



NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Growing heifers - Readers' Note

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<http://www.dpi.nsw.gov.au/agriculture/livestock/dairy-cattle/herd/manuals/growing-heifers>

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Growing heifers from weaning to calving

Growing management

Frequently, calves are reared well up to weaning, then virtually left to look after themselves. Poorly managed weaners are disadvantaged for their entire lives.

Aim to calve heifers at about 85% of the average mature cow bodyweight of the herd. This means that most of their growing is finished and they can cope with changes of grazing pasture and herd pecking order. Feed can then be directed into milk, and higher conception rates are also likely.

Feeding

This section is intended to give you a basic understanding of heifer feeding. For more details, see the DairyLink manual *Realistic Rations*.

You must understand pastures if you are going to do an efficient job of rearing dairy replacements growing at 0.7 kg/day.

Pasture quantity

Pasture quantity (or herbage mass) is expressed in kilograms of dry matter per hectare (kg DM/ha).

Once herbage mass drops below a certain level, animals are physically unable to consume sufficient pasture to maintain their weights. Similarly, above a certain level of herbage mass, animals will not eat more, even if it is available.

For a 200 kg dairy heifer, these limits are about 700 and 2500 kg DM/ha, assuming that the pasture is leafy green material, and that it is a temperate rather

than a tropical pasture.

Pasture quality

Digestibility (expressed as a percentage) is a very useful measure of pasture quality. It is strongly related to the energy and protein content of a pasture, as well as to the speed with which the plant material will pass through the animal.

Quality is complex and is influenced by:

- **Species.** Legumes usually have higher quality than grasses, and maintaining them in a pasture will maximise animal performance. Temperate species such as ryegrass have higher digestibility than tropical species such as paspalum.
- **Parts of the plant.** The leaf is more digestible than the stem.
- **Stage of growth.** Older plant material is less digestible.

Table 3.1 shows how digestibility changes as plants mature.

There is a strong interaction between digestibility, herbage mass and animal intake. As pasture quality declines, animal performance can be maintained by offering more pasture—that is, decreasing the stocking rate on the pasture so that the animals can be more selective in their grazing.

Table 3.1: Digestibility at different growth stages

Growth stage	Digestibility
Active growth, green	75–85%
Head emergence	65–70%
Late flowering	55–60%
Dead, dry material	40–55%

Note. Once digestibility drops below 60%, no matter how much pasture the animals are offered they will not be able to maintain their target weight gains—and at 50% digestibility, the animals will be losing weight.

Hay and silage

Both hay and silage can be successfully used to maintain growth rates if pasture quantity or quality is low. The feed quality of hay and silage is extremely variable, so testing for quality is recommended. There are several commercial testing services available, so seek professional advice on the availability of tests and how best to use the results.

Balancing rations

If you use low quality roughages you will need to add concentrates to meet nutritional requirements. Stock requirements are outlined in Table 3.2.

Working out the ration involves balancing the difference between the animals' requirements for energy, protein, fibre and minerals and the nutrients available from their feed intake.

For more information on nutrition from weaning to calving, see the Agriculture Victoria Agnote AG0507, *Heifer Nutrition from weaning to first calving*; there is a copy of this publication in the Further Information section of this manual.

Monitoring live weight gains

Under ideal conditions heifers should have a constant weight gain of 0.7 kg/day if they are to reach their desired weight-for-age targets. The only time it might be beneficial to slow this weight gain is during the second 6 months of life, when there is some evidence that with excessive growth rates (over 0.7 kg a day) fatty tissue may be laid down in the udder.

Compensatory growth after setbacks from low feed intake and health problems such as worms can only partly make up for lost gains. If your heifers are well fed and therefore growing well they will be less susceptible to external and internal parasites. They will also suffer less from trace element deficiency problems.

Regular monitoring and weighing will help to highlight any problems. Management can then be changed to overcome the problem and minimise the setback.

For these reasons it is important to have an accurate method of assessing live weight. Also, drench doses are all based upon live weight, and an error in live weight estimation could result in either underdosing (ineffective) or overdosing (waste of drench). Under-drenching is the most serious mistake, as it does not eradicate the worm problem and can lead

Table 3.2: Nutritive value of diets recommended for heifers of different ages to grow at 0.7 kg/day (NRC 1989)

	3–6 months	6–12 months	over 12 months
Liveweight (kg)	150	254	400
DM intake (kg/day)	3.7	5.7	8.8
Metabolisable energy (MJ/kg DM)	10.9	10.3	9.5
Crude protein (%)	16	12	12
Calcium (%)	0.52	0.41	0.29
Phosphorus (%)	0.31	0.30	0.23

to a false sense of security as well as creating a possible worm resistance problem.

Assessing live weight

There are various ways you can assess dairy heifer live weights, and they have varying degrees of accuracy. Generally it's a case of getting what you pay for. Target chest girths and wither heights are less accurate than cattle scales, but they are helpful if you don't have scales. Table 3.3 will help you choose.

Visual estimation

Some farmers are very good at guessing the live weights of some of their heifers, but get most wrong. Estimating live weights using eyesight alone is the least reliable method of all.

Girth tape

The girth tape is quite an accurate method of assessing heifer live weight, although accuracy diminishes slightly with older animals. Also, it is hard to restrain older heifers to place the tape in the correct position. This method is clearly the most labour intensive.

Wither height stick

The wither height stick is a cheap form of live weight assessment for dairy heifers. The stick is subject to some reader inaccuracy, but over a group of heifers it will indicate live weights with quite a high degree of accuracy. The withers are the

highest part of the heifer's back, behind the neck.

Scales (electronic)

Electronic scales are the most accurate way of assessing heifer liveweight. Good quality scales can store heifer liveweights in a memory to be downloaded to a personal computer.

Regular weighing, three or four times a year, tells you not only when heifers have reached target weights, but also how quickly they are growing at certain times of the year. This will provide a check on the quality of the pastures and tell you if any supplements are required.

Using growth charts

There are a number of different types of growth charts. Overleaf are some growth charts that are a guide to target wither heights at different ages up to 2 years old. One chart gives American recommendations for Friesian and Jersey heifers, and on the other you can compare some different Australian recommendations for Friesians with the American ones. By periodically monitoring your heifers and plotting their wither heights on a chart, you can see how your feeding management is going in relation to the optimum.

Critical periods in live weight gain

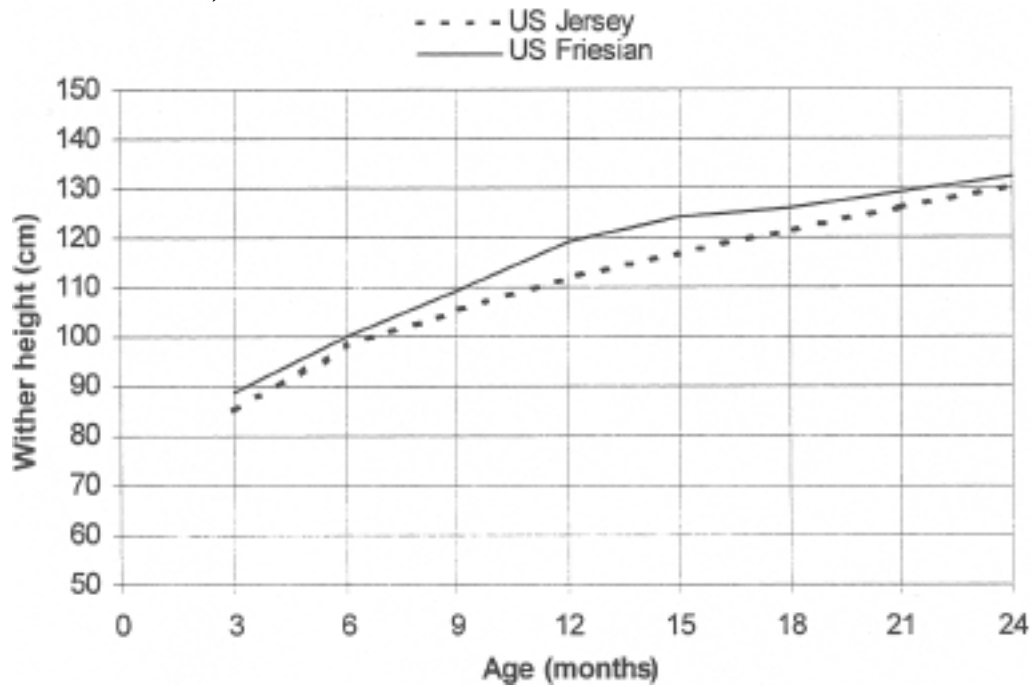
In a well managed heifer replacement program target weights are reached at a

Table 3.3: Accuracy and costs of heifer live weight assessment

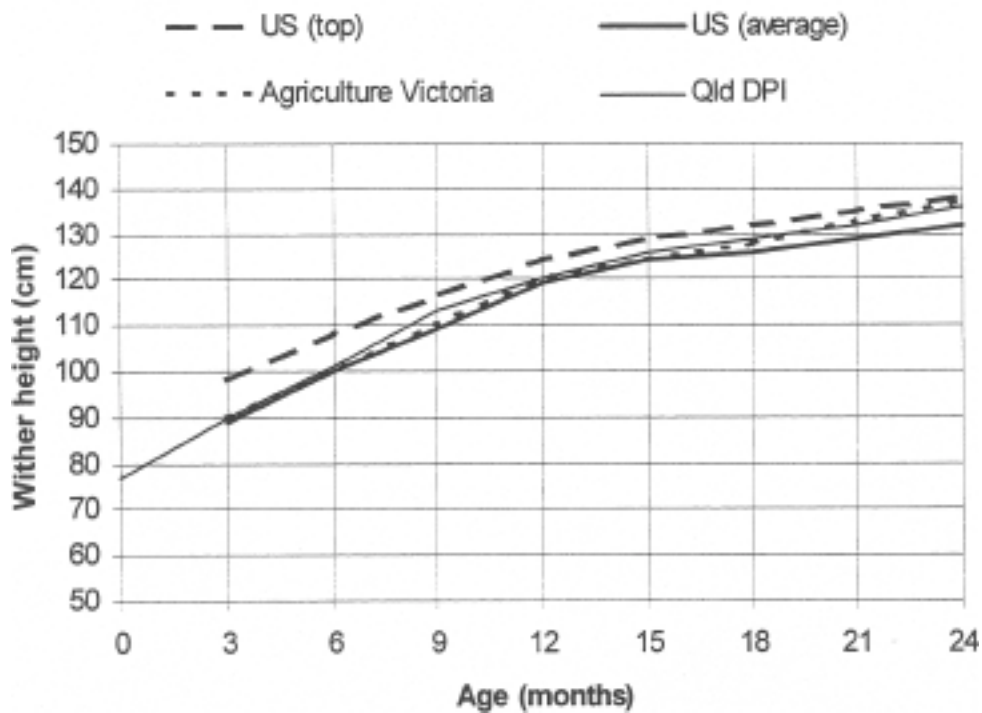
Type	Cost (\$)	Accuracy (%)	Age range applicable
Visual assessment	0	35	all
Girth tape	5–10	85 (over group)	0–6 months
Wither height stick	15	85 (over group)	6–24 months
Scales (electronic)	750–1500	95–100	all

Growth charts

Wither heights for age for growing heifers: US recommendations (after J Moran, Agriculture Victoria)



Wither heights for age for growing Friesian heifers: published recommendations (after J Moran, Agriculture Victoria)



steady growth rate. Your management must be especially careful at times that are critical for weight gain, so that this steady growth is not disrupted.

There is a critical period in the developing udder when excessive growth rates can increase the deposition of fatty tissue and reduce lifetime productivity. So far no one knows exactly when this critical period occurs, and exactly what constitutes excessive growth rates, although there are some general guidelines. Some advisers consider that live weight gains should not exceed 0.5 kg/day between 6 and 12 months, whereas others recommend gains of less than 0.7 kg/day between 3 to 8 months. Clearly it is not desirable to feed heifers above maximum growth rates during their second 6 months of life.

Fatty udders are unlikely to be a problem in pasture-grown heifers, particularly in traditional periods of pasture shortage. Balancing dietary nutrients (such as supplying enough bypass protein) may be one way of maintaining high growth rates in heifers without depositing fatty tissue.

Mating

In order to maximise the genetic gain in your herd, your heifers should be mated to the best bull you can find; the best way to do this is to use artificial insemination (AI). Heifers should be mated to easy calving bulls.

To get the best results from AI your heifers must be both at target live weight and increasing liveweight at mating.

Well grown heifers will begin to cycle earlier, will have stronger heats and will have higher conception rates and fewer calving problems than poorly grown heifers. They also tend to have higher

conception rates than lactating cows, as they do not have the stress of lactation to contend with.

Some heifers will have shorter standing heat periods than older cows; for this reason, aids to heat detection (such as tail paint or heat-mounting pads secured on the tail head) are recommended.

Drugs used to synchronise heat in heifers

Synchronising heat in your heifers will save you time and give you good control over your breeding program. A number of drugs can be obtained from your vet:

Prostaglandins

These occur naturally in the body, but can also be given as drugs to synchronise heat. They work by causing the corpus luteum (the ‘blister’ that forms on the ovary after the egg is released) to dissolve.

Progesterone (natural) or progestogen (synthetic)

Progesterone is produced by the corpus luteum. It is the hormone that ‘organises’ the whole cycle, and can also be used to synchronise heat.

Oestradiol benzoate or oestradiol valerate

Oestrogens have a similar effect to prostaglandins.

Systems used to synchronise heat

No one system is guaranteed to get all your heifers tightly synchronised. All the systems used require multiple handling of heifers.

Some people may prefer natural mating for heifers, especially if they do not have time to spend observing heats and handling stock. Groups of heifers can be run with the milking herd and either



Weaned calves should be allocated to specific calf-raising paddocks. Groups are based on size to avoid ‘bullying’ around feed areas. Photo: J Irvine, Dungog.

mated with bulls or artificial insemination.

For successful synchronisation you must make sure that the heifers to be mated are cycling before the start of the program. There are a number of systems used commonly.

Progesterone implants

CIDR (controlled internal drug release). A progesterone-releasing implant is placed in the vagina. An oestradiol capsule is also implanted at the same time (to remove any aged eggs). The CIDR implant is removed 10 to 12 days later and the cows are inseminated about 48 hours later. A prostaglandin injection is sometimes given on day 6.

Progestogen ear implants. A progesterone-releasing implant (such as Synchro-mate B®) is implanted in the ear, and an oestrogen–progesterone injection is given at the same time. The implant is removed after 10 days, and the cows are

mated 48 hours later.

These products work by lengthening the oestrus cycle while they remain implanted. When they are removed, the blood level of progesterone drops suddenly and another egg begins to develop—the cow begins to come into oestrus.

Prostaglandin injections

Two injections of prostaglandin (such as After weaning, calves should be allocated to specific calf-raising paddocks.

Lutalyse® or Estrumate®) are given, generally 10–12 days apart.

For further information on managing heifers from weaning to calving, see the Agriculture Victoria Agnote AG0506, *Health and mating management of heifers from weaning to calving*; there is a copy of this publication in the Further Information section of this manual.