

# The influence of pasture height on leaf and stem on offer of ryegrass pastures



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**Image 1.** All ryegrass pastures consist of a top leafy stratum and a bottom stemmy stratum irrespective of pasture height

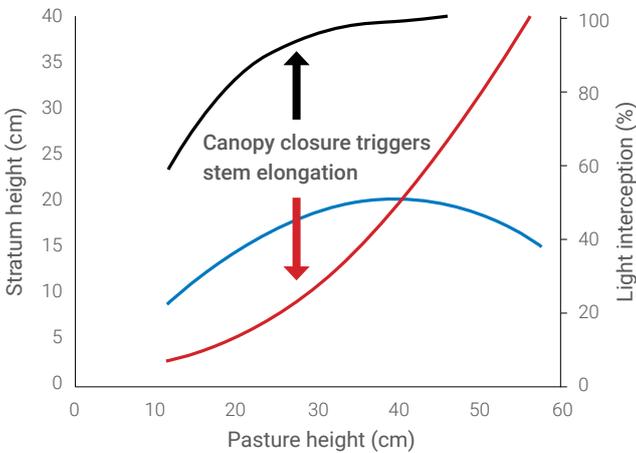
Ryegrass pastures consist of leaf (a top leafy stratum) and stem (a bottom stemmy stratum) (Image 1). The forage quality of the leaf is higher than the stem (Table 1). Cows will have a higher intake when allocated only leaf and milk production will decline when cows are forced to graze the stem.

	Neutral detergent fibre (% DM)	Crude protein (% DM)	Metabolisable energy (MJ/kg DM)
Top leafy stratum	39.1	29.2	10.4
Bottom stemmy stratum	43.6	22.1	9.8

**Table 1** Nutritive value for strata of ryegrass pastures (25 to 35 cm height). Data collected on farm in 2018.

Therefore, in order to achieve maximum cow productivity from pastures, it is recommended to graze only the leaf and avoid forcing the cows to graze the stem. However, this grazing management strategy may result in an undesirable accumulation of stem and pasture residues if appropriate management practices are not put into place. Pasture height is a well known factor that affects pasture residues. Therefore, during the winter of 2018 a study was conducted on two farms to look at the relationship between pasture height and the height and amount of the leafy and stemmy strata. The farms were located in Glenore Grove (Farm A) and Wilsons Plains (Farm B) in southeast Queensland. Two ryegrass varieties were assessed: Tetila in Farm A and Speedy in Farm B. Pasture cuts of a range of pasture heights were taken from each farm during the early (June), mid (August) and late (October) ryegrass season.

The results indicated that the height of the leafy and stemmy strata increased with pasture height in similar amounts in pastures of up to 30 to 35 cm (Figure 1, pg 3). Taller pastures resulted in full canopy closure (Figure 1, pg 3) which triggered stem elongation. Therefore, the amount of stem



**Figure 1.** The relationship between pasture height, light interception (black line) and the height of the top leafy stratum (blue line) and the bottom stemmy stratum (red line) for ryegrass pastures. 90 datapoints from two farms, 3 sampling months in 2018 and 15 observations per month.

The results seem to indicate that there is no benefit in letting the pasture grow beyond 30 to 35 cm. Beyond that pasture height, there are three potentially negative consequences for the pasture and animal productivity

in pastures taller than 30 to 35 cm was much greater than shorter pastures particularly at the end of the season (Figure 2, pg 3).

The results seem to indicate that there is no benefit in letting the pasture grow beyond 30 to 35 cm. Beyond that pasture height, there are three potentially negative consequences for the pasture and animal productivity:

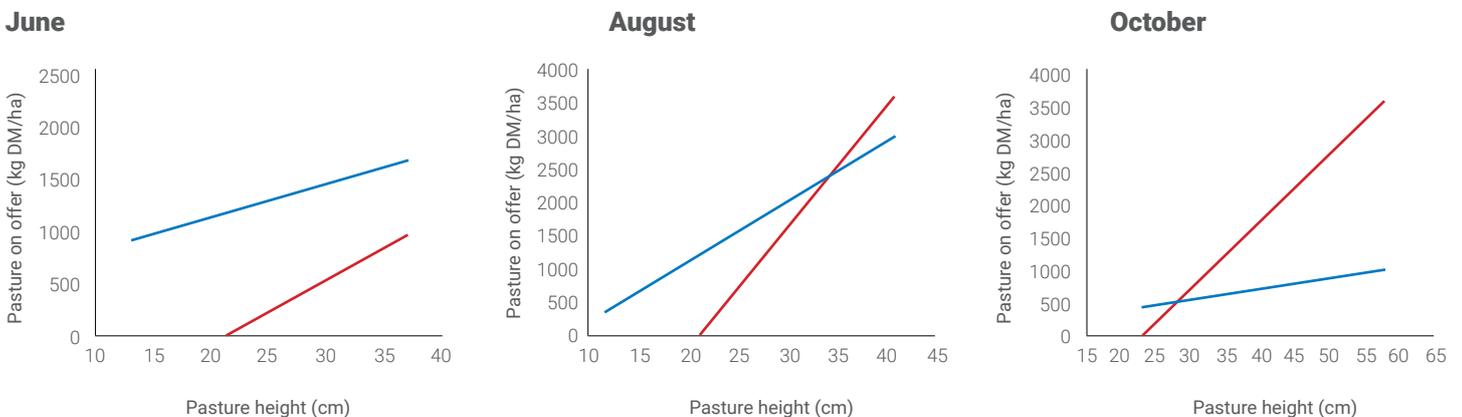
1. A large proportion of the pasture growth consists of an accumulation of the stem.
2. There may be a decrease in tiller density. This may result in a decline of growing points in the pasture which may reduce the regrowth rate of the pasture after grazing.
3. Grazing only the top leafy stratum allows the cows to achieve high pasture intake but would leave large pasture residues of at least 10 cm (Figure 1). These large residues are recommended to be reduced which may increase the cost of the system if done mechanically by slashing or mulching.

**Grazing short pastures of less than 20 cm may also have negative consequences for the pasture and the animals:**

1. It is well documented for other pasture species that bite size and intake rate is low in short pastures which may result in low daily pasture intakes.
2. Also, grazing short pastures may compromise the growth rate of the pasture. As shown in Figure 1 canopy closure has not occurred indicating that the pasture has not reached maximum growth rate.

**The ideal pasture height for grazing ryegrass seems to be between 20 and 30 cm for the following reasons:**

1. Reasonable pasture residues of less than 10 cm are likely to be achieved after grazing the top leafy stratum (Figure 1).
2. The pastures may be close to achieving maximum growth rate as their canopy is nearly fully closed (Figure 1).
3. The pastures are tall enough so that bite size, intake rate and thus daily pasture intake may not be compromised as found for other grass species. ■■



**Figure 2.** The relationship between pasture height and the top leafy (blue lines) and bottom stemmy stratum (red lines) on offer of ryegrass pastures. 90 datapoints from two farms, 3 sampling months in 2018 and 15 observations per month.

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