass quality, through an increase in potential protein levels in the conserved grass.
- There was better utilisation of nitrogen and phosphate nutrients, reducing the risk and extent of diffuse pollution.

A clear solution for farmers

ENGLAND CATCHMENT SENSITIVE FARMING DELIVERY INITIATIVE

The England Catchment Sensitive Farming Delivery Initiative (ECSFDI) is delivered in partnership by Natural England, the Environment Agency and Defra.

NATURAL ENGLAND

Environment Agency

defra
Department for Environment Food and Rural Affairs

www.defra.gov.uk/farm/environment/water/csf