

Dead Stock and Offal Disposal

Disposal of carcasses and offal is often the last thing you want to think about, but safe and effective management of offal disposal can test even the most capable farmer.

Fresh offal contains a number of harmful organisms, chemicals and bacteria which can have a serious impact on human and stock health as well as the environment. Stock and offal disposal require good management in order to reduce its impacts.

The principles of dead stock management are:

- Dispose of the animal as soon as possible to reduce the risk of disease spreading.
- Do not leave animal carcasses in the open where dogs or other animals can get to them or where they are visible from the road.
- Never dispose of carcasses in farm dairy effluent ponds.
- Keep dead stock well away from waterways, wetlands, and bores.

What are the legal requirements?

Carcass disposal may have adverse environmental impacts, particularly on the quality of water and air.

Environment Canterbury's Proposed Natural Resources Regional Plan includes the following permitted activity rules, WQL23, AQL32, AQL67 and AQL63 which apply to the disposal of dead animals and offal. Provided that you can comply with all the conditions of these rules then disposal of carcasses and offal, from animals that die or are killed on your farm, to offal pits, by composting or burial is permitted. If for any reason you cannot comply with all the conditions, you will require a resource consent.

Depending on your location there may also be other plans or rules you need to consider. Call Environment Canterbury for full details to check which rules apply to you.



All that was left of a cow after 6 months composting in saw dust

Comparing stock disposal options

Disposal Options	Advantages	Disadvantages
Off-farm rendering	<ul style="list-style-type: none"> • Unlikely to have adverse effects on the environment • No risk of on-farm contamination from carcasses 	<ul style="list-style-type: none"> • Only available in some areas • Requires an area for secure storing of carcasses before pick-up • May be costly
Composting	<ul style="list-style-type: none"> • Useful product generated • Reuses other farm resources such as calf-shed sawdust • High composting temperature destroys pathogens and prevents fly incubation 	<ul style="list-style-type: none"> • A reliable supply of carbon source (e.g. sawdust) is required • Requires understanding of composting • Predator and vermin control can be challenging. • Finished compost must not be spread on pasture grazed by stock.
Offal Pits	<ul style="list-style-type: none"> • Simple • Cost effect • Easy to manage 	<ul style="list-style-type: none"> • Seepage can contaminate groundwater • Predator and vermin control is required • Increasing restrictions on use
Burial	<ul style="list-style-type: none"> • Simple • Cost-effective 	<ul style="list-style-type: none"> • Requires vermin control • Labour intensive • Can contaminate groundwater
Incineration	<ul style="list-style-type: none"> • Carcasses are destroyed quickly • Any pathogens present are destroyed 	<ul style="list-style-type: none"> • May cause odour and smoke nuisance • Transport and cremation costs are incurred for off-farm incineration

Composting

Composting of dead stock offers an alternative to traditional disposal methods and decreases the risk of groundwater contamination. A well-managed composting system can be low cost, environmentally sound, and virtually odour-free. Composting involves layering dead animals within a bulking agent such as sawdust or straw.

Site selection

- a. Choose a high, level site away from wells, watercourses, tile drains and well above groundwater.
- b. Choose a site where soils will limit any leaching reaching groundwater.
- c. You will need enough space for 3 piles or bins and space for handling carcasses and bulking agent into and out of piles or bins.
- d. Ensure easy access to manage and monitor the compost.
- e. Ensure convenient access to a water supply so that you can add water to compost as needed.

Bulking agent

The carbon to nitrogen (C:N) ratio of composting material should be at least 5:1. Since animal carcasses are high in nitrogen, the bulking agent needs to be high in carbon. The process must be aerobic if odour is to be minimised, so air penetration through the compost heap is essential. A bulking agent with material size 12-44mm in diameter will allow better airflow through the pile. Materials must be able to settle around and be in contact with the carcass.

Untreated sawdust is recommended because of its small particle size and high absorbency that minimises leachate. Straw can be used but there are problems in using it such as longer breakdown times, and leachate production. Generally a straw stack will need to be roofed and built on a concrete surface so that leachate can be collected. You can also use finished compost as part of the bulking agent in a new pile - a rule of thumb is 50 percent old-to-new, but you may want to use more or less depending on how degraded the bulking agent is in the finished compost.

Once complete, compost can be spread over non-productive areas (domestic gardens, shelter belts, woodlots) or can be used for part of the bulking agent in a new composting pile. Compost should not be spread on ground where animals will graze as there is a risk of pathogens being present in the compost.

Composting type

Composting can be undertaken in bins or open windrows.

Windrows

- a. Windrows are generally built up to be 1.5m high and 3m wide.
- b. Windrows need to be fenced to keep stock and scavengers out.



Sheep composting windrow

Bins

- a. The composting bin needs to be at least 60cm wider and longer than the largest animal you will be expecting to compost.
- b. Usually you will need three bins – two for composting and one being filled.
- c. Large bales of low quality hay can be used to form the bins. Place bales end to end to create walls for a three sided enclosure. More permanent systems build concrete bins in a covered shed or purpose built wooden crates for smaller animals.
- d. A lid or cover will allow you to control moisture and also keep scavengers out.

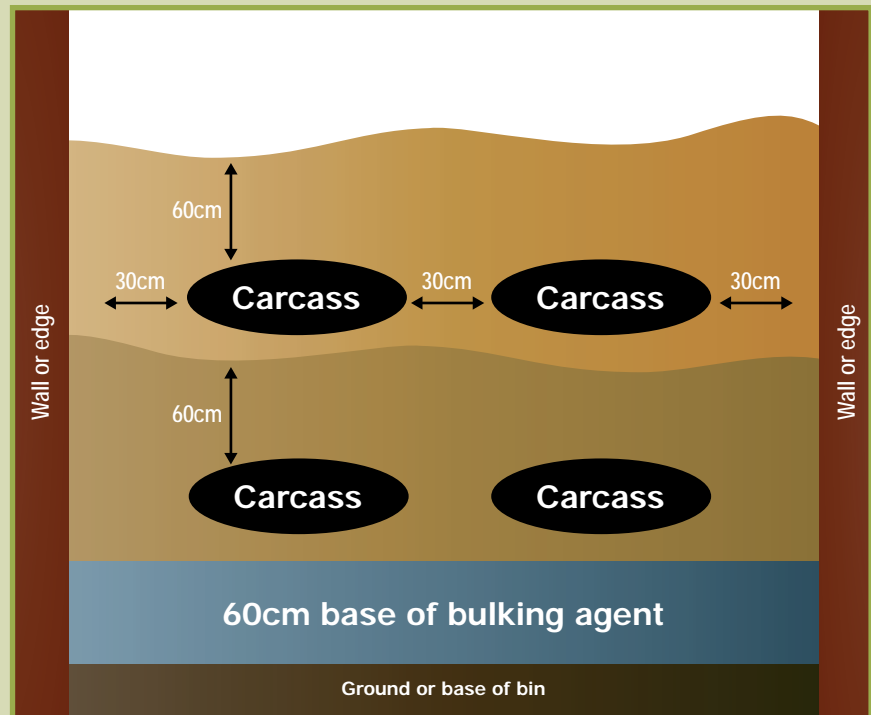


A sheep composting bin made of 50x150mm treated timber

How to compost step by step

1. Building the Pile

- Place at least 60cm of bulking agent on the ground or floor of the composting bin.
- Place the carcasses in a single layer on top of the bulking agent at least 30cm from the edge of the pile and at least 30cm apart. Split the stomach of each carcass as it is added.
- Cover the carcasses with 60cm of bulking agent.
- Add water if needed – the pile should leave your hand feeling moist, but you should not be able to squeeze any water out of it.
- Once the pile is full, start a second pile following these same steps.



Example of spacing when filling composting bin

2. Composting

- Monitor the pile regularly to make sure that all carcass parts stay completely covered by bulking agent.
- As the micro-organisms begin to compost the carcasses, the internal temperature of the pile will rise to between 60-70°C. Once oxygen is depleted this temperature will drop.
- Turning the pile – when the temperature has dropped (approx 3 months for large animals, or 45 days for small), the pile should be moved to a new bin or windrow with 60cm of fresh bulking agent on it base. This turning aerates the pile.
- Check moisture content of the pile and add water as necessary.
- Cover the turned pile with another 30cm of bulking agent.
- Leave the pile to compost through another cycle (45 days or 3 months based on animal size).

3. Finishing the compost

- Inspect the pile. If you can no longer see any flesh, the compost can be termed 'finished'. It should be dark, humus-like material with very little odour. At this stage, any bones should be so brittle that they can be easily crushed. If there is still some flesh visible, you need to turn the pile again and let it go through another heat cycle.
- Sometimes more time is needed to completely compost the larger and denser bones. If the compost is finished other than the bones, remove them and place in a new pile for further decomposition.



Dead stock collection service

Where possible, arrange for carcasses to be picked up by a licensed dead stock collection service. Operators skin the dead animals and render the carcass to produce protein meals, tallow and fertiliser.

Dead animals should be carefully handled to avoid damaging their skins as their value is greatly diminished if they are dragged or ripped. The collection point should not be visible from the road.

Offal pits

While offal pits are considered a simple and cheap method of disposing of small quantities of dead stock, they require good management in order to reduce their impact on the environment.

Location of offal pits

- Offal pits must be at least 50m from waterways, wetlands, bores and property boundaries.
- Avoid areas where the watertable is high or poorly draining soils. The bottom of the pit should be at least 3m above the top of the maximum expected groundwater level. There must be no groundwater entering the bottom of your pit.
- Surface runoff must be directed away from the pit.
- Animals and rodents must be prevented from accessing the pit.
- Offal pits can only be used for waste that originate from the property they are on.
- Pits should not be located in areas prone to flooding or ponding due to heavy rainfall (1 in 5 year event).

Construction

- Offal pits may be narrow trenches dug by an excavator, or vertical shafts usually about 1m in diameter and a few meters deep constructed by a large diameter auger.
- The volume of the pit should be no more than 30 cubic metres.
- The top of the pit should be covered with a heavy-duty concrete slab at least 125mm thick with access from at least one airtight cover-plate.



Example of a well constructed offal pit

Some guidelines for managing offal pits

Do's	Don'ts
<ul style="list-style-type: none">• Dispose of stock as quickly as possible• Slit the stomach of each carcass to allow the intestines out for faster decomposition• Puncture the left side of the rumen to prevent build up of toxic gases• Keep the pit moist by adding several litres of water weekly (but not so much that water collects at the bottom)• Cover the offal pit securely to prevent animals gaining access• Once the pit is full to within 1 metre of the surface, fill it with soil, compact and re-grass• Keep pits free of vermin such as rats	<ul style="list-style-type: none">• Do not site offal pits near property boundaries, waterways or in areas with a high watertable• Do not use disinfectant to reduce odour as this will inhibit the decomposition process• Do not add lime as this will slow down decomposition• Do not use an offal pit as a landfill• Do not dispose of chemicals in offal pits• Do not light fires anywhere near an offal pit – gases produced by decomposition can be flammable

Burial

Shallow burial may be a convenient method of disposal where water tables are low enough to avoid groundwater contamination. Controlling vermin and scavengers can be difficult. Make sure that the hole is backfilled immediately and that the buried carcass is well covered, so that dogs

or other scavengers cannot dig it up. Select an area with clay or impervious soil below to contain any leachate and site the hole at least 100m from domestic bores or surface waterways to avoid contamination. Do not bury animals in the floodplain of a waterway.

For more information contact ECan Customer Services in Christchurch or Timaru:

Christchurch Phone: (03) 353 9007
Christchurch Fax: (03) 365 3194

Timaru Phone: (03) 687 7800
Timaru Fax: (03) 687 7808

Freephone: 0800 EC INFO (0800 324 636)
Email: ecinfo@ecan.govt.nz or Visit: www.ecan.govt.nz