

# Organic pollution in farm dams: prevention and treatment

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*During periods of low rainfall, when pasture cover falls to critical levels, wind-borne dung and other organic materials may blow into dams. Rain-storms can also wash such materials into dams.*

Once in the water, the organic materials provide ideal food for bacteria and algae. These organisms grow rapidly using up all free oxygen in the water (ie it becomes anaerobic) and putrefaction results. Symptoms are dark water, a bad smell and black scum around the edge.

Stock find the water unpalatable. Thick scum around the waters edge may also prevent stock access to the water. It is believed that the water is not poisonous to sheep, but may be harmful to the young or weak.

## Effect on stock

Trials done by the WA Department of Agriculture in the early 1970's showed that:

- It took sheep 3 days to start drinking it.
- There was reduction in body weight (2-4 kg) during this non-drinking period.
- The lost body weight was rapidly regained once the sheep started drinking.
- The setback received by the sheep may have caused tender wool problems.

## Correction of the problem

The aims are to:

- prevent organic material reaching the dam
- remove organic rubbish from the water
- improve the palatability of the water

## Preventing organic matter from reaching the dam

The best prevention is to maintain an adequate vegetative cover around the dam. Permanent vegetated filter zones excluded from general grazing should be utilized.

Where vegetation has already suffered, protective

structures could be used. These include netting fences, corrugated iron fences or earth banks. Different design is required for those aimed at wind-borne materials compared to those designed for water-borne materials.

Where soils are suitable, ripping of bared areas can reduce movement of organic materials. (See Landcare Note LC0076: *Protecting land in dry times*)

## Removal of organic rubbish from dam

It is important to remove organic material from the water as soon as possible, as it usually saturates and sinks within 48 hours. Skimming the surface of the water is probably the most effective method.

A system to rapidly remove floating organic matter has been developed by farmers in WA:

1. Floating material is skimmed from the water's surface using a hand held "boom". This is a 30 m length of linkmesh (See Figure 1), 45 cm wide, with floats wired on both sides of the top edge. Ropes are attached to each corner of the 30m length of linkmesh to allow for it to be dragged across the dam. The boom is used to retain the scum along one side of the dam.

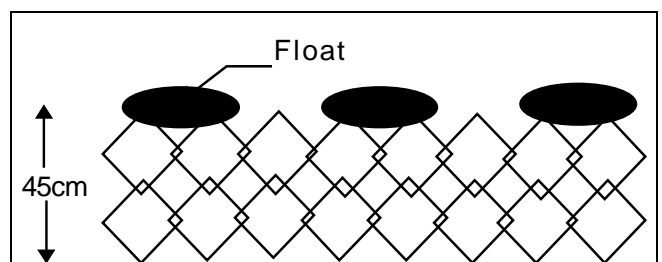


Figure 1: Part of linkmesh boom with floats.

2. The scum is then scooped from the water using a wire cage (see Figure 2) pulled by a vehicle. The cage is hitched to the vehicle by two strong parallel tow ropes (say of 12.5 mm nylon or 6.25 mm steel). Once emptied, the cage is dragged back to repeat the process. The cage is made of a 12.5 mm and 25 mm pipe frame with heavy gauge weldmesh (15 cm x 7.5 cm) attached. 25 mm x 25 mm weldmesh is wired over the frame to

trap pasture and stubble remnants. Bird wire mesh is needed to trap sheep manure.

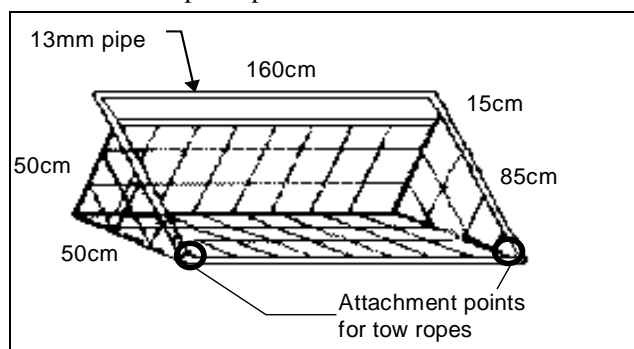


Figure 2: Cage for dragging materials from dam.

### Improving the palatability of the water

Water quality (look, taste & smell) of lightly polluted, or above treated waters can be improved by aeration and/or chemical treatment.

Aeration will occur naturally over time (2-3 weeks) if organic contamination is removed. It can be hastened by pumping-out the water and spraying it back onto the surface. However if organic material remains it will continue to break down and turn the water anaerobic again. It may be more successful to pump water to a tank as part of the aeration process to protect valuable water.

Where further improvement of palatability is required, chemical treatment may be necessary. Chlorination is most common. It is best used on water which relatively clean of organic contamination. Pre-treatment with filter alum (aluminium sulphate) and hydrated lime will probably be required (see Landcare Note LC0067: *Treating turbidity in farm water supplies.*). Then a solution of sodium hypochlorite can be added at a dilution of 1.5 L/100,000 L. It must be thoroughly mixed into the water. It is suggested that be initially mixed with

1000 L of water and sprayed into the dam water (nozzle under the water) under pressure. Aeration and chlorination may be done simultaneously.

### Recommendations

- Maintain vegetation around the dam so that it is effectively able to filter and trap wind- and water-borne organic matter. Protect from general grazing.
- Shelter the dam from direct movement of wind- and water-borne organic matter by temporary mechanical barriers around strategic parts of the dam.
- Skim floating organic material and scum from the dam before it sinks.
- Desludge sunken materials from the edges of the dam, and the bottom if possible.
- Aerate and/or chemically treat anaerobic water if it is urgently needed for stock or domestic use.

### References

- Negus T. R. (1978) Skimming polluted dams - a successful two-stage system in *Farmnote no 41/78* Western Australian Department of Agriculture
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