Comparison of Ewe Lamb Growth on Herb Based and Ryegrass Based Pastures

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Key words : Cichorium intybus ,Plantago lanceolata ,Lolium perenne ,sheep growth

Introduction Pastures based on chicory and plantain as alternatives to perennial ryegrass have the potential to provide higher nutritive value pastures with superior animal production .As part of a long term evaluation of the persistence and management of herb based pastures the growth of lambs born in spring was compared on herb and ryegrass based pastures in late summer and early autumn .

Materials and methods The experiment was at Palmerston North ,New Zealand on a Tokomaru silt loam soil with a long history of annual superphosphate applications .The four pasture treatments were : herbs/clovers (chicory (*Cichorium intybus*) Choice ,plantain (*Plantago lanceolata*) Ceres Tonic ,red clover (*Trifolium pratense*) Sensation ,white clover (*T . repens*) Tribute) ; plantain/pasture (tetraploid perennial ryegrass (*Lolium perenne*) Stirling (AR1) ,white clover Tribute ,plantain Ceres Tonic) ; new pasture (tetraploid perennial ryegrass Stirling (AR1) ,white clover Tribute) and old pasture (diploid perennial ryegrass with wild type endophyte ,other grass species and white clover) . There were three replicates with 25 Romney ewe lambs (5 months old) and 1 .6 ha per replicate .Lambs were introduced to the treatments on 12/2/2007 to acclimatize ,the experiment started on 22/2/2007 and finished on 12/4/2007 .Grazing management provided *ad lib* intake for the lambs by offering 4 .5 kg DM/lamb/day in a rotational system .Pre and post-grazing herbage mass and height were measured ,and hand plucked samples imitating lamb intakes were taken from cages .Lambs were weighed weekly .

Results and discussion The mean pre-grazing heights were 13 .8 ,15 .1 ,13 .6 and 10 .6 cm and the mean post-grazing heights were 8 .8 ,11 .1 ,11 .1 and 9 .9 cm for herbs/clovers ,plantain/pasture ,new pasture and old pasture ,respectively .The pre (3681 kg DM/ha) and post-grazing (3050 kg DM/ha) herbage masses were similar for herbs/clovers ,plantain/pasture ,and new pasture , but were 5552 and 4578 kg DM/ha ,respectively ,for old pasture .There was a high proportion of dead matter in the old pasture during summer .The pasture heights and herbage masses confirmed that the lambs were *ad lib* fed on all treatments .

The initial liveweight of lambs was 35 .3 kg and final liveweights were 47 .4 ,41 .5 ,41 .5 and 39 .6 kg for herbs/clovers ,plantain/pasture ,new pasture and old pasture ,respectively .Table 1 shows lambs on herbs/clover grew 128 ,128 and 140 g/day faster than lambs on old and new pasture or on plantain/pasture ,respectively .The growth rate of the lambs on herbs/clovers was similar to the mean liveweight growth rates of summer lambs managed as a batch on other high nutritive value forages (Lindsay *et al* 2007) .The lambs on old pasture suffered from symptoms of ryegrass staggers in the 28 days from 8/3/07 to 4/4/07 and remained 37 .3 kg liveweight during this period ,but their growth rate recovered quickly afterwards .The superior lamb growth rates on herbs/clovers suggested that the high nutritive value of chicory and red clover was the main difference between the treatments .This was supported by the metabolisable energy content of herbs/clovers being 13 .3 MJ/kg DM compared with 9 .8 to 11 .7 MJ/kg DM for the other three treatments .

Table 1 *Ewe lamb liveweight growth rates (g/day) on herb and ryegrass based pastures .*

Herbs/clovers	Plantain/pasture	New pasture	Old pasture	SEM	Probability
247	107	119	119	±7 .0	< 0 .0001

Conclusion Lamb growth rates on a herb based pasture ,a mixture of chicory ,plantain ,red clover and white clover ,were near maximum for lambs in late summer and early autumn ,and greatly exceeded lamb growth on ryegrass based pastures .

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 .