Feeding crops and supplements to heifers

This Infosheet covers:

- Why crops and supplements are useful for feeding heifers and the importance of good crop management.
- The animal health benefits of feeding crops and supplements.
- The risks associated with feeding crops and supplements.
- Deciding when to feed crops and supplements.
- The effect of compensatory growth.

Key points

- Feeding heifers crops and supplements is most cost effective when short of pasture or pasture quality is limiting feed intakes.
- Unless pasture quality is below 10 MJ ME when feeding crops or supplements, liveweight gain is due mainly to the increase in feed offered, rather than differences in feed quality.
- Feeding crops and supplements helps to reduce the animal health risks associated with feeding pasture including internal parasites, facial eczema, and ryegrass staggers.
- Stock need time to transition to a new feed.
- Compensatory growth is possible but cannot be relied upon as it can be variable and typically it cannot be sustained over a long period of time.
**Using crops and supplements for better heifer liveweight gain**

Heifers require suitable levels of high quality feed during the first two years of life to reach their weight-for-age targets. However, pasture supply does not always match their feed demands. Stocking rates and other stock classes, such as trading stock, can also influence total feed demand on farm. To meet competing demands for feed, the supply can be manipulated using supplementary feeds, crops and nitrogen applications.

Crops and supplements can provide a good source of energy and protein for growing heifers (as can pasture). They are most cost effective when pasture supply is limited, either because of low pasture growth rates or high stocking rates.

When heifers are fed crops or supplements, their liveweight increases. However, this is mainly due to an increase in available feed, and to a lesser extent, to differences in feed quality or crude protein content.

Good crop management, to ensure crops are successfully established and achieve yield targets, is critical to gaining a worthwhile financial return from crops. Before planting a crop, its cost effectiveness should be analysed on an individual farm basis.

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**Opportunity**

Use crops and supplements when pasture supply is limited.

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**More information**

- For more information about stocking rates see Heifer Infosheet: Setting Stocking Rates with Heifer Grazing.
- For more information about feed planning see Heifer Infosheet: Feed Management for Growing Heifers.

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**FARMER VIEWPOINT**

Don’t always go by what you can see. In the autumn, even though the grass looked like rocket fuel, I started weighing and it showed the heifers weren’t gaining any weight. The dry matter was too low so we added in supplement.

Contract grazier, 850 heifers, Stratford Taranki
**Animal health benefits**

High quality pasture is a complete feed. It can meet all of a heifer’s feed requirements at every stage of her life and carries few risks; however, there are some potential animal health issues including facial eczema, internal parasites and ryegrass staggers. Feeding a crop or supplement use can mitigate the risk of these animal health issues when the risk is high. If the feed makes up a significant proportion of the diet the requirement for prevention or treatment regimes may be reduced or eliminated.

The spores that cause facial eczema are specific to pasture, so using an alternative feed when spore counts are high can mitigate the risk of facial eczema. With sufficient substitution (up to 100%), the need for zinc treatment may not be required, but this should be assessed case-by-case. If a crop or supplement is only a portion of the diet then the usual control methods should be used i.e. zinc administration based on spore count.

Infection by internal parasite larvae only occurs when heifers are fed pasture so drenching to control parasites will not be required if the whole diet is composed of a crop or supplements, assuming heifers have been treated for parasites prior to crop grazing. When crops or supplement make up a portion of the diet, then faecal egg testing is required to assess the need for drenching. Talk to your vet about an appropriate drenching policy for your growing heifers.

**More information**

- For more information about facial eczema see Heifer Infosheet: Other Illnesses and Disease in Dairy Heifers.
- For more information about internal parasites see Heifer Infosheet: Parasite Management and Heifer Factsheet: Managing Roundworms in Young Stock

**Risks of feeding crops or supplements**

There are some risks associated with using crops and supplements.

Different types of rumen microbes are required to digest a starch-based compared with a low fibre feed. When a new feed is introduced into the diet the appropriate microbe population have to develop, by changing the proportion of the various microbes. This needs time, which varies depending on the feed. This is known as the transitioning process. If this process is not completed properly then new feeds can result in illness or even death.

Other factors to consider when assessing the suitability of a crop or supplement, and any risks associated with it, include: palatability, nutritional composition, mineral content, differences in feed management required, and fit with the wider system.

When feeding a crop or supplement:

- Avoid sudden changes in diet; transition when necessary.
- Adequate dietary fibre is crucial. At least 10% of the diet must be fibre to maintain rumen function.
- Supplements often contain a higher percentage of dry matter than pasture so make sure sufficient water is available. Limiting water intake will depress heifer liveweight gain.
Deciding when to feed crops and supplements

The whole system, including stocking rates and expected pasture growth, needs to be evaluated when factoring crops or supplements into the diet. Both the current situation and the future expectations should be assessed when considering:

- How much grass is available and what is its quality?
- What grass growth is expected for the season (need for cropping) or the next week or two (need to feed a supplement)?
- Does the pasture cover need to be built up to meet anticipated feed shortfalls i.e. going into summer or winter?
- What are the heifers’ current weights and how soon do they need to meet their target weights?
- Will there be health benefits if a crop or a supplement is used?

There is also the possibility that substitution may occur. When animals are offered a supplement they will often eat the supplement in preference to pasture. This can decrease the amount of pasture consumed (substitution) and it can increase the cost of rearing heifers because often pasture is the cheapest feed. However, sometimes substitution is beneficial, for example to build up pasture reserves or to slow the grazing rotation to maximise pasture growth rates.

Relevant factors:

- Increasing the amount of supplement fed will increase liveweight gain, but at a diminishing rate. This means the performance benefit gained from each additional kilogramme of supplement is smaller than the last, especially at high levels of supplementation.
- In general, the liveweight response to supplementation is highest in animals of heavier liveweight potential. Heifers with a higher expected mature liveweight will give the best response.
- Pre-grazing pasture covers of 2,000-2,500 kg DM/ha are desirable. If covers are lower, there may not be enough feed available and supplementation may be of value.
- Feeding supplements when pasture supplies are plentiful, of good quality, and grazing conditions are favourable, is rarely economical even if animals gain slightly more weight. Situations where it may be justified include: when heifers are behind their target weight, or weight gains need to be slightly accelerated to achieve weight for age targets at the end of contract, or before stock are moved.
- Short term feeding of a supplement can be beneficial if it helps to increase pasture growth rates, which then lifts average pasture covers to fill feed shortfalls later.
- When facial eczema spore counts or risk of ryegrass staggers are high, feeding supplements can reduce the impact of the toxins on cattle and improve liveweight gain.

Allocate supplement and crops to meet the animals’ needs. Over the winter our lightest heifers are fed on all grass, the medium weight animals will get turnips and swedes and the heaviest will go on fodder beet. We give the lighter animals the higher protein feeds.

Contract Grazier, 1,500 heifers, Mossburn Southland

Relying on only grass can be risky. We grow crops because we don’t want any big surprises in the winter.

Contract Grazier, 1,200 heifers, Middlemarch Otago

We know we don’t grow enough feed over the winter so we cut over 500 bales of silage, in the long run we’ll move to winter cropping once we’ve lifted soil fertility.

Contract grazier, 400 heifers, Matawi, Gisborne

We use kale over the winter because it is easy to manage and it fits in with our crop rotation.

Contract graziers, 720 heifers, Oamaru, North Otago
Compensatory growth

- Farmers often rely on compensatory growth i.e. a period of faster growth, to catch up after times of restricted feed availability, or when for other reasons heifer growth rates fall behind target. Supplementary feeds or crops can be used to boost weight gains; however, remember that they should only be used for this purpose when pasture supplies are limited because of the cost advantage offered by pasture.

- Research\(^2\) has shown that bull mobs fed on chicory when pasture was limited over summer grew faster and attained heavier weights than the mobs that were left on drought-affected pasture. However, once the mobs were joined and placed on pasture over winter half of the advantage which had been gained was lost as the stock which had been on the drought-affected pasture compensated once they were offered adequate pasture supplies. Several conclusions can be drawn from this: when pasture supplies are limited, feeding a crop or supplement can be worthwhile to reach weight for age targets, stock can compensate when they shift from limited to adequate pasture and stock that compensate will often still lag behind the better performers in a mob.

- Graziers that regularly weigh stock report that they see high rates of compensatory growth after periods of very low growth e.g. 0.3-0.4 kg/day. Although compensatory growth is well documented in research, and backed up by farmer experience, it can be variable and typically it cannot be sustained over a long period of time.

**FARMER VIEWPOINT**

Have realistic expectations for growth rates. I’ve found exceptionally well grown calves are difficult to grow through winter at average growth rates.

Contract Grazier, 1000 heifers, Patea Taranaki

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**Definition**

**Substitution** – Pasture left behind from feeding another feed.

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