

Some frequently asked questions about silage

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“Every silage season, many questions are asked about making and storing silage,” says Frank Mickan, Fodder and Pasture Specialist, DPI, Ellinbank. Below are some answers to the more common questions but please remember that there are often some other factors which need to be taken into account when answering silage related questions.

What is the correct DM content for each form of silage?

Stack silage: Long chopped silage (eg. loader wagon) 30 – 35% DM. Precision chopped 30 – 40% DM.

Baled silage: Round bales 40 – 50% DM. Large rectangular bales 45 – 60% DM.

How can I tell if the forage is too wet to ensile?

Use a microwave oven to determine DM content. Most hay moisture meters are not suitable for measuring moisture contents for silage (100 – moisture content = DM content).

Some practical tips to observe when the material is too wet to ensile:

- *Stack silage* – If moisture drips from the fingers after hand-squeezing a sample of forage (chopped into 2 – 3 cm lengths) for about one minute. If moisture oozes out of truck/trailer during transport or from the stack during rolling. Slight dampness on the wheels of the rolling tractor indicates correct DM content.
- *Baled silage:* Tractor blowing exhaust smoke. Baler has trouble turning the bale in the chamber. Bale ends blackened when ejected. Perimeter of bale glistens in sunlight.

If my silage is not wilted enough, and rain is coming, can I still ensile it?

Yes, but to ensure a good fermentation (pleasant sweet smelling silage), apply an inoculant (or other appropriate silage additive) from reputable companies which have research to back up their products. Apply at the recommended rate per tonne fresh crop acknowledging extra cost due to extra weight of the water.

If my crop is not quite wilted enough, and rain is coming, what should I do?

Crop cut for less than 3-4 days: Harvest before rain event but apply a silage additive at the pick-up to assist the fermentation process and avoid the production of an unpalatable silage with increased losses. Tedding immediately after mowing most likely would have ensured the wilting target to have been reached.

Crop cut for 4+ days: Plant sugars, essential for ensiling, will probably be substantially depleted. Applying a buffered acid silage additive (or other appropriate silage additive) at baling may assist the fermentation process. Applying an ordinary silage inoculant probably won't assist due to lack of sugars.

How do I know if the stack is rolled enough?

The forage will not be depressed by the rear wheels more than a few centimetres as they pass over the stack. Rolling slowly rather than quickly aids compaction. Fingers can be pushed into only the first joints into an opened stack face.

How do I know if the bales are baled tightly enough?

Bales should hold their shape some time after baling when left on their round side. Fingers can only be pushed into the first joints into the ends of bales.

Should I cover the stack during harvest?

Ideally, yes. The rolled stack will contain a certain amount of air, no matter how tightly compacted, allowing plant respiration and microbial bacteria activity to occur, resulting in DM and quality losses. Carbon dioxide + water + heat are given off and rises as hot air!

This heated air rises out of the stack to be replaced by cool air. This cool air is heated, rises and is replaced by more cool air! View this as cold air in, \$\$\$\$ out. A plastic sheet dragged over the stack and with tyres placed around its perimeter, will greatly slow down this cycle. Not always easy, especially late at night, and harder with large above ground stacks, but worth considering!

When should I cover the silage stack after harvesting is finished?

As soon as rolling is completed. Rolling should have kept up with stack filling and so should not need too much rolling at the end. If late at night, at least drag the plastic sheet over and place tyres around the perimeter. Next day, place weight such as tyres over the entire stack surface and seal edges airtight.

Are there alternatives to using tyres for sealing and weighting plastic sheets?

Ideal: A thin layer (3 – 5 cm) of soil over the plastic over entire stack surface and 5 – 10 cm over the plastic edges. Painful to remove soil but consider throwing some grass seed on top to act as handles to easily remove soil at feed out.

Make “sausages” containing dirt, sand, pea gravel, etc. out of last year’s sheet plastic (Figure 1) and lay in overlapping rows along plastic edges, at overlaps and in rows across the stack surface.



Figure 1. “Sausages” made out of old plastic and hay twine

When should bales be wrapped?

As soon as practicable after baling, up to several hours later. Never leave them unwrapped overnight and, if unavoidable, stand bales on their butt to make wrapping possible the next morning.

How many layers of plastic on round and rectangular bales?

Four layers ALL over the bale at 50% stretch with NO underlapping. New Zealanders recommend six layers but stretch their plastic 70%, ie. thinner per layer. Six layers are recommended if transporting bales, if being left in paddocks on stubble, for sheep and horses. If a known proportion of bales are to be carried over each year, wrap these in six layers to probably give two years safe storage.

When should bales be moved from the paddock?

Two experiments (Norway and Sweden) have shown that transporting wrapped bales soon after baling or 5 – 6 days after baling resulted in negligible differences in yeast and mould growth. Bales left on their sides in paddocks for several weeks are prone to damage from bale moving equipment causing plastic damage in slumped bales. You should store bales on end if they are to be left in paddocks for several weeks.

However, removing bales within a day or so has been shown to reduce bird damage substantially in Ireland and UK, as the birds sit and pick holes in the plastic after their fill of grubs, worms, slugs, etc. from the freshly mown paddock.

When can I open my silage after it is made?

Stack silage: Silage requires at least 6 – 8 weeks for the whole stack to ferment if compacted tightly and sealed airtight within hours after harvest is completed. If material is too dry, not rolled well, only covered and not sealed, etc. fermentation will take several weeks longer. If opened earlier, the open area of the stack will be flooded with air and fermentation will be affected with loss of dry matter (DM) and nutritive value.

Baled silage: Individually wrapped bales can be opened anytime as long as the bale is consumed within the day. Fermentation won't be complete but won't matter. By day 2, it will be heating and starting to go mouldy. Treat large square bales under sheets of plastic as a stack and don't open for 6 – 8 weeks.

When can I send silage samples for feed analyses?

After the above opening periods and, ideally, several weeks longer in case the fermentation is taking longer which commonly occurs. The results will be incorrect if sent earlier.

How much silage is in my stack?

This will depend on silage DM content, cut length, stack depth and how well the stack was compacted. Table 1 shows the silage densities of 168 silos in America, but similar densities would apply in Australia.

Table 1. Approximate weight of silage per cubic metre (kg/cu.m)

Weight basis	Pasture, Lucerne	Maize
	Density (kg/cubic metre)	
	Average (Range)	Average (Range)
Fresh weight basis	590 (210 – 980)	690 (370 – 960)
Dry weight basis	240 (110 – 430)	232 (125 – 378)

The longer the silage, lower the density. Wetter the silage lower the DM density.

What are the advantages of chopper balers?

Overseas research has measured 8 – 15% extra weight in chopped bales compared to unchopped same sized bale so less bales/hectare and less plastic/tonne DM. Depends on operator, number of knives used and baling speed. Easier to feed out, esp. in mixer wagons. No great advantage in straw or hay.

What plastic tape should I use to repair holed silage plastic?

Specifically manufactured tape should be used on sheet plastic and stretch wrap plastic. Duct tape is not suitable for more than a few weeks, if that! Plastic should be clean, dry and cool before patching. Use light colour tape on light colour plastic to avoid differential in heating/contracting causing tape failure. Cut tape to length before placing over hole.