# Minimise your silage waste

**Tom Ryan**
Teagasc Rural Economy Development Programme

What differentiates those who have consistently very little waste from others is attention to detail. There is nothing the best silage-makers are doing that can't be done by everyone else.

## Field losses

The yield and quality of grass harvested can be quite different from the potential yield and quality.

This can be due to several factors, for example rough areas at gaps and around headlands, soft spots in the field needing drainage, obstacles left in the field, low yields due to poor fertility and soil acidity, inaccurate fertiliser spreading, predominance of old grasses and weeds in need of reseeding and harvesting losses in the pickup process.

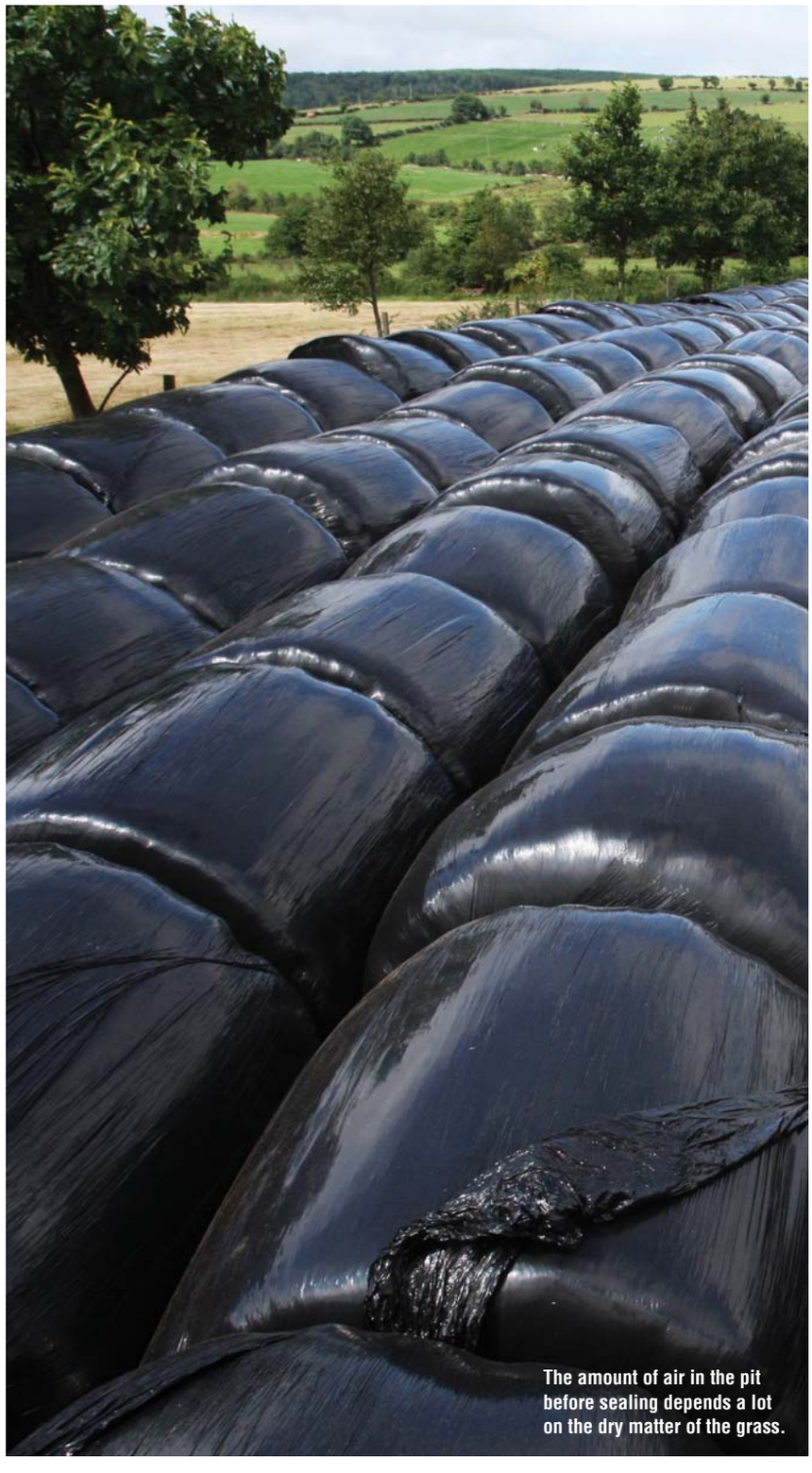
These problems generally take time and expense to sort out. The important thing is to have a plan to tackle them at some stage.

## Wilting

Wilt, if possible, by cutting with a conditioner mower and spreading out the grass as much as possible. Follow this by tedding out the swaths before raking into windrows for subsequent pickup.

Weather permitting, this approach should ensure that the grass DM is between 27% and 32% within 12 to 24 hours of cutting, reducing the potential for effluent and concentrating sugars in the grass to aid good preservation.

Nowadays, the work rate of silage harvesting equipment is such that upwards of 40ha a day is easily achieved. Fast filling of silage pits is good; the only drawback is that the spreading, levelling and consolidating of grass might not be given enough time. This is more critical in silage pits being filled with wilted material. It is important to spread wilted grass in thin layers and compact it thoroughly.



The amount of air in the pit before sealing depends a lot on the dry matter of the grass.

Continued on next page

»From page 13

### Cutting height

Grass digestibility is lower in the stems than the leaves so anything that increases the proportion of stem in the ensiled material lowers the average digestibility.

When the load of grass is tipped out in the yard the colour and the feel of the material gives a good indication of the stem to leaf ratio. The extra yield gained by cutting lower is small and comes at the cost of diluting the quality of the silage.

### Good preservation

Rapid filling, good consolidation and an effective air-tight sealing will generally result in a fast and efficient preservation with minimal dry matter losses. The result is well preserved silage with minimal waste, reduced DM losses, better feed value and good intakes.

Good preservation keeps the development of spoilage organisms like clostridia, moulds and yeasts at bay. The preservation process cannot begin while there is any air left in the pit. So a lack of attention to detail in sealing the pit will delay the preservation process and increase losses. Ensure that silage pits are really air-tight.

### Keeping the air out

The amount of air in the pit before sealing depends a lot on the dry matter of the grass. Leafy, wet, short chopped grass will compact a lot better than dry, long chopped, stemmy grass. Below 24% DM, there is very little space for air as these spaces are filled with effluent and less rolling is needed. For material over 30% dry matter, air can find its way deep into the pit unless it is very well rolled and consolidated.

When pits are filled very fast, there isn't much time for rolling and consolidating and there usually isn't enough room in pits for two machines to safely operate at the same time. Compacting the grass therefore poses a challenge. Sometimes the best that can be achieved is to spread out loads as evenly and thinly as possible, leaving no lumps and humps or hollows.

The sides of clamps pose a particular problem. We tend to make them relatively steep which means they can't be rolled on for consolidation. It is important that the sides are well-built with a uniform slope, without humps or hollows. This will ensure that the silage covers will lie right up against the ensiled material leaving no air pockets, once effectively weighted down.

Another increasing problem is that pits are being overfilled. I get the impression that some farmers feel they can expand stock numbers but manage with their existing silage pits. The result is that the height at filling and even at feedout is dangerously high. Pits are getting narrower and narrower as they rise, increasing the danger of the loader toppling. The effectiveness of consolidation is lessened. At feed-out, stripping back the cover and tyres becomes a lot more difficult and dangerous.

### Covering the pit

Covering the pit to maintain an effective air-tight seal is most important. The surface of the grass before covering should be smooth, without humps and hollows to eliminate air pockets and ensure that any rainwater falling on the covers will flow off completely. Water lodged continuously in depressions causes surface damage underneath and if it leaks through will result in a vertical column of bad silage.

The covers must be weighted down well using a combination of tyres, mats, gravel bags and nets. Nets are great for keeping the covers in close contact with the ensiled material. Nets must be non–slip to make them safe to walk on. Tyres should be placed edge to edge and heavy lorry tyres used along the sides.

Gravel bags should be filled with pea gravel for drainage so they will last. Gravel bags are very effective because they exert much more pressure for their size than tyres. Therefore, they should be used in a line to seal clamps at ground level. This seal should ideally be right in close to the ensiled material, and inside any channel in order to prevent air getting back up the pipe in the channel during storage.

Overlaps of the covers should be

The yield and quality of grass harvested can be quite different from the potential yield and quality.

# TAKE ACTION

If you have experienced some of the problems outlined in this article, maybe this is the year to take action to resolve these issues. Silage is an expensive feed. The extra work and expense of dealing with waste silage is considerable. The benefits of taking action include cost savings, better quality, higher intakes and greatly reduced concern about running short.

1.2m to 1.8m. Overlaps should be weighed down with gravel bags as well as tyres to make them air-tight.

All too often, I see polythene on the sides of clamps flapping in the wind or damaged by dogs, cattle, etc, or because after the initial covering it was never retightened when the clamp settled. This neglect causes massive surface waste and poor preservation in layers below the surface waste.

Top and side waste seems to be worse on the windy side of clamps. Wind blowing over silage creates all sorts of pressures that can either force or suck air if there are any deficiencies in the covering.

Regularly inspect and repair silage covers. Catching a damaged cover early can help to minimise spoilage from oxygen exposure.

## Covering walled pits

Walled pits are better and safer as silage storage structures than clamps. They are generally easier to cover effectively. However, I often see waste along the top and in by the walls. Waste at the walls is often triangular-shaped, widening towards the floor, indicating that air and or water got in where the covers meet the wall. Gravel bags are needed here also and any water flowing off the cover towards the wall should be channelled away before it reaches the wall.

The wall should be lined with polythene as well. The polythene should extend from past the channel in the floor to out over the wall or up and over a guide rail if present. When the pit is being covered, this sheet should be folded back first and overlapped with the top covers. It still needs to be sealed with the gravel bags and rainwater deflected.

Some complain that it is too difficult to manage this extra sheet lining the wall. It really boils down to the fact that they don't want to put in the extra effort to cover the pit properly.

Grass can get caught up in this sheet, especially if the guide rail is present. This makes it difficult to fold back smoothly over the surface. The other benefit of this sheet lining the wall is that it protects the wall surface, wall floor joint and channel from wear due to effluent from unwilted crops.

Overfilling walled pits is also common and not a good practice. It makes effective sealing of edges more difficult. To prevent burdening the walls with extra weight over their design weight, grass piled above the walls should slope in at 45 degrees. This makes effective rolling at the walls difficult. Rolling at the walls should be done before the grass raises much above the top of the walls.

## Silage covers

There is a wide range of silage pit covers available. These can be used with tyres, mats, nets and gravel bags. Some of the newer covers may have advantages over the normal practice of using two black polythene sheets.

There are covers with cling film properties (clear or slightly coloured) which cling better to the ensiled material preventing air pockets from forming. The aim is to reduce the amount of air taken in throughout the storage period.

Other products are described as "oxygen barrier films" and have cling film properties also. These are claimed to let virtually no oxygen through and would typically be used under a black polythene sheet or close weave netting. Suppliers of these products should be able to give assurances that the oxygen transmission through these should be much lower than that of normal black polythene sheets and the like.