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Summary only

FORMIC ACID AS AN ADDITIVE FOR LUCERNE SILAGE

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Six pairs of silage stacks were made at Wairakei with spring and autumn-cut mature lucerne in the three successive seasons commencing spring 1970. One of each pair received formic acid at about 4 l/t. The other was untreated.

The response to formic acid was assessed by self-feeding the silages to young Angus steers, and measuring liveweight gain (LWG), by indoor feeding to Perendale wether hoggets and measuring digestibility, voluntary intake and in two years LWG and by chemical analysis of the silages. Results as overall means for formic acid treated silage and non-formic silage respectively, were as follows: LWG g/day (cattle) 442 v. 60 ($P < 0.001$); LWG (sheep) 21 v. -31 ($P < 0.001$); OM digestibility 65.7 v. 58.6 ($P < 0.01$); DM intake (g/day/kg LW^{0.75}) 58 v. 45 ($P < 0.05$).

Formic acid-treated silage contained more organic matter 85.8 v. 82.6 ($P < 0.05$), more digestible organic matter 56.5 v. 48.5 ($P < 0.01$); and less fibre 38.4 v. 44.2 ($P < 0.05$) than untreated silage, but lower values were recorded for ammonia (9.7 v. 24.2 $P < 0.01$), pH (4.36 v. 5.22 $P < 0.001$) and total VFA (3.1 v. 7.5 $P < 0.001$).

Fibre content of silages was the only feed constituent significantly related to animal performance data DMI, DOM and LWG. It is postulated that the higher DMI, DOM and LWG recorded for formic acid-treated silages is ascribable to decreased loss of OM, hence of nutrients, associated with the damping down of the silage fermentation by formic acid.

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