

An autumn management decision support tool

Mark Neal, Jane Kay, Sally Peel, Sean McCarthy

DairyNZ 

Autumn management

- When do I dry off?
 - What will it cost if I have to feed supplement?
- What happens if I milk once a day?
- What happens to the condition score and pasture cover?
- Am I setup for next year?

About the model

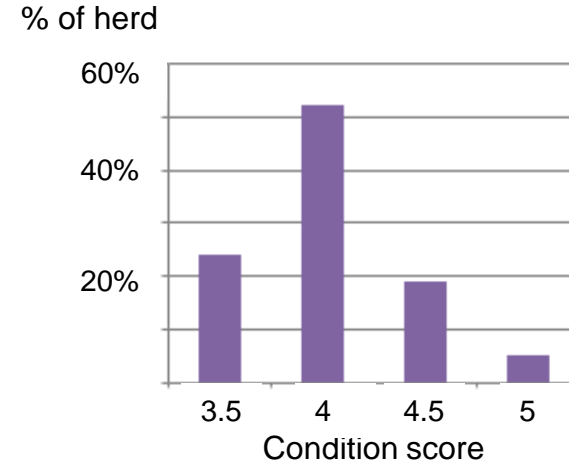
- Don't impact next year
 - Ensure targets met by calving
 - Cow condition and pasture cover
- Deliberately kept simple
 - 80/20 rule
- Manage by condition score group
- Energy-based

Case study: Waikato

- 3 cows/ha
- Model at March 15, to calving
- Condition score average 4.0

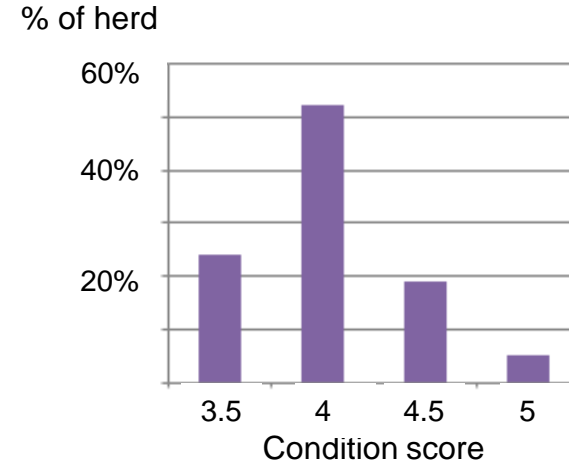
Case study: Waikato

- 3 cows/ha
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- Condition score average 4.0
 - ‘3.5’ dryoff now, ‘4.0’ dryoff in 4 wks



Case study: Waikato

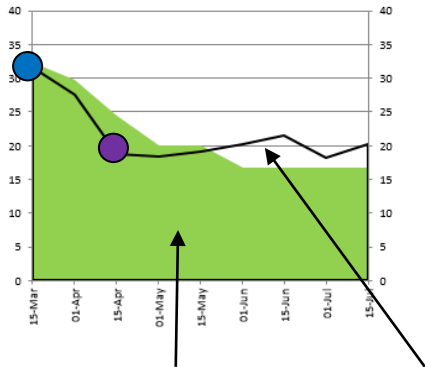
- 3 cows/ha
- Model at March 15, to calving
- Condition score average 4.0
 - ‘3.5’ dryoff now, ‘4.0’ dryoff in 4 wks
- When do we dryoff high condition cows?
- When do culls leave?
 - \$4.15/kg MS, Supplement \$0.36/kgDM eaten*



Feed supply and demand

No purchased supplement

Cull now and
'High' dryoff in 4w

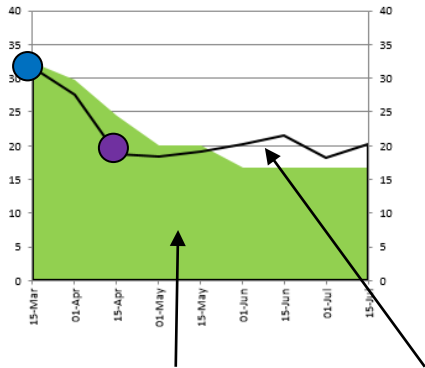


Grass supply Animal demand

Feed supply and demand

No purchased supplement

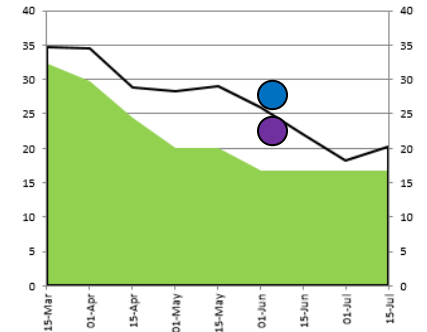
Cull now and
'High' dryoff in 4w



Grass supply Animal demand

Milk both as long as possible

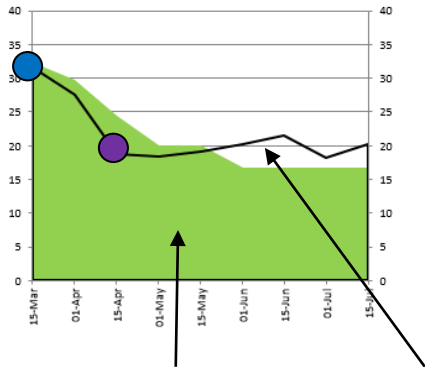
Cull in 11w and
'High' dryoff in 11w



Feed supply and demand

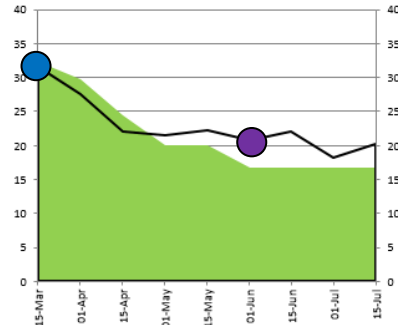
No purchased supplement

Cull now and
'High' dryoff in 4w



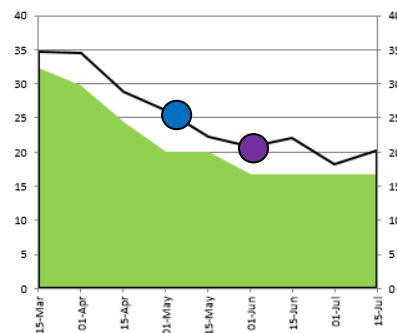
Cull now
Milk "high" long

Cull now and
'High' in 11w



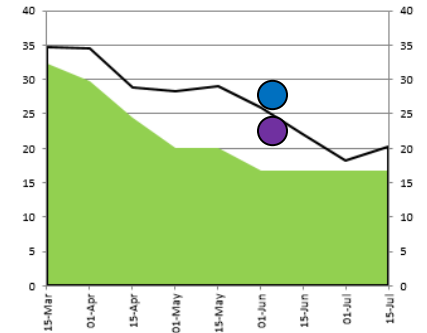
Cull soon,
Milk "high" long

Cull in 6w and
'High' dry in 11w



Milk both as
long as possible

Cull in 11w and
'High' dryoff in 11w



Grass supply Animal demand

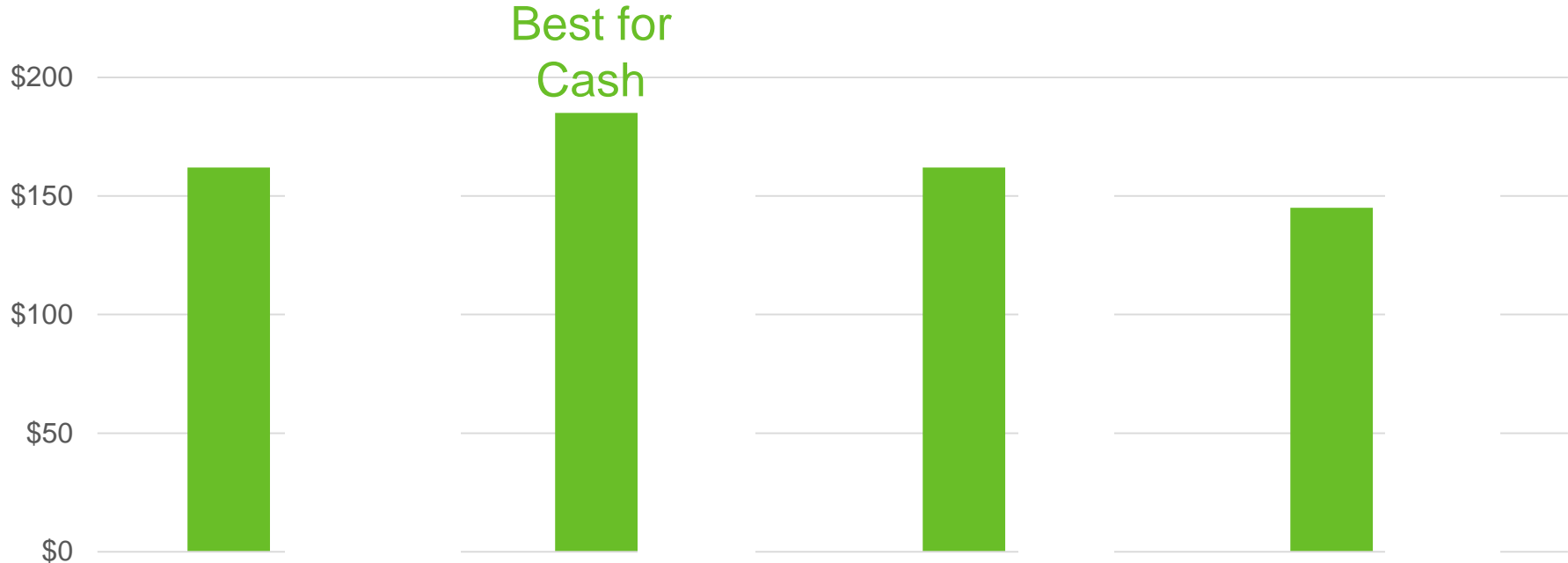
Economics

No purchased supplement

Cull now
Milk "high" long

Cull soon,
Milk "high" long

Milk both as long as possible



“Cash” = Milk less supplement and shed expenses

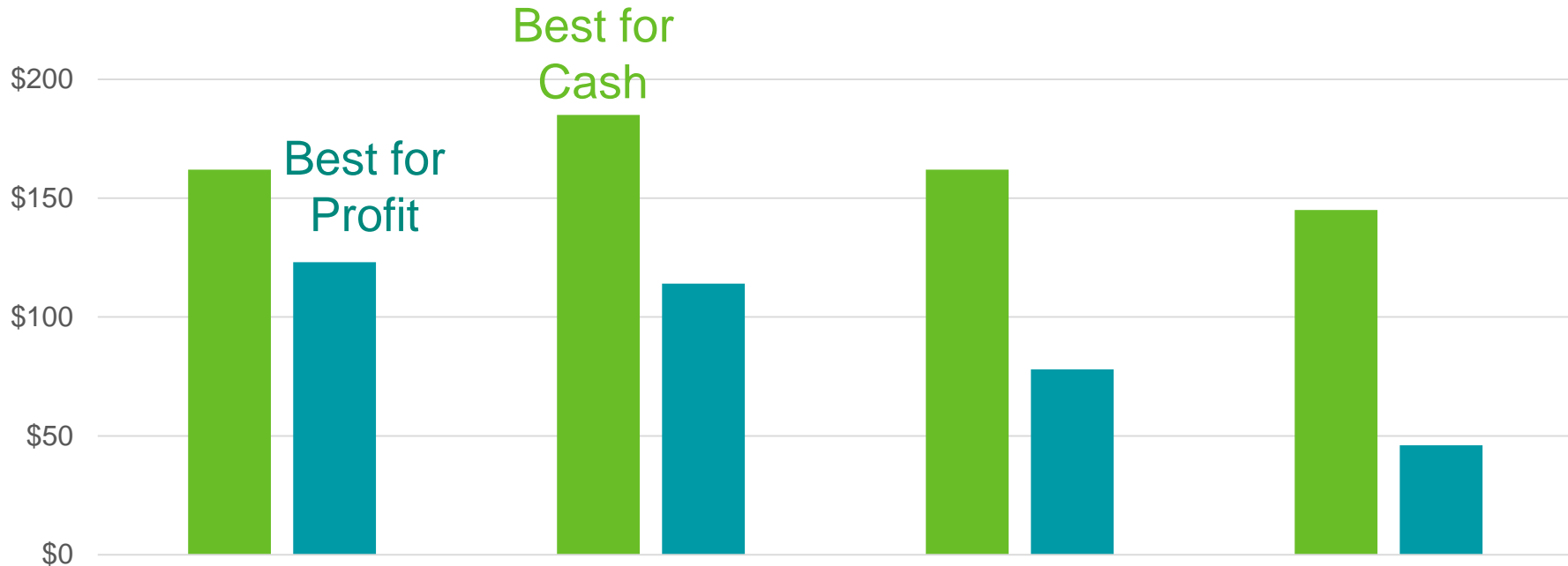
Economics

No purchased supplement

Cull now
Milk "high" long

Cull soon,
Milk "high" long

Milk both as long as possible



Best for
Cash

Best for
Profit

“Cash” = Milk less supplement and shed expenses

“Profit” = Milk less supplement, shed expenses and opportunity cost of labour

Conclusions

- Potentially helpful
 - Compares, doesn't provide “best option”
 - Fills a feed gap - Doesn't determine response to increasing/decreasing feeding level
 - Uncertainty of pasture growth, feed prices and milk prices
 - Depends on an informed user

Questions

What does it look like?

Model Overview

Manage from Summer to Planned Start of Calving

Answering the questions: Is it profitable to Milk on (TAD or OAD) or dry off? Cull?

While checking: Average pasture cover and Body condition targets are met

Given: your basic farm data and pasture growth estimates

Model Overview

How it works, what it assumes.

Version 1.1

For queries or help email

Gail.Feel@dapnz.co.nz

Model Summary

This model starts from the presumption that most farmers will want to limit the impact of decisions made this season on next season's results. This can be done by meeting Average Pasture Cover (APC), targets for the Planned Start of Calving (PSC) and Body Condition Score (BCS) targets for the stock at calving.

These targets determine how late cows can be kept milking and still achieved the targets.

But what does the economics say about milking to that point? And when should we switch to once a day milking (OAD)?

Should milk on and use grazing off as current prices? Or do I need to get rid of Culls early? And what should I do about EITMs?

There are a lot of decisions to make, and this tool aims to help Rural Professionals and Farmers comfortable with Excel in considering these issues together.

It is more holistic than simple tools (eg Autumn rotation planners), but less sophisticated than whole farm models (eg Farmax, Udder etc.).

Supply and demand

The model is basically an energy supply and demand model.

Energy supply comes firstly from pasture growth, and is affected by changes in the average pasture cover.

Additional energy supply comes from grazed crop. Harvested crop is considered at the end.

Energy demand is determined by the number of stock in each Condition score category, and their requirements for milk production, condition score gain and activity.

Energy demand includes the number of replacement stock on or returning to platform (R1, R2 or mature replacements).

If demand is greater than supply, a purchased supplement (described by you) is used to fill the gap.

If supply is greater than demand, then the user can choose how to value and use the surplus. 1. "Default" Can be carried over from one period to another by removing from a deficit at a value of zero.

2. "Perfect substitution" - can be removed from a deficit and valued at the purchase price of feed or 3. "transfer as conserved feed" - Not used or valued in the model. Transferred to a period outside the model.

Demand can be altered by moving your "management levels", such as by changing the timing of culls leaving the farm, changing from TAD to OAD, drying off, and sending off farm to runoffs or grazing.

Limitations and Key assumptions

The model may be too simple to answer some questions: Other whole farm modelling tools are available for these questions (eg Farmax, Udder etc.)

Models only the milking platform

- Pasture

The model assumes the pasture is managed appropriately (ground length and residuals are maintained).

It does not try to advise how pasture should be managed.

N-based growth is assumed in growth rates

Assumes appropriate management in drought (slower rotation, residuals not too low)

Growth rates are not linked to the average pasture cover, so the effect of a very fast rotation is not addressed.

- Crop, supplement and grazing off

Assumes cost of crops are a "sunk cost". It does not attempt to determine if the crops were a profitable decision.

All purchased feed is priced at one cost.

If cows are sent to grazing off to a runoff facility then the model assumes sufficient feed is available.

- Animals

Heifers (in the milking mob) needing to get to a target of 5.5 (not currently considered). Replacements are fed to achieve weight for age target for the specified breed.

Dietary limitations (protein, fibre) are not considered.

It assumes the milk production entered is achievable for the cows and management.

It does not attempt to model the response to extra feed, or determine what level of per cow production is most profitable.

Assumes cows that leave are away till PSC. R2 heifers return to the platform on the date specified in dashboard.

R1 heifers can be either on or off the platform (tick box) for the whole period but cannot come and go from the model.

BCS gain is managed from dryoff by reducing intake if it would otherwise produce overfat cows.

How to use it.

Start with the Farmer input worksheet to set up your farm.

Yellow -> Enter your figures here

Orange -> Edit if you aren't happy with the defaults

Blue -> Do not edit these cells, for information only

Then go to the Dashboard and levers sheet

Suggested approach is to move all groups at once (with BCS warnings off) to see whether it is profitable to milk on or dryoff.

Once you are roughly happy with the scenario, see what you might have to do to ensure all groups meet their BCS target

DISCLAIMER

This calculator has been developed

with the purpose of assisting dairy

farmers with cow dry off /OAD

decisions. Read the instructions

and limitations of the model

available on this page. The model

may be too simple to answer

some questions. It is dependent on

information entered by you, the

user, and this information has not

been verified or screened for

accuracy. The calculator should be

used to assist with decisions

around the value of milking versus

drying off in autum for spring

calving.

DairyNZ accepts no liability of any

kind whatsoever, including liability

by reason of negligence, to any

person(s) or entity for losses

incurred as a result of placing

reliance on the outputs generated

by this calculator.

Start with the Farmer Input ->

What does it look like?

Model O Farmer Input

Manage from Summer to Planned Start of Calving

Answering the questions: Is it profitable to Milk on (TAD or OAD) or dry off? Cull early? Graze? While checking: Average pasture cover and dry cows. Given: your basic farm data and pasture growth

Model Summary

This model starts from the presumption that most farms can be done by meeting Average Pasture Cover (APC) targets. These targets determine how late cows can be kept in milk. But what does the economics say about milking to that level? Should milk on and use grazing off as current practice? There are a lot of decisions to make, and this tool aims to be more holistic than simple tools (eg Autumn rotations).

Supply and demand

The model is basically an energy supply and demand model. Energy supply comes firstly from pasture growth, and is then supplemented by purchased feed. Additional energy supply comes from grazed crops. Pasture energy demand is determined by the number of stock on farm. Energy demand includes the number of replacement stock. If demand is greater than supply, a purchased supplement is used. If supply is greater than demand, then the user can choose to "Perfect substitution" - can be removed from a deficit. Demand can be altered by moving your "management" target.

Limitations and Key assumptions

The model may be too simple to answer some questions. Models only the milking platform.

Pasture
The model assumes the pasture is managed appropriately. It does not try to advise how pasture should be managed. It-based growth is assumed in growth rates. Assumes appropriate management in drought (lower growth rates are not linked to the average pasture cover). **Crop, supplement and grazing off**
Assumes cost of crops are a "sunk cost". It does not attempt to model the response to extra feed. If cows are sent to grazing off or a runoff facility then this is assumed.

Animals
Heifers (in the milking mob) needing to get to a target of BCS gain is managed from dryoff by reducing milk intake. It does not attempt to model the response to extra feed. Assumes cows that leave are away till PSC. FIC heifers (FIC heifers can be written on or off the platform tool) best BCS gain is managed from dryoff by reducing milk intake.

How to use it.
Start with the Farmer input worksheet to set up your farm data.
 - Enter your figures here
 - Edit if you aren't happy with the defaults
 - Do not edit these cells, for information only

Then go to the Dashboard and levers sheet. Suggested approach is to move all groups at once (leave them). Once you are roughly happy with the scenario, see what

Start with the Farmer Input

Manage from Summer to Planned Start of Calving

Answering the questions: Is it profitable to Milk on (TAD or OAD) or dry off? Cull early? Graze? While checking: Average pasture cover and dry cows. Given: your basic farm data and pasture growth estimates

Initial user inputs

Scenario/Farm Name: **ADSS Example**

Date of start: **1/1/2023**

Platform Size (Effective): **10**

Terrain (Flat or Un/Undulating): **x**

Distance walked (TAD km per day): **3**

Stocking rate: **3.0**

Platform Size (Effective): **10**

Cow type: **x**

Culls (% of herd): **20%**

Planned Start of Calving (PSC): **1/1/2023**

Target BCS at PSC: **5**

Value of grazing \$/ha: **20%**

Value of grazing \$/ha: **20%**

Value of grazing \$/ha: **20%**

Farm description and settings

Setup your farm here, then go to Dashboard & Levers

Click [what is this?](#) from more information

Milk revenue per kg MS: **\$8.15**

Pasture utilization: **88%**

Opportunity cost of labour, \$ per hour: **\$20.00**

Cost of grazing off dry cows \$/cow/week: **\$10**

Cost of supplement feed Per Tonne, Ferts: **\$ 250**

Variable milking cost \$/cow/week: **\$ 0.15**

No. of replacements: **67**

Associated cost of supplemented feed (%): **8%**

Time to get cows (hours per milking): **0.75**

Purchased Feed ME: **115**

DM%: **90%**

Losses in feeding: **5%**

Cost of DM eaten: **\$ 0.26**

Feed price sensitivity: **20%**

Milking throughput, cows per hour: **180**

Number of milking operators: **2**

Time to clean, wash up, per milking (hours per milking): **0.5**

Total labour hours per day for milking all cows TAD: **92**

Value of Surplus feed: **0.1**

Version: **11**
For queries or help email Salv.Freeth@dairyNZ.co.nz

SUPPLY Pasture Growth

Choose source for growth data: **Use Pasture and Figure**

Weather Pattern Data: **Low Rain Average**

Region: **Lower Northland**

Sub-Region: **Chilchance**

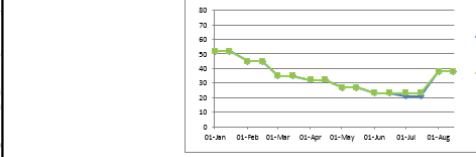
If El Nino: Estimated Yield, as a percentage of long term average: **90%**

NOTE: First column is always Dec 1

01-Jan	15-Jan	01-Feb	15-Feb	01-Mar	15-Mar	01-Apr	15-Apr	01-May	15-May	01-Jun	15-Jun	01-Jul	15-Jul	01-Aug	15-Aug
52	52	45	45	35	35	32	32	27	27	23	23	23	23	23	38

Default for chosen region: **52**

Enter user defined values: **52**



Related info on growth data
Annual Yield: **15.3**
Info: **Cage**
Info2: **0**
From: **1996** to **1997**
Source: **5. DairyNZ (More summer milk trial)**

What does it look like?

Model O Farm Dashboard and levers

Manage from Summer to Planned Start of Calving
 Answering the questions: Is it profitable to Milk on (TAD or OAD) or dry off? Cull early? Graze-off?
 While checking: Average pasture cover and Body Condition targets are met
 Given: your basic farm data and pasture growth

Model Summary
 This model starts from the presumption that most farmers manage from Summer to Planned Start of Calving (A). These targets determine how late cows can be kept milk. But what does the economics say about milking to that point? Should milk on and use grazing off as current pasture? There are a lot of decisions to make, and this tool aims to be more holistic than simple tools (eg Autumn rotation).

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Assumptions
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How to use it.
 Start with the Farmer input worksheet to set up your farm. Enter your figures here. Edit if you aren't happy with the defaults. Do not edit these cells, for information only.

Then go to the Dashboard and levers sheet. Suggested approach is to move all groups at once (with Once you are roughly happy with the scenario, see what

Start with the Farmer

Manage from Summer to Planned Start of Calving
 Answering the questions: Is it profitable to Milk on (TAD or OAD) or dry off? Cull early? Graze-off?
 While checking: Average pasture cover and Body condition targets are met
 Given: your basic farm data and pasture growth estimates
 Note: You may want to use the "View", "Zoom" command so you can see the levers and main graphs on screen at the same time

Margin per ha for period to PSC:

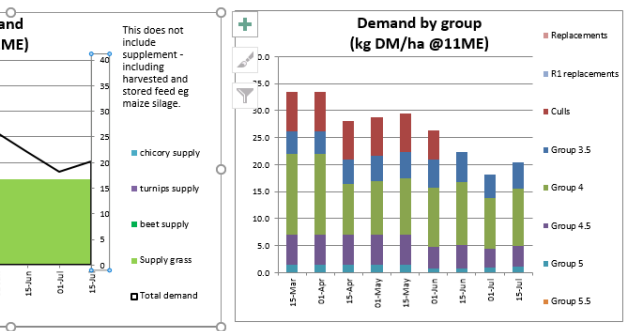
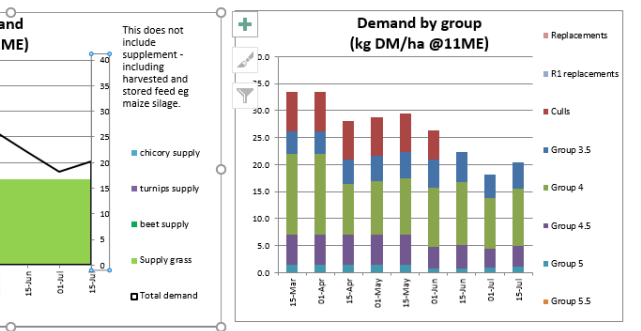
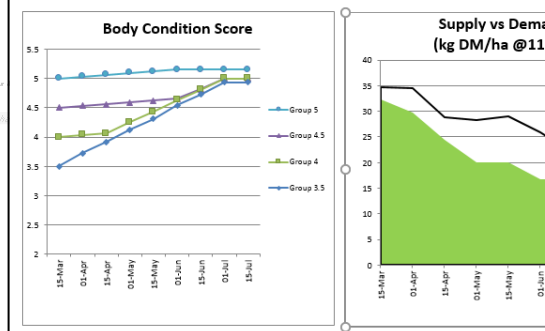
Milk revenue less purchased feed costs, grazing off costs, variable milking costs, and opportunity cost of milking labour

At the feed cost of:

Feed cost 20% higher: \$0.43
 Feed cost 20% lower: \$0.29

Not achieving BCS targets will negatively impact profitability in the following season by decreasing milk production and reproduction

Cows in group	CS at PSC	Met BCS target?	Switch to OAD	Weeks on OAD	Finish Milking	Weeks before PSC	Off Platform	Weeks before PSC	Group leaves platform (Runoff or grazing)
67	4.9	Target not met	01-Jun	0	01-Jun	6	01-Jun	0	Culls go to sales/work at dryoff
64	4.9	Group 3.5	15-Mar	0	15-Mar	11	15-Jul	0	Group 3.5
139	5.0	Group 4	15-Apr	0	15-Apr	13	15-Jul	0	Group 4
51	5.0	Group 4.5	01-Jun	0	01-Jun	6	15-Jul	0	Group 4.5
13	5.2	Group 5	01-Jun	0	01-Jun	6	15-Jul	0	Group 5



Dashboard and management levers
 Adjust your management levers and see the results

Feed Balance	Tonnes / ha	\$/ha	User input chosen
Feed deficit (in model)	0.68		Default
Feed surplus grown	0.00	\$0	what is this?
Total deficit to fill (leaten)	0.68		before wastage
Other feed on hand @11ME available before PSC	enter: 0.00		conserved or purchased feed already paid for/sunk cost. Offered, before wastage.
harvested crop:	Maize 0.00	sunk cost	converted to 11ME
Purchased feed to fill gap	0.79	\$216	wastage included

Time and Labour	Value	what is this?
Time milking (hours)	519	what is this?
Weeks 2 milkings/day	11.1	what is this?
Weeks 1 milking/day	0.0	what is this?
Weeks milking	11.1	what is this?

Mature Replacements returning to platform

Date returning: 06/06/2016

Break down of margin per ha

	\$/ha	\$/whole farm	hectares
Milk revenue	\$ 716	\$ 80,945	113
Value of conserved feed	\$ -	\$ -	what is this?
Cost of purchased feed	-\$ 216	-\$ 24,440	what is this?
Variable cost of milking	-\$ 129	-\$ 14,563	
Opportunity cost of milking	-\$ 92	-\$ 10,372	what is this?
Cost of grazing cows off	\$ -	\$ -	
Cost of grazing R1's off	\$ -	\$ -	
Cost of grazing replacements off	\$ -	\$ -	
Margin	\$ 279	\$ 31,569	

ADSS Example Start date: 15/03/2016 End date (PSC): 15/07/2016
 Version: 1.1
 For queries or help email: Sally.Peel@dairynz.co.nz

Suggestions for use:
 Ensure Box to "Turn off BCS warnings" is ticked. Select button to "Move all at once".
 Dry off as late as possible. What does the feed deficit look like? Do most of the cows meet their BCS target? If you dry off earlier, do you make more money?
 Then select button to "Move individually". Can you switch to OAD early to get cows to the target BCS? Do they also need to be dried off earlier?
 If you are in a feed deficit when the culls are dried off and leave the farm, is it profitable for them to leave earlier?
 If sending stock to a runoff or using grazing off, carefully consider whether there will be enough feed to support their needs.
 What are the risks of the feed price going higher, or feed supply being lower? A plan to dry off late may be profitable, but a failure to feed as required could severely damage the business in the following year.
We recommend all cows have at least 6 weeks dry.

Cows/Ha at PSC: 2.96 @ 113 ha (assumes any group leaving platform return at PSC)
 @ 335 cows
 Crop grown on platform and/or any feed inventory on hand (eg silage) is regarded as a sunk cost.