factsheet

FEEDLOTS

A framework for water and energy monitoring and efficiency in feedlots

Factsheet 5: Water data collection tools

This factsheet forms part of the Measuring water usage phase of the framework (Figure 1).

This factsheet introduces the various methods for collecting water usage data. The most obvious tools for collecting usage data are water flow meters (discussed in *Factsheet 4: Additional water measurement equipment*). But there are several other tools that can provide a less accurate but often adequate measure of water usage.

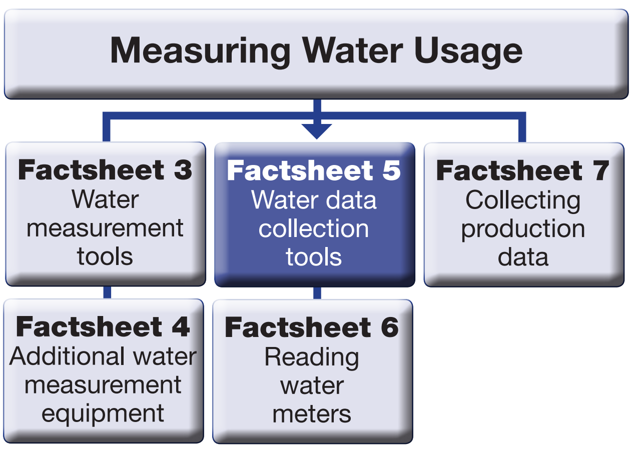

Figure 1: Measuring water usage flowchart

Water usage data can be obtained from a number of sources.

These include:

- water corporations - water obtained by agreement (e.g. Sunwater)
- checking and recording in-line water flow meters
- estimates from operational data
- rainfall captured in open water storages

Key benefits

- There are number of methods available for estimating water usage.
- One or a combination of methods may be used.
- Develop a pro-forma for reporting water usage data.

Water corporations

Water for feedlots may be sourced from shallow and artesian bores, rivers, creeks, irrigation channels, water harvesting of overland flow into on-farm dams and reticulated pipelines. Lot feeders may have an entitlement or authority to take or interfere with water under their relevant state government water act.

In some cases the take may be metered with a water supplier meter and the user charged based on volume of water taken. In this case, the water supplier will usually read the meter and supply a meter reading report. This report can be used to determine water usage.

Water flow meters

Documenting water flow meter readings will provide the required information to enable better analysis of usage from water using activities.

It is important to develop a reporting pro-forma tool to provide a simple and effective way to internally record usage from water using activities.

The simplest form is a paper-based record, which allows you to simply record the reading of each water flow meter. Data records are a legal and auditable document and must be kept safe at all times. It is good practice to have one sheet for each meter, which records the date on which the meter is read, the meter reading, meter location, the reading units and any other notes.

Example of data collection sheet—water flow meter usage

Meter ID: WM05

Date	Time	Meter location	Reading	Units	Comments
1 January 2009	7.00am	inflow to mill shed	1203.55	m^3	meter in good condition
1 February 2009	7.00am	inflow to mill shed	2209.81	m^3	meter required cleaning otherwise good

Figure 2: Data collection sheet for water flow meters

Example of data collection sheet—water usage from operational data

Activity: water tanker

Date	Time	Tank Fill	Volume (L)	Comments
1 January 2009	7.00am	1	15,000	
1 January 2009	11.00am	1	25,000	

Figure 3: Example data collection sheet for operational data

The reader is then able to quickly check the current reading with the previous readings and assess the quality of the data. An example of a simple form is shown in *Figure 2*.

Operational data

Documenting operational data from which water usage will be estimated will require a simple reporting pro-forma tool or logbook. This method will most likely be used with minor water usage activities (e.g. dust suppression). An example of a simple form is shown in *Figure 3*.

Captured rainfall

If you have a large surface area from one or more open storages you may wish to estimate the volume of water captured by net rainfall into your water usage. That is, after evaporation losses are taken into account. This may be positive or negative.

To estimate this you need to estimate the total surface area and the total rainfall for the period.

Evaporation from open water storages can be estimated from a evaporation factor for your area and surface area.

For example:

Evaporation:

The volume of water lost to evaporation is calculated the same way. The evaporation rate (often called the Class 'A' Pan evaporation) can be found at the Bureau of Meteorology website (www.bom.gov.au). Pan evaporation rates must be adjusted by a coefficient (KOW, usually 0.7—0.8) so that they represent the open water evaporation from a storage.

So, 120mm of pan evaporation during the month for a 4ha surface area will lose:

Pan Evap. x KOW x Surface Area ÷ 100 = Evap. Loss

120 mm x 0.75 x 4 ha ÷ 100 = 3.6 ML

Rainfall:

Assuming that the storage does not collect any runoff i.e. turkeys nest, the volume of rainfall captured by incident rainfall (ML) = rainfall (mm) x surface area (ha) /100

So, 50 mm of rainfall during the month on a 4ha surface area will produce: **50 mm x 4 ha ÷ 100 = 2 ML**

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Further information

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Sample data collection sheet—water flow meter usage

Water meter ID________________________________

Date	Time	Meter location	Reading	Units	Comments