

PRACTICAL SOLUTIONS TO MANAGE SPRING FEED

Phillipa Hedley¹ and Corrigan Sowman
¹DairyNZ

Introduction

This paper outlines the principles behind spring feed allocation and makes some suggestions of how to apply the principles. As this is a workshop session more practical options will be discussed from the experiences of those attending.

Summary

- Feed budget with the best information available to ensure that feed supply meets demand including knowing the actual area in grass per paddock
- Target cover at calving is key
- Feed budget on offered i.e. allow for utilisation especially if on a wet farm
- Review calving date, stocking rate, supplements and nitrogen use if short of feed every spring
- Use the spring rotation planner (SRP) or weekly feed budget to generate pasture cover targets
- If on a wet farm add 5 days to your first round target to give you some extra area that can be used when wet and you need to speed up
- Monitoring and altering the plan to keep on track is key to managing spring feed - set up systems to monitor pasture cover at least fortnightly against target
- Record paddocks grazed daily; allocate area weekly and monitor accumulated area allocated on the SRP against actual area grazed to date every week
- Identify mobs in early winter and mark for easy drafting
- Appoint someone in the team to keep tally of cows in each mob daily and stress importance to everyone of knowing how many cows are in each mob

Notes:

- Always have the next day's break set up - reels and standards are cheap
- Plan when to feed supplement that matches work load – often easier end of first round, providing supplement is excellent quality
- Keep paddocks handy to shed for early lactation milkers when there are multiple mobs to get in, keep colostrum cows away from the calf shed.
- Eliminate mobs as soon as possible
- Keep cows healthy – downer cows need lots of attention. Have systems to ensure cows get magnesium and feed the colostrum cows well (mob that does not need to be restricted)
- You can use late calvers to tidy up big areas of incorrect residuals providing that they graze the paddock immediately after the cows to prevent grazing new growth and that they have sufficient magnesium.

Principles of spring feed allocation

A series of farmlet experiments were undertaken at No. 2 Dairy (Ruakura) in the early 1980s, to establish best practice in pasture management over the autumn/winter/early spring. The trial results greatly improved the understanding of optimal pasture management and led to the development of the Spring Rotation Planner (SRP). The results from these trials are discussed by Macdonald (2011) and are summarised as follows:

- The level of pasture cover at calving is very important. Too much feed will mean that pasture is wasted and growth may be reduced. Whereas if there is insufficient, the cows will be underfed.
- If in attempt to fully feed cows when there is insufficient pasture the inter-grazing interval is reduced, (where pastures are grazed before the 2 ½ leaf stage) growth will be reduced and herbage mass will stay low until the summer.
- Spring feed allocation needs to result in the cover being lowest when feed supply equals demand (balance day) with the target pasture cover dependant on the stocking rate and per cow pasture demand (influenced by breed and supplements).
- Aim to be on the fastest rotation when pasture growth gets ahead of herd requirements (balance date). The higher the stocking rate and especially if little or no supplement is available, the more important this rule becomes.
- The spring rotation planner is an excellent tool to manage rotation length.

Details of how the SRP works are not given in this paper, refer to DairyNZ Technical Series (May 2011) and Farmfacts 1-12, 1.13a and 1-13b. There are also some excellent tools for spring rotation management that are available on the DairyNZ website: www.dairynz.co.nz

Setting up the Spring Rotation Planner (SRP) and feed budgeting

The SRP is an excellent tool providing that:

1. The farm has sufficient feed on hand (pasture cover and supplement) to feed the cows until balance date and
2. The time of balance date and pasture cover at balance date are correct.

A feed budget for many farms may not be required as there is enough knowledge built up over the years to know what pasture cover is required at calving and at balance date and, when balance date is. However, if the SRP does not work on your farm or you are on a new farm then a feed budget is required to determine the amount of feed (cover, grazing off and supplements) and when balance date is likely to be.

Feed budgeting is an area fraught with potential errors, therefore it is important to gather information on growth rates for your farm along with soil temperature and nitrogen (N) applications and to use realistic feed intakes that account for utilisation (feed offered).

Soil temperature is an excellent indicator of likely pasture growth rates. Measuring soil temperature and comparing to historical figures for soil temperature, pasture growth rates and N applications will help predict pasture growth rates.

Feed intakes

Often feed budgets over estimate cow intake at the start of calving. A trial at DairyNZ showed that the average intake of pasture for cows unrestricted in early lactation was only 13.5 kg DM/cow/day for the first 5 weeks of lactation Roche (2007). Cows can reach their peak milk production per cow in as little as 4 weeks but peak dry matter (DM) intake doesn't happen until 7-10 weeks after calving. Therefore average herd intake is considerably less as not all cows calve on the same day as shown by Figure 1. However, these intakes do not allow for utilisation and need to be increased especially if wet or feeding supplements. In wet weather it is very easy to underfeed cows.

Notes:

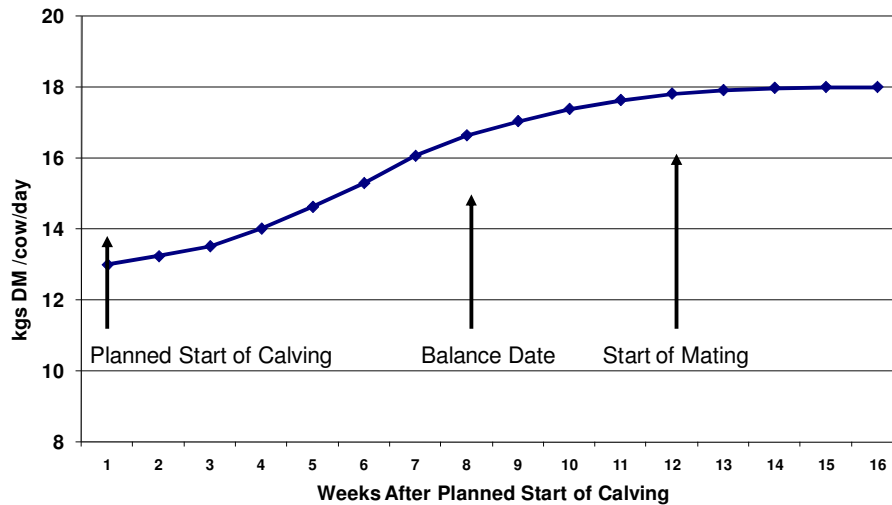


Figure 1. Average Cow Intake Eaten on a Herd Basis for Cows Reaching Peak Intake of 18 kg DM/cow/day by Week 7 after Planned Start of Calving

Balance date

As we are farming a pastoral system dependent on weather, balance date is not set in stone. However, as with all aspects of pastoral farming having the “best estimate”, monitoring and adjusting the plan can result in a close match of feed supply to demand.

When the SRP was developed the recommended time for the first rotation was 40 days (Bryant, 1990). To achieve an average rotation of 40 days the round length at the start of calving needs to be slow (80-100 days) and the time from planned start of calving (PSC) to balance date around 45 days. The use of high rates of N allow the time from the PSC to balance date to be extended out to around 55 days. The farm decision rule for No.2 Dairy which calved 8 weeks before balance date without N, was to apply N to all paddocks grazed over winter at the start of winter at 60 kg N/ha and follow the cows with N at this rate and then to follow the cows with a second application of 40 kg N/ha.

Since the 90’s calving dates have moved forward as well as increases in stocking rate (liveweight/ha) resulting in either the farms being heavily dependent on high rates of N and/or supplement in early lactation or always running out of feed. If you are always short in the spring calving date, N use and supplements need to be reviewed so that feed demand more closely matches supply.

As N use has a significant impact on the feed available in early spring and on balance date it is often better to apply N when you have the time rather than when conditions are ideal. This is particularly important on wet farms when the time to apply nitrogen can be lost.

Pasture cover at balance date

$$\text{Feed cover at balance date} = \frac{(\text{Rotation length days} \times \text{SR} \times \text{Intake})}{2} + \text{Optimal residual}$$

The amount of pasture required at balance date is affected by the stocking rate (SR), demand for pasture and rotation length. The trick is to be confident in your feed budget, monitor actual against target and if on track to stick to the plan as when you near balance date you will only be able to see 2-3 days feed in front of the cows.

The longer the rotation is at balance date, the more feed cover required at balance date. For districts where growth rates can vary greatly and are highly stocked the rotation length may be 23-25 days at balance date, for farms that are either low stocked or high supplement systems 18 days maybe suitable, and for most other farms the fastest rotation is 20-22 days.

If you often find that you can shut up for silage a week to 10 days after you are on your fastest rotation either balance date is too late and/or the target cover at balance date is too high. If the cover is too high, pasture quality is quickly lost and it is hard to hold peak per cow production.

Paddock area

Knowing the grazeable area of paddocks is important. The effective area of the farm drives all the calculations in the SRP. Get the farm mapped accurately and ensure that areas in paddocks that are not in pasture are taken out.

How to meet the feed budget or Spring Rotation Planner targets

Well that is the theory but how do you apply the SRP or the feed budget when in practise every season is different and there are never enough hours in the day.

Monitor actual against target

If you use the SRP and have calculated the pasture cover target at calving a quick feed budget of the target covers to balance date can be done by drawing a line from the target

Notes:

opening cover to the target cover at balance date as shown in Figure 2. The same weekly targets can also be generated from a feed budget. The actual cover can then be monitored against budget.

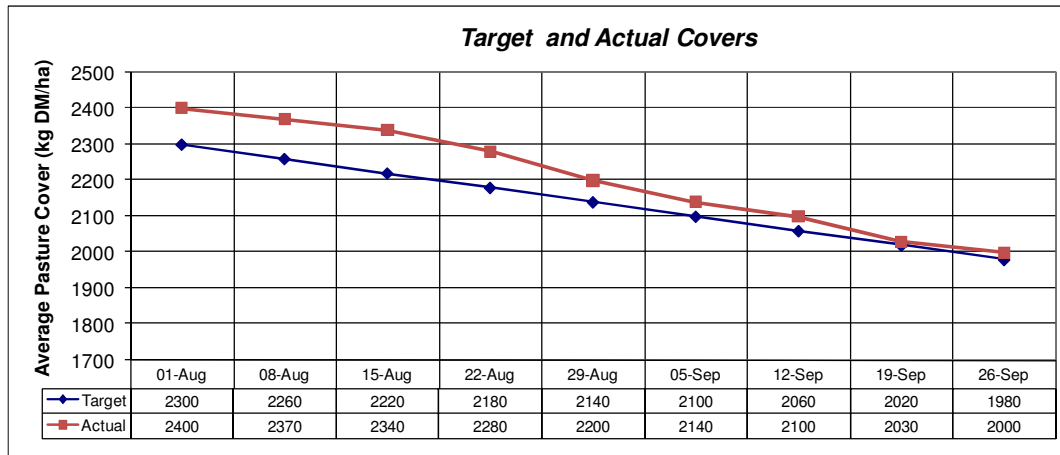


Figure 2. Example of Target and Actual Pasture Covers from PSC to Balance Date

In the spring there is never enough time to walk the farm but the key to managing pasture allocation in spring is knowing what cover is on the farm. A weekly or fortnightly farm walk can actually save you time by allowing you to plan grazing a week ahead from the longest to shortest paddock list. If you don't have time to assess the cover on all paddocks of the farm consider:

1. Employing someone to do the assessment weekly or every 2 weeks or
2. Monitor the 6 longest and 6 shortest paddocks and calculate the average pasture cover. For this system you need to know your farm well enough to know what are the 6 longest paddocks and if the feed wedge is not even it can give a misleading answer. However, it is better than not doing any monitoring and will give you information as to whether you need to change feed allocation to keep on target.

Cover above target

If the cover is well above target and the accumulated area grazed at 3-4 weeks is less than that on the SRP, the rotation needs to be sped up either by stopping supplementary feeding, increasing intake (providing residuals are kept consistent and even) and if necessary, harvesting the surplus. Harvesting works where a light crop is taken and the paddocks are quickly back in the round. Apply N as an insurance. The longer the surplus is left, average pasture growth rates will be reduced as the paddocks will be at canopy closure and the farm is likely to go into a deficit when the area is harvested or the cows will have to eat long rank poor quality pasture just when they are coming into peak cow intake.

Cover below target

Where cover is below target there are a number of options that can be taken providing that the farm meets the animal welfare standards. These are outlined in the DairyNZ's spring survival guide and summarised below:

- Do not speed up the rotation
- Feed supplements to build cover
- Apply nitrogen
- Prioritise intake to the most vulnerable stock: colostrum; milkers; springers then dry cows
- Minimise pugging damage to protect future growth

Monitor grazed area against target

Monitoring the area grazed is easier to manage if you have set weekly targets (or every 3-4 days) rather than daily. Daily record the paddocks grazed and every week (or twice a week) work out the average area grazed for all the farm and plot this against the accumulated target as shown in Table 1. Often in the first few weeks, the accumulated area grazed is less than the SRP. Do not speed up in the first 3 weeks based on this information as having a few hectares to spare is great when there is some wet weather or growth rates are less than that budgeted.

Table 1. Example of Weekly Targets and Actual

Week End	Average Ha Grazed Per Day	Ha Allocated for Week	Area Used to Date	Ha Used for the week	Ha Grazed To Date	Cover End of Week	
						Target	Actual
Monday	Target	Target	Target	Actual	Actual	Target	Actual
						2300	2400
07-Aug	1.1	7.4	7.4	5	5	2270	2370
15-Aug	1.2	8.3	15.7	7	12	2230	2340
22-Aug	1.3	9.4	25.2	9	21	2190	2280
29-Aug	1.6	10.9	36.1	12	33	2160	2200

Notes:

Minimum number of mobs

The more mobs that are on the farm the harder it is to monitor the area grazed and not graze too much of the farm in the start the spring. A lot of mobs grazing individual paddocks also make it difficult to keep up behind the cows with nitrogen and a lot of effort is required with back fencing.

Therefore as soon as possible reduce mob numbers. Use one paddock for two mobs, e.g. colostrum cows at the front and dry cows at the back.

Tally of cows in mobs

An accurate tally of cows in each mob is important as in large herds being out by 50 cows can result in wasted feed or cows being underfed. Numbers can be kept track of providing that one person is responsible and stock movements are recorded every day.

Plan ahead

Always have the next day's break set up - reels and standards are cheap compared to losing pasture control and having to purchase extra supplement. Having plenty of reels and standards and being able to set things up quickly (and in advance) is critical. They can be wound up at quiet times of the day by one person. There is nothing worse than needing to take down a fence in order to put one up for another mob.

Keep mobs of early lactation milkers near shed

Early in the season there are often multiple mobs that take time to get to the shed. Consider calving springers in paddocks some distance from the shed and keep paddocks close to the shed for early lactation milkers when there are multiple mobs to get in. You don't have to calve that many cows at the shed compared with the time it takes get small mobs of milkers in from far away paddocks for multiple days. Keep colostrum cows away from the calf shed.

Supplements

Work out when it is easiest for you to feed supplements. Provided supplement is of high quality, it may be easier to feed out in the later part of spring than early when you are very busy. Also it easier to feed bigger mobs of milkers supplement rather than small amounts early in lactation and end up driving the tractor for more days and have stack/face management issues. However, the supplement has to be good quality to ensure energy intake is not reduced when cows are reaching peak intake. Poor quality supplement will reduce both dry matter intake per cows as well as energy intake per kg DM eaten and therefore reduce milk production.

Identify mobs in early winter

Mark the late calving cows or early calvers and cows to be induced before sending cows off to grazing. If in a dry climate, tail paint will work. If in a wetter climate use a good paint across the shoulders or an ear tag may be required.

Use late calvers to restore residuals

Late calvers can be used to tidy up after the milkers as long as they graze the paddock immediately after the milkers to prevent grazing the regrowth and that the cows get adequate magnesium. This reduces the number of cows on small square meters (mud makers) and keeps the milkers being offered as much energy as possible (particularly useful if it cover is higher than target and you want to speed up the milkers round.).

Keep cows healthy

The most vulnerable cows are the colostrum cows. Be generous in the area offered to ensure they are well fed. This is the one mob where restricting their intake can result in animal health issues. Downer cows need lots of attention and can take up a lot of your time. Have systems to ensure cows get magnesium. If use late calving cows to clean up after the milkers consider “more magnesium”. Dusting can be hassle on big areas, consider drenching at a time of the day that is not so busy or shift springers to small break fresh grass dusted the magnesium and then shift to do clean up job. Adding magnesium to PKE is also an effective way of getting extra magnesium into cows.

References

- Bryant A M. 1990. Optimum stocking and feed management practices. Proceedings of Ruakura Farmers' Conference 42: 55-59.
- Macdonald K A. 2011. Early spring management – use of a spring rotation planner. DairyNZ Technical Series May 2011: 12-15

Notes:

- McGrath J. 1999. Profitably producing milk from pasture. Proceedings of Ruakura Farmers Conference 51:48-58.
- Roche J R. 2007. Milk production responses to pre- and post calving dry matter intake in grazing dairy cows. Livestock Science 110:12-24.