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Summary only

PASTURE COMPOSITION AND BLOAT

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The interaction of environmental, plant, microbial and animal factors may result in the bloating of cattle grazing legume-dominant pastures. Plant components considered to be relevant in the aetiology of bloat are saponins, pectins and proteins to stabilize foams in the rumen, tannins which precipitate proteins, non-structural carbohydrates which provide a rapidly fermentable substrate for gas production in the rumen, and lipids as potential antifoaming agents.

In three experiments, in late September, early October and November, lactating twin cattle were grazed for three days on white clover- or grass-dominant pastures. At 8.00 a.m. and 4.00 p.m. each day, bloat severity (scored 0-5) and incidence were recorded, and pastures sampled. These samples were freeze-dried and analysed for total nitrogen, soluble protein, total non-structural carbohydrates (TNSC) and lipid. Dry matters were determined on fresh material.

During the trials, bloat incidence varied according to pasture type, with up to 80% of cows reaching a score of 2 or greater on clover, compared with up to 25% on grass. Weather conditions varied with respect to rainfall (0 to 18 mm/day), sunshine (0 to 11.3 h/day), grass minimum temperatures (3.4 to 14.1° C), minimum air temperatures (8.4 to 14.8° C) and maximum air temperatures (15.9 to 21.2° C). No relationship between bloat and weather was obvious.

Values for chemical analyses of pasture samples, on a dry matter basis, fell within the following ranges: total N for clover (3.7 to 4.5%), grass (2.6 to 4.3%); soluble protein nitrogen in clover (0.88 to 1.49%), in grass (0.84 to 1.65%); lipid in clover (4.3 to 6.3%), in grass (4.3 to 6.8%); and total non-structural carbohydrate in clover (8.7 to 13.7%), in grass (11.9 to 24.7%). Dry matter ranged between 9.4 and 15.5% and between 10.7 and 18.1% for clover and grass, respectively.

Diurnal effects were consistently seen only for dry matter and TNSC in both pasture types, the higher afternoon levels being particularly marked for grass TNSC.

Bloat did not appear to be associated with variations in plant dry matter, TNSC, lipid or nitrogen.