

# Temperature and Pasture Growth

Guideline No 7.



*Low temperatures experienced in the South East region slow the mineralisation of Nitrogen in dairy shed effluent. Low temperatures also slow the rate of pasture growth.*

*A dairy effluent storage system should be considered during times of low temperature and low pasture growth to minimise the risk of nutrients entering groundwater and surface water systems.*

## Effects of Temperature on Pasture Growth

Temperature has a significant effect on pasture growth. High and low temperatures can inhibit the growth of pastures and crops. Excessively high temperatures are not common in the South East but the region does experience low temperatures during winter, which may reduce the growth of pastures. Low temperatures slow down the mineralisation of the nitrogen in dairy shed effluent and restrict the uptake of nutrients by plants. This means that the nutrients in effluent applied during this period will not be taken up by plants and therefore increase the risk of them entering surface or groundwater systems.

Soil temperature records for Mount Gambier show that the soil temperature at a depth of 10 centimetres is less than 9°C for three months of the year. The same months also show average maximum temperatures less than 15°C and average minimum temperatures less than 6°C. Tables 1 and 2 summarise the temperature records.

Table 1 shows the months during which average daily maximum temperatures could be expected to limit mineralisation.

**Table 1 – Months when Average Maximum Temperature is less than 15°C**

Locality	Months Average Maximum Temperature is Less Than 15° C	May	June	Jul	Aug	Sep
Beachport	3					
Bordertown	2					
Conmurra	2					
Coonalpyn	1					
Coonawarra	3					
Frances	2					
Kalangadoo	3					
Keith	1					
Kingston SE	3					
Kongorong	3					
Kybybolite	3					
Lochaber	3					
Lucindale	2					
Meningie	1					
Millicent	3					
Mount Burr	3					
Mount Gambier	3					
Naracoorte	2					
Padthaway	2					
Penola	3					
Robe	3					
Struan	3					
Tantanoola	3					
Tarpeena	3					
Tintinara	1					
Wolseley	2					
Wrattonbully	2					

Table 2 shows the months where minimum temperatures could be expected to limit pasture uptake of nutrients.

**Table 2 - Months when Average Minimum Temperature is less than 6°C**

Locality	Months Average Minimum Temperature Is Less Than 6° C	May	Jun	Jul	Aug	Sep	Oct
Beachport	0						
Bordertown	3						
Conmurra	3						
Coonalpyn	2						
Coonawarra	3						
Frances	3						
Kalangadoo	3						
Keith	2						
Kingston SE	0						
Kongorong	3						
Kybybolite	4						
Lochaber	3						
Lucindale	3						
Meningie	0						
Millicent	0						
Mount Burr	2						
Mount Gambier	3						
Naracoorte	3						
Padthaway	2						
Penola	3						
Robe	0						
Struan	3						
Tantanoola	2						
Tarpeena	3						
Tintinara	2						
Wolseley	3						
Wrattonbully	3						

The tables show the months during which nutrient uptake and pasture growth is likely to be inhibited by low temperatures in the South East of South Australia. Low pasture growth means that the uptake of nutrients by the pasture is also low.

During the months in which pasture uptake of nutrients is low, the spreading of dairy shed effluent is not advisable. Storage is recommended over this period until pasture growth and the uptake of nutrients by the pasture increases.

### **Advantages of storing effluent over slow pasture growing periods**

There are distinct advantages in storing the effluent over the period when pasture growth is low. Superior utilisation of the nutrients it contains will be achieved when spread during the spring and summer months. This will help offset some of the cost of installing an effluent storage. Another significant advantage is the saving in the additional infrastructure, which would be required to spread the effluent over a larger area. For example, based on pasture growth rates, if the effluent is not stored, the area required for spreading the effluent could be from 4–8 times the area required for spreading in spring and summer. This would require a much larger investment in the distribution system.