

3-21 Feed requirements of dairy calves and heifers

This *FarmFact* contains 2 parts. Section 1 is a quick reference guide to the feed requirements of dairy youngstock, which will be appropriate for most circumstances.

Section 2 contains detailed guidelines, to allow a more precise calculation of the ME requirements of youngstock. The figures are based on European (ARC) research, and are taken from *Milk Production from Pasture* (C.W. Holmes and G.F. Wilson).

Target liveweights for dairy youngstock are given in *FarmFact 3-22 Recommended liveweights for youngstock*.

Dry matter requirements (kg DM/day) of growing youngstock

The following table assumes that the mob is eating high quality feed containing 11 MJ ME/kg DM.

| | Rate of liveweight gain (kg/day) | | | | |
|---------------|----------------------------------|-----|-----|-----|-----|
| | 0 | 0.4 | 0.6 | 0.8 | 1.0 |
| 100 kg | 1.6 | 2.3 | 2.7 | 3.0 | 3.4 |
| 150 kg | 2.1 | 2.9 | 3.2 | 3.6 | 4.0 |
| 200 kg | 2.7 | 3.6 | 4.1 | 4.6 | 5.1 |
| 250 kg | 3.1 | 4.1 | 4.6 | 5.1 | 5.6 |
| 300 kg | 3.6 | 4.8 | 5.4 | 6.0 | 6.6 |
| 350 kg | 4.0 | 5.2 | 5.8 | 6.4 | 7.0 |
| 400 kg | 4.5 | 5.9 | 6.7 | 7.4 | 8.1 |
| 450 kg | 4.9 | 6.3 | 7.1 | 7.8 | 8.5 |
| 500 kg | 5.3 | 6.9 | 7.7 | 8.6 | 9.4 |

Assumes maintenance = 0.55 MJ ME/kg liveweight^{0.75}

- Heifers in late pregnancy will need extra feed to support their growing calf. In the 6th month of pregnancy - 0.5 kg DM/day; 7th month - 1kg DM/day; 8th month - 2kg DM/day; 9th month - 3kg DM/day.

ME requirements of dairy youngstock

After weaning, the most basic feeding need of growing heifers is metabolisable energy (ME). Protein intake is usually sufficient on a pasture based diet, unless very large amounts of a low protein feed (like maize silage) are being eaten.

These figures assume that the herd is being fed high quality feed (>11 MJ ME/kg DM). Daily ME requirements increase if poorer quality feed is being used, as heifers cannot utilise the poorer quality feed as efficiently as high quality feed.

ME requirements = maintenance + liveweight gain + pregnancy

Maintenance

The energy required by heifers to survive from day to day. Maintenance needs are related to liveweight (0.55 MJ ME/kg LW 0.75), with heavier animals needing more feed for maintenance.

| | Liveweight (kg) | | | | |
|------------------|-----------------|-----|-----|-----|-----|
| | 100 | 200 | 300 | 400 | 500 |
| MJ ME/day | 17 | 29 | 40 | 49 | 58 |

Liveweight gain

The amount of energy needed to gain 1kg liveweight depends on the heifer's liveweight. It takes more ME to gain fat than it does to gain protein. As heifers grow, they tend to gain less protein, and more fat. So, the ME they need to gain 1kg of liveweight increases.

| | Liveweight (kg) | | | | |
|------------------|-----------------|-----|-----|-----|-----|
| | 100 | 200 | 300 | 400 | 500 |
| MJ ME/day | 20 | 27 | 33 | 40 | 45 |

The quality of the feed being eaten has a big impact on liveweight gain. The above figures assume that the herd is being fed high quality (11 MJ ME/kg DM) feed. If feed is only 10 MJ ME/kg DM, a 50% increase in the ME required to gain 1kg liveweight will occur.

Pregnancy

In early pregnancy, the growing calf requires little extra energy from its mother to grow. However, for the last 4 months of pregnancy, the energy demands become more significant.

| | Liveweight (kg) | | | | |
|------------------|-----------------|---|----|----|----|
| | 1 - 5 | 6 | 7 | 8 | 9 |
| MJ ME/day | 0 | 5 | 10 | 20 | 30 |

Example

A 200kg heifer gaining 0.6kg LW/day needs:

- 29 MJ ME (maintenance) + 16 MJ ME (liveweight gain) = 45 MJ ME.
- If the feed contains 11 MJ ME/kg DM, she needs 4.1kg DM/day (45 ÷ 11).