

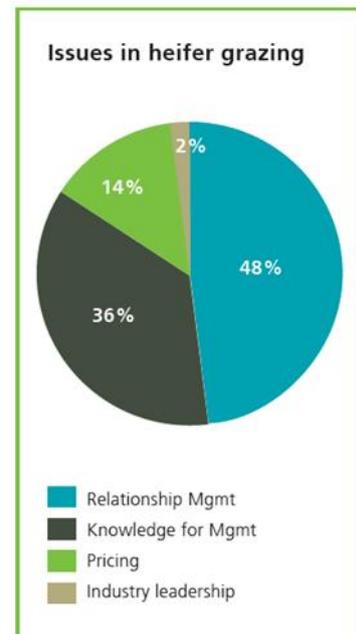
Meeting Heifer Growth Targets

Turning the vision of your herd into reality

Sarah Dirks, DairyNZ

Herd reproductive performance is important for New Zealand farmers because of seasonal calving; it is valuable to get cows milking early and limit the number of empty cows at the end of mating. In 2008 the dairy industry set a target to improve herd reproduction and introduced the InCalf Programme to support the targeted improvements.

The InCalf programme identifies eight aspects that influence herd reproduction, one of which is growing heifers to meet liveweight targets prior to first calving. In 2012 LIC reviewed heifer liveweights in the national database and found that only 23% of animals were within 5% of their liveweight targets, based on Liveweight Breeding Values (Lwt BV). This underperformance will significantly impact herd reproduction and milk production on farm.



In 2013 DairyNZ led a review to try and understand the underlying issues influencing current heifer growth performance. Eight focus groups were set up throughout the country, from Northland to Southland, involving dairy farmers, graziers and rural professionals. Participants were asked to list the top three issues limiting good results. Relationship management was the most frequently mentioned issue, with one of the most common complaints being that stock owners and stock graziers do not have shared expectations of grazing.

Growing heifers to meet targets offers a number of benefits

- **Early calving.** In an Australian study, first service conception rates improved 20% by reaching 60% of liveweight targets at first mating compared to reaching only 50% of liveweight targets.
- **Genetic gain.** Heifer empty rates greater than 10% limit genetic gain.
- **Milk production.** Milk production can be reduced for 3 - 5 seasons if pre-calving liveweight targets are not met.
- **Improved reproduction.** Missing the 22 month liveweight target by 10% could reduce the herd's 6 week in-calf rates by 5%.
- **Lifetime productivity.** Heifers that miss liveweight targets are at higher risk of losing days in milk, not getting in calf at second mating, or being culled for low production.
- **Reduced replacement costs.** Lower empty rates and increasing productive years in the herd reduce the number of replacements needing to be reared each year.

- **Less intervention** is required at their second mating e.g. CIDRs or OvSynch.
- **Fewer animal health and calving issues.** Animals requiring assistance at calving are 10-15% less likely to get in calf.
- **Less environmental impact.** Good herd reproduction improves nitrogen efficiency.
- **Reduced farmer stress.** Poorly managed stock can be quite stressful for farmers.

Key considerations

When considering how replacements will be brought into the herd there are five options:

1. Manage the stock on dairy farm or at a runoff.
2. Contract growing stock to a grazier with a self-managed relationship to deliver stock performance outcomes.
3. Contract growing stock to a grazier through a grazing company that mediates the relationship and manages stock performance.
4. Contract growing stock to a grazier with a third party monitoring stock performance but the relationship is self-managed.
5. Purchase in grown replacements prior to calving.

Liveweight targets

The first step is to set the vision or expectations of the cows that you want to milk by selecting mature liveweight targets. There are three industry agreed methods for setting mature liveweights: liveweight breeding values (Lwt BV), average weight of the mature herd or typing animals and assigning weight by a breed average. None of the methods are perfect and each has its strengths and weaknesses.

Liveweight breeding values	
Strengths	Weaknesses
<ul style="list-style-type: none"> • Objective measure • Best prediction based on genetics • Developed by data from sire proving herds • Accounts for individualised breeding programmes • More accurate for Crossbred herds than breed averages • The majority of animals have a Lwt BV 	<ul style="list-style-type: none"> • Only accessible through MINDA software • Low accuracy on an individual basis or groups fewer than twenty animals • Mis-mothering • Genes are randomly inherited so animals may not have “average” genes • Normal variation is -5% to +5% of the predicted weight • Liveweight is 35% heritable so management can mask genetics • Data will be less accurate for herds with a high proportion of overseas genetics
Average weight of mature herd	
Strengths	Weaknesses
<ul style="list-style-type: none"> • Representative of actual herd • Improves information for the herd e.g. stocking rates, drench rates, mineral dosing • Captures management factors and environmental conditions of the farm system 	<ul style="list-style-type: none"> • Time required to weigh cows • Not every animal will represent “average” • Does not capture recent changes in breeding policies e.g. increased crossbreeding • May set targets too low if mature stock were poorly grown
Typing and assigning breed average weight	
Strengths	Weaknesses
<ul style="list-style-type: none"> • Easily assigned through observation or breed make up (e.g. F10 J6 or F2 J14) • Could be more accurate than herd average weight if animals are typed well • Can be used in the absence of Lwt BV data • Effort to match phenotype with genotype if visually assigned 	<ul style="list-style-type: none"> • Subjective • Variations within a breed • Not every herd represents their breed’s average or individual

Once you’ve chosen a mature liveweight target then liveweight targets by age are:

- 30% of mature weight at 6 months.
- 60% of mature weight at 15 months (mating).
- 90% of mature weight at 22 months (pre-calving).

Relationship management

If you are using a grazier, grazing company or stock manager it is important to communicate your expectations. You may have expectations for growth rates, feeding levels, management of underweight animals or if there are feed shortages on farm, these need to be agreed.

Communication regarding stock management should be honest, two way and on-going. Monitoring needs to occur to have constructive conversations regarding stock performance. The only objective way to measure performance is through regular weighing: 4-6 weekly for weaned heifer calves and up to 8 weekly for R2 heifers.

Regardless of who is managing the stock day to day; as a stock owner, there are four areas that can/will influence whether or not you achieve the results you want.

1. Infrastructure
2. Animal health
 - Vaccinations - which ones and when.
 - Parasite management - monitoring faecal egg counts and drenching.
 - Minerals - timing and deficiencies.
 - Biosecurity/disease control - stock movement and risk management.
3. Feeding
 - Annual feed supply - quantity: stocking rates and supplemental feed.
 - Seasonal feed supply - quantity and quality: achieving growth rates.
 - Emergency feed supply - quantity and quality: overcoming adverse events.
4. Breeding
 - Planned start of mating - ideally heifers will be mated 10 days before the mature herd because, on average, heifers take 10-14 days longer to cycle than mature cows.
 - Mating (bulls/AB) - fertility, disease free, on farm and correct ratios to heifers.
 - Optimising conception rates - achieving puberty and multiple oestrus cycles before mating (target 60% mature liveweight at start of mating).

Economics

Youngstock are a long term investment for the farm business. Growing a heifer from birth to calving is estimated to cost \$1,400 to \$2,000 per animal. Expenses vary based on feed availability, stocking rate, and animal health requirements. If using a grazier, fair payment will reflect achieved performance and the service provided (i.e. animal health, weighing, guarantee of performance, etc.). There are four standard methods used to pay for grazing:

1. Price per head per week. This is the most commonly used method but runs the risk of not rewarding good performance and overvaluing poor results. The only way a grazier can increase their income is to either lift prices or increase stock numbers.
2. \$ per kilo of liveweight gain. This is the second most frequently used payment method. However, graziers have found that this method significantly increases their risk - particularly during adverse events. \$/kg liveweight gain doesn't value the expense of maintenance feed and there are times when feed is more expensive than the return of the weight gain. \$/lwt gain billing is less straightforward and returns from grazing are less transparent.
3. Base rate plus a bonus. This method, typically, combines the price per head per week with a bonus for meeting or exceeding targets. Bonuses are either on a kilo of liveweight basis or a fixed bonus of \$/head.
4. Price per kgDM consumed. This can be an underlying consideration for the three previous pricing models, however, this method formalises the amount of dry matter consumed and back calculates energy costs from an animal's liveweight gain. The benefits are that the grazier is paid for maintenance and weight gain and any fed supplement can be easily charged. The downsides to this payment method include: can be difficult to administrate, cashflow fluctuates and feed value changes by season.

More information and resources for heifer management can be found at:

- Feeding: DairyNZ and Beef + Lamb NZ.
- Targets: DairyNZ and LIC.
- Relationship management: DairyNZ, Federated Farmers and grazing companies.
- Farm systems: DairyNZ and farm consultants.
- Mating: DairyNZ and vets.
- Economics: DairyNZ, Beef + Lamb NZ and grazing companies.
- Technology: LIC, NAIT and scale companies.
- Stock movement/biosecurity: Vets and DairyNZ.

Farmer case studies

Nick Palairet - dairy farmer, Waikato



Background

Nick grew up on a dairy farm on Candy Road near Pokuru, Te Awamutu. After finishing school he completed a Bachelor of Applied Science at Massey University and had a short employment with Dexcel after graduation. Nick moved to rural banking and worked for ASB in the Waikato for seven years, during that time he married his wife Jo and they now have three girls. After banking Nick worked for DairyNZ as a Regional Leader and for Pioneer as a Farm Systems Specialist, while living in the Te Awamutu area. Three years ago Nick and Jo purchased their first farm in partnership with Nick's parents and had a manager for the first two seasons, but have worked as owner-operators for the 2014-15 season.

When the Palairets purchased the farm they strategically selected a herd focusing on high BW stock within a defined budget. The herd currently has a BW of 160 and a PW of 207; nationally the herd ranks in the top 5% for BW and the top 3% for PW. The mating strategy is to use nominated Friesian and Crossbred semen based on the selection criteria of: BW, fertility, udder and capacity. Surplus replacements are reared targeting revenue from stock sales for the high genetic merit animals.

Targets for young stock

- Grown to at least 90% of their mature Lwt BV - both mob and individuals.
- 90% of the individuals up to target, to prevent a tail end of stock weights and reduce animal wastage.

- Calve early to tighten up the herd calving spread - heifers currently calve 3 days earlier than the herd, but they are moving to 10 days earlier next season.
- 90% of animals reared as calves return home with 5% or less empty over a 10-11 week mating period.
- Lift genetic gain of the herd by synchronizing heifers and using AB this season. At a cost of \$300 per heifer calf on the ground (45-50% in-calf to AB) there is no way that you'd be able to purchase animals of this genetic merit for a similar cost.
- Target for grazier: double the weights from arrival (May to May).

Palairt farm details

District	Paterangi, Te Awamutu
Dairy farm area	66ha
Dairy effective area	61ha
Soil type	⅔ ash ⅓ sandy loam
Contour	Flat to gentle rolling
Pasture species	Ryegrass/white clover
Herd size	200 cows peak milked 2014-15 season
Stock numbers	
R1 heifers	58 from November to 1 May
Winter R2 heifers	53 from 1 May to July
Cropping	4.2ha of turnips (15 Jan-31 March) 3.4ha maize, 65 bales silage made on farm (development/drainage)
Feed made on farm or purchased	System 4 last season back to System 3 this season 1.4 t/cow last season 120 units N/ha <ul style="list-style-type: none"> • 120 t PKE • 18 t maize • 21 t grass silage • 15 t hay • 30 t winter grazing
Runoff	Area allocated to heifers: 7.5ha lease block on a year by year lease, borders dairy farm Rolling ash/loam soils, subdivided into 13 paddocks

Using a grazing company versus personal management

Nick originally used a grazing company to reduce the risk of getting undergrown heifers, however it wasn't cheap and in the end it didn't return good results. This season they switched graziers and moved to a self-managed relationship, but Nick would still be open to using a grazing company if this doesn't work out.

Previous results from using the grazing company:

- 2012 born line: last season heifers only gained 7kg from the 9 Jan 2014 until they came home on the 1 May 2014 - the mob averaged 416kg on return:
 - Nick had told the grazier: "I want to write you out a big fat check at the end of the year (for weight gain)" but action wasn't taken.
 - Nick offered to buy PKE and troughs to feed out to stock on the 20th March but the grazier preferred to feed out grass silage, which was poor quality.

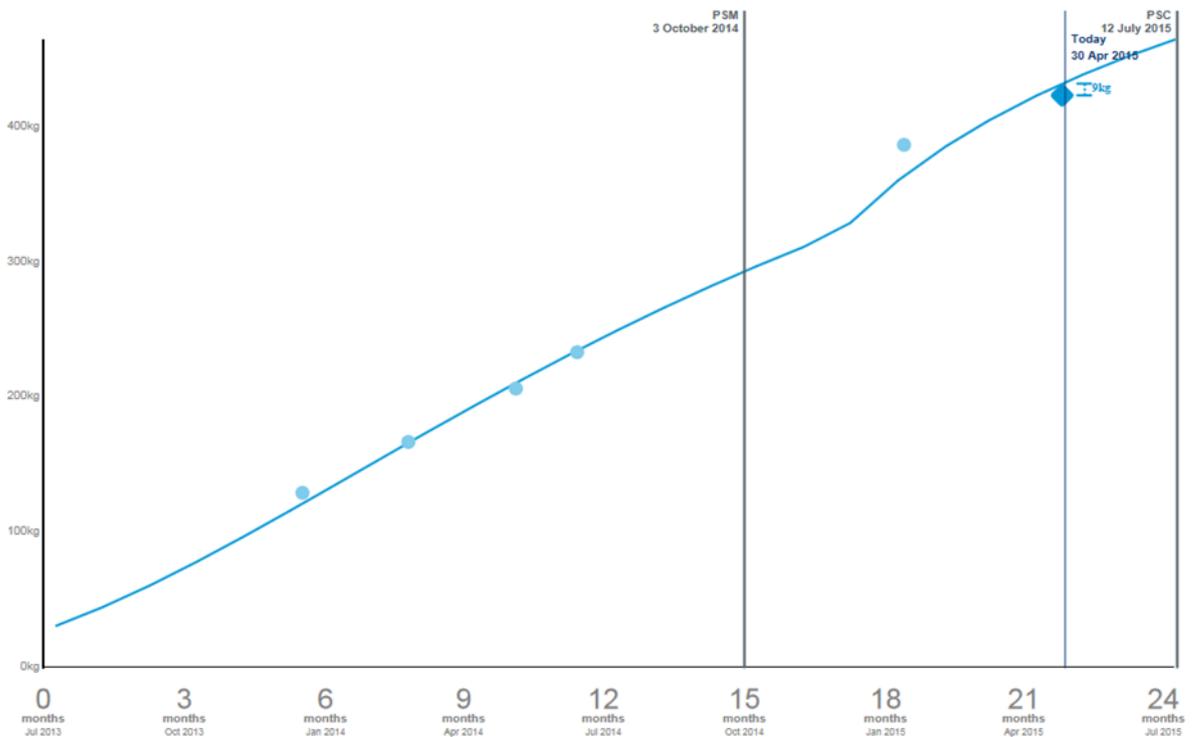


Figure 1. 2013 born line. Average mob weight over time - 30 April 2015, 9kg below target.

- 2013 born line went off the farm at an average of 126kg at weaning (40 out of 55) and weighed 203kg on 1st May 2014.
- Although the 2013 born animals had a check when they left the dairy farm they were healthy and well grown going into mating. Mating results were 38% empty with three heifers put down, two because of broken legs and another because of facial eczema.

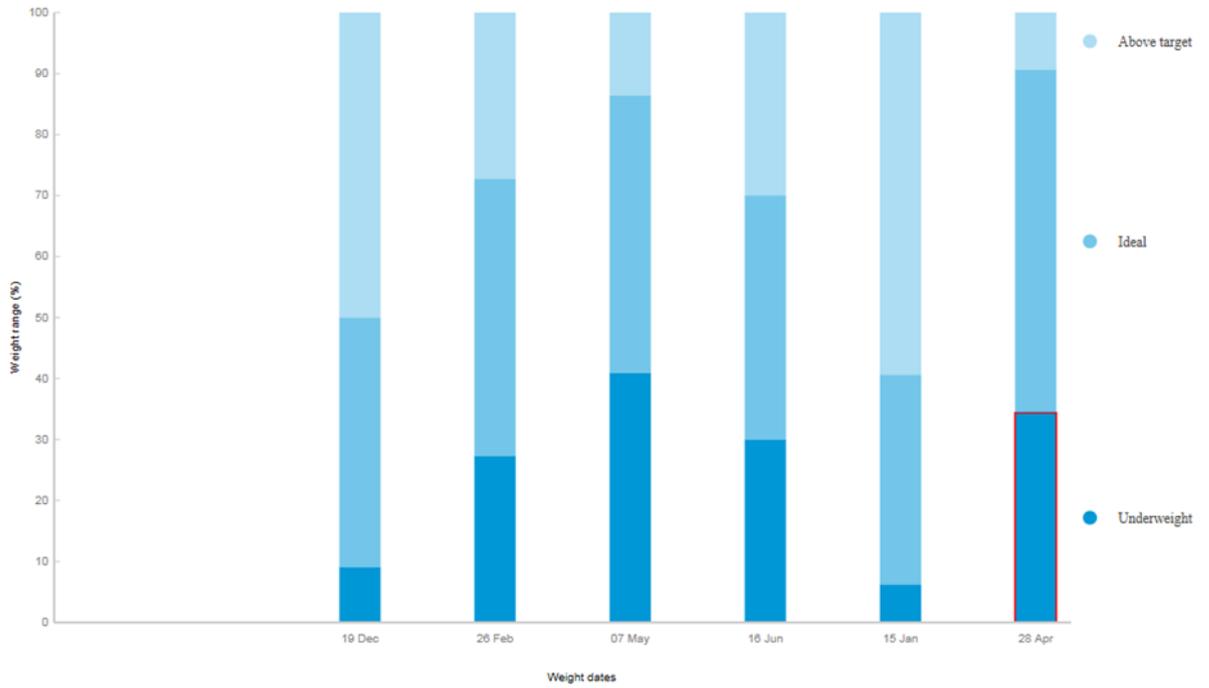


Figure 2. 2013 born line. Percentage of mob compared to Lwt BV targets.



Figure 3. 2013 born line. Individual heifers compared to Lwt BV targets and rate of gain at last weighing.

Key points for relationship management

- Both sides have to buy in to results via a written agreement, including “silly things” like the freedom to view heifers and how often.
 - The grazing company gave verbal confirmation that stock could be mated to AB but when mating came around they said it wasn’t possible.
- Grazing agreement needs to be read, agreed and signed.
- Have an agreed decision making or management process for unforeseen circumstances, like drought or poor performing stock.
- If you’re working with a grazing company they should reduce the risks by identifying sick or underperforming stock early and use weight data to change management.
- Instead of being helpful, third parties can be a road block to communication and clarifying expectations with the grazier.

What Nick now looks for in a grazier:

- Farmer who has built heifer grazing into their farming operation as part of their system and takes pride in stock performance.
- A person who provides on-going communication and no surprises during stock visits.
- Someone that passes a “due diligence” process (talk to carrier firms about new grazier and the stock that had left the farm).

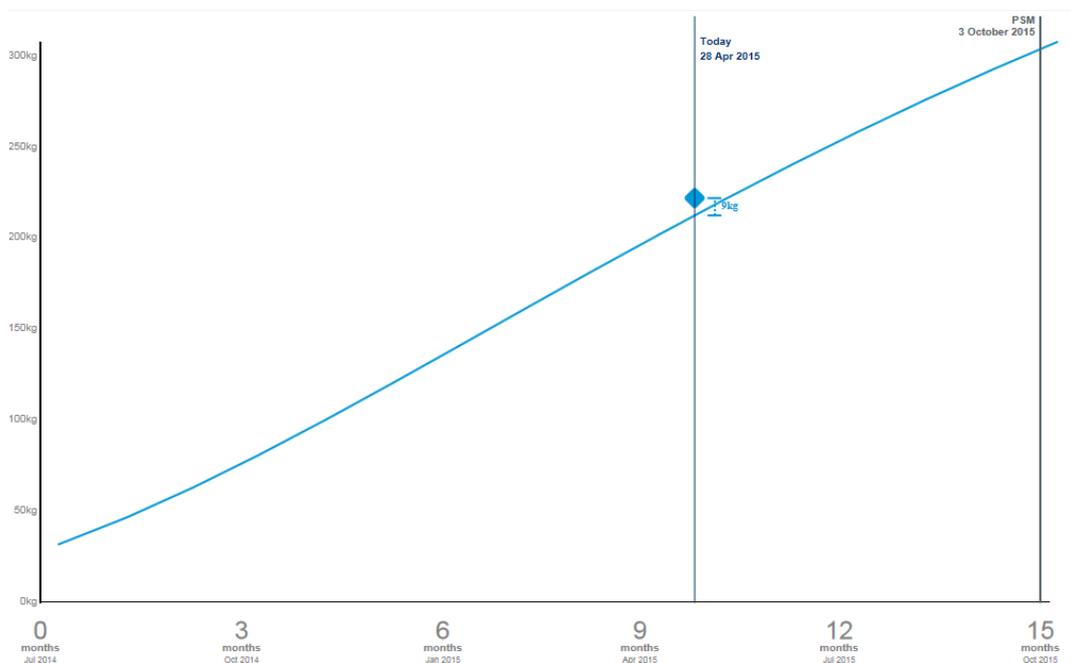


Figure 4. 2014 born line. Mob weight on 28 April 2015 –9kg above target.

This season's payment system:

- \$2.30/kg liveweight gain - includes animal health: drenching, minerals and eczema treatment (spraying farm and putting zinc in water), as well as weighing (6 times a year).
- Yarding fees for AB.
- Bull grazing during mating - \$10/head/week.
- Agreed one month of silage will be provided after drought is declared and any feed used over and above that the costs are split 50:50 while still paying weight gain.

Management observations

- Stock need to arrive at the grazier in the same condition that they should come back.
- Keep animals at home that are unwell or aren't up to target weights.
- The weaning to R1 stage is the most difficult stage to manage.
- Even under personal management the R1s have needed meal or PKE every month, but one, since weaning off milk to meet target weights.
- Late born calves were weaned 10th January at 130kg; no weaning check at that weight!

Challenges of growing stock well

- There is no respite for heifer growing - from when they hit the ground until they calve in the herd you have to be on your game with management.
- You take your eye off the ball and suddenly they've fallen behind target.
- A lot of work:
 - o Feeding milk and meal is an on-going job.
 - o It's easy to think: "I can't be bothered".
 - o Harder as a small herd farmer because you're doing all the work yourself.

Nick's seasonal management

Summer

- Monitor worm burdens and parasites.
- No hungry days.
- 1st January start monitoring for eczema (trough treatment).
- Only one month that heifers weren't fed supplemental feed.

Autumn

- When the grass starts growing after a drought heifers can't physically eat enough to meet growth targets because of low dry matter feed.
- Carry on feeding supplement even after pasture lifts.
- Drop out PKE to prepare them to shift to grazing.

Winter

- Visits on a regular basis - monthly.

Spring

- Fertility test bulls for \$100/head.
- Four bulls to 58 heifers.
- Make sure animal health plan is completed with minerals.
- Check small animals in the mob are up to mating weights.
- Let bulls adapt to the farm prior to mating.

James Burke – grazier, Bay of Plenty



Background

James grew up in Tauranga and after finishing school worked in the kiwifruit industry where he spent a year on the Gold Coast planting an orchard and surfing. After returning to New Zealand he worked for eight years on a sheep and beef farm near Katikati, and during that time completed a Bachelor of Applied Science in Agribusiness. After a short stint with the BNZ he has been managing the current 500ha property for Rick and Rose Powdrell of Te Puke for the last two years.

The Powdrell farm is a third generation sheep and beef unit located up the top of Rangiuru road. Rick and Rose have acquired a large part of the farm themselves and run it in conjunction with a family trust block. Rick has longstanding grazing relationships with his sister-in-law and some close neighbours. He has had a strong involvement in Beef + Lamb NZ and Federated Farmers over the years and is currently the Chairman of Meat and Fibre for Federated Farmers.

Heifer targets

- Use targets from current *DairyNZ Facts and Figures*.
- Targeting 200kg of weight gain from May to May.
- Increase farm income from dairy grazing by moving from per head per week rates to liveweight gain contracts.

Powdrell farm details

District	Rangiuru, Te Puke Approx. 180m above sea level
Rainfall	1900 mm/yr
Farm area	500ha 50ha Maori lease, 132ha family trust, 258ha R & R Powdrell's
Effective area	440ha 58 paddocks averaging 7.5ha/paddock
Soil type	Oropi and Kaharoa Sandy Loam
Contour	Rolling with some steep gullies and sidlings
Pasture species	Ryegrass/white clover
Stock numbers	5,100
Heifers	123 R1 Jersey - 123 R2 Jersey 146 R1 Crossbred - 234 R2 Crossbred
Ewes	2,200 Romney, scanned 156%
Ewe hoggets	520
Rams	36
R2 steers	50
Carry over cows	28
Cropping	Plantain for lambs
Feed made on farm or purchased	25-35ha of grass silage each year

Why dry stock farmers are doing more dairy support

- Safer stock to have on farm than bull finishing.
- Guaranteed paycheck each month.
- Good cash flow
 - o Payment schedule.
 - o Calf grazing \$5.50/head/week starting in December, increasing 50c a month until April - \$7.50/head/week.
 - o R2 heifer grazing moved from \$8.00/head/week with weight gain bonus to \$2.00/kg liveweight gain.
 - o Returns on heifer grazing range from 18c-22c per kgDM of pasture.

- Returns aren't necessarily better than a high performance sheep and beef finishing operation, but provide consistent returns to the farmer.

Management observations of growing dairy heifers

- Liveweight gain contracts are more motivating for performance.
- Highest risk feed period on this farm is winter because paddocks are large and there is only one water source in each paddock so mobs can't be back fenced.
- Beef animals easier to satisfy with feed and clean up better - can be used as a clean-up mob with heifer grazing.
- Meal sent with newly arrived weaned heifer calves can aid the relocation process.
- Graziers need a right of refusal for stock so they have healthy and well-grown stock to start with.
- Calves need to be weighed more often, i.e. monthly for weaned heifer calves, and R2 heifers are weighed 6 weekly.
- If animal health is left to dairy farmers it doesn't always get done on time, to the inconvenience of the grazier and detriment of the animal.
- Weight gain contracts should have the grazier administer an agreed animal health program.

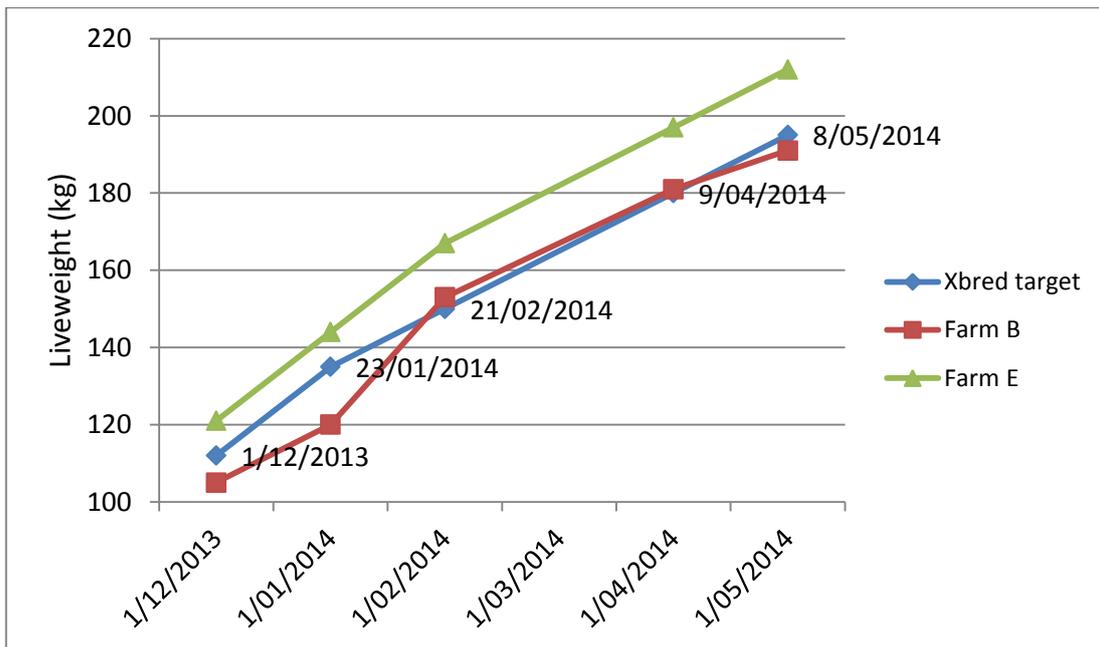


Figure 5. 2013 born Crossbred lines growth over first year.

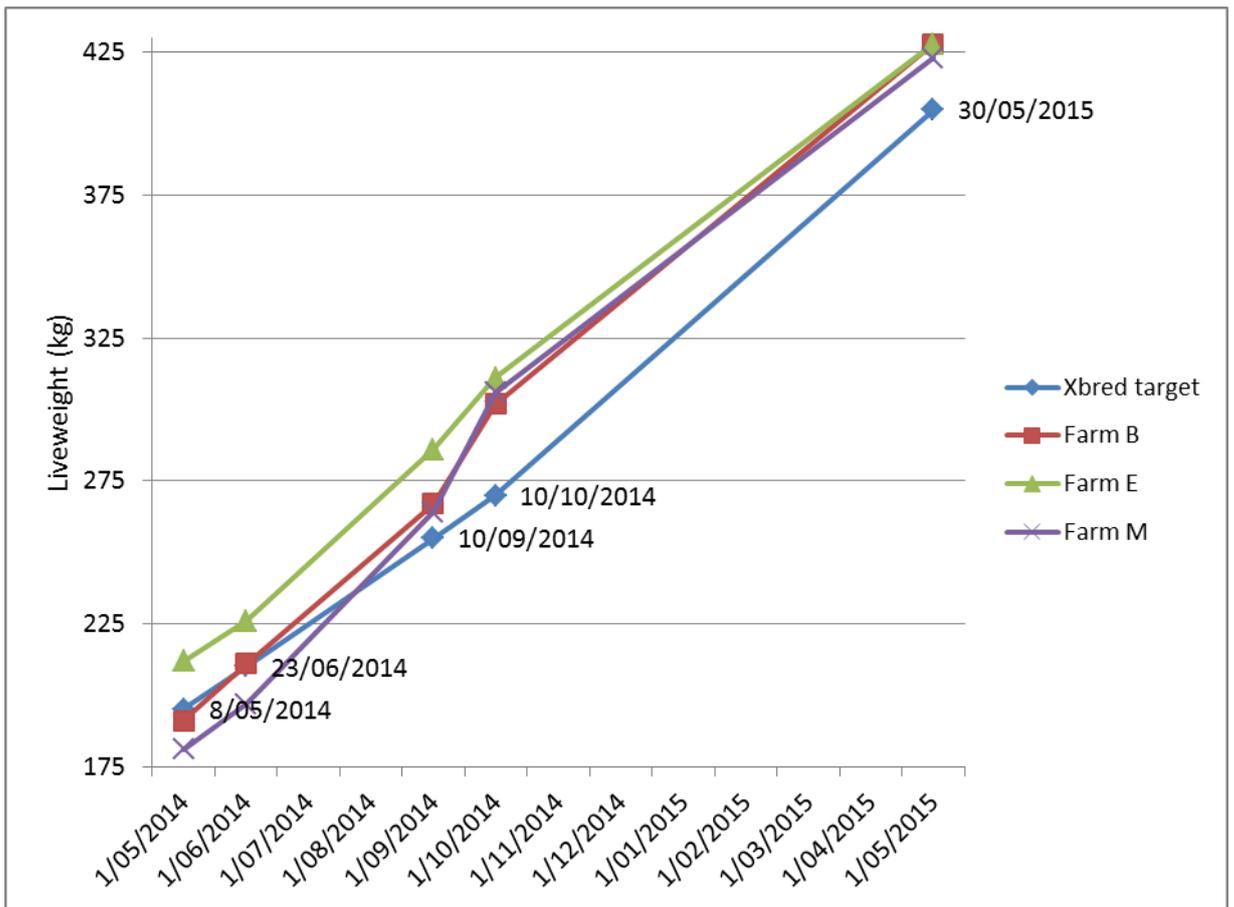


Figure 6. 2013 born Crossbred lines growth over second year.

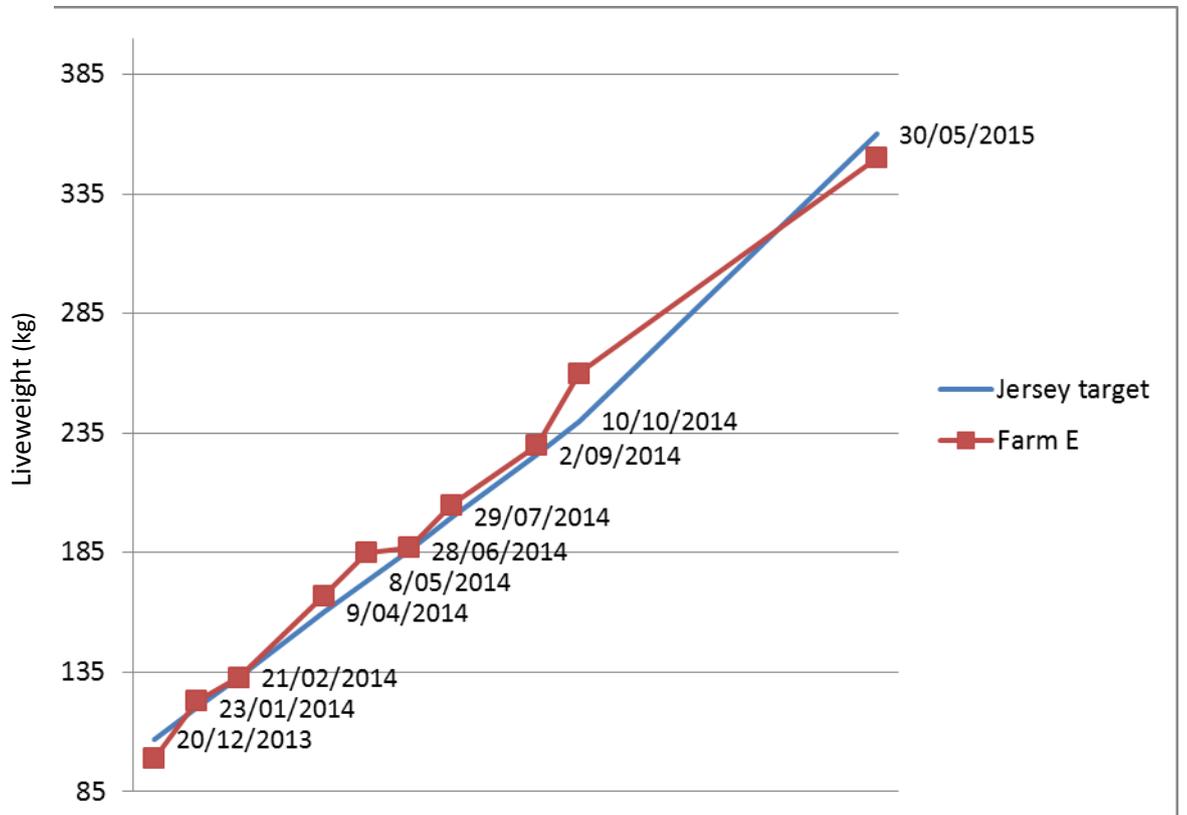


Figure 7. 2013 born Jersey lines growth.

Challenges of growing heifers well

- Jerseys are finicky and stomp their feed into the ground over winter.
- Dry summers and feed shortages.
- The number of animals (entire mobs) that arrive onto the farm behind target.
- Farm specific experiences:
 - o Stock that arrived with *Yersinia*, the whole group was a hospital mob.
 - o This season stock arrived with ryegrass staggers.

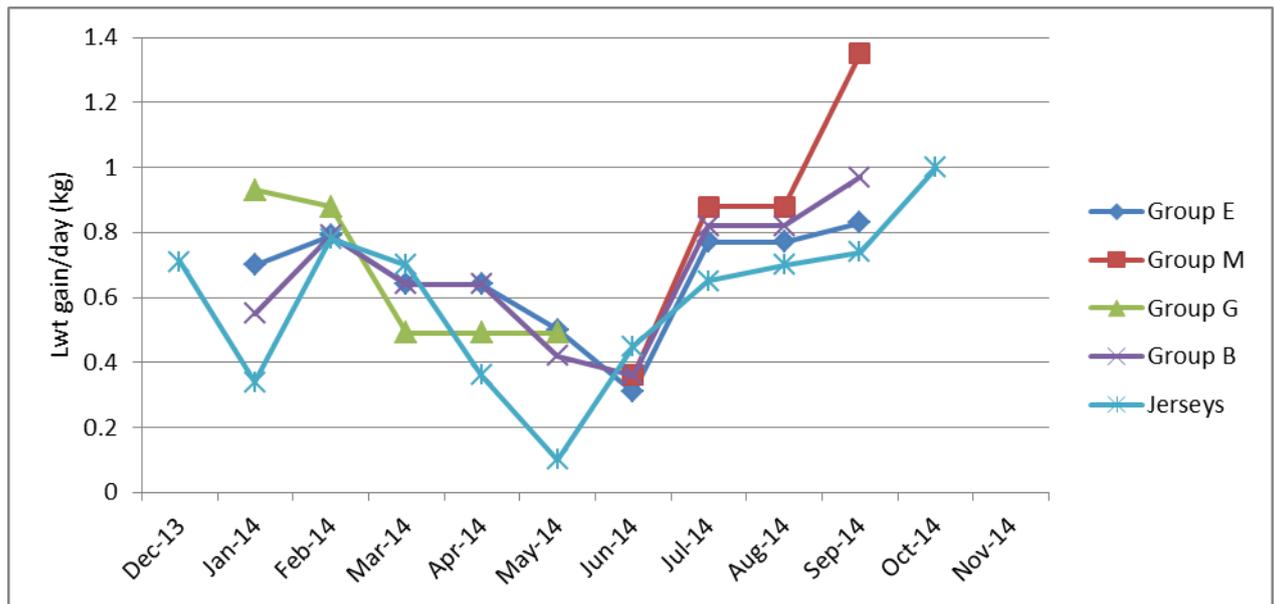


Figure 8. 2013 born lines liveweight gain per day.

James' seasonal management

- Annual fertilizer program and soil tests every 3 years.
- Agreed animal health plan with vet and basic drenching program.

Summer

- Focus on putting calves on highest quality feed.

Autumn

- Monitoring for parasite risk.
- Monitoring for eczema risk.
- Treat with copper because of deficiencies in the area.
- Nitrogen applied to build pasture cover.
- Start feeding out silage.

Winter

- Move to break feeding mobs.
- Continue feeding out silage.
- R2s stay on for winter grazing.

Spring

- Finish feeding out silage.
- Stock owners supply their own bulls for mating.