

# Silage effluent and silage wrap disposal



## Preparation of grass prior to making silage

## Litres of effluent per tonne of grass

Leafy grass, no wilting	500
Wilted to 20% dry matter	50-120
Wilted to 25% dry matter	0-30

Silage Dry Matter can be roughly assessed by twisting a handful of silage:

- Juice comes out easily = 18%
- Juice comes out with difficulty = 18-22%
- No juice, but your hands are moist = 22-27%
- No juice, and your hands are dry = over 30%
- Making silage during fine weather.
- Allowing a minimum of 6 hours drying time in the paddock after cutting, although 24 hours is ideal.
- Using mechanical conditioning and chopping to increase the speed of wilting.

If the crop cannot wilt due to unfavourable weather, make sure you have measures in place to deal with the increased effluent that will be produced.

## Choosing a site for a silage pit

Environment Canterbury's Proposed Natural Resources Regional Plan states specific requirements for the location of silage pits (Rule WQL29). Depending on your location there may also be other plans or rules you need to consider. Call Environment Canterbury for full details to ensure you comply with these rules, if you have any questions or for more detail on how to apply for resource consents.

Silage pits need to be managed and carefully sited to ensure there are no issues caused by effluent.

- Pits should be sited at least 50m from waterways, ponds and wetlands and well away from bores and soak holes.
- Do not place pits in areas prone to flooding or ponding during heavy rainfall (1 in 5 year event).
- Do not locate silage pits on areas with underground field tile systems, springs or high water tables, as this may cause decay in the stack, leach valuable nutrients and extend effluent production.

## Why manage silage effluent?

Silage effluent can start flowing from stacks within 24 hours of construction and continue for up to eight weeks as the silage compacts and ferments. The effluent can be a valuable nutrient source for pasture, but can also be one of the most contaminating wastes generated on a farm.

Silage effluent is very acidic and contains high levels of nutrients, if it reaches a waterway it can kill fish and other aquatic life or cause algal blooms. Silage effluent is:

- 200 times more concentrated than raw domestic sewage
- 40 times more concentrated than dairy shed waste

Under the Resource Management Act 1991, you must not let contaminants (including silage effluent) get into waterways directly or through leaching to groundwater where it may enter surface water.

## Managing silage effluent

### Wilting of Herbage

Well made, high quality silage will produce little effluent. Silage quality can be improved by:

- Wilting the cut grass and herbage prior to adding it to the silo or stack. This reduces the amount of effluent produced, and improves the quality of the feed.

## Construction

- Proper lining of silage pits improves compaction and sealing of the stack and is required by Regional Plans.
- The floor should be watertight and slope towards a drainage channel.
- Expansion joints should be sealed with a flexible compound.
- Note that silage effluent is corrosive enough to damage concrete and steel.
- Stormwater should be prevented from entering the silage pit by cutting a channel on the hillside above it.

## Covering

- Cover silage stacks and seal edges firmly during and immediately after filling. Poor covering lets in rain and air, which increases leachate and decreases silage quality.
- Keep the cover as intact as possible when you start to feed out.



## Silage effluent collection & disposal

Silage effluent is best collected via stack drainage into a watertight storage sump. The recommended capacity is 3m<sup>3</sup> per 100 tonnes of grass ensiled. Initially, the sump could require emptying every 2 to 3 days.

### Land Application

Silage effluent can make great fertiliser when spray-irrigated on pasture. It should be diluted with water to avoid scorching the pasture, especially in hot weather. The recommended dilution is 1:1 water to effluent. This mix applied at 25m<sup>3</sup>/ha can provide:

Nutrient	Amount
Nitrogen	25-75kg/ha
Phosphorus	25kg/ha
Potassium	100kg/ha

### Feeding to stock

Silage effluent can also serve as a feed for stock. Fresh silage effluent has great nutritional value and is high in protein, lactic acid and carbohydrate. In an undiluted state, 20 litres of silage effluent is equivalent to 1kg of barley. Silage effluent can be fed to:

- Beef – Given ad-lib as a supplement to grass silage and barley and can be consumed around 14 litres per day per head.
- Pigs – 15 litres can replace 1kg of meal, although 5 litres a day is more reasonable for growing pigs.

## Baled silage

Baled silage can also leak effluent. To minimise the risk of effluent discharge:

- Wilt material until it contains at least 25% dry matter before baling.
- Site bales away from waterways, bores, springs, drains and soak holes.
- Feed out away from waterways.

### Disposing of bale wrap

The best way to dispose of bale wrap is to recycle it. Agpac provide collection sites and recycling services for bale wrap throughout Canterbury. Using recycling services can help ensure traceability for end consumers, which enhances the producers' image in an increasingly environmentally aware market.

Burning or burying of silage wrap both cause significant environmental damage and both methods are actively discouraged.



*Balage Bin in use – Photo courtesy of Agpac Ltd.*