

## 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
<b>Pit Silage</b>	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
<b>Baleage</b>	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
<b>Hay</b>	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
<b>Summer crops or re-grass</b>	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.
<b>Deferred Grazing</b>	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
<b>Top</b>	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
<b>Speed up rotation</b>	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
<b>Other classes of stock</b>	Possible savings in grazing costs or more income from stock sales	Not practical to get stock for short periods
<b>Slow round</b>	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

## How much to Area to Shut Up

The area to shut up for conservation can be estimated. However, the accuracy of the estimate is dependant on the estimate of future pasture growth rates and how long the area shut up will be out of the round (dependent on when the contractor can come). The risk of shutting too much and restricting milk production can be minimised by taking out small amounts for a short time and/or keeping the same grazing interval and using some of the surplus feed to extend the rotation.

The risk associated with shutting too large an area increases:

- The later in spring the surplus is identified
- With higher stocking rate and
- With unreliable contractors

Controlling surplus pasture by going on very fast rounds (less than 20 days) and dropping out paddocks for silage is also risky as growth rates can be depressed by repeated grazings before the emergence of the 3<sup>rd</sup> leaf and it can be difficult to extend the rotation out again.

### Example of keeping the same grazing interval (useful option high stocked farms)

Farm 100 ha, 40 paddocks equal size, 3.7 cows/ha, cow intake 18 kg DM/day

There are 8 paddocks with a cover above the pre-grazing target, 20 ha of the 100ha farm. If all these paddocks are dropped from the round and cows are offered the same area ( $100/23 = 4.35\text{ha/day}$ ), the rotation length will need to be sped up to 18 days as only have 80ha in the round (rotation length:  $80/4.35 = 18$  days). Speeding up the rotation at high stocking rates is risky if there is a drop in pasture growth rates. A safer option is to harvest a smaller area (e.g. 5 paddocks or 12.5ha) and keep the grazing interval at 23 days, reducing the area offered to  $(100-12.5)/23 = 3.5\text{ha}$ . With a smaller area offered the pre-grazing target cover needs to be lifted to keep feeding the cows 18 kg DM/day. The calculation below shows what the new pre-grazing cover is with 12.5 ha out of the round (5 paddocks) and keeping on a 23 day round.

Pre-grazing target cover required when 5 silage paddocks out of round (12.5 ha)  
 = (Cows/ha reduced area x rotation length x per cow take) + target residual  
 =  $(370\text{ cows} / (100-12.5\text{ha}) \times 23\text{days} \times 18\text{kgDM/cow}) + 1500$   
 = 3250 kg DM/ha

### Calculation of Area to Shut for Silage

The area to be harvested can be estimated from feed demand and the average estimate of growth rate until the harvested paddocks are back in the round.

Area required to feed the cows =  $\frac{\text{Target Feed Demand/ha}}{\text{Pasture growth rate}} \times \text{Farm Area ha}$

#### Example

Area required to feed the cows =  $\frac{(3.0\text{ cows/ha} \times 18\text{kg DM/cow})}{60\text{kg DM/ha/day (estimate of average pasture growth rate)}} \times 100\text{ ha farm}$   
 =  $0.9 \times 100\text{ ha}$   
 = 90 ha  
 Area to be shut =  $100\text{ ha} - 90\text{ ha}$   
 = 10 ha

The longer the paddock is closed for silage, the higher the risk of pasture growth rates on the remainder of the farm slowing. In this situation the harvesting of silage late could create a feed deficit. To make the best quality silage and minimise risk, hitting and harvesting small areas often (therefore Baleage) is the best policy especially on high stocked farms.

## Making Quality Silage

Pasture silage made by NZ dairy farmers is often poor quality and does not meet the requirements of a lactating cow of 11.0 MJME or better. A LIC survey in 1994/95 showed that more than 70% of the silage submitted for analysis had an ME of less than 10 MJ ME/kg DM. The low quality being the result of ensiling feed that was high in stem and not initially of good quality rather than poor silage preservation (*Howse et al., 1996*).

## Length of closure period

As a silage crop matures, yield is increased but the MJME/kg DM decreases. Trials at Ruakura and Taranaki showed that although yield increased at a linear rate from 3 weeks after the last grazing to the final harvest at 9 weeks, ME declined at an average rate of 0.3 MJ/kg DM for each week of closure i.e. in early September ME at 3 weeks after grazing was 12 MJ/kg DM and at harvesting, 9 weeks of closure the ME was only 10 MJ/kg DM (*Wrenn and Mudford, 1996*).

## Date of Closure

The date that a paddock is closed also affects the quality of the silage with quality decreasing from October into December by about 1 MJME per month.

## Recommendations for Closure

As both length of closure and date of closure affects quality there is a trade-off exists between dry matter (DM) yield and energy content of that dry matter. Recommendations based on trial work are to harvest from paddocks that had a post-grazing residual of 1500 kg DM/ha by the end of November with closure time approximately 5½ weeks (*McGrath et al, 1998*).

## Using “Rolling Deferred”

Where there is a surplus but uncertainty over future growth rates, rolling deferred can be used to keep pasture quality on most of the farm and dropping out an area to ensure that pre-grazing covers enable the target residual to be achieved while feeding the cows. The area dropped out can be reassessed in 7-10 days and either dropped out for silage or come back into the round (may need to be topped in front to ensure cow intake is not compromised while ensuring a consistent, even grazing residual is achieved) and another area dropped out.

## References

Holmes, C.W. et al 2002. *Milk Production from Pasture*. Pages 104-105

McGrath, J.M.; Penno, J.W.; Davis, K.L.; Wrenn, R. 1998. Effect of date and length of closure and post grazing residual on pasture quality for silage. *Proceedings of the NZ Grassland Association* **60**: 259-264

Howse, S.W., Isherwood, P., Miller, D.B., Wells, J.L., Riddick, C.M., Thomson, N.A., and Clark, D.A. 1996. Pasture silage in New Zealand – targets and current practice. *Proceedings of the New Zealand Grassland Association* **57**: 157-160.

Wrenn, N.R.; Mudford C.R. 1996. Making quality silage. *Proceedings of the Ruakura Dairy Farmers' Conference*. **48**: 50-57