

Trial Protocol

Dairying in a Variable Climate Trial

Farmlets

1. **No Imported Supplement - *Pasture Only Farm***: No imported supplement, home grown grass silage. Peak numbers 2.7/ha – starting numbers 77 cows on 28 ha
2. **Restricted Imported Supplement - *PKE Only Farm***: PKE to be fed according to decision rules but constrained by acceptable milk FEI. Peak numbers 3.1/ha – starting numbers 88 cows on 28ha
3. **Unrestricted Imported Supplement - *PKE Plus Farm***: PKE fed up to acceptable milk FEI and then other imported supplements added. Peak numbers 3.1/ha – starting numbers 88 cows on 28ha

Treatments 1 and 2 will test and demonstrate the options and impacts of managing feed supply shortages such as OAD milking, early culling, drying off etc. Treatment 3 will provide a comparison of using other imported supplements to fill feed gaps. This trial will examine the effects of differing levels of imported supplements on milk production, profit and environmental impacts.

Farmlet structure

- Each farmlet is 28 ha
- Paddocks allocated to farmlets to balance:
 - Historic cropping and pasture renovation
 - Kikuyu presence
 - Pasture growth potential
 - Location on the farm
 - Effluent application
 - Soil type

Trial establishment

- Cow distribution to occur to balance BW, PW, age, condition and calving date.
- Cows allocated to mobs by 25th June
- Cows to be collared. Pasture Only = Green, PKE Only = Red, PKE Plus = Blue
- Pasture cover to be balanced during June to ensure average cover and wedge similar across farmlets by 1st July.
- Pasture only farmlet to start with bales remaining on that farm – approximately 90 bales, minus the amount that would have been fed during June. Other farms to start with no bales on hand.

Supplement management

- All farmlets can make baleage when pasture surplus is evident, and feed as required.
- Imported supplement is to be used to fill feed deficits on farmlets 2 & 3.
- Supplement will not be fed to generate a pasture surplus to encourage silage conservation
- Feeding of PKE on treatment 2 will be limited by keeping milk FEI in acceptable levels.
- Feeding of PKE on treatment 3 will be limited by keeping milk FEI in acceptable levels. If FEI approaches the grading level then alternative imported supplements may be used based on the next cheapest feed source (\$/MJ ME). Feed may be contracted pre-requirement to ensure consistent supply.

Effluent and nitrogen etc

- Effluent application will be evenly allocated across farmlets. If the time spent on the feed pad or shed differs between farmlets then there will be an adjustment for this in effluent application
- Nitrogen application will not exceed 200 kg/ha/annum and will be even across farmlets
- Gibberellic acid and strategic applications of sulphur may be used in winter/spring, common across all farmlets

Cow and Pasture management

- Once a day milking (OAD) may be introduced at any time to manage cow condition and mating
- Springer mobs may be joined across farmlets to reduce workload over calving. If this occurs then grazing will be shared between farmlets. Springer mobs cannot be mixed if supplement is being fed
- Small numbers of dried off cows may be amalgamated on the same basis
- All kikuyu dominant pastures will be broadcast or undersown with Italian ryegrass and mulched. This will be balanced between farmlets
- All young stock will be grazed off from November/December through to pre-calve
- No cows grazed off farm unless for animal welfare reasons
- From time to time the hill paddocks and other small paddocks at NARF not allocated to a treatment may be evenly grazed by the farms

Pasture measures

- Fortnightly plate meter measures on all paddocks. This will occur weekly at times
- Monthly feed quality measures (NIR) on a pooled pasture sample from the next paddock to be grazed within each farmlet
- Batch feed quality measures (NIR) on the pasture silage
- Pugging damage survey in September (if pugging has occurred)

- Kikuyu presence survey in Feb/March

Production and animal measures for each farmlet

- Daily milk production/farmlet (litres, composition, SCC & total MS), separate vats for each farmlet
- Calf milk taken out of the vat
- Quarterly herd testing
- Fortnightly average condition score for each farmlet
- Mating and calving information

Management Decision Rules

Drying Off

- Empty and Cull cows are removed from the herd when average/cow intake of the herd is projected to be less than 12 kg DM/cow for 14 consecutive days after 1st January
- Individual cows to be dried off with sufficient time to attain a condition score of 5.0 by calving
- Individual cows with daily milk solids less than 0.5 kg MS/day in autumn are dried off
- Individual cows are dried off no less than 50 days before their expected calving date

Grazing management

Grazing management will be based on maintaining optimum grazing rotation length to optimise pasture growth and pasture quality. Expected pasture allocation is outlined below.

Autumn/Winter

- May - Daily grazing area to be between 1/40th and 1/80th of the total farm
- June - Daily grazing area to be between 1/60th and 1/100th of the total farm
- July - Daily grazing area to be between 1/60th and 1/100th of the total farm

Spring Grazing Management

- The spring rotation planner will determine the grazing rotation. Balance date assumed mid-September with a rotation length at balance date of 28 days.
- After pasture growth exceeds herd requirements, pasture conservation is used to maintain a post grazing residual of:
 - September 1600 kg DM/ha
 - October 1650 kg DM/ha
 - November 1700 kg DM/ha

Summer Grazing Management

- Daily grazing allocation between 1/30th and 1/40th of the pasture area
- If pasture growth exceeds herd requirements, pasture conservation is used to maintain a post grazing residual of 1800 kg DM/ha.
- Mulching to occur behind the cows when kikuyu stolon presence is significant and pasture growth is predicted to be significant
- Oversowing or drilling of Italian ryegrass combined with mulching will occur on all kikuyu based pastures between late March and early May.

Rules for supplement feeding

- When winter and spring post grazing residuals fall below 1500 kg DM/ha
- When milking cows are stood off due to pugging and poor utilisation
- Summer/autumn - to extend lactation and meet feed cover and cow condition targets at 31st May
- Winter - to meet feed cover and cow condition targets at calving
- If cows fall to condition score 3.0 so animal welfare is compromised, then:
 - Graze off a portion of the herd
 - Purchase baleage for dry cows

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In the event of pastures being under flood water or pasture growth restricted due to flood damage, additional feed may be shared between farmlets or purchased to maintain production and cow condition.

Mating

- Cows that are 3.5 CS or less and who have not been observed in oestrus 14 days before mating will be milked once daily
- Low condition score cows <3.5 will be put on once a day even if cycled
- Cows that have cycled and >3.5 CS will be put back on twice a day
- Supplements will not be used to specifically support mating
- No CIDR's to be used

Animal welfare:

- Cows with condition score below 3.5 will either have milking frequency reduced (OAD or dried off) or fed supplement to increase condition score up to 3.5 or above.