Helping Farmers to provide for their Lambs
Volac

The reputation of Volac has been built around dairy nutrition and product innovation. We have developed unique manufacturing techniques at our Welsh factory, that now produces thousands of tonnes of high quality milk replacer, colostrum alternatives and human food supplements every year.

Volac Lamlac is the market leading ewe milk replacer you can buy. It was also the first commercially available ewe milk replacer and the springboard for the establishment of Volac.

Today Volac is still a family owned business with manufacturing sites in Felinfach, Port Talbot and Liverpool. All Volac products are supported by our strong technical, sales and marketing teams, who aim to bring you timely husbandry and management information, to help you get the most from your flock.

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Hypothermia and infectious diseases are responsible for just over one half of annual lamb losses

Why are newborn lambs at risk from hypothermia?

• Newborn lambs have a large surface area to body weight ratio which makes them susceptible to serious heat loss.

• The newborn lamb has limited energy reserves and is therefore at risk of hypothermia due to starvation, which depresses heat production by the lamb. This can be made worse by adverse weather conditions and/or lack of shelter. Energy reserves need to be built up through feeding to maintain body temperature.

Why are newborn lambs so vulnerable to disease?

There is no transfer of antibodies across the placenta in ruminants. Therefore lambs are born with no resistance to disease and are reliant on colostrum for passive immunity.

• Antibody status is negligible in newborn lambs.

• Newborn lambs have a very permeable gut lining that can allow bacteria and toxins into the bloodstream.

• Slow gut movements during the first day of life give ingested bacteria more time to establish and multiply.
The first hazard the lamb has to face is a dramatic reduction in ambient temperature from the 39˚C it has been accustomed to in the womb. If the weather is unkind, as it often is at lambing time, wind and rain will exacerbate heat loss.

In such conditions all newborn lambs are at risk of exposure. With a significant draw on energy reserves to maintain body temperature, lambs will rapidly succumb to hypothermia if they do not consume sufficient feed.

Viruses, bacteria and protozoa in the environment also take their toll - causing diseases familiar to all shepherds such as watery mouth, coccidiosis, and tetanus etc.

**Viruses**
- Rotavirus (Diarrhoea)
- Coronavirus (Diarrhoea)

**Bacteria**
- E. coli (Watery mouth)
- Clostridium perfringens type B (Lamb dysentery)
- Erysipelothrix rhusiopathiae (Arthritis, Pneumonia & Septicaemia)

**Protozoa**
- Cryptosporidia (Diarrhoea)
- Coccidia (Diarrhoea)
Colostrum is the key to reducing losses from both hypothermia and disease in newborn lambs.

As a first feed it is particularly rich in proteins, which carry specific antibodies that provide the lamb with immunity from infection. Colostrum is also high in energy, which will help the lamb maintain body temperature.

Colostrum is without doubt the ‘fuel for life’ and the key to survival for all newborn lambs.

It is therefore extremely important to feed in-lamb ewes to stimulate production of quality colostrum.

...and it is absolutely essential to ensure that all newborn lambs receive sufficient quality colostrum to promote good health and wellbeing.

**Birth to 5 Hours**

Hypothermia related to heat loss

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Advice according to symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Low energy reserves</td>
<td><strong>Moderate:</strong> Dry, feed*, shelter, check</td>
</tr>
<tr>
<td>• High blood glucose levels</td>
<td><strong>Serious:</strong> Dry, warm, feed*, shelter, check</td>
</tr>
<tr>
<td>• Losing heat faster than generating heat</td>
<td></td>
</tr>
</tbody>
</table>

Advice according to symptoms

**Moderate:**
Dry, feed*, shelter, check

**Serious:**
Dry, warm, feed*, shelter, check

10 hours - 3 days

Hypothermia related to starvation

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Advice according to symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No energy reserves</td>
<td><strong>Moderate:</strong> Dry, feed*, shelter, check</td>
</tr>
<tr>
<td>• Dangerously low blood glucose levels</td>
<td><strong>Serious:</strong> Glucose injection**, dry, warm, shelter, check</td>
</tr>
<tr>
<td>• Can’t produce enough heat</td>
<td></td>
</tr>
</tbody>
</table>

Advice according to symptoms

**Moderate:**
Dry, feed*, shelter, check

**Serious:**
Glucose injection**, dry, warm, shelter, check

Any lamb showing signs of lethargy or distress should have its temperature taken.

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above 40°C</td>
<td>Infection likely</td>
</tr>
<tr>
<td>39-40°C</td>
<td>Normal</td>
</tr>
<tr>
<td>37-39°C</td>
<td>Mild hypothermia</td>
</tr>
<tr>
<td>Below 37°C</td>
<td>Severe hypothermia</td>
</tr>
</tbody>
</table>

*Feed ewe colostrum if available, or Volac Lamb Volostrum within the first 24 hours. Thereafter feed warm milk replacer such as Volac Lamlac.

** Seek advice from your veterinary surgeon.
The Importance of Pre-Partum Feeding

Careful ewe feeding in the last third of pregnancy is an important part of the preparation for trouble-free lambing, and ensures that lambs get the best start in life.

In order for the ewe to provide her lambs with the quantity and quality of milk required for health in the first six weeks post-partum, she must be in good condition at lambing. Failure to achieve this can result in poor lamb performance and an energy deficit at this critical time can result in a greater frequency of health and fertility problems in the future.

However, during late pregnancy the dry matter intake of the ewe is limited by the number and size of the lambs in the uterus. 70% of foetal growth occurs in the last six weeks prior to lambing but the ewe cannot eat to satisfy her own energy requirement and that of her growing lamb(s) due to the reduction in rumen volume.

As a result she can lose condition by rapidly mobilizing body fat in an effort to bridge the energy gap, which can in turn lead to serious health problems such as pregnancy toxaemia. As ewes carrying twins will have a greater energy gap this problem is commonly known as ‘twin lamb disease’.

How do you provide sufficient energy to a ewe whose appetite is depressed?

Megalac provides the ideal solution...

Megalac is a concentrated source of digestible undegradable energy (33.25 MJ/kg DM) and allows a highly energy dense ration to be fed to the ewe. Megalac is a combination of natural plant oil and calcium. The calcium protects the fatty acids from breaking down in the rumen, so they do not interfere with rumen function but pass intact to the acidic lower gut where they are efficiently digested. Increasing the energy density of the diet will help reduce the effect of low appetite on energy intake and assist in maintaining ewe body condition.

The Nutrition and Production Cycle of a Ewe

• Feeding in the dry period affects bodyweight before mating.
• Condition at mating affects number of eggs shed.
• Nutrition in early pregnancy affects embryo survival.
• Feeding in late pregnancy affects lamb birthweight and vigour.
• Feeding in lactation affects milk production and lamb growth.

The effect of feeding Megalac on lamb survival

<table>
<thead>
<tr>
<th>Twin Suckling Ewes</th>
<th>Triplet Suckling Ewes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Megalac</td>
</tr>
<tr>
<td>Lambs reared per group</td>
<td>38</td>
</tr>
<tr>
<td>% Ewes rearing ALL lambs</td>
<td>90</td>
</tr>
<tr>
<td>Lamb gain to weaning (g/day)</td>
<td>218</td>
</tr>
<tr>
<td>Lamb gain to slaughter (g/day)</td>
<td>329</td>
</tr>
</tbody>
</table>

04 Minimising Losses
Pre-Lambing Preparation

Ewe Vaccination

Vaccinate ewes against clostridial infections and Pasteurellosis (booster injections are best administered 1 month before lambing).

Lambs consuming sufficient colostrum from vaccinated ewes should be protected against clostridial diseases for approximately 4-6 weeks.

Ewe Scanning

Pregnancy scan to ensure more appropriate and accurate feeding of the ewe - thus reducing the risk of energy deficit and subsequent health problems.

Ewe Condition Scoring

Condition scoring is a management tool that costs little to implement but allows producers to improve flock performance, limit health problems associated with improper nutrition throughout the production cycle, and ultimately reduce costs.

Used regularly to identify subtle changes in condition it ensures that potential problems can be rectified in good time.

A productive ewe or ram should be neither too fat nor too thin. Body weight alone is an inadequate measure as it does not take account of the mature size of individuals and breeds. Lowland ewes should be condition score 3, and hill ewes score 2, eight weeks prior to lambing. This will give the best chance of avoiding pre lambing problems such as twin lamb disease, and encourage a plentiful supply of high quality colostrum and milk.

So a combination of condition scoring with weighing is preferable.

Ideally in-lamb ewes should be scanned and fed according to condition and litter size.

- **Good condition at tupping** predisposes to higher birth weight lambs by encouraging placental development.

- **Good condition prior to lambing** reduces the incidence of twin lamb disease in the latter stages of pregnancy, and encourages improved colostrum quality and yield.
Housing

Reduce stress by providing ewes and lambs with comfortable housing. Sufficient light, space, drainage, ventilation and cover are all important considerations.

Space Allowance for Ewes

Allow 1 to 1.5m² floor space per housed ewe.
12cm trough space per head for ad-lib forage.
45cm trough space per head for concentrate feeds.

Space Allowance for Lambs

Up to 12kg liveweight allow 0.5 to 0.6m² floor space per lamb.
From 13-30kg liveweight allow 0.8 to 0.9m² floor space per lamb.

Limit groups to 15 lambs maximum.

Drainage and Bedding

Ewes and lambs require ample, clean, dry, fresh bedding to help minimise disease build-up. Be aware that lambs reared on ad-lib milk feeding systems produce large volumes of urine that must be adequately drained away or absorbed to avoid pockets of high humidity and maintain a healthy environment.

Ventilation

Up to 0.06m³ fresh air per kilo body weight per minute in hot weather, reducing to a tenth in cold weather. Draughts must be avoided at sheep level and walls should be sheeted up to a height of 1.25m.

Water

Provide access to fresh clean water at a height which is easily accessible to lambs and ewes at all times.
Care of the Newborn Lamb

Ensure that you have an emergency lambing ‘kit’ on hand at all times including lubricant, thin obstetric disposable gloves, stomach tubes, a supply of colostrum or alternatives such as Lamb Volostrum, tincture of iodine, a lamb warming box, glucose solution for intraperitoneal injection, disposable needles and suitable antibiotics supplied by your vet.

Navel Cord

Must be treated immediately with, for example, tincture of iodine, to reduce risk of bacterial infection.

Colostrum

This must be fed as soon as possible after birth.

- Colostrum contains protective antibodies that can only be absorbed through the gut wall during the first 24 hours of life.

- Colostrum is a vital energy source that protects the lamb from hypothermia.

Colostrum - The fuel for life

Approximately fourteen days prior to parturition, a ewe begins to concentrate protein in her milk, to such a level that the milk becomes thick. This is what we know as ‘Colostrum’.

The large protein molecules in colostrum carry antibodies that offer the suckling lamb protection from disease. Colostrum is also high in energy, particularly in the form of fat, which enables a newborn lamb to maintain body heat and encourages feeding. Whilst mother’s colostrum is preferable, a ewe is often unable to provide sufficient quality colostrum for all of her lambs. In such situations an alternative needs to be fed quickly...

The Alternatives

- Foster Ewe.

- Frozen Ewe Colostrum - thaw slowly below 55°C to preserve immunoglobulins - do not microwave.

- High Quality Colostrum Alternative (Volac Lamb Volostrum).

- Frozen Cow Colostrum - thaw as above - mix from at least four cows to reduce risk of a haemolytic anaemia occurring at around 5-12 days of age. Increase volume fed by 20-40% to compensate for lower level of nutrients in cows milk.

Ensuring all lambs receive enough quality colostrum is the single most important factor in reducing losses from hypothermia and disease.

The following chart illustrates the link between colostrum absorption and mortality in lambs. Lambs which receive little or no colostrum have a significantly greater risk of dying.

![Colostrum Absorption Chart]

Source: Moredun, (1997)
Colostrum - When and How Much?

When?
Colostrum should be fed as soon as possible, preferably within the first six hours whilst the gut wall is most permeable.

How Much? - 50ml per kg liveweight per feed
Daily intake required is higher than you might think!

3kg Lamb
- 1.1 Pints - 630ml

4kg Lamb
- 1.5 Pints - 840ml

5kg Lamb
- 1.8 Pints - 1050ml

For lambs born and raised outdoors, increase colostrum allowance by 15% - 20%

The 3Q Rule of Colostrum Management

<table>
<thead>
<tr>
<th>Quality</th>
<th>Quantity</th>
<th>Quickly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ewe condition</td>
<td>50ml/kg Lwt per feed</td>
<td>First 6 hours of life</td>
</tr>
<tr>
<td>Ewe parity</td>
<td>Minimum 210ml/kg bodyweight within first 24 hrs</td>
<td>Small frequent feeds during the first 24 hrs</td>
</tr>
<tr>
<td>Ewe health</td>
<td></td>
<td></td>
</tr>
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Volac   FREEPHONE 0800 919808   www.volac.com
There are several methods of rearing orphan or surplus lambs. The pros and cons of the most widely used systems are discussed in the following section. A well organised rearing system can save hours and produce quality lambs.

**Training Lambs to Suckle**

Remove lambs at 24 hours (48 hours max).

Leave for a few hours to get hungry.

Keep lambs warm, draught-free and dry.

Introduce gently to the teat.

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**Bottle Feeding**

- More labour.
- Less growth.
- Increased risk of digestive upsets.
- 9-10kg milk replacer used per lamb.

(200g Volac Lamlac + 800ml water = 1 litre of milk)

Mix and feed warm (not hot) at 39˚C/102˚F

<table>
<thead>
<tr>
<th>Days</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days 1-3</td>
<td>1 litre split into 4-5 feeds</td>
</tr>
<tr>
<td>Days 4-7</td>
<td>1 litre split into 4 feeds</td>
</tr>
<tr>
<td>Days 7-weaning</td>
<td>1.5 litres split into 4 feeds initially, reducing to 2 feeds by weaning</td>
</tr>
</tbody>
</table>
Ad-Lib Feeding

- Low set-up cost.
- Faster growth.
- Milk consumed ‘little and often’.
- Less risk of digestive upsets.
- 11-12 kg milk replacer used.

Teat Height
12-15 inches from the ground (30-38cm).

Lambs / teat
Maximum 10 (6-8 would be more advisable).

Group Size
Maximum 25 per pen.
Similar age/size together.

Temperature
Milk can be fed cold or warm on the minisuckler.
Maximum 18-20°C if fed warm.
For cold ad-lib feeding mix with cold water - do not mix warm and allow to cool.

(200g Volac Lamlac + 800ml water = 1 litre of milk)
Do not mix warm and allow to cool

Start lambs on restricted warm milk until trained
(1 litre split into 4-5, 200-250ml feeds, per day until trained which normally takes 1-3 days)

Ad-lib access to milk once trained
Automatic Machine Feeding

- Least labour.
- Highest set-up cost.
- Fastest Growth.
- Milk consumed 'little and often'.
- 12 - 13kg milk replacer used per lamb.

Maintenance

Clean teats, lines and mix bowl daily.

Ensure non return valves are vertical.

Check machine calibration at least once a week and between batches of milk powder.

Daily Inspection of lambs is vital

(200g Volac Lamlac + 800ml water = 1 litre of milk)

Start lambs on restricted warm milk until trained (1 litre split into 4-5, 200-250ml feeds, per day until trained which normally takes 1-3 days)

Ad-lib access to milk once trained
Helping Farmers to provide for their Lambs
Volac has been involved in lamb nutrition for over 40 years and during this time we have committed ourselves to product innovation to ensure that we offer farmers progressive products to meet their evolving needs.

Volac offers a complete lambing system from a natural colostrum alternative, for the newborn lamb, right through to rearing systems to rear the lamb. Volac Lamlac is the market leading ewe milk replacer which has been proven over many years of successful use on farms.

All Volac products are supported by our strong technical, sales and marketing teams, who aim to bring you timely husbandry and management information, to help you get the most out of your flock.
A natural alternative to colostrum to be fed whenever ewe colostrum is unavailable or in short supply.

Benefits of Lamb Volostrum

• 38g protein per 50g (140ml) lamb feed.
• Helps newborn lambs resist potentially fatal disease challenges.
• Highly digestible source of energy helps reduce risk of hypothermia.
• Consistent quantity and quality guaranteed.
• Hygienic, easy to use individual sachets.
• 3 year shelf life.
• Vital stand-by in any lambing shed.
• Independently tested.

Controlled Trials

Harper Adams Agricultural College.

In a controlled trial, 45 lambs consisting of quads, triplets and twins were divided into three equal groups. 15 suckled the ewe from birth, 15 were removed from the ewe and given a measured amount of ewe colostrum and 15 were removed from the ewe and given Lamb Volostrum only.

The results showed that those given Lamb Volostrum were as healthy and viable as the lambs in the other two groups, proof that Lamb Volostrum supplied complete protection and energy.

Commercial Farm Trials

Over 400 lambs were involved in trials on over thirty commercial farms. Most breeds and management systems were represented and flock sizes ranged from 200 to over 800 ewes.

In every case the farmers taking part in these trials expressed complete satisfaction with the results achieved using Lamb Volostrum.
Volac Lamlac

The first commercially available ewe milk replacer introduced over 40 years ago. Continual technical developments have ensured that Volac Lamlac is still No.1.

Benefits of Lamlac

- Concentrated milk protein.
- Highly digestible for faster growth.
- Ultrafiltrated milk protein.
- Natural health protection with less risk of nutritional upsets.
- Instantised.
- Easy mixing even in cold water.
- Fully formulated.
- Provides all the nutrients required by the lamb.
- Stays fresh for 24 hours.
- Excellent in ad-lib systems.
- Available in 5kg, 10kg and 25kg bags.
- For convenience.
- Available in Instant or Freeflow forms.
- Suits all rearing systems (manual/machine).
- Outstanding growth rates proven in performance trials.
- Lamlac is also suitable to feed to Kids.

Volac Lamlac

<table>
<thead>
<tr>
<th>Protein</th>
<th>Oil</th>
<th>Ash</th>
<th>Fibre</th>
</tr>
</thead>
<tbody>
<tr>
<td>24%</td>
<td>24%</td>
<td>7%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Volac AS Gold

An electrolyte with added fibres to promote a healthy gut.

Use where there is digestive disturbance (Diarrhoea) or as directed by your vet.

Can be fed on its own, mixed with water or added to milk replacer.

Benefits of Volac ASGold

• Contains electrolytes and glucose.
• Rehydrates lambs effectively.
• Contains natural plant fibres and pectins.
• Helps maintain a healthy gut.
• Aids recovery from digestive upsets.
• No need to withdraw milk, so lambs can continue to grow.
• Feed at 1g per kg liveweight mixed into 40ml of water or Volac Lamlac.

✅ Re-energises
✅ Rehydrates
✅ Revitalises

CAN BE FED WITH MILK

<table>
<thead>
<tr>
<th>Crude Protein</th>
<th>Crude Fibre</th>
<th>Crude Oils &amp; Fats</th>
<th>Crude Ash</th>
<th>Sodium</th>
<th>Potassium</th>
<th>Chloride</th>
</tr>
</thead>
<tbody>
<tr>
<td>3%</td>
<td>6%</td>
<td>1%</td>
<td>14%</td>
<td>4.1%</td>
<td>0.9%</td>
<td>5.4%</td>
</tr>
</tbody>
</table>
Warm Milk Lamb Feeders

The Volac Ewe 2 is easy to operate and saves valuable time during one of the most labour intensive periods of the year.

Designed to operate safely outside the pen and comes complete with minisuckler, non-return valves and silicone tubing.

The durable 300W metal heater element is easily controlled via a thermostat built into the plug.

The Ewe 2 has a 25 litre capacity and will rear up to 20 lambs with the standard minisuckler.

The Ewe 2 Plus has a 50 litre capacity and will rear up to 40 lambs.

- Durable heating element
- Easy thermostatic control
- Sits safely outside the pen
Automatic feeders are available for hire for lamb rearing.

Each feeder can automatically feed up to 70 lambs at one time, dramatically reducing the man hours required for mixing milk and feeding lambs, although a high degree of management skill is still required.

Milk may be offered warm (39°C/102°F) on a restricted basis during the early training period. However once lambs are suckling from the teat on an ad-lib basis, the milk temperature should be reduced to 18-20°C/66-70°F, to reduce the risk of health problems caused by over-consumption. The machine should be cleaned daily and calibrated regularly.
For successful weaning, lambs should be:

Minimum 2½ times birth weight (9 -10kg).
Minimum 35 days old.
Eating 250g or ½ lb solid feed per day.

ABRUPT WEANING = THE BEST SYSTEM

Although your lambs are unlikely to reach all three at the same time, it is important to ensure that they are consuming adequate levels of solid feed to avoid the post weaning checks that are often seen with artificially reared lambs.

By adopting an abrupt weaning regime you will reduce the risk of digestive upsets that can occur during gradual weaning.