

## **Water planning for a dry summer**

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With the recent winter rain, many of Gippsland's farm dams are now full and there's lots of moisture in the soil. But if we don't have significant follow up rain in spring and summer, or if you are still lacking dam water and soil moisture, will your farm water supply get you through til the next heavy falls?

In the summer of 2006-07, around 300 Gippsland dairy farmers experienced difficulties accessing adequate water for stock and dairy needs. The hilly areas of South Gippsland continued to have little runoff into dams for a further 14 months and anecdotally streams and springs have only now started flowing well again.

According to the Bureau of Meteorology the outlook for total spring (September to November) rainfall is neutral, meaning the chances of being wetter than normal are about the same as the chances of being drier.

To be prepared for what does eventuate, it is timely to plan now to meet summer water needs.

### **How much water do you need?**

The August 2008 HNGC had an overview of how much water is potentially used in the dairy. Here we look more closely at the stock and domestic needs of the farm and then add them to the shed needs to get a farm total.

#### **Stock water needs**

How much does your stock drink each day? Daily water intake varies among different forms of livestock and is also influenced by the temperature and the type of feed being consumed.

A milking cow on a hot summer day can drink up to 200 l/day. Average consumption over a longer period is likely to be about 150 l/day, but if possible check out your own consumption. Cows on a high dry matter diet will also consume a higher amount of water. In the cooler weather with green feed, a milking cow may only need 100 l/day.

Estimate daily stock water requirements for summer:

		Number		
Milking Cows	150 litres	X	=	
Rep Heifers	50	X	=	
Calves	25	X	=	
Bulls	80	X	=	
Dry Cows	80	X	=	
<b>DAILY STOCK TOTAL</b>			=	_____ litres

### Domestic water needs

Estimates of domestic household needs vary from 100-180 litres/person/day. Gardens can use 10,000 – 30,000litres/ha/day.

### Dairy shed water needs

If you haven't yet estimated your use, use the following as a guide, but shed water use varies widely.

50 unit rotary dairy	16,000 – 60,000 litres / day
30 unit Herringbone	6,000 – 26,000 litres / day
18 unit Herringbone	6,000 – 20,000 litres / day

### How much is stored and how long will it last?

#### Roof capture

For domestic supplies and for some dairy use, it is wise to use all available roof areas. To estimate the collection per year:

Quantity = roof area (length X width) m<sup>2</sup> X rainfall (mm) = X litres

Eg. 12m X 12m roof = 144m<sup>2</sup> X 900mm rainfall = 129,600 litres/year

Remember the actual rainfall in any one year will vary considerably, so estimate with the lowest recent annual rainfall as well as average and allow 10% loss for overflows. Then consider how often it rains and therefore the length of storage needed. Two to three months supply should usually be adequate in our Gippsland climate.

#### Dams

Dams are commonly used to supply stock water. A simple way to estimate the dam volume follows.

Firstly estimate the top surface area = area 1

Then estimate the area of the bottom of the dam = area 2

(area 1 + area 2) divided by 2 = average area of the dam (this allows for the dam wall slope)

Then multiply the average area by depth = volume of dam

Example.

Top of dam is 40m X 20m = 800m<sup>2</sup>

Bottom of dam is 10m X 10m = 100 m<sup>2</sup>

Average dam area is  $800 + 100 = 900 / 2 = 450\text{m}^2$

Volume is  $450 \text{ m}^2 \times 3\text{m} = 1,350\text{m}^3 = 1,350,000 \text{ litres}$

**(note: 1,000 litres = 1 m<sup>3</sup>)**

Volumes required will vary with temperature, and how often the storage will re-fill. Remember to make allowances for the sediment in the bottom and calculate the volume currently in the dam, not what it would be if it is full.

For a rough estimate of how long the dam example above will last if used just for the milkers, firstly take off 10% for evaporation

$$1,350\text{m}^3 \times 0.9 = 1,215\text{m}^3 = 1,215,000 \text{ litres}$$

Then divide the volume after evaporation by the water consumed daily by stock.

For 200 milking cows @ 150l/cow, estimate 30,000 litres / day required

$$1,215,000 \text{ litres} / 30,000 \text{ l/day} = 40.5 \text{ days of water available}$$

What other sources of water do you have and how reliable have they been in dry summers?

Also consider the quality of water available compared to the various uses.

### **Key planning options:**

- Investigate reducing your water needs, especially around the shed
- Consider expanding existing storage capacity such as enlarging dams
- Consider additional water sources such as groundwater

Remember to contact Southern Rural Water first to check licensing requirements.

### **Further information**

DPI Information Notes on water quality, availability and conservation and a booklet Managing Farm Water Supplies in Drought are available through the website [www.dpi.vic.gov.au](http://www.dpi.vic.gov.au) or call the Customer Service Centre on phone 136 186.

The DPI Gippsland Extension and Nutrient Teams also have worksheets, case studies, and a Water Management Planning program to assist Gippsland dairy farmers assess and plan their farm water security. Contact DPI Ellinbank on 5624 2222.

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