DTT GIBSON FARM TRIAL
2017 – 2019

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Introduction

In the two seasons from 2017 – 2019, the farm has been investigating the biophysical and economic effects of supplementing grazing dairy cows with palm kernel expeller (PKE) compared with a PKE blend or grain.

Background

In-shed feeding has become more common in recent years, due to improved utilisation of the imported feed (vs feeding in trailers or feed pads), ability to feed blends, and incorporate minerals. With Fonterra imposing fat evaluation index (FEI) grading, feed blends are being used as an alternative to straight PKE so more can be fed during feed deficits.

Trial Design

This trial investigated the marginal benefit, and or cost of 1) increasing stocking rate and utilising PKE within the limitations of Fonterra's FEI or 2) increasing stocking rate and offering a PKE blend or maize grain / barley compared to a pasture-only system.

2017-2018 Season
In June 2017, 227 Friesian cows were split into three 24 ha farmlets. Annual pasture growth over the past 9 seasons = 15.4 t DM/ha and cow liveweight = 510 kg/cow. Stocking rate based on 90 kg LWT/t feed available/ha

1. All grass – stocked at 2.9 cows/ha (69 Friesian cows)
2. PKE farmlet – stocked at 3.29 cows/ha (79 Friesian cows) feeding 500 kg/cow PKE
3. Grain farmlet – stocked at 3.29 cows/ha (79 F cows) feeding 500 kg/cow either barley or maize grain

2018-2019 Season
In 2018-2019 season the maize grain / barley was replaced by an in-shed blend consisting of 33 – 50 % PKE, 25 – 33% DDG, 12 – 15% Tapioca, 15% high starch pellet, & up to 15% soya hull pellet. The blend was formulated to be higher in starch during late winter and spring, and higher in protein during summer and autumn.

Measurements

- Pasture growth from calibrated weekly visual estimation of all paddocks (2 weekly in winter)
- Pre and post herbage mass measurements and estimated cow intakes
- Supplementary feed harvested and fed, imported feed (amount and cost)
- Milk production from 2 weekly herd tests for the first 100 days of lactation and then 4 weekly
- 2 weekly cow liveweight and condition score
- All animal health and cow fertility events
- Full financial analysis of all farmlets

Supplement Feeding

Trigger for feeding supplements to be when cows are underfed from pasture only from weekly farm walks and pre and post grazing measurements + targeted cow intakes. Residuals to be no lower than 1500 kg DM/ha through lactation on the supplemented farmlets. Majority of feeding to be in late winter / early spring (calving to October) and late summer / autumn (Feb – May). PKE was fed throughout lactation at a rate of 1-5 kg/cow/day (716 kg DM/cow) & kibble maize or barley was fed if required to achieve pasture targets in early and late lactation (633 kg DM/cow). Drying off decisions to be made on feed budgets and cows condition measurements.

Results

2018-2019 Results
http://www.dairytrusttaranaki.co.nz/wp-content/uploads/2020/01/2018-2019-Gibson-Trial-Results-.pdf

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