

# Red Meat Development Programme

## The Why, When and Which of Silage Additives



The Red Meat Development Programme is managed by Hybu Cig Cymru on behalf of Farming Connect. Within the programme the Institute for Biological, Environmental and Rural Science (IBERS), Aberystwyth University is one of three Farming Connect Red Meat Development Programme Development Farms whose role is to demonstrate new approaches and new technologies to support sustainable beef and sheep production systems.

### Why use a silage additive:

Bacteria convert forage into silage. However, most bacteria present on the crop are either detrimental to silage preservation or carry out an inefficient fermentation. Thus resulting in a poor or slow fermentation with most of the sugar being used and protein broken down, thus the silage has a lower nutrient content. Silage additives are designed to dominate the natural bacterial population so the forage is preserved in its optimal state.

### The additive will:

- Help preservation when weather conditions are poor and there is a greater risk of soil contamination.
- When conditions and the crop are ideal further improve silage quality and animal performance.

In a number of silage experiments conducted at Gogerddan, Aberystwyth we have seen significant benefits with silage inoculants. In 6 beef experiments on average intake increased by 7% and liveweight gain by 24% when ensiled with an inoculant compared to no treatment. Sheep studies have shown similar benefits of silage inoculation.

### When to use a silage additive:

If the livestock are rapidly growing and productive then an additive is worthwhile. However when the silage making conditions are ideal and the stock being fed do not require a high plane of nutrition e.g. in-calf suckler cows, then an additive may not be cost effective.

### Silage additive types

**Homofermentative Inoculants** contain bacteria such as *Lactobacillus plantarum*, *Pediococcus* and *Lactococcus* species. They promote a rapid fermentation producing mainly lactic acid and bring the pH down to 4 rapidly, preventing further breakdown of the sugar and protein in the crop.

**Heterofermentative Inoculants** contain bacteria such as *Lactobacillus buchneri* and *Lactobacillus brevis*. They produce a mix of lactic and acetic acid which results in a slower fermentation than the homofermentative inoculants, they are designed to inhibit yeast and moulds.

**Combination Products** these contain homofermentative inoculants plus sorbate and/or benzoate salts. The inoculant promotes a rapid fermentation whilst the salts act as a preservative to inhibit yeasts and moulds.

**Acids and Acid Salts** contain mainly formic, propionic acids or their salts. They directly acidify the crop when applied 3 – 4 litres per tonne. They are designed to inhibit all microbial activity. They can be expensive and corrosive but can have advantages in poor weather conditions or where soil contamination is a problem.

There are 2 additional things to bear in mind when making your decision.

1. Under Welsh conditions for making grass or clover silage an inoculant needs to supply 1 million bacteria per gramme of forage to dominate the fermentation. Not all inoculants do this.
2. If mould growth on your silage is controlled by good silage management e.g. using 6 layers of film wrap on bales and storing them well then an additive that controls moulds will not be required.

### And Finally

Silage additives will not make poor quality forage good but they can help make good quality forage into excellent quality silage.

