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Technical Article

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Research shows the true value of effective silage preservation

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An extra profit of almost £42/cow/305 days can be made through proven, effective forage preservation. Exciting new data shows that getting more milk (or meat) from conserved forage is a realistic proposition for any farmer, by minimising fermentation losses and, at the same time eliminating the considerable energy losses caused by aerobic deterioration of silage at feedout.

Dry matter (DM) and energy losses from silage are a major cost to the livestock industry, so we make no apologies for the 'heavy' reading in the following paragraphs. If you have a genuine interest in getting more from the silage you make and have not yet joined the many UK farmers who are already benefitting from using Safesil, please read on.

The, as yet unpublished, research data has demonstrated the true value of Safesil, which contains high levels of the feed preservatives *potassium sorbate* and *sodium benzoate*. The research, carried out on high quality grass silage at SLU, Uppsala, Sweden, and by Dr D Davies on maize silage in the UK, demonstrates the economic value of minimising energy and DM losses during fermentation and the feedout period.

In the Swedish trial high quality grass silage was ensiled at 42% DM and was either untreated or treated with Safesil. DM losses during fermentation of 5% in the untreated silage and 4.25% in the treated silage were measured after 56 days ensiling. After three days exposure to air 0.3 MJ ME/kg DM was lost in the untreated silage, while the treated silage remained stable, with no measureable energy loss.

A similar procedure was conducted by Dr Davies with 31% DM maize silage. In this case fermentation DM losses were 3.15% for untreated silage and 3.01% in treated. After 3 days' exposure to air 0.68 MJ ME/kg DM was lost in the untreated silage and 0.27 MJ ME/kg DM in the treated, a difference of 0.41 MJ ME/kg DM.

From these measurements it is possible to put a true value, in terms of potential extra milk production and income, on what is often perceived by farmers as 'an expensive and unnecessary' silage treatment.

I will take as an example a 100 cow dairy herd fed 6kg DM of the high quality grass silage and 6kg DM of the maize silage over a 305 day lactation, with a farm-gate milk price of 28p/litre and with silage costs of £141/t DM for the grass silage and £123/t DM for the maize (AHDB costs).

With Safesil costing £1.50/litre and application rates of 3 litres/t FW (fresh weight) on grass and 1.5 litres/t FW on maize, the treatment cost of the 42% DM grass silage is £10.71/t DM and £7.26/t DM for the 31% DM maize.

Using these figures the value of DM lost in the grass silage can be calculated as follows:-

Untreated: 5% DM loss = 50 kg/t = £7.05
Safesil treated: 4.25% DM loss = 42.5 kg/t = £5.99
The treatment saves £1.06p/t DM during the fermentation period.

Aerobic spoilage loss of 0.3 MJ ME/kg DM in the untreated silage – (6kg DM fed x 0.3 MJ ME) = 1.8MJ ME less/cow/day compared to the treated silage.

Using the standard of 5 MJ ME to produce 1 litre of milk, 0.36 litres less milk/cow/day will be produced when untreated silage is fed. At 28p/litre this equates to 10.08p/cow/day lost. The silage treated with Safesil showed no energy loss during the feedout period.

6kg silage DM costs 6.43p/cow/day to treat (1071 ÷ 1000 x 6kg), with lower losses due to treatment equalling 0.64p/cow/day (106 ÷ 1000 x 6kg), and produces 10.08p worth more milk/cow/day.

So, taking everything into account (cost of Safesil – £1,962.00 to treat 183t DM @ 42% DM – more silage and more milk), the treated silage will produce 4.29p/cow/day extra income ((10.08 + 0.64) - 6.43 = 4.29p).

For a 100 cow herd over a 305 day lactation this equates to additional income of £1,308.45 – a 66.7% return on investment.
Similar calculations for the maize silage show an even better return:-

Untreated 3.15% DM loss = 31.5kg/t = £3.87
Safesil-treated 3.01% DM loss = 30.1kg/t = £3.70

So, in this case, Safesil treatment saves £0.17p/t DM during the fermentation period.

Three days' aerobic spoilage resulted in 0.68 MJ ME/kg DM being lost in the untreated silage and 0.27 MJ ME/kg DM lost in the Safesil-treated, a difference of 0.41 MJ ME/kg DM.

6kg DM fed x 0.41 MJ ME = 2.46 MJ ME less/cow/day when the untreated silage is fed. So, using the standard of 5 MJ ME to produce 1 litre of milk, the untreated silage will produce 0.49 litres of milk/cow/day less than the treated. At 28p/litre this represents 13.72p/cow/day lost when the untreated silage is fed.

6kg maize silage DM cost 4.36p/cow/day to treat (726 ÷ 1000 x 6kg) with lower losses due to treatment equalling 0.10p/cow/day (17 ÷ 1000 x 6kg)

So taking everything into account (cost of Safesil – £1,327.50 to treat 183t DM @ 31% DM – more silage DM and more milk) the treated maize silage will produce 9.46p/cow/day extra income ((13.72 + 0.10) - 4.36 = 9.46p).

For a 100 cow herd over a 305 day lactation this equates to additional income of £2,885.30 – an amazing 217% return on investment!

While these calculations are purely theoretical they are based on sound scientific evidence which, as numerous trials and an ever-increasing number of livestock farmers in the UK have shown, can help to reduce concentrate bills and increase production of both milk and meat from home-grown forage.

With maize silage harvest fast approaching, and the potential for some very high quality crops to ensile, don't let fermentation and aerobic losses eat into your profits. Good clamp management, from filling (compact the crop with a SilaPactor and seal the clamp with O_2 Barrier 2in1) to feedout, coupled with the proven energy-saving ability of Safesil could ensure you get significantly higher returns from your forage this year.

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