Lamb Growth on Leaf Turnips, White Clover and Pasture in Summer

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Introduction The objective was to compare lamb performance on new pasture and on white clover with that on hybrid leaf turnip to determine factors that caused the variable lamb growth rates on leaf turnips over summer reported in anecdotal farmer evidence .

Brassica species can contain secondary compounds that have anti-nutritive properties . The most common of these compounds are SMCO (S-methylcysteine sulphoxide) and glucosinolates . SMCO is known to have a haemolytic anaemia effect on animals , and glucosinolates affect thyroid function .

Materials and methods Two hundred and seventy weaned ,entire male Romney cross lambs with an average live weight of 28 .1± 0 .1 kg were rotationally grazed on one of three forage treatments : pasture [perennial ryegrass cv Bealey (*Lolium perenne*) and white clover cv Apex (*Trifolium repens*)] ; hybrid leaf turnip cv Hunter (*Brassica rapa*) ; and white clover cv Apex . Each treatment was 2 .6 ha with three replicates .Lambs were introduced to their respective herbage treatments on 21 December 2005 and slaughtered 56 days later .Lambs were *ad lib* fed by being offered 4 .5 kg DM/day and not grazing below 10 cm height on leaf turnips and 5 cm on the pasture and white clover .Herbage mass and lamb liveweight measurements were published in Lindsay *et al* .(2007) .

Lamb's blood was sampled via jugular venepuncture (10mL vacutainer® ,EDTA ,Becton-Dickinson Ltd) from a random six lambs from each replicate after 29 and 57 days . These samples were analysed for Heinz-Ehrlich bodies ,(slides stained with new methylene blue) ,to determine any changes in blood levels from secondary compounds within the forages . Scores for Heinz bodies ranged from 1=none present ,2=rare ,3=medium ,4=many ,to 5=maximum bodies present .Lambs were assessed after 15 days for symptoms of photosensitivity . Lambs were subjectively dag scored after 40 days . Scores were on a 1 to 4 scale(1= no dags ,and 4=extremely daggy) .

Results and discussion The concentrations of SMCO and glucosinolates in hand plucked herbage samples of leaf turnips ranged from 0 .2-0 .4 g/g DM and from 3 .3-26 .7 μmol/g DM ,respectively .Although the concentrations increased as the turnips matured they were still relatively low for a forage brassica .There was no difference between the forage treatments in Heinz-Erlich body scores after 29 days ,but after 57 days the score for lambs on the leaf turnips was slightly higher than for the other forages ($P<0.05$,Table 1) .However ,the lamb growth rates of 245 ,269 and 226 g liveweight/day for leaf turnips ,white clover and pasture ,respectively ,suggested that the slight increase in Heinz bodies observed did not affect lamb growth on leaf turnips . No thyroid problems were observed .
Dag scores after 40 days were significantly ($P<0.05$) greater in lambs grazing new pasture than lambs grazing leaf turnip or white clover ,with mean values of 1 .77 ,1 .34 ,and 1 .50 ,respectively . Faecal egg counts were zero ,and no photosensitivity symptoms were observed in any forage treatment .

Table 1 *Scores for Heinz-Ehrlich bodies in blood of lambs grazing different forages .*

Date	Pasture	Leaf turnips	White clover	SEM	Probability
18 Jan 06	1 .3	1 .7	1 .6	±0 .03	0 .249
15 Feb 06	1 .4	1 .8	1 .3	±0 .02	0 .039

Conclusions The growth of lambs grazing on leaf turnips was found not to be affected by secondary chemicals or photosensitivity .Provided grazing management maximises the intake of lambs their average growth rates on leaf turnip over summer can exceed 250 g liveweight/day .

Reference

Lindsay ,C .L . ,Kemp ,P .D . ,Kenyon ,P .R . ,Morris ,S .T .(2007) .Summer lamb finishing on forage crops .*Proceedings of the New Zealand Society of Animal Production* 67 : 123-125 .