

Rainfall and Evaporation

Guideline No 6.



To determine your winter dairy effluent storage requirements you will require rainfall and evaporation data for your property location.

To determine your effluent storage capacity you will need to calculate a number of factors including the amount of rainfall runoff from dairy yards, roof surface area that drains to the effluent system, dairy wash water, and rainfall on the ponds themselves.

Determining Winter Storage Requirements

The number of months in which rainfall exceeds evaporation differs for locations across the South East of South Australia. The table below depicts these months for different rainfall recording stations. You will need to determine the location nearest to your property.

Rainfall Station	Months Rainfall Exceeds Evaporation	Apr	May	Jun	Jul	Aug	Sep
Beachport	4		■	■	■	■	
Bordertown	1					■	
Conmurra	4		■	■	■	■	
Coonalpyn	2					■	
Coonawarra	4		■	■	■	■	
Frances	3						■
Kalangadoo	5		■	■	■	■	■
Keith	2					■	
Kingston SE	4		■	■	■	■	
Kongorong	6	■	■	■	■	■	■
Kybybolite	3						■
Lochaber	3						■
Lucindale	4		■	■	■	■	
Meningie	2					■	
Millicent	4		■	■	■	■	
Mount Burr	5		■	■	■	■	■
Mount Gambier	5		■	■	■	■	■
Naracoorte	3						■
Padthaway	3						■
Penola	4		■	■	■	■	
Robe	4		■	■	■	■	
Struan	3						■
Tantanoola	5		■	■	■	■	■
Tarpeena	4		■	■	■	■	
Tintinara	2					■	
Wolseley	2					■	
Wrattonbully	4		■	■	■	■	

The table shows the months for which wet weather storage of dairy shed effluent is likely to be required in the South East of South Australia. Actual storage time may need to be extended for two weeks before and two weeks after the months shown to allow soil moisture conditions to become suitable for irrigation. For example, Mount Gambier shows a period when rainfall exceeds evaporation for five months but the actual storage required could extend from mid-April to mid-October – a period of six months, or 180 days.

To more accurately determine the storage time required the rainfall can be graphed against evaporation and the points where the two lines cross over will show the minimum period for storage. Developing an irrigation schedule based on crop water use and soil moisture deficit principles will give even more accuracy to the calculation of minimum storage time.

Calculating Effluent Storage Capacity

Once the storage period is defined (refer to graph, usually in months) the minimum storage volume can be calculated. The storage capacity will be the sum of the:

- 1) dairy effluent wash-water;
- 2) rainfall and runoff which lands on the dairy yards and roof that drains to the effluent system
- 3) rainfall on the storage pond itself.

In order to calculate the volume of water that is captured by the yards, roof and storage pond local rainfall data needs to be assessed. The 90 percentile rainfall figures of the contributing storage months is then multiplied by the area of the dairy catchment, (as defined in bullet point 2). The 90th percentile rainfall is approximately 1.5 times the average rainfall for the specific period.

Other areas feeding effluent into the ponds must also be accounted for, such as laneways, adjacent yards, and feeding sheds or feed pads. Again, the 90 percentile rainfall should be used.

Spreading Effluent During Times of High Rainfall

Spreading of effluent during the period when rainfall exceeds evaporation may be possible depending on the ability of pastures or crops to utilise the nutrients applied. An Irrigation Management Plan (IMP) should be developed to determine the feasibility of spreading effluent during this period. For more details refer to ***South East Dairy Effluent Guideline 12 : Irrigation Management Plans.***