

Dairy Farmer News

ISSUE 9 | WINTER 2014

IT'S ALL ABOUT WATER QUALITY!

Changes to milking regime

A number of farms are changing from all-spring calving regimes (with no milking over winter) to either split or full autumn calving.

Milking over the winter months presents additional challenges for effluent management, especially when feed/standoff pads are intensively used. Race areas around the dairy and the pads also tend to collect a lot more effluent.

Infrastructure which might previously have been adequate for an all-spring calving regime is likely to require improvement to manage effluent in compliance with regional rules and/or consent conditions.

Most resource consents require that the regional council is notified in writing in advance of changes to cow numbers or if the calving regime is to be changed. Council will then re-assess the effluent system infrastructure against minimum guidelines for the specific cow numbers or milking regime. If the infrastructure does not meet minimum guidelines, improvements will be required.

Consented farms which choose to increase cow numbers or change the calving regime without notification will be in breach of resource consent conditions. Non-consented, permitted activity farms may find it difficult to comply with regional rules for land application.

Positive compliance trend continues

The Northland Regional Council's farm dairy effluent monitoring results for the 2013-14 season continue to show an overall trend of incremental improvement.

Sixteen percent of farms with resource consents were graded 'significant non-compliance', down from 20% the previous season. This means 27 additional Northland farms moved to full compliance.

Unfortunately the number of farms which rely solely on land application and must meet the 'permitted activity' criteria did not perform as well. Significant non-compliance increased to 29%, up from 26% the previous season and representing nine additional farms which fell into significant non-compliance between the two seasons.

The major reasons for non-compliance, and a range of ways to keep things on the right track, are covered in the following pages.

In this issue:

Pg 2

Discharges to water
Stand-off/Feed pad trends
Weeping wall maintenance

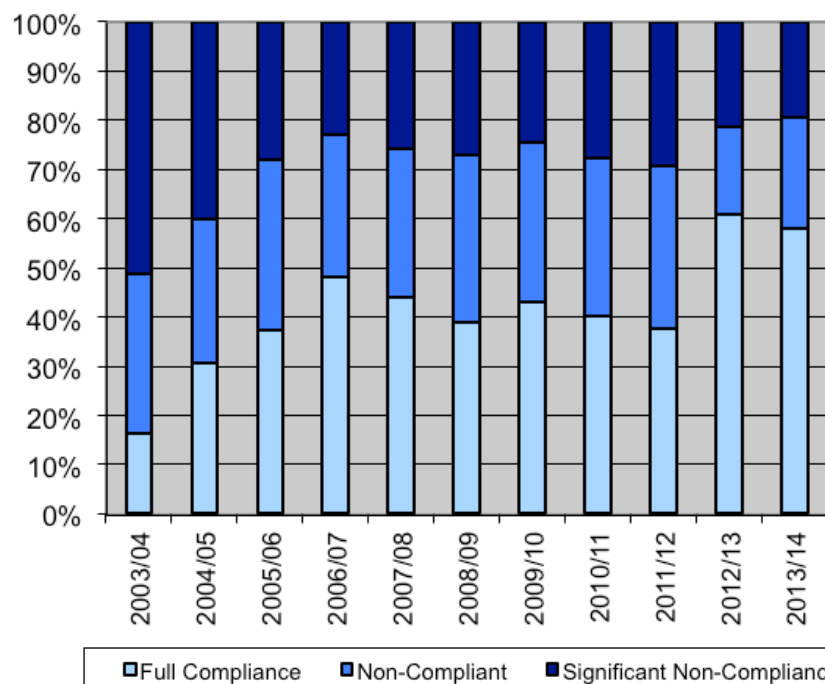
Pg 3

Get those ponds down
Roof water

Pg 4

Land application systems
Introducing Michelle Grant

Compliance results over 10 years



Stand-off/feed pad trends

Design and construction of off-pasture systems, especially on larger farms, has seen a move away from 'open to the weather' pads. Instead, pads are increasingly being roofed and in some cases, weatherproofed with side curtains.

The **advantages** of these extra steps are:

- Improved cow comfort
- Cows can be stood-off for longer
- Further reductions in pasture damage
- Cows eat less
- Less feed wastage due to rain
- Big reductions in effluent volumes.

Cleaning

Cleaning of pads is either by:

- Flood washing with recycled effluent, or
- Dry scraping into a covered bunker.

Comparisons

FLOOD WASHED PADS

Flood washed pads require:

- Additional pumping, tanks and pipework
- Ongoing mechanical maintenance
- Expensive rubber floor covering for medium- or long-term stand-off
- Solids ideally to be removed from the effluent before it is used for washing
- Some collection and storage volume.

DRY SCRAPED PAD

Dry scraped pads require:

- A covered storage bunker
- Minimal additional infrastructure
- Some additional labour
- Some additional machine time.

In a well-designed covered pad with dry scraping, the effluent tends to dry out rapidly and can form bedding on which the cows will lay down. The dry effluent is a very valuable slow-release fertiliser and is usually applied to pasture or crop paddocks by muck spreader.

With either method, effluent volumes are reduced well below those generated from open pads.

Discharges to water

We continue to see a reduction in the number of consented farms identified as discharging treated effluent to water. During the 2013-14 monitoring season, 46% were found to be discharging to water, compared with 71% five years earlier.

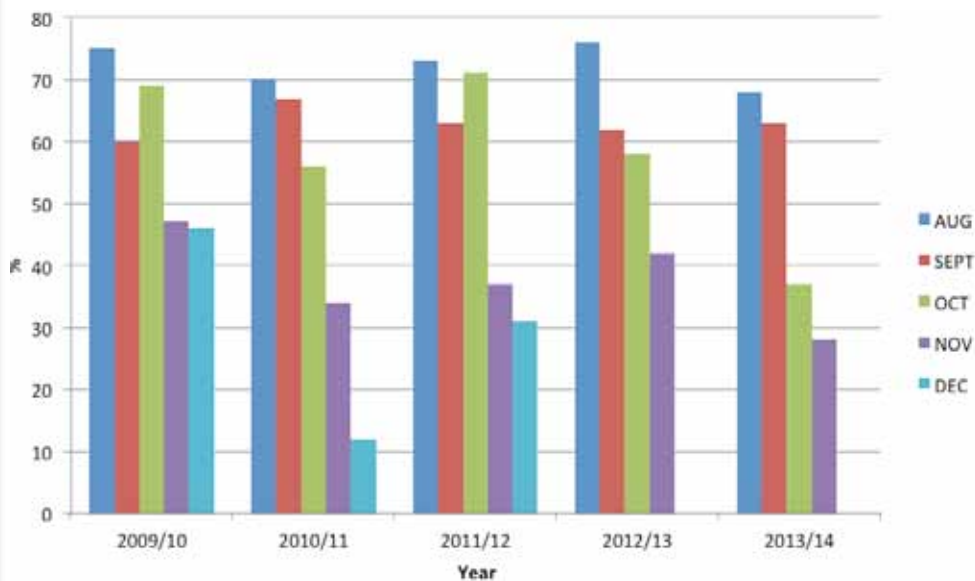
A large number of resource consents have conditions requiring discharge only to land (not to water) when ground conditions are suitable for land application. Unfortunately more than 20 farms were found to be in breach of that consent condition in 2013-14.

As more land application systems are installed, the frequency with which consented farms exercise their consents and the volume discharged will continue to fall. This is also a positive trend.

The graph below demonstrates the variation between years and across the various seasons.

Differences in weather patterns from year to year have an influence on the results.

Trend of farms discharging over past five years



Weeping wall maintenance

There have been reports of weeping walls not working effectively after the sludge beds have been cleaned. This is typically due to effluent on the slats drying and reducing the open (drainage) area between the slats.

Maintenance is the answer, and all that is required is to:

- Pressure-wash the wall to remove all effluent, especially from between the slats.
- Inspect and repair or replace any broken slats.

Get those ponds down

After a long dry period for much of Northland, it has been disturbing to see quite a number of effluent storage ponds which are close to full or teetering on the brink of overflow. If the ponds are at – or near – full, there is little or no contingency storage for any mechanical failure, one-off high rainfall event or the onset of a prolonged wet spell.



Operating procedures for all farms with land application systems should include:

- Have ponds at or near-empty in the lead-up to winter
- Keep ponds low by using the land application system for as long as soil conditions allow
- Divert as much rainwater as is practicable from buildings and yards during winter and spring
- Store effluent in the pond/s during winter/spring when soil conditions are not suitable for land application
- When soil conditions again become suitable, irrigate to land and maintain at least sufficient freeboard in the ponds for wet weather events or mechanical failure



- Have ponds at or near-empty prior to the following winter.

Note: Effluent should only be irrigated to land when soils are in moisture deficit and pasture is actively growing.

Roof water

Almost 80% of the dairies monitored during 2013-14 had clean water originating from the roofs of their buildings going into their effluent ponds. Buildings included the dairy, calf housing, implement sheds, disused wintering barns, etc. Some had gone to great lengths to collect roofwater and then pipe it onto the yard, while others collected it in troughs or tanks which overflowed onto the yard.

One farm had 2612m² of roof, 1400m² of unused feedpad and 750m² of unused silage storage area draining into the pond – a total of 4762m² or almost half a hectare. Clean water going to the ponds on this farm during a 100mm rain event amounts to 476m³ or 18 milk tankers full.



Guttering fitted to wintering barns to reduce effluent volumes

On a region-wide basis, the volume of clean water turned into effluent across Northland is estimated at more than 300,000m³. This equates to more than 11,000 milk tanker loads of good clean water turned into a contaminant for no good reason.

The financial cost of managing this extra volume and the cost to the environment could be easily and – in most cases – cheaply avoided.

Once-a-day milkers diligently using yard diversions have a significant advantage in controlling stormwater.

Land application systems – electronic controls

Breakdowns in land application systems are the cause of a high percentage of farm dairy non-compliance, often leading to contamination of waterways. Common failures include:

- Pump suction being blocked by excessive solids or other matter
- Blocked irrigator or sprinkler nozzles
- Leaks or breakages in the mains or drag hose
- Failure of couplings or hydrants
- Human error.

There are simple electronic systems which can save damage to the system and eliminate, or at least reduce, any contamination caused by undetected breakdown. Control can be included to stop the pump at pre-set times.



Recommendation

We recommend that, as a minimum, land application systems are fitted with electronic controls which will stop the pump in the event of:

- Excessive high pressure.
- Low pressure
- Low or no flow.

An anti-siphon device should also be fitted. These systems can be simple and very cost-effective, especially with mains-powered pumps, and recovery of the initial outlay can be very quick.

Recent upgrades in the region



Upgraded 7000m³ storage pond (above) and covered pad (below)



Introducing Michelle Grant

Michelle Grant (pictured at right) is the newest member of the council's farm dairy effluent team.

Michelle comes from a long involvement with farming, having grown up on her family's farm in Kerikeri. She recently graduated with a Bachelor of Applied

Science, with an Environment major, from the Open Polytechnic. Her degree studies included two years in Southland where she became interested in dairy farming and environmental sustainability, and a year of research into different regional approaches to dairy farm monitoring.

Contact us

For further information freephone
0800 002 004

Email: mailroom@nrc.govt.nz

36 Water Street, Whangarei
P: 09 470 1200 F: 09 470 1202



Dennis Wright
Environmental
Monitoring Officer



Rachael Anderson
Environmental
Monitoring Officer



Michelle Grant
Consents/Monitoring
Officer

www.nrc.govt.nz/farmmanagement