SILAGE-MAKING
WHAT REALLY HAPPENS UNDER THE SHEETS
AND HOW YOU CAN IMPROVE THE RESULT
WELCOME TO KELVIN CAVE LTD

THE HOME OF EFFECTIVE HOME-GROWN FEED PRESERVATION

Founded in 1982, the company's objective has always been to source and supply scientifically proven products and systems to help UK livestock farmers get more from the conserved animal feeds they grow on their own farms.

To this end we are continually looking for innovative and ever more effective ways of preserving ensiled feeds in order to minimize the inevitable losses that occur during the silage-making process.

The purpose of this booklet is to increase the understanding of the silage-making process for farmers, and help them to make informed decisions about their silage-making, in order to retain more of the crop's original feed value and reduce the farm's reliance on bought-in feeds.

We are grateful to Salinity Agro of Sweden, the inventor and manufacturer of Safesil, for allowing us to use some of the material in this booklet.
SILAGE FROM START TO FINISH

Making silage is about producing nutritional forage that can be stored for a lengthy period of time. Although our knowledge of the silage process is increasing all the time, things do not always go according to plan, and the forage then has to be topped up with extra concentrates.

One thing is certain: with increased knowledge you can produce silage with a high nutritional value and top-quality hygiene, with minimal losses and maximum palatability! Our intention with this booklet is to contribute to that knowledge.

SILAGE IN SHORT

✓ Ensilage is a biological process in which lactic acid bacteria in an airtight (anaerobic) environment form lactic acid, which lowers the pH (acidity) of the forage. When pH is low and the surroundings are free of oxygen, unwanted bacteria and fungi cannot grow and spoil the forage.

✓ Successful ensilage is when the crop is conserved with minimal loss of nutrients, a high standard of hygiene, and is palatable and not harmful to the animal.

✓ The addition of a proven ensiling agent is necessary in order to guarantee good forage and minimize nutrient loss.
1. THE GROWING FORAGE CROP

A large number of different types of bacteria, yeasts and mould spores occur naturally on the growing crop. Here we find bacteria that thrive in an oxygen-rich environment and those that thrive best in an oxygen-poor environment.

Before the crop has been cut the bacteria are relatively harmless, as they do not come into contact with the carbohydrates and proteins in the plant, which are protected inside the plant's cells.
2. THE CUT FORAGE CROP

Once the crop has been cut and left to dry the crop’s ability to grow and take up fresh nourishment from the soil is obviously eliminated. Instead, something known as cell respiration now begins, which has a great bearing on the future result of the silage. This is because during cell respiration the bacteria’s source of nutrient – carbohydrate – breaks down into carbon dioxide and water, which is a loss, and the plant’s proteins also begin to decompose. During cell respiration heat is produced, most of which is conducted away from the relatively humid surroundings.

The priority now is to gather the crop and halt cell respiration in order to reduce energy and nutrient losses.
3. THE CHOPPED AND PACKED FORAGE CROP

When the crop is chopped and then packed into the clamp, tube or bale the oxygen in the silage is eliminated by pressure, and the heat from cell respiration stays in the forage crop. Chopping destroys some of the plant's cell walls. The sap, which contains plentiful carbohydrates, is released. The combination of high temperature and access to carbohydrates fuels bacterial growth.
4. TIME TO EXCLUDE THE OXYGEN...

The first stage in the ensilage process is to exclude oxygen by sealing the crop in clamps, tubes or bales with plastic sheeting. The crop can also be packed in airtight tower silos.

Cell respiration ceases when the oxygen runs out. At this stage the cells of the plant are also broken down further by enzymes, and more nutritious sap is released. After a while those bacteria that can only grow in an oxygen-rich environment die.
...THE ENSILING PROCESS COMMENCES

The bacteria that thrive without oxygen now take over; fermentation can begin. The silage contains three sorts of bacteria of importance to the ensilage process, one good and two bad. The bad ones are the enterobacteria and butyric acid bacteria (clostridium bacteria); the good ones are lactic acid bacteria.

When ensiling starts the enterobacteria are dominant, being in the majority, but the butyric and lactic acid bacteria are also multiplying. As the bacteria grow they produce acids and alcohols, and consume nutrients - primarily carbohydrates.

All three also produce carbon dioxide and water to varying degrees. For the ensilage process the crucial difference between the bacterial types is that the enterobacteria and butyric acid bacteria produce a lot of carbon dioxide (lost DM), but do not tolerate an acid environment as well as the lactic acid bacteria. This means that as pH drops, the lactic acid bacteria increasingly gain the upper hand, to the detriment of the other two. The lactic acid bacteria reach their maximum number 2-6 days after the start of ensilage.
At a pH of 4.7 further enterobacterial growth stops completely. At pH 4.5 the butyric acid bacteria also stop growing and may pass into spore form (clostridium spores). When pH drops further and the value reaches 4.2-4.0 the lactic acid bacteria also stop growing.

In an optimum case scenario the final result is low pH and an oxygen-free environment that gives stable ensilage in which cell respiration has ceased and no microbial activity is able to take place. The silage can now be stored for a lengthy period of time.

In reality pH rarely drops so low that bacterial growth is halted altogether; there are usually a small number of enterobacteria and butyric acid bacteria left that compete with the lactic acid bacteria. Under adverse conditions they can begin to grow and start a new, secondary fermentation that increases the loss of nutrients from the silage, forming butyric acid and generating heat which means loss of DM and energy. That is why an effective ensiling agent is essential to produce top quality silage.
TIME TO FEED

This stage of the ensilage process may be the trickiest part in creating good silage. During removal the airtight environment is compromised and oxygen flows into the surface layer of the silage. The oxygen-rich environment allows dormant oxygen-dependent bacteria, yeasts and moulds to grow and generate heat. If you do not use an ensiling agent that can prevent this process it will continue right up until the time the animal eats the forage.

What is more, if the silage has been unstable from the outset, i.e. pH has not been sufficiently low, all this can lead to large-scale loss of nutrients and much of the dry matter in the silage will be lost. The additional growth of yeasts is not harmful to animals but does impair the nutrient content. In contrast, the additional growth of moulds can cause animals to become sick from the mycotoxins the moulds produce.
FACTORs AFFECTING THE SILAGE

The ensilage process is seldom ideal, as previously mentioned. A great many factors can mar the process and bring about extensive loss of nutrients. The most important factors are outlined below.

1. ACIDITY

Low pH and an oxygen-free environment are the mainstays of the ensilage process. How low the required pH needs to be to obtain stable silage with zero bacterial growth depends on the dry matter content of the ensiled crop. In the case of direct-cut grass, with dry matter of less than 25%, the pH value needs to be less than 4.3.

At higher dry matter contents, obtained with wilting, pH need not be lowered as much. The lower water content decreases the growth of undesirable bacteria, such as butyric acid bacteria.

<table>
<thead>
<tr>
<th>pH-value</th>
<th>DM 20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>&lt;4.2&lt;sup&gt;*&lt;/sup&gt;</td>
<td>&lt;4.5</td>
<td>&lt;4.7</td>
<td>&lt;5.0</td>
</tr>
<tr>
<td>OK</td>
<td>4.2-4.4</td>
<td>4.5-4.7</td>
<td>4.7-5.0</td>
<td>5.0-5.3</td>
</tr>
<tr>
<td>Bad</td>
<td>&gt;4.4</td>
<td>&gt;4.7</td>
<td>&gt;5.0</td>
<td>&gt;5.3</td>
</tr>
</tbody>
</table>

* At pH less than 3.8 the palatability may be affected adversely.
2. DRY MATTER CONTENT OF THE CROP

The dry matter content of the forage plays a crucial role in the final outcome of the ensilage process, so it is important to find the correct balance between dryness and wetness.

Packing gets harder the drier the forage; any oxygen remaining in the silage is not forced out and the risk of mould and yeast growth increases.

A moist crop is easier to pack but requires lower pH in order to turn into stable silage. The moister the crop the more sensitive the silage will be to butyric acid production. Silage with dry matter content lower than 28% can also cause problems with silage effluent formation.

On balance, you should aim for dry matter content of between 28 and 50% in order to achieve nutritious, palatable and stable silage. The choice of dry matter content depends on your storage system.
3. BUFFERING CAPACITY OF THE CROP

Buffering capacity is a measure of the amount of acid the bacteria need to produce in order to lower pH sufficiently to achieve stability. The significance of the buffering capacity depends on the crop being ensiled. Leguminous plants (legumes) rich in protein have a higher buffering capacity, while that of grass and maize is lower. Residual nitrogen from fertiliser that has not been used up by the plant also increases buffering capacity.

Crops with a high buffering capacity require longer for pH to drop to a stable state, therefore making them harder to ensile as compared with crops that have low buffering capacity.

The risk with crops that are difficult to ensile is that the drop in pH will not be adequate. Enterobacteria and butyric acid bacteria continue to grow in the silage to the detriment of the lactic acid bacteria. A hard-to-ensile crop, therefore, always requires an ensiling agent which will help lower pH and prevent the growth of undesirable bacteria.
4. OXYGEN IN THE SILAGE

By far the most important thing for a successful ensilage process is to protect the crop from oxygen. Only then can cell respiration cease and the fermentation process of the lactic acid bacteria get started. Careful packing squeezes the oxygen out of the silage and shortens the time over which cell respiration causes nutrient losses. Remaining oxygen can allow unwanted oxygen-dependent bacteria, yeasts and moulds to grow.

Mould spores can also be brought to life, which causes nutrient losses as well. In addition, moulds can produce toxins harmful to animals.

One rule of thumb is that the wetter the crop at the time of ensiling the easier it is to pack the silage and rid it of oxygen. As the dry matter content of the crop increases it becomes harder to pack and remove the oxygen.
5. ACCESS TO CARBOHYDRATES

If the carbohydrate content of the crop is low the carbohydrates will be used up quickly by the lactic acid bacteria and enterobacteria collectively; growth of lactic acid bacteria will be inhibited and the drop in pH counteracted. This provides scope for the ‘baddies’, the unwanted bacteria, to develop. When the carbohydrate content is low these bacteria can consume protein, which is broken down into ammonia. The final result will be inferior silage with reduced true protein content.
PUTTING SAFESIL TO THE TEST

<table>
<thead>
<tr>
<th>Safesil</th>
<th>DM approx. 20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>- No additive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inoculant</th>
<th>Inoculant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lactic Acid Bacteria</td>
<td>Lactic Acid Bacteria</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safesil</th>
<th>1.39 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inoculant</td>
<td>7.72 %</td>
</tr>
<tr>
<td>Control</td>
<td>4.60 %</td>
</tr>
</tbody>
</table>

Undesired microbial growth ferments the sugars in the silage lowering the feed value. Use Safesil to minimise these losses.

<table>
<thead>
<tr>
<th>Safesil</th>
<th>282 cfu/g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inoculant</td>
<td>213,796 cfu/g</td>
</tr>
<tr>
<td>Control</td>
<td>19,498,446 cfu/g</td>
</tr>
</tbody>
</table>

Growth of yeasts and moulds normally occurs in the presence of oxygen due to insufficient compaction and/or leaking storage facilities. Safesil will inhibit the growth of yeasts and moulds on your silage, but good ensiling practice is also essential for best results.

<table>
<thead>
<tr>
<th>Safesil</th>
<th>Measured as hours to +3°C temperature increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inoculant</td>
<td>No Heating &gt; 260 hrs</td>
</tr>
<tr>
<td>Lactic Acid Bacteria</td>
<td>60.30 hrs</td>
</tr>
<tr>
<td>Control</td>
<td>No Heating &gt; 260 hrs</td>
</tr>
<tr>
<td>Lactic Acid Bacteria</td>
<td>65.30 hrs</td>
</tr>
<tr>
<td>30 % DM</td>
<td>102.70 hrs</td>
</tr>
<tr>
<td>20 % DM</td>
<td>64.70 hrs</td>
</tr>
</tbody>
</table>

One of the first signs of unstable silage is a rise in temperature. Safesil will give your silage excellent aerobic stability at all DM levels between 15-50%.

<table>
<thead>
<tr>
<th>Safesil</th>
<th>Sugars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inoculant</td>
<td>Sugars</td>
</tr>
<tr>
<td>Lactic Acid Bacteria</td>
<td>Sugars</td>
</tr>
<tr>
<td>Control</td>
<td>Sugars</td>
</tr>
<tr>
<td>Lactic Acid Bacteria</td>
<td>Lactic Acid Bacteria</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>30 % DM</th>
<th>117.10 g/kg DM</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 % DM</td>
<td>105.40 g/kg DM</td>
</tr>
<tr>
<td>30 % DM</td>
<td>60.15 g/kg DM</td>
</tr>
<tr>
<td>20 % DM</td>
<td>143.10 g/kg DM</td>
</tr>
<tr>
<td>30 % DM</td>
<td>71.50 g/kg DM</td>
</tr>
<tr>
<td>20 % DM</td>
<td>110.20 g/kg DM</td>
</tr>
</tbody>
</table>

One way to measure how successful the fermentation process has been. Safesil improves fermentation.

Tests performed by Dr D Davies, Aberystwyth University. 2009

AN ENSILING AGENT IS REQUIRED FOR SUCCESSFUL SILAGE

Many farmers, though far from all, use an ensiling agent to obtain silage that is as nutritious as possible, whilst preventing the production of butyric and acetic acid, and eliminating yeasts and moulds. The result is higher milk yield and increased growth in beef cattle.

With a modern ensiling agent you can reduce dry matter losses by 5-30%, and some can prevent unnecessary waste due to mould and yeast attacks. There are three sorts of ensiling agents, which work in different ways:
ACIDS

Acids belong to an older generation of ensiling agents. They contain formic and/or propionic acid. The acids work best when the silage has a lower dry matter.

Acids lower the pH of the ensiled forage quickly, thus minimising the growth of harmful bacteria. The disadvantage of acids is that they do not kill the butyric acid bacteria which pass into spore form when pH is lowered. Other drawbacks are that most acids cause machinery to corrode and can be injurious to humans.

INOCULANTS

Effective inoculants consist of homofermentative lactic acid bacteria, which dissolve in water. This type of bacteria convert plant sugars into lactic acid with minimal DM loss, and work best when the carbohydrate content is high. Adding this type of inoculant helps the natural fermentation of the ensilage process. The extra lactic acid bacteria increase the formation of lactic acid, and pH is lowered more quickly. One downside is that they do not kill off the butyric acid bacteria, which pass into spore form instead, nor do they protect against mould and yeast attacks, which results in aerobically unstable silage which could be harmful if fed to animals.

If yeasts and moulds start to grow heat is generated, which can quickly lead to overheating in the silage and considerable loss in feed value.

Some inoculants contain what are known as heterofermentative lactic acid bacteria. They produce some lactic acid but also acetic acid, some alcohols, carbon dioxide and water. Acetic acid can help to control yeasts and moulds, and so improve aerobic stability, but it can also reduce the palatability of the silage, and its production invariably results in loss of DM and energy from the silage.

SALTS

Salts are sometimes called chemical agents but should not be confused with acids, as salts are basic (alkaline). Salts have a wider range of applications than the other ensiling agents, and can be used in both wet and dry silage.

Certain combinations of salts, Safesil for example, form a gas during the ensilage process that specifically kills bad bacteria, leaving the good, lactic acid bacteria with no competition during the fermentation. This essential gas formation means that Safesil-treated silage must be sealed for at least two weeks before feeding. The salts also act as a preservative in the presence of oxygen, before all the oxygen has been used up at the start of ensiling, as well as during feed-out. Safesil eliminates yeasts and moulds, so Safesil-treated silage will remain cool and retain its feed value during feed-out.
TIPS AND HINTS
ON SILAGE

1. USE FRESH FORAGE ANALYSES TO DETERMINE THE OPTIMAL TIME OF HARVESTING

2. CHECK THE CURRENT WEATHER FORECAST

3. ALLOW THE GRASS TO DRY TO THE RIGHT DM CONTENT

For clamps 28-35%; for tower silos 45% at the bottom, 25% at the top; for bales 35-50% and for tubes 30-40%.

4. MEASURE DM CONTENT USING A MICROWAVE

The microwave oven is a fast method for determining crop DM but does call for vigilance owing to the risk of fire. Use a microwave with a revolving plate. Proceed thus: Chop the sample into 2-3 cm long pieces. Weigh out 100g (about 4oz) and place in a microwave-safe container, e.g. an earthenware pie dish. Heat according to the table below. Weigh again. The DM content is the same as the remaining sample in grams. Example: after heating there is 20 g left – so 20% DM.

<table>
<thead>
<tr>
<th>SAMPLE</th>
<th>POWER</th>
<th>TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh forage</td>
<td>750 W</td>
<td>10 min, remove and stir + 2 min</td>
</tr>
<tr>
<td>Silage</td>
<td>750 W</td>
<td>6 min, remove and stir + 3 min</td>
</tr>
</tbody>
</table>

Source: Swedish University of Agricultural Sciences (SLU), Technical Report 9 (2002). NB. Different materials may take a different amount of time. For greater accuracy, the sample can be taken out and weighed as you go along; when the sample no longer reduces in weight, it is ready. Be alert to dry materials, which can catch fire if dried for too long.
5. CORRECT STUBBLE HEIGHT

An appropriate stubble height is 8-10 cm. The risk of soil contamination is then slight and fresh growth is not disturbed.

6. RISK OF RAIN

In the event of any risk of rain on the cut crop, it is always best to bring in the crop as fast as possible, even if the DM content obtained is less than ideal.

7. SPREAD THE CROP WIDE

In order to achieve faster drying, the crop should be spread out wide.

8. PLAN YOUR WINDROWING

By planning windrowing in the field in order to obtain as even a windrow as possible you will increase the chances of the ensiling agent being spread evenly across the whole crop. If you are baling, you will get a more even bale.

9. CLEAN THE SILAGE AGENT CONTAINERS CAREFULLY

When changing over ensiling agents from an acid to Safesil the containers must be thoroughly cleaned because even a few centilitres of acid can change the consistency of Safesil to jelly. The mixture can also form gases injurious to health; these gases could also expand enough to cause the container to burst.
10. KEEP CHOP LENGTH SHORT

Chopping the crop into smaller pieces when harvesting is a positive thing and will facilitate better compaction. In addition, the increased chopped surface area makes more nutrients (sugars) available to the lactic acid bacteria, accelerating the silage process.

11. SAFE APPLICATION IN FORAGE HARVESTERS (CUTTING LENGTH 20-40 MM)

It is recommended to apply Safesil somewhere between the pick-up reel and the accelerator.

N.B. Applying Safesil on the swath, at the end of the forager spout or into the trailer is not suitable. This can jeopardise the end result, as the Safesil is not mixed evenly over the entire forage mass.

12. SAFE APPLICATION IN FORAGE WAGONS (CUTTING LENGTH 20-60 MM)

Safesil must be applied in the feed-in elevator prior to chopping. Otherwise you run the risk of untreated sections of the silage being affected by mould or yeast attack.

13. CHECK THE DOSAGE EQUIPMENT

It is of the utmost importance to check that the dosage equipment is accurate and that it is dispensing the right amount matching the set value. You can do this by spraying some Safesil into a suitable container and timing it, e.g. measure the quantity sprayed after one minute.
14. CHECK THE DOSAGE

If you overdose, you are throwing money down the drain. If you underdose, you are jeopardizing the quality of the silage.

15. USE TWO OR MORE NOZZLES

Using two or more nozzles will ensure more even and accurate application of the preservative.

16. PREPARING THE SILAGE CLAMP

Repair any large cracks and holes. Make sure the silage effluent drain is not blocked and free-flowing.

Drape fresh plastic over the clamp walls, leaving at least a metre at the top of the wall to fold on to the silage - the plastic should cover the whole wall and, preferably, extend down another metre onto the base.

17. FILLING THE SILAGE CLAMP

Use the 'Dorset Wedge' method. Tip in 'just enough' down both sides to hold the side-sheets in place and then build up to full height forming a shallow wedge. Continue to fill both height-ways and length-ways; using this method will give you a good balance between packing and achieving an airtight finish quickly.
18. CONSOLIDATING THE SILAGE

Air is silage enemy No. 1 - consolidation is the key to success. It will render the environment oxygen-free more quickly, thereby cutting losses and the risk of overheating at the start of ensilage. Furthermore, fermentation will start sooner, as the lactic acid bacteria will have an oxygen-free environment. Do not apply more than 20cm-thick layers at a time. Using a SilaPactor will increase packing density and reduce fuel consumption.

Tip: Pack until the tractor tyres are wet with sap and then pack a bit more.

19. COVERING THE SILAGE CLAMP

When ensiling and consolidation are complete cover the silage with a layer of ClampFilm, fold the side-sheet over this and spread a single UV-stable plastic sheet over the entire clamp surface. If joins are necessary, make sure there is an overlap of at least two metres to ensure a good airtight seal.

Alternatively, fold in about 1 metre of side-sheet and cover with a single layer of O² Barrier 2in1 (see picture).

Weigh down the sheeting with ClampNet and gravel-bags or tyres. If there is a high risk of birds damaging the sheet it will pay to cover the clamp with ClampTiles - a durable and long-term solution to this problem. Straw must be avoided, since it can attract vermin.

O² Barrier 2in1 is a unique silage film that combines a very oxygen-impermeable polyamide vacuum film with a high quality UV-stable top sheet. This helps create and maintain anaerobic conditions in the clamp up to ten times more efficiently than conventional sheeting systems, and saves time and money as it is the only sheet required to complete the sealing process.
20. MOVING BALES

You should always aim to move bales to the storage site as soon as possible, where they can be given protection from birds, rodents, livestock and pets. From a silage perspective, bales with a low DM content (lower than 30-40%) should be moved within three hours of compacting. If that is not possible, it is better to wait until 24 hours after wrapping in plastic.

21. WHEN CAN I START FEEDING?

A clamp should never be opened earlier than two weeks after sealing, but ideally keeping it sealed for at least six weeks will ensure full stability.

22. FEED OUT

To minimise waste at feed-out, remove silage from clamps and tubes with a shear-grab to leave an even-cut face, thus minimising the surface-area exposed to air.

23. SORTING AND DISCARDING

Remove all mouldy silage. This should not be necessary when an effective preservative like Safesil has been used alongside good ensiling practice.

24. WARNING ABOUT GASES

Hazardous gases form during ensiling, so be vigilant for at least a week after sealing the clamp. Avoid breathing in the gases and ensure humans and livestock are kept away from the area.
Safesil® – FOR ALL SITUATIONS AND CROPS

Safesil was developed by Salinity Agro in close collaboration with SLU in Uppsala, Sweden, to overcome the drawbacks that are often associated with acids and inoculants.

The aim was to produce an ensiling preservative that would be consistently effective on crops with both high and low carbohydrate content, with large or small buffering capacity, on both wet and dry silage, and able to prevent the growth of yeasts and moulds. The new silage preservative also had to be gentle on both machinery and operators.

The result is Safesil — a new generation of ensiling preservative, and the first to have been approved by the Swedish Dairy Association under its “Good Chemical Advice” scheme, which outlines safe choices of chemicals for use on dairy farms etc. Safesil has also been approved by the independent German organization DLG in classes 1a, 1b, 1c, 2 and 5. No other ensiling agent has as wide a range of applications.
SAFESIL IS MADE FROM HUMAN FOOD PRESERVATIVES

Safesil contains only approved, tried and tested preservatives effective against bacteria, yeasts and moulds: potassium sorbate, used in wine-making; sodium benzoate, used in jams, fruit juices and medicines; and sodium nitrite, used in human foodstuffs.

When Safesil is applied to forage, the sodium nitrite is converted to gas, which kills off the competing enterobacteria and butyric acid bacteria. The lactic acid bacteria can then grow optimally and form lactic acid, which lowers pH value quickly. Unlike previous ensiling agents, Safesil prevents the butyric acid bacteria from forming spores. Safesil also safeguards against the growth of yeasts, which can be a problem at the start of ensiling when air is still present. The result is silage with long-term stability, where no other fermentation can take place. At feed-out the natural preservatives in Safesil protect against bacteria, mould and yeast attacks. Therefore, the risk of heating and waste is minimal.

SAFESIL IS SUITABLE FOR ALL CROPS, DRY MATTERS AND STORAGE SYSTEMS

Safesil is equally effective on grass, clover, lucerne, maize and wholecrop silage. You can use Safesil regardless of the dry matter content, from 15% up to 50%. Safesil works in all storage systems. In addition, Safesil protects your total mixed ration during feed-out, so there is no need for additional stabilisers. With Safesil you only need one ensiling agent on the farm.

SAFESIL IS KIND TO MACHINERY AND OPERATIVES

If you use Safesil you can banish those worries about your machinery rusting away. Safesil will not cake up nozzles, and cleaning equipment is easy with normal water. Furthermore, Safesil is neither corrosive nor caustic, and contains no allergens, so it will not harm you or your livestock.