Targeting ewe efficiency is key to more profitable sheep production which in turn could lower the farm carbon footprint.

Lambing percentage (number of lambs reared per ewes mated x 100) is the typical benchmark used by farmers across the country to compare their performance with others.

While this is a useful way to compare year on year performance within a farm, it does not account for the wide range of farm types, different farming systems and labour resources found on Scottish farms. For example, upland sheep production versus lowland; early indoor lambing systems versus outdoor lambing in mid April.

Ewe efficiency is linked to three key technical aspects of sheep production:
- Lambing percentage
- Lamb weight at sale/transfer
- Ewe weight at mating

This Practical Guide looks at benchmarks to assess flock efficiency. Additional guides in this series focus on maximising performance both pre and post lambing.

Evaluating flock performance: kilos of lamb produced per ewe mated 1 to 1

A more accurate efficiency benchmark is the kilograms of lamb produced (sold or retained) per kilogram of ewe mated. The target for lowland farms is a ratio of 1:1 or 1 kg lamb sold per 1 kg of ewe mated. Expressed as a percentage this is 100%. For example:

- 72 kg ewes (average weight at mating) at lambing percentage of 173%
- Selling lambs at 42 kg liveweight (LW)
- 1.73 lambs/ewe x 42 kg/lamb = 72.66 kg of lambs produced per ewe
- 72 kg (average ewe LW at tupping) = 1.01 this is above the 1:1 ratio or 101%
Improving Ewe Efficiency (1); Meeting Benchmarks

**Adjusted 90 day weaning weight**

The “adjusted 90 day weaning weight” benchmark is similar to but offers a more thorough evaluation of ewe efficiency than the 1 to 1 calculation, before post-weaning management affects performance.

This benchmark uses the average lamb weaning weight standardised at 90 days (calculated from the midpoint of lambing - point at which half of the ewes have lambed). If weaning earlier, add the average lamb daily liveweight gain, multiplied by the difference of days, to the weaning weight. Conversely, if weaning later, subtract the weight gain after 90 days. This benchmark offers producers an accurate figure for the percentage of ewe liveweight weaned. For Lowland target 0.95 (range 0.65-0.85); for Upland aim for 0.85 (range 0.55-0.80).

To calculate, multiply the average lamb weaning weight at 90 days by the weaning percentage (number of lambs weaned per ewes mated) and divide the result by the average ewe weight at tupping. For example, take a flock of 72 kg ewes at tupping, lambing from 1 April onwards, weaning at 176% with an average lamb weight of 31 kg on 16 July (90 days):

\[
\frac{31 \times 1.76}{72} = 0.76 = 76\%
\]

The advantage of this ewe efficiency benchmark is that they are improved by different factors, such as increasing lamb growth rate to weaning, increasing lambs reared and lighter ewes. As these factors are influenced by maternal genetics, the ewe efficiency calculation can be used to select replacements within different breeds once farm-specific parameters are set.

**Body condition score**

Aim to have lowland and upland ewes in a condition score of 3.5 at mating. Hill ewes should be ideally in a score of 3.0 at mating.

**Reproductive benchmarks** for these different flock types are shown below:

<table>
<thead>
<tr>
<th>Per 100 Ewes Tupped</th>
<th>Hill</th>
<th>Upland</th>
<th>Lowland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ewes barren</td>
<td>10</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Ewes dead pre-lambing</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Ewes dead post-lambing</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Ewes to ram</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Lambs born</td>
<td>100</td>
<td>145</td>
<td>175</td>
</tr>
<tr>
<td>Lambs reared</td>
<td>90</td>
<td>130</td>
<td>160</td>
</tr>
<tr>
<td>Lambs reared range</td>
<td>60-145</td>
<td>100-160</td>
<td>130-190</td>
</tr>
</tbody>
</table>