Making best silage:
Oxygen ‘the Achilles heel’ of clamp silage making

In this article, Dr. Dave Davies of Silage Solutions Ltd discusses the importance of excluding oxygen from the clamp during silage production.

It does not matter whether you are making silage in bales, clamps, pits, sausages or towers the most important factor is excluding oxygen to the maximum possible extent. It is important that during:
- Filling – the removal of all oxygen is done as quickly as possible
- Storage – oxygen is kept out
- Feeding – oxygen is excluded for as long as possible

Oxygen results in:
- Lower sugar
- Higher acetic acid
- Greater Dry Matter losses
- Higher numbers of yeasts, moulds and Enterobacteria - the undesirable microorganisms
- Higher risks of aerobic spoilage during feed-out

To minimise oxygen in the clamp:
- Ensure side sheets are used and the chop length is correct for the correct forage DM (see accompanying factsheet on chop length).
- Fill the silage clamp in even layers, with layers no more than 15cm deep. Thicker layers trap pockets of oxygen and cannot be consolidated evenly.
- Compact as you go.
- The walls of the silage clamp are a particular challenge. It is best to fill the sides of the clamp to form a ramp running away from the wall so that the sides can be compacted properly without the risk of damaging the side sheets with the tractor.
- If the pit is to take more than 1 day to fill:
  - Start at the back of the clamp
  - Rather than filling right to the front fill up to the maximum height at the back.
  - Move forward with a ramp at an approximate angle of 30°.
  - The top sheet can then be pulled back during filling as each section is completed allowing fermentation to begin sooner thus improving silage quality and reducing losses.
  - This technique reduces the risks of over rolling the front section of the clamp which can cause poor quality silage.
  - Never roll silage the next morning because carbon dioxide will have been produced overnight and the fermentation process will have begun. By rolling you will squeeze the carbon dioxide out and introduce more oxygen thus reducing fermentation, reduce sugar content and increase losses.

  - If filling again the next morning, fill the clamp with at least 30cm of forage and compact as you go.
- Seal the clamp immediately after filling, even if this is late at night. Pull the sheet over and place sufficient weight to hold the sheet down over night.
- Side sheets should overlap with the top sheet by at least 2m.
- If stopping over night and continuing the next day always pull a sheet over.

02 www.makingbestsilage.com
When filling is complete, consider using a thin vacuum film such as Visqueen Clingseal. This new generation clamp sheet sits directly beneath the traditional black silage sheet, where, thanks to its design it closely follows and ‘clings’ to the clamp surface. In doing so it prevents pockets of trapped air forming to significantly reduce aerobic spoilage on the top and shoulders.

After sealing has been completed place sufficient top weight on the silage clamp. If the clamp is under cover then ideally use straw or hay bales, they provide far more top weight and reduce top silage losses than tyres.

When using mesh coverings and sand/gravel bags the silage clamp needs to be finished in a domed shape so when the bags are placed around the edges the mesh cover will pull down across the entire surface of the clamp. It is important to return to the clamp daily during the first week to pull the bags tight as the silage settles.

A sharp shear grab should be used at feedout to maintain a clean silage face and to reduce air ingress, thus reducing the risks of oxygen and aerobic spoilage losses.

### Checklist
- Use side sheets
- Fill silage clamp with even 15cm layers of fresh forage
- Compact as you fill
- Do not roll the silage the next morning
- Seal well and quickly
- Apply sufficient top weight to ensure good sealing and compaction is maintained throughout the storage period.

Please see our Disclaimer below:

We strive to ensure that the information, recommendations and guidance on the use of our products ("Product Guidance") is correct and offers the best guidance which we, or third party experts whom we have consulted, can provide to assist farmers and growers in deciding which products are suitable for your needs and getting the best results from our products. However, Product Guidance is necessarily of a general nature and cannot be tailored for the specific conditions and requirements which each farmer or grower will have. Bespoke advice on the suitability of our products and guidance on their use for your individual requirements should be obtained by contacting customersupport@makingbestsilage.com.

Accordingly, we make no claims, warranties, representations or guarantees on the accuracy or completeness of the Product Guidance and we exclude any legal liability or responsibility (to the maximum extent legally permissible) for the Product Guidance or for the consequences, direct or indirect, of any farmer, grower or other party following, or deciding not to follow, the Product Guidance or any part of it. Our only liability is contractual liability to purchasers of products from us as set out in our Terms and Conditions of Sale, a copy of which is available upon request from customersupport@makingbestsilage.com.

This disclaimer of liability applies to makingbestsilage.com, any other member of our group of companies, our officers, directors and employees, and any third party expert or other person whose materials we have included in the Product Guidance.