DairyNZ farmfact

1-37 Surplus Management - Identifying a Surplus

Maintaining high quality pasture while feeding cows well during a period of feed surplus is one of the greatest skills of pasture management. Temporary periods of pasture surplus develop mainly in spring and if not managed ryegrass forms stems, flowers and seed heads, resulting in a low pasture quality (*Holmes et al., 2002*). If pastures are allowed to become stemmy, milk production will fall even though there appears to be plenty of pasture (a rapid fall from peak milk production is an indicator of poor pasture control). The benefits on summer production to maintaining a low residual pasture cover during the period of spring pasture surplus have been demonstrated in many trials.

This Farm Fact covers the first of three areas of surplus management:

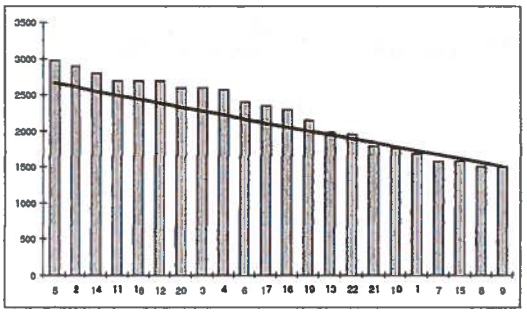
- How to identify a surplus
- Options to manage a surplus
- How much area to shut up

Table 1 How to Identify a Surplus

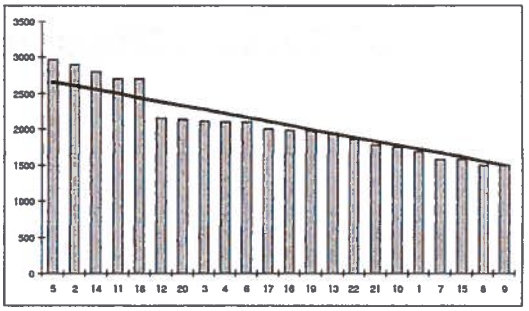
	10% Clumps	Pre-grazing covers higher than target	Pasture growth rates greater than demand	Average Pasture Cover (APC) greater than target	Feed Wedge - paddocks above the target line
Pros	Quick & easy Can be assessed daily	Quick & easy Can be assessed daily	Quick as only need to monitor a few paddocks	Whole farm assessment	Whole farm assessment. Shows where the feed is distributed Can be used to predict feed surpluses & deficits 10-14 days in advance
Cons	Too late, once10% clumps seen farm already in a surplus Not predictive May not be a genuine surplus just a few long paddocks with APC lower than that required to feed the cows	Need to know target pre-grazing Not predictive May not be a genuine surplus just a few long paddocks with average pasture cover (APC) lower than that required to feed the cows	Does not tell you where the feed surplus is or if APC is sufficient to feed the cows Need to know feed demand	Accuracy dept on method used to assess APC Time and discipline to do on a regular basis. Needs to be done round length divided by 3 e.g. 21 day round need to be weekly farm walks	Time and discipline to do on a regular basis. Needs to be done round length divided by 3 e.g. 21 day round need to be weekly farm walks
Accuracy	→				
Effort	→				

Identifying a true surplus using the Feed Wedge approach

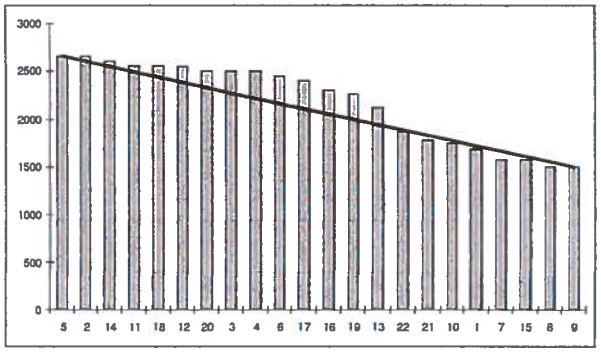
A farm in a "Classic" surplus



A farm in a "False" surplus



A farm in an "Early" surplus



Target Line

To use the feed wedge or to observe when pre-grazing mass is above target requires calculating the pre-grazing target mass and having a post-grazing residual target.

Grazing Residual Target

To have quality feed at the next grazing requires leaving a consistent, even grazing residual (few or no clumps). For ryegrass dominant pastures that are not pugged and are weed free this will be a residual of 7-8 clicks on the rising plate meter (RPM) or 1500 -1600 kg DM per ha on the standard winter equation (RPM height x 140 + 500).

How to Calculate Target Pre-grazing Mass

(Stocking rate x Intake x Rotation) + Optimum residual = Pre-grazing Cover

(___ cows/ha x ___ kgDM/cow x ___days) + _____kg DM/ha = _____ kgDM/ha

E.g. (3.0 cows/ha x 18 kg DM/cow x 22 days) + 1500 kg DM/ha = 2700 kg DM/ha

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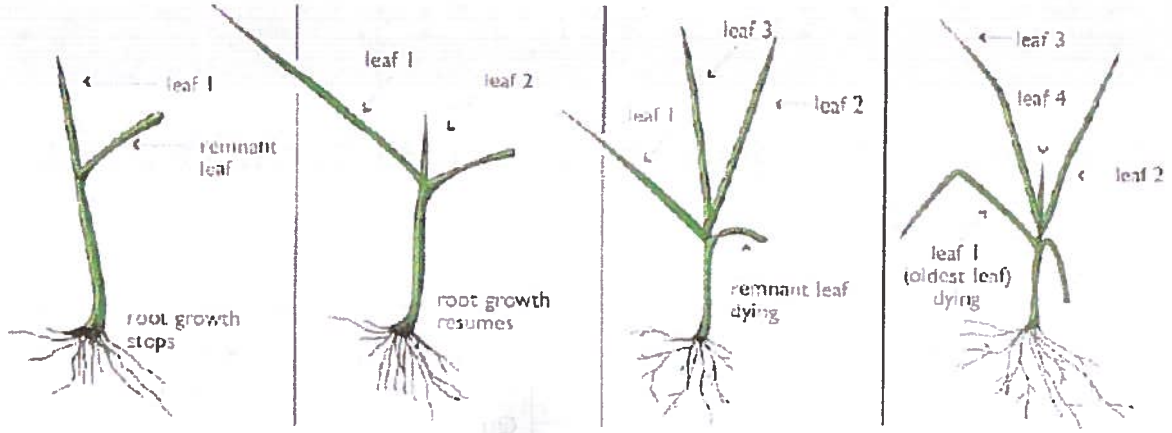
1-38 Surplus Management - Options to Manage a Surplus

Table 1 outlines the advantages and disadvantages of various methods to manage a surplus.

	Pros	Cons
Pit Silage	Easy to feed out	Need enough silage to make pit silage. Can result in too much out for too long Quality dept. on weather Risk of leachate into waterways
Baleage	Make small lots reducing risk of creating a feed deficit Potential for high quality	Feeding out is labour intensive in large herds Can be more expensive than pit
Hay	Useful for small amounts Useful to settle dry cows when grazing low DM feeds or feeds very fast rate of digestion e.g. kale	Weather - greater risk of quality loss due to rain Feed quality low 8-9 MJME
Summer crops or re-grass	Take out poor performing paddock and improve	Crop failure, risk high in dry summer Crop not req'd wet summer Work to feed off crop comes at time when often skeleton staff (summer holidays) May not be able to get back into new grass early enough to get good winter growth.
Deferred Grazing	Take out poor performing paddock and get re-seeding of ryegrass Can be better fit of feed supply to demand Can always come back into the round Hill farms can fence off parts of paddock	Lower quality feed Ryegrass staggers if high endophyte ryegrass Work to set up on hill farm
Top	Useful to manage a small surplus while feeding the cows well or restore quality	Waste of pasture Cost of time, diesel and depreciation Only useful for small feed surpluses Increases risk of eczema in autumn
Speed up rotation	Where graze before the third leaf can depress growth rates Good option for low stocked farms as allows cows to selectively graze, need to do with topping	In theory a fast rotation can reduce growth rates, however the reduction in growth rates is often not sufficient and in practice speeding up the rotation only results in residuals increasing. Very risky at high stocking rates Often difficult to extend round out again Hard to see what is happening with growth rates on fast round
Other classes of stock	Possible savings in grazing costs or more income from stock sales	Not practical to get stock for short periods
Slow round	Push feed ahead into a period of deficit (summer) or into autumn to extend lactation	Lower quality if too high pre-grazing Pre-grazing too high for animals to harvest and need to top in front of cows

Figure 2 How a ryegrass tiller grows



Leaf Stage 1	Leaf Stage 2	Leaf Stage 3	Leaf Stage 4
Growth dependent on crown and root reserves		Rapid growth, adequate leaf area ensures optimal growth	Slower growth phase due to: 1. Shading 2. Decay

The "3 Leaf Principle"

Figure 2 illustrates that after the emergence of the 4th leaf the 1st leaf starts to die, slowing pasture growth rates and reducing feed quality. Grazing before the emergence of the 2nd leaf will reduce yeild, and if repeated will impact on plant survival.

The 3 leaf principle is a useful guide to check on grazing management decisions, however it is not predictive. There are times of the season when matching feed supply to demand requires grazing pastures earlier or later than the 3 leaf principle to meet Average Farm Cover (AFC) targets.

Rotation Length

Rotation length or round length is how many days it will take for you to graze around your entire grazing area. Because we want to maximise grass quality (before 4th leaf starts) and maximise quantity (3rd leaf growth) our round length for most of the season will match new leaf emergence.

On conventional farms leaf emergence occurs approximately every 7 days; therefore entering paddocks at the 2 ½ to 3 leaf stage requires a rotation length of 18 – 21 days.

On organic farms leaf emergence is slightly slower (every 8-9 days). Generally organic farms will be entering paddocks at the 2 ½ to 3 leaf stage on a 23 – 27 day round.

Round length during the bulk of the typical 'grazing season' (after mid-April) can be managed on this basis except in autumn when round length will be manipulated intentionally to meet AFC targets. Early spring grazing requires a different approach to round length based on a Spring Rotation Planner.