



# OWL FARM

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## Growing Calves on Chicory

### Objectives:

- To ensure calves meet puberty growth targets which supports successful reproductive performance.
- To use an on-farm chicory crop, with silage and PKE, to achieve calf growth targets at similar cost or less than off-farm grazing.

### Background

Previously, Owl Farm's heifer calves were grazed off, but a change in circumstances in 2020 meant the management team had to reassess the grazing arrangements. The decision was made to trial grazing them at home.

#### Key considerations:

- Preventing any impact on the milking herd.
- Factoring in the additional demands on labour and infrastructure (for handling and weighing).
- Providing summer feed with the correct composition i.e. containing sufficient protein and energy to meet targets.

### Analysis of Opportunity

A number of possible feed options were identified, including: annual crops, such as Raphno or chicory; or a perennial crop, like lucerne. Pasture was discounted, as when growth rates were low over summer the calves would require an area of up to 13 ha. This would impact on the milking herd. Also, the pasture quality would not be high enough to meet the calves' requirements.

Chicory was selected as Owl Farm could lease a 4.7 ha block next to the milking platform. The calves could rotationally graze this, in combination with supplementation with pasture silage (and PK if needed). The protective value against facial eczema spores and reduced need for worm drenching were also benefits. We estimated it would cost approximately \$7.50/hd/wk to graze the calves at home, compared to \$11/hd/wk at the grazier's.

### Keep in mind

Your RPs have a wealth of expertise you can tap into. We regularly touched base with a variety of industry experts, including our partners, PGG Wrightson Seeds and Ballance Agri-Nutrients, along with our vets, to make sure we got the best results we could.



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## Results

The heifer calves grew exceptionally well on this regime. They weighed 247 kg when ten months old (Figure 1), which was 25 kg above their target weight, and no calves were underweight. Average liveweight gain of 0.7 kg/hd/day.

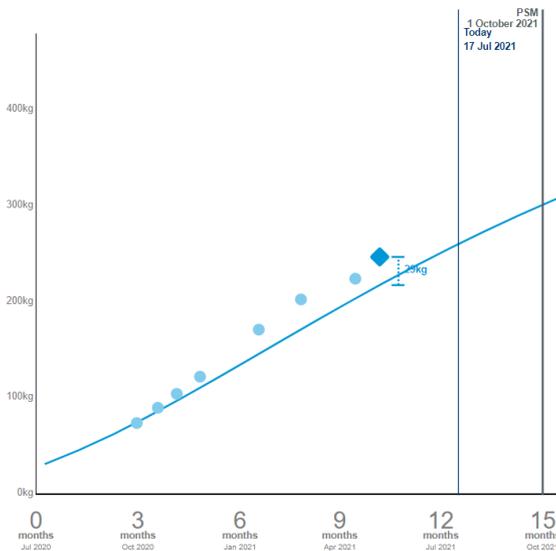


Figure 1. Heifer weights (kg) at key ages compared to targets.

From 27<sup>th</sup> November to 20<sup>th</sup> April the calves were offered 40 t DM chicory over seven grazings. The chicory was planted on 30<sup>th</sup> September and its estimated yield was 8.5 t DM/ha. This is an average growth rate of 42 kg DM/ha/day. This was lower than the 10-12 tDM/ha expected due to dry soils in late spring and low rainfall impacting Feb/Mar growth rates.

Adjustments to the feed plan were required. We transitioned the calves onto the PKE once the calf meal was finished. However, they preferred the grass silage over the PKE, so the amounts of each of these were amended.

Over summer the calves' feed demand exceeded what the chicory crop could supply. Our usual 25 day rotation decreased to 18 days, so in February a contractor applied effluent to bolster the crop's moisture and nutrient levels. The calves were taken off the crop to allow it to recover and were fed extra silage and pasture.

On an average daily basis, the calves were offered 3 kg DM chicory, 2 kg DM grass silage and 1 kg DM PKE (Table 1).

Table 1. Feed allocation (kg DM offered/hd/day).

	Nov	Dec	Jan	Feb	Mar	Apr
<b>Pasture</b>	0.5	0.5	0.2	0.2	0.1	0.2
<b>Chicory</b>	3.0	3.5	3.0	2.0	3.0	2.9
<b>PKE</b>	0.9	0.6	0.8	1.5	1.0	0
<b>Grass silage</b>	0	0	1.2	1.9	2.0	3.2
<b>Total eaten</b>	3.5	3.7	4.1	4.4	4.7	5.0

Grass was sown into the chicory paddock on the 20<sup>th</sup> April. Once the cost of leasing the block to grow the crop was included (see Table 2 footnote 2), the cost of grazing the heifers on chicory, in comparison with grazing them off was similar, around \$11/head/week (plus transport).

Table 2. Cost analysis (actual).

<b>Chicory</b>	\$1,200/ha x 4.7 ha	\$5,640
<b>Effluent for chicory</b>	\$2,000 (approx.)	\$2,000
<b>PKE</b>	11.1 t DM x \$340/t DM	\$3,774
<b>Grass silage</b>	19.1 t DM x \$380/t DM	\$7,258
<b>Pasture</b>	3 t DM x \$0.37/t DM	\$1,136
<b>Staff time<sup>1</sup></b>	100 hr x \$25/hr	\$2,500
<b>Total cost</b>		<b>\$22,308</b>
<b>Cost/head/week<sup>2</sup></b>		<b>\$9.30</b>

1. Shifting every second day and weighing three times.

2. Cost/head/week if cost of lease block is included = \$11.65.

However, maintaining close supervision of this stock class over a critical growth period, so they achieve their target weights, is highly beneficial, and well worth the extra labour required.

Owl Farm also gained benefits, particular to its demonstration role. It gave visiting groups easy access the calves and crop, and allowed the farm team to share the results with multiple industry groups.

## Plan for Next Season

This trial has been successful. Next season (2021/22) the plan is to grow 5+ ha of chicory for the heifer calves and to use similar levels of supplementary grass silage and PKE. The farm team will choose areas for cropping that are prime for re-grassing and that are close to hand so visiting groups can view the calves easily.

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  - The calves developed interdigital dermatitis from crowding around the feeding trailer after the rain in February. After that we removed the trailer and just fed the grass silage in the paddock. Next year we will shift the trailer every two days if it is wet.
  - There was high wastage during the first grazing as all the chicory was ready to graze at once and it took 25 days to graze it. Next year we will stagger plant half the crop 10-14 days later.
  - We used Gallagher 3 wire fence standards and portable water troughs to ensure an accurate feed allocation and prevent back grazing.

## Further Information

- [www.dairynz.co.nz/feed/crops/chicory/](http://www.dairynz.co.nz/feed/crops/chicory/)
- [www.dairynz.co.nz/animal/heifers/heifer-feeding-and-nutrition/](http://www.dairynz.co.nz/animal/heifers/heifer-feeding-and-nutrition/)
- [www.pggwrightsonseeds.com/crops/herbs/chicory/puna-ii](http://www.pggwrightsonseeds.com/crops/herbs/chicory/puna-ii)