



# Rural Water Note

RWN 01

## Water quality in broadacre farming – September 2007

Water quality requirements for broadacre farming can be split into three broad categories – stock water, non-potable domestic use and crop spray water.

### Stock water

Salinity is the main factor when considering stock water quality, Table 1 gives upper salinity thresholds for certain types of stock.

This table also refers to salinity thresholds for other water uses that are usually encountered within broadacre enterprise, including non-potable domestic uses.

The salinity threshold for the drinking water quality of an adult sheep may vary from 1650 to 2200mS/m.

The demand requirements for all livestock water vary with the number of animals, their live weight, reproductive state, daily evaporation, type of feed and the water quality itself. The long-term use of lower quality water (water close to the thresholds) can affect animal health.

Table1: Salinity thresholds for a range of on-farm water uses

Water use	Salinity	
	mS/m	ppm*
Poultry	470	2585
Dairy cattle	550	3025
Showers and baths	620	3410
Pigs	700	3850
Horses	1000	5500
Lambs, weaners and breeding ewes	1100	6050
Beef cattle	1550	8525
Adult sheep	1650-2200	9075**
* Unit conversions vary with type(s) of salt in solution. ** ppm at 1650mS/m		



### Crop spray water

The type of pesticide determines the water quality required. Most farmers prefer rainwater for crop spraying. Note that chemical manufacturers sometimes over specify the required water quality to ensure the best performance of their product. **Suspended clay** reduces the effectiveness of knockdown herbicides containing paraquat, diquat or glyphosate.

**Hard water** reduces the effectiveness of both glyphosate and 2,4-D amine.





**High pH** reduces the tank-mixed life of organophosphates and some other insecticides when application is delayed.

**Turbid water** with suspended clay can be used for a number of pesticide applications, especially for soil-applied herbicides. Note that soil-active pre-emergent herbicides are often tank-mixed with knockdown herbicides that are affected by suspended clay, so good quality water is needed.

Where the effectiveness of crop-protection chemicals has been reduced by poor quality water, additional environmental conditions may mask or enhance the outcome.

Chemicals such as glyphosate are relatively cheap and increasing the chemical rate is often the easiest way of dealing with poor water quality. Other options include adding spray adjuvants which modify detrimental effects of poor water quality.

Alum, gypsum or ammonium sulfate are frequently used by farmers to make turbid or muddy dam water clear enough to use as a spray-water supplement when rain water supplies are limited.

This practice can lead to poor effectiveness of glyphosate but is acceptable for other pesticides. The demand for crop spraying water on a farm is determined by:

- area of crop
- crop establishment system
- types of crop
- need for particular crop protection
- rate of water used for spraying

Farmers commonly use a water rate of 50L/ha for boom spraying. It is possible to lower this rate to reduce water use, but extra care with filtration and nozzle maintenance will be required.

#### Further information

*Water Quality for Farm, Garden and Household Use.* Farmnote 41/2004. Department of Agriculture and Food, Western Australia.

*Clearing Cloudy or Discoloured Water.* Farmnote 42/2004. Department of Agriculture and Food, Western Australia

*Water Quality for Farm and Domestic Use.* Farmnote 43/2004. Department of Agriculture and Food, Western Australia.

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