AUSTRALIAN FARM WASTE PORTAL

FACT SHEET – DECEMBER 2023

A GUIDE TO MEASURING FARM WASTE DATA

For organic, plastic and workshop waste

OVERVIEW

We know that Australian agriculture, fisheries and forestry sectors produce a large amount and diversity of waste on-farm. Until recently, data on the volume, location and pathways for disposal has been limited.

In 2022, the first baseline data on pre-farm gate waste was estimated through the AgriFutures Australia Pre-Farm Gate Waste Program. Information was collected on organic, plastic and workshop waste.

Analysis of the data was refined in 2023. It is estimated that 10.6 million tonnes of pre-farm gate waste was generated by the agriculture, fisheries and forestry sectors in 2020/21. This included:

- 10.3 million tonnes of organic material
- 159,000 tonnes of workshop material
- 100,000 tonnes of plastic material.

KEY MESSAGES

Around 10.6 million tonnes of pre-farm gate waste was generated by Australia's agriculture, fisheries and forestry sectors in 2020/21.

- To effectively manage pre-farm gate waste for the long-term, it is essential to measure the scale and distribution of different waste streams in Australia and share this knowledge across industry.
- This fact sheet provides guidance on the recommended units for data collection and reporting for organic, plastic and workshop waste to allow for consistent and comparable measurement.

WHY MEASURE WASTE?

To manage our waste, we need to be able to measure the scale and distribution of various waste streams. This requires the establishment of standard approaches for categorising waste types, and collecting waste data.

Sharing our knowledge of waste generation across primary sectors, with other industries and across government will ensure we have the best knowledge to tackle the biggest issues, and that our efforts are well targeted.

Ongoing collection of data on pre-farm gate waste in Australia will better inform management practices, policies and investment.

In addition, rural industries are setting waste reduction targets and considering waste

management as part of their Environmental, Social and Governance (ESG) compliance.

Establishing a baseline to measure progress and providing guidance on what to measure will support industries to achieve their waste reduction targets.

WHAT WASTE ARE WE MEASURING?

Pre-farm gate waste is defined as waste generated in primary production businesses up to the point of and including harvest, prior to product leaving the farm or fishing vessel. For example, waste generated at a processing factory is not included. Pre-farm gate waste is categorised into the following three categories.

- **Organic** – animal and plant organic matter, such as manure from intensive animal systems, harvest waste, pruning and other organic matter
- **Plastic** – soil mulch, protective films, nets and mesh, piping and irrigation, poly tunnels and silage wrap, containers
- **Workshop** – metal, treated timber (including copper chrome arsenate or CCA posts), tyres, oils, machinery and other non-hazardous and hazardous waste.

The types of pre-farm gate waste included under the three waste streams are shown in Figure 1 (agriculture and forestry) below and Figure 2 (fisheries) on page 3.

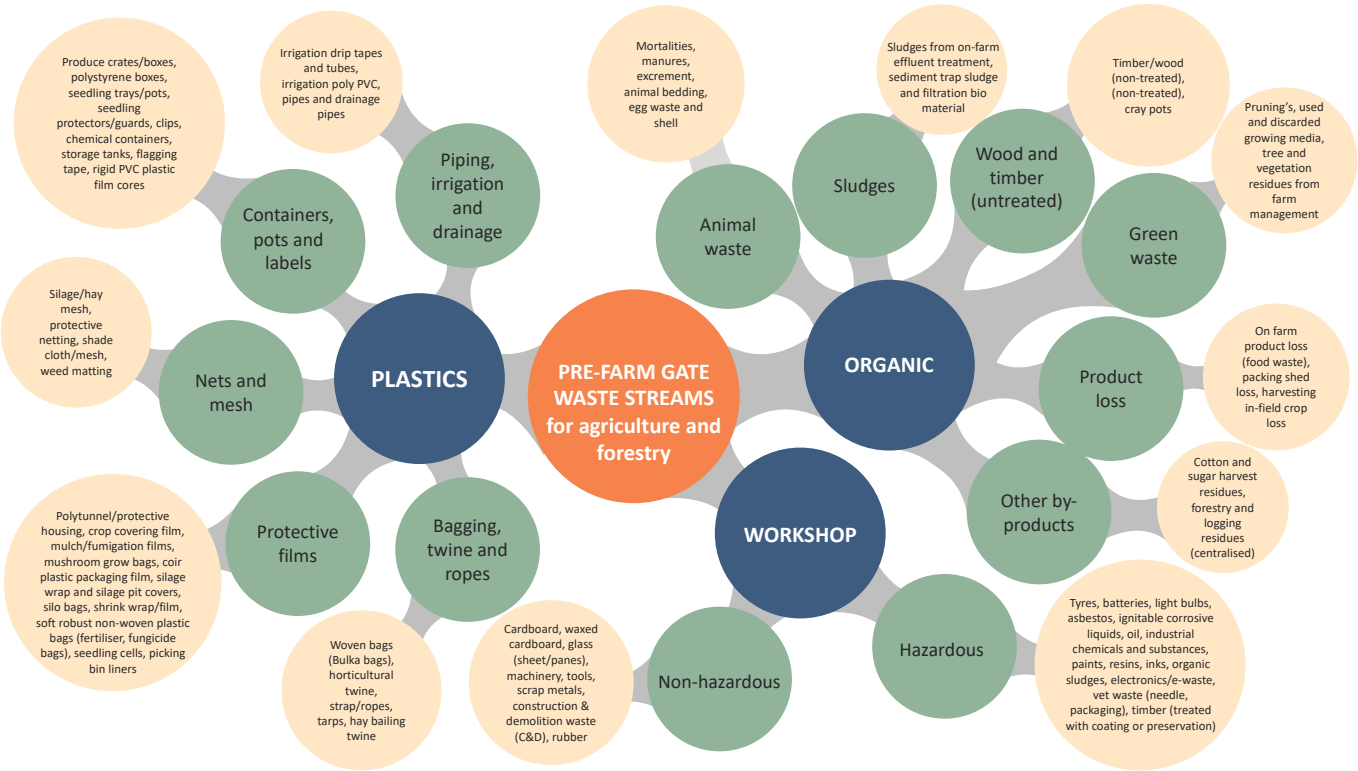
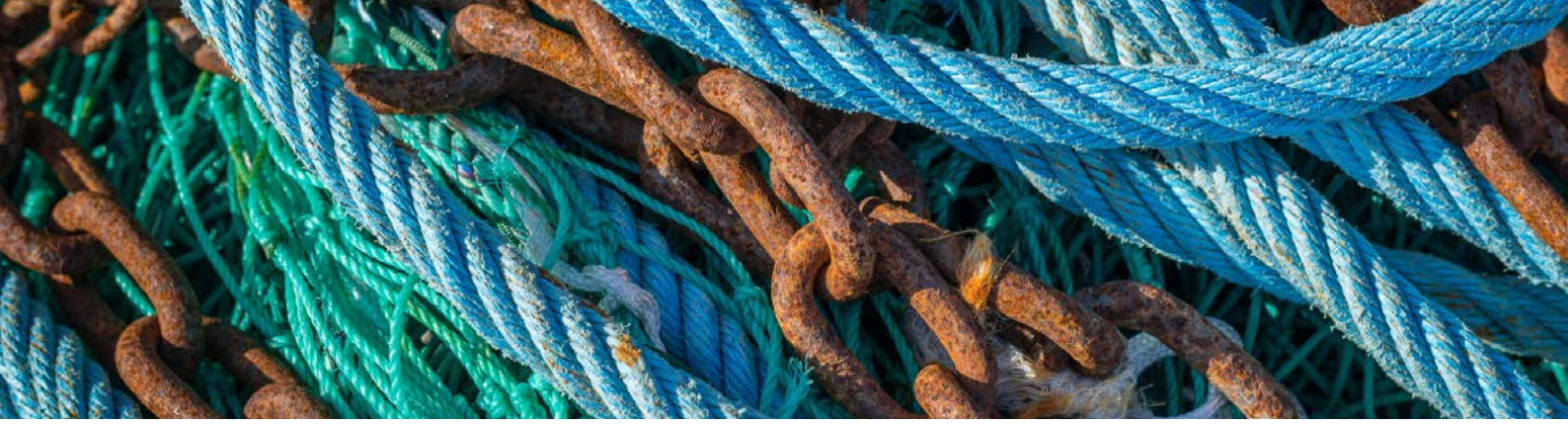


Figure 1: Examples of pre-farm gate waste streams for Australian agriculture and forestry.



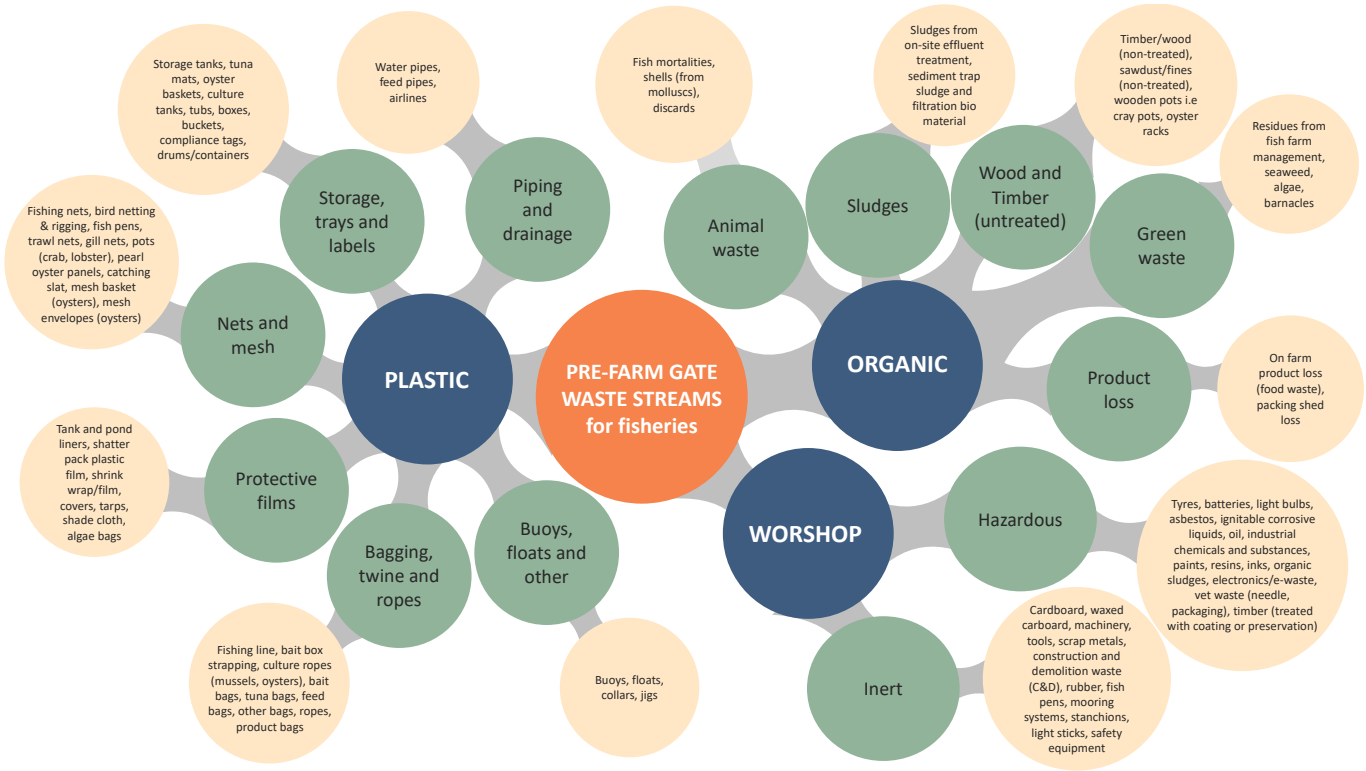


Figure 2: Examples of pre-farm gate waste streams for Australian fisheries.

DEFINITIONS

Further descriptions of the waste included under each of the three categories of pre-farm gate waste are provided below.

Organic waste

Organic waste is defined as material that is derived from biotic processes. **We include all material that is actively managed** (e.g. cauliflower stems and leaves that are mulched and incorporated into the soil are included; crop stubble that is retained is not included). Therefore, we include organic material that is used beneficially on-farm, and is not 'wasted'.

Plastic waste

Plastic waste is defined as a range of synthetic or semi-synthetic organic solids that are mouldable.

Workshop waste

Workshop waste is defined as a category based on:

- Activity or use, rather than a material type
- Wastes that are not classified as plastic or organic and are generated on farm, at sea on fishing vessels, onshore or in forests where light industrial work is undertaken.

HOW TO MEASURE WASTE

To allow for consistent, comparable collection and measurement of pre-farm gate waste data, the following units for data collection and reporting by waste stream are recommended. These metrics were developed in consultation with industry and other stakeholders. Refer to the Pre-farm gate waste management: Guidelines for waste data collection for factors for converting units to tonnes.

Organic waste

Organic material type	Description	Units for data collection	Unit for reporting
Animal waste			
Mortalities	Whole dead animals from livestock and fisheries.	Tonnes; m^3	Tonnes
Manures/excrement not mixed with bedding material	Animal excrement from livestock and fish that is not mixed with animal bedding material.	Tonnes; m^3	Tonnes
Litter (mix of bedding and manures)	Bedding material (e.g. sawdust or straw) that includes animal manures from cattle, pigs, poultry.	Tonnes; m^3	Tonnes
Egg waste and shell	Waste from egg and shell in all poultry production.	Tonnes; m^3	Tonnes
Shell (from molluscs)	Shell waste from growing and grading molluscs. Does not include processing (e.g. shucking).	Tonnes; m^3	Tonnes
Sludges			
Sludges from onsite effluent treatment	Sludges accumulated in wastewater treatment ponds with a solid content of approximately 15% or more. Excludes irrigation from treatment ponds, which is mainly water.	Tonnes; m^3	Tonnes
Sediment trap sludge and filtration bio material	Soil and organic material captured in filters from undercover protected cropping growing areas.	Tonnes; m^3	Tonnes
Green material			
Prunings (woody clippings/trimmings from vines and trees)	Clippings/trimmings from woody plants, such as vines and fruit trees.	Tonnes; m^3	Tonnes
Used and discarded growing media (e.g. coir, potting mix)	Potting mix, coir or other growing media blend used in, for example, nurseries, hydroponics or other specialised plant production.	Tonnes; m^3	Tonnes
Plant residues (whole/ part plants)	Whole plants/trimmings/clippings from glasshouse vegetables or excess propagation material and plants that do not meet quality parameters (pest/disease/form).	Tonnes; m^3	Tonnes

Organic waste (continued)

Organic material type	Description	Units for data collection	Unit for reporting
Green material (continued)			
Tree residues (e.g. orchard removal, tree felling)	Bulky tree residues from orchard upgrades or tree removal.	Tonnes; m^3	Tonnes
Seaweed/algae removal	Residues from removing seaweed and algae from aquaculture infrastructure, where the removal takes place on land.	Tonnes; m^3	Tonnes
Product loss			
Packing shed loss (e.g. grading)	Loss of edible product in the fresh produce packaging shed typically due to specification requirements and/or minor damage. Also includes retail-ready or wholesale-packed produce returned by wholesalers or retailers after inspection.	Tonnes; m^3; % of production	Tonnes
Crop loss – unharvested crop/part of crops	Plant parts that were intended for harvest but were left in the field due to, for example, a weather event or market-based decision (specifications and/or minor damage). Crop loss is specifically the plant part that is normally harvested (e.g. cauliflower head with some leaves).	Tonnes; m^3; % of production	Tonnes
Harvesting residues (left in field after harvest)	Crop residue material that is left in-field after harvest of crops but not including the above crop loss; and requires active management (e.g. cauliflower stems and outer leaves that are not normally harvested). Not including crop residues that are not normally harvested (e.g. cereal stubble). Not including sugar and cotton (see 'Other organics').	Tonnes; m^3; % of production	Tonnes
Other organics			
Forestry and logging residues (centralised)	The amount of forestry harvesting residues (wood, leaf) that is actively managed.	Tonnes; m^3	Tonnes
Cotton and sugar harvest residues (left in field after harvest)	Crop residue material left in-field after harvest of cotton and sugar crops.	Tonnes; m^3	Tonnes

Plastic waste

Plastic material type	Units for data collection	Unit for reporting
Protective film		
Silo bags	Tonnes of grain stored in silo bags	Tonnes
Polytunnel/protective housing	m^2 covered; tonnes	Tonnes
Crop covering film (e.g. for grapes, fruit)	m^2 covered	Tonnes
Mulch/fumigation films	m^2 covered	Tonnes
Mushroom grow bags	Number of bags	Tonnes
Coir plastic packaging film	m^3	Tonnes
Silage wrap	Number of bales covered with plastic wrap	Tonnes
Silage pit covers	m^2 covered; number of rolls and size	Tonnes
Shrink wrap/film	m^2	Tonnes
Soft, robust non-woven plastic bags (fertiliser bags, fungicide bags)	Number of 20 litre bags	Tonnes
Seedling cells	Number of plants used	Tonnes
Picking bin liners	Litres of vessel and number of liners	Tonnes
Tank and pond liners	Litres of capacity and number of liners	Tonnes
Shatter pack plastic film	m^3	Tonnes
Shrink wrap/film	m^3	Tonnes
Covers	m^2	Tonnes
Tarps	m^2	Tonnes
Shade cloth	m^2	Tonnes
Algae bags	Litres/kilogram and number of bags	Tonnes
Piping, irrigation, and drainage		
Irrigation drip tape	Kilometres	Tonnes
Irrigation drip tube	Kilometres	Tonnes
Irrigation poly pipe	Kilometres	Tonnes
Irrigation PVC pipe	Metres	Tonnes
Drainage pipes – agricultural pipes	Metres	Tonnes
Feed pipe	Linear metres/kilometres	Tonnes
Water pipes	Linear metres/kilometre	Tonnes
Air lines	Linear metres/kilometres	Tonnes
Nets and mesh		
Silage/hay mesh	Number of bales; number of rolls and size	Tonnes
Protective netting	Hectares covered	Tonnes
Shade cloth/mesh	Hectares covered; m^2 covered	Tonnes
Weed matting	m^2 covered	Tonnes

Plastic waste (continued)

Plastic material type	Units for data collection	Unit for reporting
Nets and mesh (continued)		
Fishing nets	m²	Tonnes
Pots (crab, lobster)	Number of pots (approx. 800mm); number of pots (approx. 900mm); number of pots (approx. 1000mm); number of pots (>1200mm)	Tonnes
Bird netting and rigging	m²	Tonnes
Fish pens (netting)	Litres of capacity and number of pens	Tonnes
Trawl nets	m²	Tonnes
Gill nets	m²	Tonnes
Pearl oyster panels	m² and number of panels	Tonnes
Catching slats	m² and number of slats	Tonnes
Mesh baskets (oysters)	m² and number of baskets	Tonnes
Mesh envelopes (oysters)	m² and number of envelopes	Tonnes
Bags, twine and ropes		
Produce crates/boxes	Volume (litres) of crate/box and number of vessels	Tonnes
Polystyrene boxes	Volume (litres) of box and number of boxes	Tonnes
Seedling pots	Diameter (cm) of pot and number of pots	Tonnes
Seedling trays	Number of seedlings in a tray and number of trays	Tonnes
Seedling protectors/guards (i.e. core flute or net sock)	Number of netted sock short (30-50cm) or number of corflute short (30-50cm) or number of corflute long (70-110cm)	Tonnes
Clips	Number of clips	Tonnes
Agricultural containers (e.g. chemical/oil/ liquid fertiliser drums)	Number of containers 1-5 litres; number of containers 10-20 litres; number of containers 50-100 litres; number of containers 100-plus litres	Tonnes
Large containers and tanks	Litres of vessel and number of vessels	Tonnes
Flagging tape	Metres	Tonnes
Fishing line	Linear metres/kilometres	Tonnes
Bait box strapping	Linear metres	Tonnes
Culture ropes (mussels, oysters)	Linear metres/kilometres	Tonnes
Bait bags	Litres/kilograms and number of bags	Tonnes
Tuna bags	Litres/kilograms and number of bags	Tonnes

Plastic waste (continued)

Plastic material type	Units for data collection	Unit for reporting
Bags, twine and ropes (continued)		
Feed bags, other bags	Litres/kilograms and number of bags	Tonnes
Ropes	Linear metres/kilometres	Tonnes
Product bags	Litres/kilograms and number of bags	Tonnes
Storage containers, trays and labels		
Oyster baskets	Number of baskets, m^2	Tonnes
Storage tanks	Volume (litres) of tanks and number of tanks	Tonnes
Culture tanks	Volume (litres) of tanks and number of tanks	Tonnes
Tubs	Volume (litres) of tubs and number of tubs	Tonnes
Boxes	Volume (litres) of boxes and number of boxes	Tonnes
Buckets	Volume (litres) of buckets and number of buckets	Tonnes
Tuna mats	m^2	Tonnes
Compliance tags	Length (cm) and number of tags	Tonnes
Drums/containers	Number of containers 1-5 litres; number of containers 10-20 litres; number of containers 50-100 litres; number of containers 100-plus litres	Tonnes
Buoys and floats		
Buoys	Number of buoys less than 250mm; number of buoys more than 350mm; number of buoys more than 500mm	Tonnes
Floats	Number of floats less than 250mm; number of floats more than 350mm; number of floats more than 500mm	Tonnes
Collars	Number of collars	Tonnes
Other		
Jigs	Number of jigs	Tonnes

Workshop waste

Workshop material type	Units for data collection	Unit for reporting
Hazardous		
Asbestos	Litres; m³	Tonnes
Batteries	Number of small batteries (e.g. car, motorbike); number of large batteries (e.g. tractor, truck)	Tonnes
Electronics and e-waste waste	Tonnes; m³	Tonnes
Ignitable corrosive liquids	Litres; m³	Tonnes
Industrial chemicals and substances	Litres; m³	Tonnes
Light bulbs	Number of small bulbs; number of fluoro bulbs	Tonnes
Oils	Litres	Tonnes
Paints, resins, inks	Litres; m³	Tonnes
Treated timber posts (e.g. CCA-treated posts)	Tonnes; m³; number of six-foot posts; number of eight-foot posts; number of pallets	Tonnes
Tyres	Number of small tyres (e.g. motorbike/buggy); number of medium-sized tyres (e.g. car); number of large tyres (e.g. tractor)	Tonnes
Veterinary product waste (e.g. needles, packaging)	Litres; m³	Tonnes
Non-hazardous		
Cardboard	Litres; m³	Tonnes
Construction and demolition waste	Litres; m³	Tonnes
Fish pens	Litres; m³	Tonnes
Glass (e.g. sheet/panes)	Litres; m³	Tonnes
Light sticks	Litres; m³	Tonnes
Machinery	Litres; m³	Tonnes
Mooring systems	Litres; m³	Tonnes
Rubber	Litres; m³	Tonnes
Safety equipment	Litres; m³	Tonnes
Scrap metals	Tonnes; m³	Tonnes
Stanchions	Litres; m³	Tonnes
Tools	Litres; m³	Tonnes
Waxed cardboard	Litres; m³	Tonnes

TIPS FOR MEASURING WASTE

To improve accuracy, consistency and reporting it is recommended that:

- **Data is recorded for each industry separately** (e.g. for mixed farming, separate data by each main enterprise type). It is reasonable to record an estimated split
- **Record data for each financial year.**

MORE INFORMATION

Further information about collecting pre-farm gate waste data can be found in the Pre-farm gate waste management: Guidelines for waste data collection report.

Details of the pre-farm gate baseline survey including methods, definitions and sector summaries can be found in the Pre-farm gate waste management: Baseline waste data for the agriculture, fisheries and forestry sector report.

If you would like to discuss the waste metrics for your industry, please contact Steph McNulty (RMCG) at stephaniem@rmcg.com.au

AgriFutures Australia

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