



A Partnership for Sustainable and Profitable Dairy Farming in Western Australia

ENVIRONMENTAL BEST PRACTICE GUIDELINES

8.0 WASTE MANAGEMENT





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8.0 WASTE MANAGEMENT

Large amounts of waste material are generated on today's farms. Much of this can pollute the environment if not dealt with correctly. Farm wastes can be broadly classified as

1. Solid non-biodegradable wastes, such as empty chemical containers, disposable plastic containers, packaging and wrappers, plastic silage wrap and scrap metal (machinery, vehicles and drums)
2. Biodegradable wastes that include milk, carcasses, plant residues and manure, and
3. Residual farm chemicals or residues left in empty containers and on spraying equipment.

Implementing Good Practice

Practicing good waste management will save you money, reduce environmental impacts and ensure you comply with the law. Some general principles you should follow include:

- Recover, reuse and recycle materials whenever and wherever you can.
- Compost organic wastes such as plant debris, cardboard and paper
- Always choose biodegradable materials if available.
- Try to reduce the volumes of waste generated and amount of materials you throw away.
- If reuse or recycling is not possible, ensure safe disposal of wastes using a licensed waste contractor.

Reduce, re-use and recycle wastes wherever & whenever possible

8.1 DISPOSAL OF MILK

Milk is a great source of nutrition but it also has the potential to be a serious environmental pollutant when farmers are forced to dispose of milk they are unable to off-load.

A polluting substance can be rated according to the amount of oxygen required by bacteria to break down the substance's organic matter, referred to as its biological oxygen demand (BOD). When watercourses are contaminated with organic pollutants, so much oxygen is consumed by bacteria that water oxygen levels become too low to support aquatic life and fish die. The higher the BOD, the more serious the pollution risk. Table 8.1 presents typical BOD values for a number of potential farm pollutants. The high BOD value for milk suggests it must be disposed of carefully in order to avoid serious environmental damage.

Table 8.1. The biological oxygen demand (BOD) of various organic pollutants

Pollutant	BOD (mg/L)
Raw sewage	300
Dairy effluent	3,200
Pig effluent	11,500
Milk	30,000
Silage effluent	60,000

Implementing Good Practice

Milk must never be discharged into drains and watercourses because this may result in large numbers of dead fish and plants that will poison the water. The damage caused to streams and rivers can be long term.

Under No Circumstances Should Milk Be Discharged Into Water Courses

If pick-up is likely to be disrupted for a few days, you may consider cutting down on feed to reduce milk production. However, this can be risky and there is a limit to what you can achieve without causing long-term problems. Reducing the amount of pasture offered and slightly reducing the amount of concentrates fed will reduce milk production but the benefit of such a strategy is questionable.

Emergency means of disposing of unwanted milk, presented in order of preference, include:



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Feeding milk to livestock. Calves can drink five or more litres of whole milk in a day before weaning. Dairy cows can be fed up to 10 litres in a day. The addition of citric acid at a rate of 2 g/L will preserve milk for a few days, even in summer. If the bulk of milk has been inadvertently contaminated with antibiotics, you can still feed it but the unnecessary ingestion of antibiotics by healthy animals is not recommended. The milk from individual cows treated with antibiotics should not be fed to livestock. Applying milk to freshly grazed pasture using an effluent tanker, boom spray or sprinkler is an option. Applying immediately after cows have finished with a paddock will maximise the time between grazings. Use a one part milk to 10 parts water diluted mixture to spread over as large an area as possible. Only apply to your driest winter paddocks to minimise run-off and stay away from paddocks close to watercourses.

Dedicated ponds or trenches are another option provided that you have suitable soil to prevent milk leaking into groundwater. Use a front-end loader to dig a trench capable of holding about two days of milk. Make sure that it is far enough away from houses so that odour doesn't become a problem. The trench should be backfilled immediately after the last of the milk has been disposed of. If you need to get rid of more than two days' production volume, dig a second trench.

Directing unwanted milk into the effluent storage pond is not a solution. You are better-off by-passing the storage pond and pumping the milk straight on to pasture.



Pump milk onto a sacrifice area that by definition is a non-productive area clear of watercourses, houses and the farm dairy. However, pasture damage and odour can be expected. To minimise these problems, each dumping should be at a different site. Flushing with water (rain or irrigation) to wash the milk off the plant leaves will reduce tissue damage.

While the key principles the same for all dairy farms, your best option will depend on your particular circumstances.

Further Information

Crocos, A. 2000. Farm Fact AGO428 Dairy waste: Emergency disposal of milk on farms. Department of Primary Industries, Victoria

Department of Agriculture and Food. 1998. Disposal of Milk. Farmnote 53/98. Department of Agriculture and Food Western Australia. Available online at www.agric.wa/gov.au

Dexcel. Farm Fact 3-2: Farm dairy management. Available online at www.dexcel.co.nz





8.2 CARCASS DISPOSAL

Animals die, even with the best animal husbandry. Disposing of the odd dead animal promptly and properly is very important. Decomposing carcasses are a source of disease producing bacteria such as salmonella, streptococcus and tuberculosis and provide the ideal habitat for disease vectors such as blow flies, mosquitoes and other vermin. Poor carcass disposal can result in contamination of groundwater and waterways used for human drinking water. The sight and smell of dead animals creates a bad public perception of the dairy industry.

Implementation of Good Practice

Having the carcass removed by a licensed dead stock carrier is the best option for disposing of dead animals. Keep the carcass on your property as most collection services prefer to load-up inside the farm gate. If using a collection service is not an option, alternative means of disposal are presented in Table 8.2.

Table 8.2 Benefits and liabilities of various carcass disposal options

Disposal Options	Benefits	Liabilities
Deep burial	Simple, cost effective & sanitary	Should not be used in areas with high water tables or prone to flooding. Predator and vermin control is required. Should not bury stock within 100 m of a waterway.
Offal pits	Simple, cost effective, easy to manage and sanitary	Should not be used in areas with high water tables or prone to flooding. Most efficient when using small and infrequent amounts of offal. Predator and vermin control is required. Should not be locate within 100 m of a waterway
Composting	Can be used in areas with high water tables or prone to flooding. Produces a reusable product. High composting temperatures destroy pathogens and disease. Can recycle sawdust from calf sheds.	Requires a reliable source of sawdust and a sound understanding of composting process. You will need to fence-off compost pile from other stock
Burning	Carcass is destroyed quickly. Any pathogens present are destroyed.	Requires extremely high temperatures to burn a carcass. You should not use burning accelerants such as tyres as these release odorous toxic fumes and nuisance smoke. Bones remain after burning

If you have an offal pit, be sure it is well out of the reach of children and inaccessible to dogs and vermin by covering it with a heavy-duty concrete slab. Do not tip chemicals and chemical containers, human sewage and other household wastewater, or garden prunings and lawn clippings into offal pits. Other useful tips when burying a carcass or using an offal pit are provided in Table 8.3.

It is illegal to dump dead animals and offal into rivers, streams or the ocean. You should never feed animal carcasses or offal to pigs or to leave dead animals lying around the farm or within 45 m of the farm dairy.

Table 8.3 What to do and what not to do when burying animals or using offal pits.

You should	You should not
<ul style="list-style-type: none"> • Slit the stomach of the carcass to allow the intestines out for faster decomposition. • Puncture the rumen on its left side to release the gases to prevent toxic gas build up. • Add a small amount of effluent sludge to speed up the decomposition process. • Cover offal pit openings securely with a concrete lid at all times. • Once an offal pit is full to within 1m of the surface, it should be retired and filled up with earth, compacted and re-grassed. 	<ul style="list-style-type: none"> • Do not add lime to an offal hole or burial site as this slows down the decomposition process. • Do not use an offal pit as a rubbish dump. • Do not dispose of chemicals in offal holes. • Do not light fires anywhere near offal holes. • Do not site offal pits or bury stock near waterways, property boundaries or in areas with high groundwater. • Do not locate offal holes and burial sites within 45m of the farm dairy.

The key principles of dead stock management are:

- Dispose of the animal as soon as possible to reduce risk of disease spread
- Do not leave animal carcasses in the open where they are readily accessible to dogs
- Move or cover dead carcasses that are near the roadside
- Never dispose of carcasses in farm dairy effluent ponds
- Dead calves and cows should be carefully handled to avoid puncturing their skins and hides
- Burning animal carcasses and offal should be left as a last resort

Further Information

Dexcel Limited. Farm fact 1-18: Dead stock disposal (online). Dexcel Limited, New Zealand. Available online at www.dexcel.co.nz

Dexcel Limited. Farm fact 3-22: Farm dumps and offal pits (online). Dexcel Limited, New Zealand. Available online at www.dexcel.co.nz



8.3 MASS DISPOSAL OF CARCASSES

Fortunately, outbreaks of contagious deadly diseases have so far been rare in Australia. Such diseases spread quickly within intensive enterprises causing mortality rates to rise sharply. You need to be aware of emergency procedures in the event of sudden mass deaths.

In the event of a significant disease outbreak, Biosecurity Officers at the Department of Agriculture and Food will coordinate animal disposal.

Implementing Good Practice

Delivery of dead animals to a rendering plant is the preferred disposal method. However, if this is not an option to you, the most practical method of disposal of large numbers of carcasses is by burial. On site burning is only mandatory for certain exotic diseases such as anthrax.

Choose a burial area at least 100 m away from houses and watercourses. The pit base should be at least 1 m above the level of the water table. Heavy, impermeable and stable soils are a must and the area should be easily accessible to earthmoving machinery and stock transporters. Avoid sites sloping towards watercourses and areas that are likely to drain into watercourses or groundwater.

Trenches should be 5 m to 6 m deep and 2 m to 2.5 m wide. Allow for 2.5 m to 3.0m of fill above the carcasses. Your local government may have their own specific requirements so you may want to give them a call.

If the carcasses will have to be disposed of on the farm, it is very important to do the job quickly and thoroughly. Excavators are ideal for digging trenches and carcasses are best loaded and placed in trenches using a front-end loader and tip truck. Dozers can be used to fill-in trenches.

Stock should be buried as soon as possible after death. To reduce swelling during decomposition, open the abdomen and paunches of carcasses to allow gas escape.

Soil surfaces should be sealed with clay or bentonite and then compacted using a vibrating roller or similar. Keep an eye on the burial trenches for a few months after the mass disposal. The surface should be stable and flat. You may need to apply 150 mm of top soil over the surface to give it some extra protection from the weather.



If you are unable to immediately bury or burn carcasses for any reason, pile them up in a secluded spot away from watercourses. Spread sump oil liberally over the heap to discourage flies and scavengers.

Further Information

Department of Agriculture and Food. 2002. Environmental Guidelines for Beef Cattle Feedlots in Western Australia. Department of Agriculture and Food, Western Australia. www.epa.wa.gov.au

Environment Protection Authority. Dead stock disposal. Environment Protection Authority New South Wales. Available online at www.epa.nsw.gov.au

Svensson, R. 2005 Disposal of carcasses. Department of Primary Industries and Fisheries, Queensland. Available online at www.dpi.qld.gov.au





8.4 FARM RUBBISH DISPOSAL

If not disposed of regularly and properly, general farm rubbish can become a serious safety hazard and damage the environment.

Implementing Good Practice

Separate general rubbish into waste types and recycle or reuse on-farm where possible. For example, food scraps and other organic matter can be composted while most timber, bricks and wire can be stored for reuse on the farm as the need arises.

Dumped scrap metal has a profound negative impact on the aesthetic value of any landscape. Such dumping doesn't make sense as many scrap metals have an economic value. If you can't recycle this waste on your farm, your local scrap metal dealer will happily take it off your hands.

The lead contained in batteries is a toxic heavy metal that can contaminate land and water resources, resulting in poisoning of stock and native fauna. Lead can be absorbed through the human skin. Batteries should not be buried or mixed with other wastes. Lead can easily be recycled.

Domestic wastes are often a mixture of paper, plastic and metal that require regular disposal. Where possible, use local government refuse and recycling facilities to dispose of domestic waste. In situations where there is no local rubbish collection service or tip facilities, the alternative is to bury it in a suitable location on the farm where the water table is more than 3 metres from the surface, well away from waterways and wetlands and preferably within clay sub-soils.

Compost household green wastes in an enclosed compost bin to prevent dogs and vermin foraging in an open compost heap. Compost can be applied to the vegetable garden or applied lightly to pasture.

If disposing farm rubbish in public land-fill is not an option due to location, a farm dump can be established to hold any material that can not be re-used, recycled or composted until conditions are right to burn it. These should be sited at least 100 metres from a domestic bore or 200 metres if located up-slope of a bore. They should be at least one metre from the maximum expected groundwater table level and at least 45 metres from the dairy shed.

Before burning rubbish on your farm, you should:

- Check if there are current fire restrictions in your district and inform your local fire service before beginning any substantial burning operation
- Never burn plastics, rubber, old tires or other materials known to produce dark smoke, aerosol containers or treated timber
- Make sure the rubbish you intend to burn is dry. Keep fires small by continually adding material rather than piling it high on the fire. Safely agitate the base of the fire to improve the air supply
- Build fires well clear of houses, other buildings, overhead cables, trees and hay sheds, public roads and airfields (including airfield approach paths). Avoid burning if it will cause a nuisance to nearby residential areas
- Always burn in light winds that assist combustion
- Supervise the fire at all times and extinguish fires before leaving them. Have a fire extinguisher and supply of water on hand in case of emergency

Further Information

Contact your Shire Office for local guidelines and restrictions.

Dexcel Limited. Farm fact 3-22: Farm dumps and offal pits. Dexcel Limited, New Zealand. Available online at www.dexcel.co.nz

Overwhelming evidence has implicated plastics as one of today's most persistent environmental pollutants. The plastic used for containers, agricultural sheeting and irrigation tubing does not readily degrade and takes up large volumes in landfill sites. Many dairy farmers wrap silage, a practice that generates copious amounts of waste plastic sheeting.

While polyethylene can be recycled by the plastics industry, there is very little recycling of polyethylene from agricultural uses in Australia. Recycling of agricultural plastics is an energy-negative process because more energy is used to collect, clean and process used plastic than is used to produce new plastic. Recycling plastic from metropolitan areas is more feasible because of economies of scale, easier collection from closely grouped sites and less contamination.

Implementing Good Practice

Plastics are classified as hazardous wastes in some States and our EPA has introduced regulations which prohibit its open-air (low-temperature) burning because toxic gases and particulates are produced. As such, the best way of getting rid of your plastic containers is by recycling them. Ideally you should return spent containers to the retailer or manufacturer. If this is not practical, many containers these days provide instructions on their label regarding recommended methods of disposal. However if the label gives no special instructions then rinse out the container three times, crush and bury it in a suitable land fill.

You have little choice at present when considering what to do with your used silage wrap. The preferred option would be to dispose of it at your local shire's landfill site and public tips still accept bulk plastic but this may not be sustainable if quantities continue to rise. Also the cost of disposal at landfill has increased dramatically over recent years. Check with your local council as many have an approved collection site for empty pesticide containers. It is illegal to burn pesticide containers. There are adequate facilities available for farmers to recycle their used chemical containers. The **drumMuster** program has collection points in most south-west regions and the shires provide details of the local collection venues.

Recycle all rinsed chemical containers by either returning them to the manufacturer or depositing them at a drumMUSTER collection point.

When buried promptly, plastic film does not pose special problems, but it takes up landfill volume and adds to the overall cost of rubbish disposal. Plastic dumped at uncontrolled rubbish disposal sites creates problems by blowing around and producing smoke and fumes if the tip burns. These problems are minimised if plastic is baled before disposal.

Standard hay balers can be used to reduce volume to about one-sixth. Balers need a tine fork feed, not an auger feed, to avoid plastic wrapping around the feed mechanism. Large round balers can be used, but small square balers are preferred because their bales are easier to handle. Plastic should be as clean as possible, laid out on a clean surface in a windrow about 1 m by 0.6 m and picked up in the normal manner. Tie the bales with plastic twine, not jute.



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Hand feeding the baler is dangerous because tangles could pull the operator into the machine.

Each year large quantities of silage wrap and baling twine need to be recycled where they can or disposed of at appropriate land fill sites.

The only other alternative to public landfill sites is to bury it on your farm but this is not an ideal option as it will remain intact indefinitely and may be unintentionally unearthed, creating problems in the future.

With increasing environmental concerns, alternative ensiling technology or the establishment of recycling facilities within agricultural centres may be needed to deal with spent plastic silage wrap.

Further Information

For details of your local **drumMUSTER** program contact your local shire or visit the program website at www.drummuster.com.au

Shire of Campaspe. 2003. Agricultural recycling. Shire of Campaspe, Victoria. Available online at www.campaspe.vic.gov.au

Smart. W. 1997. Disposal of plastic silage wrap. Farmnote 1/97. Department of Agriculture and Food Western Australia. Available online at www.agric.wa.gov.au

