The nutritive value of ryegrass pastures on farm

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Image 1 *top and bottom strata in ryegrass*

Ryegrass pastures consist of leaf (a top leafy stratum) and stem (a bottom stemmy stratum) (Image 1). Recent studies at Gatton Research Dairy have demonstrated that cows can achieve high levels of pasture intake when grazing the top leafy stratum of lucerne pastures. Bite size and therefore pasture intake decreased when cows were forced to graze the bottom stratum of pastures. This decline in pasture intake was also associated with a decrease in the nutritive value of the bottom stratum.

In order to quantify the difference in nutritive value between strata of ryegrass pastures, a study was conducted on two farms during the winter of 2018. The farms were located in Glenore Grove (Farm A) and Wilsons Plains (Farm B) in southeast Queensland. Two ryegrass varieties were assessed: Tetila at Farm A and Speedy at Farm B. Pasture cuts from a range of pasture heights were taken from grazing strips ready to be grazed at each farm during the early (June), mid (August) and late (October) ryegrass season.

The results indicated that all four factors (strata, pasture height, farm and month) had an influence on the nutritive value of ryegrass. However, the magnitude of the effect differed between these factors.

Strata was the factor with the greatest influence on the nutritive value in ryegrass (Figure 1). The average protein (29 vs 22 %) and energy (10.5 vs 9.8 MJ/kg DM) content of top stratum was greater than the bottom stratum respectively. Fibre content (neutral detergent fibre, NDF) was lower in the top stratum (38 vs 45 %). This indicates that nutrient intake is likely to be higher when cows graze the top stratum.

Pasture height was the second most important factor influencing the nutritive value of ryegrass (Figure 1). Fibre content consistently increased with pasture height for both strata and farms. However, the pattern of change in protein and energy content with increasing pasture height was not the same for both farms. While the protein and energy of the top stratum tended to decrease with pasture height in farm A, they increased in farm B. Since all samples were collected from the same grazing strip at each farm this difference between farms could be explained by soil fertility. In farm B the samples of tall pasture were probably collected from patches of higher soil nitrogen content which probably resulted in higher protein content.

Farm and month were the two factors with the least influence on the nutritive value of ryegrass. Differences in nutritive value between farms and months were much lower than the observed differences between strata. Therefore, months are not shown as separate lines in Figure 1.

In conclusion, irrespective of pasture height the nutritive value of the top leafy stratum is greater than the bottom stemmy stratum of ryegrass pastures. Therefore maximising leaf intake will increase diet quality and most likely have a positive impact on pasture intake and milk yield.

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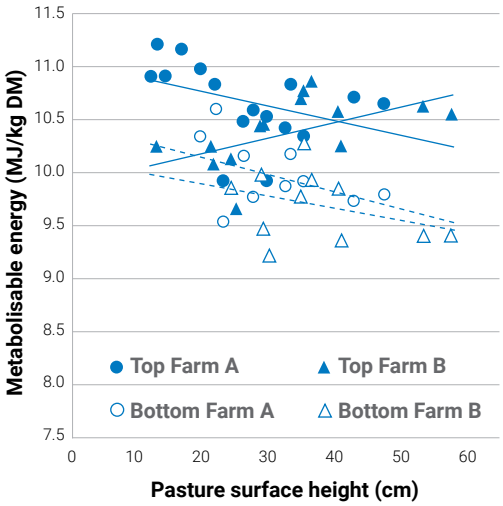

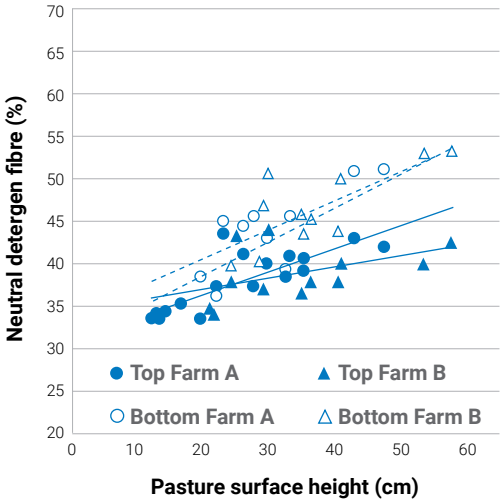

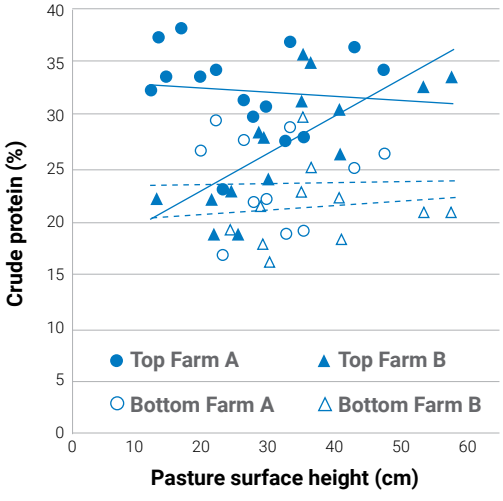

Figure 1 *Nutritive value of the top (solid lines) and bottom (dashed lines) strata of ryegrass pastures in two farms. Each line includes data from June, August and October 2018.*