Potential for increased efficiency in crop and animal production by applying nutrients as a foliar spray

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In an annual plant, seed development from flowering to maturity constitutes a heavy drain on the plant's reserves of inorganic nutrients. Supplementing these reserves by the addition of nutrients in a foliar spray at flowering may help remove a nutritional limitation to seed yield, and aid the retention of nutrients in the stem and leaves.

In addition to the fertiliser normally applied at sowing, foliar sprays containing N, P, K and S were applied to crops of wheat. oats, and lupins at flowering in 1976 and 1977 by Ozanne and Petch (1978). Grain responses were obtained and in addition, the N and P contents of both the grain and the

stubble were increased. The weight of crop residue left after harvesting wheat represents a very large potential supply of feed for ruminants. But normally the nutrient content and digestibility of stubbles are so low that they are of little value and are frequently just burnt off.

During 1978 further experiments were carried out on wheat using a foliar spray supplying N. P. K and S at nominally 30, 3, 4, and 1.5 kg/ha. The results are shown in Table 1.

TABLE 1. Effect of applying N. P. K and S in a foliar spray to wheat at flowering in 1978

	Grain		Breakdown of crop residues		
	Yield kg/ha	Crude protein %	Rumen liquor %	Rumen %	Soil mg Co_2-C/wk
Unsprayed	1.13	10.9	47	43	23.1
Sprayed	1.35	12.7	52	46	24.7

Breakdown of the crop residues after harvest was measured by incubation in rumen liquor for 48 hours. by digestion for 50 hours in the rumen of fistulated sheep, or by measuring the rate of CO_2 evolution from residues mixed in soil and incubated in the laboratory. The foliar spray increased breakdown in both the "in vitro" and "in vivo" techniques suggesting an increase in digestibility. The increased rate of breakdown in soil suggests faster incorporation into the soil organic matter and the possibility of resultant improvements in soil structure.

Ozanne. P.G. and Petch. Ann (1978). 8th Intl. Coll. on Plant Anal. and Fert. Problems, Auckland, N.Z. 1978. Proceedings p.361-366.