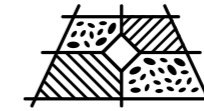


INNOVATION
FARM PROGRAMME

2012-16





**INNOVATION
FARM PROGRAMME**

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How the Innovation Farm Programme works

The Innovation Farm Programme showcases innovation and puts new science to the test.

Innovation Farms are intended to showcase a narrow category of farming activity rather than taking a whole-farm approach. For example, an Innovation Farm may be forage-specific or production-specific by either sheep or beef.

The programme is aimed at farmers who want to help identify tools and practices that result in real financial improvements.

Innovation Farms are likely to be technical in nature and involve unproven or new-to-market technologies. The Innovation Farm programme is 'innovation in practice' and carries some risk of not being successful.

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Focusing on feeding

When Blair (Munta) and Anna Nelson's neighbours started converting their land to dairying, the couple were forced to consider their land-use options.

The couple, who have three children, farm 1100 ha at Aria in the King Country. They wanted to continue sheep and beef farming, but to make their flat country competitive, they knew they had to lift production and profitability to another level.

Through Beef + Lamb New Zealand's Innovation Farm programme, they sought to lift profitability on their cultivable land by \$200/ha. To do this they focused on growing specialist forages on their cultivable country.

Initially they grew plantain, but found the plant did not suit their system. They struggled to get clover established into the plantain sward and battled with both plantain moth and low nitrogen levels.

With the aim of getting more clover into their forage crops, the couple grew red clover with the intention of over-sowing the crop with plantain once it was established. But the clover grew so well that they chose to leave it as a pure sward.

It grew 4 tDM/ha more than the pasture it replaced which generated average post-weaning lamb growth rates of 240 g/day.

While primarily used for lambs, this feed was also used for growing out hoggets and this had a profound effect on their farm system.

This saw these sheep, as two-tooths, outperform their mixed-age ewes in scanning and lambing percentages as well as in weaning weights. They believe that this focus on feeding in the first summer sets the potential for the life-time performance of their Coopworth Romney ewe flock.

To realise the productive potential of their 3800 ewes, the Nelson's are now striving to feed them evenly throughout the year. This, along with regular monitoring of body condition scores, has made the biggest difference to their farm system.

Anna explains that by focusing on fully-feeding ewes, they have been able to target a lamb weaning weight of 34 kg – up from 29 kg – and this heavier weaning weight has given them more options for selling or finishing lambs.

Maintaining ewe body condition at a score of 3-3.5 has also resulted in a reduction of ewe and lamb losses and saw the weaning percentage increase from 140-157% over four years.

The sheep are run alongside 300 breeding cows (including first calvers) and their progeny which are finished and 560 R2 Friesian bulls.

Setting targets

As part of the Innovation Farm programme, the couple worked with AgResearch Scientist, David Stevens, and FARMAX's Graeme Ogle to set their initial gross margin target of \$900/ha (up from \$700/ha). They then broke this down to smaller targets around increasing animal performance in order to achieve this lift in profitability.

Key performance indicators were used to help them track progress and these included mating weights, weaning percentages, overall losses of both ewes and hoggets, lamb growth rates, sale dates and value per head. Anna and Munta also gained a good understanding of how much drymatter they were growing and utilising.

Hogget productivity

Some of the greatest gains have been made in the Nelson's hogget performance. The red clover has allowed them to lift the mating weight of their hoggets from 39 kg to 49 kg and their lambing percentage increased to 96%.

Fine-tuning

Anna says they have been surprised at how hard it was to achieve what they set out to achieve.

They are spending a lot more on cropping – \$105,000-\$106,000 per annum compared to \$48,000 in their old system – but this system change generated an extra \$79,000 in 2014/15 and \$145,000 or \$131.80/ha in 2015/16.

“IT TOOK A LOT OF FINE-TUNING – BUT THAT’S WHAT MAKES THE DIFFERENCE IN GETTING MOST OUT OF YOUR FARM.”

This extra income is a result of the cumulative effect of an increased lambing percentage in both ewes and hoggets, increased lamb carcass weights and a shift in mean slaughter date by over a month earlier.

The couple stress the value of feeding young sheep, irrespective of whether they are mated or not. They need to reach a target two-tooth tugging weight, which for the Nelsons, is the same target as the mixed-age ewes.

They say red clover suits their system, and while it can be complicated to manage, it is helping them achieve their animal production goals.

Some of the challenges they have encountered in the four-year programme include under-performing forages, pests and weeds and determining the best crop rotation.

AIM

To lift profitability on their cultivable land by \$200/ha using forages.

FINDINGS

- » Plantain did not suit their system.
- » A pure sward of red clover grew 4 tDM/ha more than the pasture it replaced.
- » Red clover drove lamb growth rates of 240 g/day.
- » As two-tooths, hoggets grown out on red clover outperformed mixed-age ewes.
- » The red clover cropping system required more intensive management – but was financially worth it.

CONCLUSIONS

By using a forage crop – namely red clover – the Nelsons' generated an extra \$145,000 or \$131.80/ha of income. This was through an increased lambing percentage in both ewes and hoggets, increased lamb carcass weights and a shift in mean slaughter date by over a month earlier.





AIMS

» To lift productivity and profitability in their sheep and beef business by examining four aspects of their business; grain-assisted cattle finishing, orphan lamb rearing, triplet management and early weaning lambs.



Leading with pride

Matt and Lynley Wyeth are unequivocal about what they strive to achieve within their sheep and beef business.

Their mission is to produce a top quality, succulent eating experience that is ethically grown and sustainably produced.

They are determined to remain in the top 10% – and at the leading edge – of their farming class and are not afraid to push the boundaries to see what is possible to drive performance and profitability.

Fiercely proud sheep and beef farmers, they believe the sheep and beef industry has a great future, but needs to find ways of doing things better.

“WE NEED TO BE INNOVATIVE AND ADAPT TO CHANGE.”

Beef + Lamb New Zealand’s Innovation Farm programme was a natural fit for the Wyeth’s who are focused on finding efficient ways to produce more product.

They had questions around four areas of their business; these were grain assisted cattle finishing, orphan lamb rearing, triplet management and early weaning lambs.

In a typically ambitious way, they embarked on projects looking at every one of these, which were all about lifting productivity and profitability.

Detailed financial analyses were carried out for each project to determine the feasibility of the management changes.



FINDINGS

- » Grain improved liveweight gains.
- » Must be used to fill dietary deficits in a feed crop rather than as a supplement.
- » Crops need to be tested for their nutritional value.

CONCLUSION

Grain proved a cost-effective way of driving growth rates in cattle provided it was used to fill nutritional gaps, not as a supplementary feed.

PROJECT ONE *Grain assisted cattle finishing*

This project was set up in response to the challenge of getting cattle finished in time to meet processor contract requirements.

Autumn drought conditions can mean lower than expected cattle growth rates going into winter, so the Wyeth’s wanted to see if grain could be used to assist winter feed crops in helping lift weight gain. The premise being that the grain would fill any dietary deficits in the crop.

The couple monitored the effect of a grain-assisted diet on cattle liveweight compared to a control mob fed the same winter feed crop. Both groups were fed hay and this made up 1 kgDM/day of their diet.

Over three years the treatment group grew at an average 1.305 kg/day while the control group grew at 0.776kg/day. This means the cattle in the treatment group grew at over half a kilogram faster than the control.

Matt and Lynley stress that the system is grain assist – not supplementary feeding. This means the crop needs to be tested and dietary deficiencies identified to ensure the concentrate is filling a nutritional gap.

The return of investment ranged from 27% in the first year to 187% in year three. This reflected changes the price of grain, the cost of growing the crop and liveweight gains which improved throughout the three years.

PROJECT TWO *Indoor triplet management*

With a focus on improving lamb survival, the Wyeth’s identified the most vulnerable stock-class – triplet bearing ewes – and set up system to remove bad weather as risk factor.

This meant bringing these ewes indoors to lamb.

To do this they needed to establish – and adhere to – stringent protocols around animal health and welfare.

Triplet-bearing ewes were identified at scanning and introduced to a feed concentrate.

Three weeks before lambing they were reintroduced to the feed. This ensured the ewes were eating the concentrate before entering the pre-lambing pens in the shed. The

average stay in these pens was six days. Once the ewe had lambed she was put into an individual “bonding” pen before being moved into mixing pens and then back out to pasture.

Matt and Lynley admit the programme was a team effort, with everyone required to maintain very high standards of hygiene and cleanliness, particularly important in the individual pens.

The biggest costs in this system are feed and labour. Costing between \$22,900 and \$27,154, the system generated a profit of between \$9,213 and \$12,450.

The financial outcome was significantly influenced by lamb survival.

FINDINGS

- » Lambing triplet-bearing ewes indoors generated a profit of \$9,213-\$12,450.
- » The greatest costs were feed and labour.
- » The average stay in the indoor pens was six days.
- » The system requires high standards of hygiene and cleanliness.

CONCLUSION

Although labour intensive, an indoor triplet management system proved to be economical but required strict adherence to animal health and welfare protocols.



FINDINGS

- » There was no growth penalty to weaning lambs early.
- » The practice allowed cull ewes to be sold earlier.
- » Early weaning gave ewes more time to recover body condition and this was reflected in an increased scanning.

CONCLUSION

Early weaning is a valuable management strategy. While feed was the biggest cost, this was more than off-set by an increase in ewe scanning percentages.

PROJECT THREE *Early weaning project*

There are a number of advantages to weaning lambs early. These include being able to partition high-quality feed into growing lambs, selling cull ewes early and allowing ewes more time to recovery post-weaning body condition.

The Wyeth's undertook a trial comparing the performance of early weaned and normally (90 days) weaned lambs over three years.

This trial included lambs reared in their orphan and indoor triplet management systems.

The programme proved the value of early weaning and there was ample evidence, gathered from weighing and carcase weight data, to confirm that early weaned lambs were not disadvantaged in terms of lifetime weight gain.

There was strong evidence to suggest that early weaned lambs grew faster after 90-100 days than lambs weaned at that time.

The concentrate feed was the biggest cost, but this was more than off-set by the increase in scanning in the ewes that had been weaned early. This was between 8 and 14 per cent.

PROJECT FOUR *Orphan lamb rearing system*

In keeping with the Wyeth's philosophy of giving every lamb the best chance of survival, the couple set up an orphan lamb rearing system.

Used for lambs born outdoors and in the indoor triplet management project, the Wyeth's sought to rear 300 orphan lambs at a cost of \$34-\$40.

Lambs coming into the shed were given remedial treatment and colostrum for the first five days of their life. They then went onto powder for five days before going onto full milk replacement powder until weaning.

The lambs move through the shed, going from four feeds a day to

two feeds. They then go out into a paddock and receive one feed a day until weaning.

To work efficiently, this system needs dedicated staff, adherence to strict animal health protocols and access to milk from dairy farms.

The costs per lamb ranged between \$32.78 and \$55.06 depending on variables such as cost of milk powder, vet and drug costs and feed concentrate. The profit per lamb ranged from \$5.92 to \$39.22.

While labour intensive, (labour costs were taken into account) the system did save a number of lambs that otherwise would have died.

FINDINGS

- » It costs between \$32.78 and \$55.06 to rear an orphan lamb to weaning.
- » The system required dedicated staff, adherence to strict animal health protocols and access to milk from dairy farms.
- » Profit ranged between \$5.92 and \$39.22.

CONCLUSION

While labour intensive, an orphan lamb rearing system did generate a small profit and had significant animal welfare advantages.



Fine-tuning a sheep and beef system

Wanting to fine-tune an already high performing sheep and beef operation motivated Andrea and Warren Leslie to turn the spotlight on two components of their business.

Through Beef + Lamb New Zealand's Innovation farm programme, the South Canterbury couple wanted to maximise sheep production by achieving a scanning of 200%-without triplets. They aimed to do this by selecting and retaining twin-bearing ewes - and assigning single and triplet-bearing ewes to a terminal sire or cull mob.

A second sheep trial looked specifically at mated hoggets and sought to identify where - between mating and weaning - lamb losses occurred.

Cattle, both beef finishing and dairy support, are an important part of their business and the couple sought to economically maximise winter growth rates in both these classes using fodder beet as a base feed and tweaking supplement use, particularly crude protein. Part of this trial was determining whether, by using fodder beet, beef finishing could be economically competitive with dairy grazing.

Andrea and Warren farm 600 ha of rolling country between Fairlie and Timaru. They run 3000 composite ewes and 1100 hoggets along with 225-240 dairy support and 100 trading cattle.

Maximising sheep production

Twin-bearing ewes were identified in year one of the project. They were EID tagged and drafted into an "A" flock so the number of lambs they produced could be monitored over the three year programme.

Twin lambs from these ewes were also EID tagged and their scanning was monitored as a hogget, two-tooth and four-tooth.

Any animal that scanned single or triplet were moved into the "B" flock.

Over the three years the Leslies did reduce the number of triplets, but increased the number of single-bearing ewes. This could have been a function of factors such as climate and ewe condition rather than the selection policy. They found the proportion of ewes scanned with twins remained static.



AIMS

- » To maximise sheep production by scanning 200%-without triplets.
- » Identify where, between mating and weaning, lamb losses occurred in mated hoggets.
- » Use fodder beet and supplement to maximise winter growth rates in beef finishing cattle and dairy heifers.

FINDINGS

- » Selecting and retaining twin-bearing ewes to breed replacements, while assigning single- and triplet-bearing ewes to a terminal sire or cull mob did not increase the number of twin-bearing ewes.
- » In mated hoggets, there were few losses (2.2%) between conception and birth, with most losses occurring between birth and tailing. A further 4% died between tailing and weaning.
- » In the cattle trial, fodder beet proved most economic when fed with minimal silage.
- » They found beef was competitive with dairy grazing when the beef cattle grew at an average of 800gms/head/day. In the dairy grazers, they found the most economic fodder beet-based diet was 70% fodder beet, 15% silage and 15% straw. The majority of dairy grazers grew at 500gms/day on this diet - which had a crude protein content of 10% - and there was no benefit in providing extra protein.



Hogget-lamb wastage

As part of the Maximising Sheep Production trial, the Leslies were trying to pin-point where most lamb wastage occurred in their mated hoggets.

They EID tagged 1100 hoggets and these were scanned fortnightly from conception to 80-days post-conception. Losses from birth to weaning were also monitored along with liveweight of hoggets pre-lamb and at tailing.

They found there were few losses (2.2%) between conception and birth, with most losses occurring between birth and tailing. A further 4% died between tailing and weaning.

Monitoring showed the hoggets did lose bodyweight between lambing and tailing.

Optimising fodder beet feeding

Over the first two years of the three-year trial the Leslies trialled various feed and supplement mixes on three mobs of beef and dairy cattle - some mobs were mixed, others were straight dairy grazers.

While fodder beet was the baseline forage crop, the trial looked at various transition strategies - such as using rape and grass and kale as transition feeds, as well as the use of supplements such as grass and oat baleage, straw, lucerne baleage and a protein lick block.

Cattle were weighed regularly throughout the trial, and forages and supplements were analysed to calculate the average crude protein and energy content of the feed offered.

Results in the first two years showed that fodder beet was most economic when fed with minimal silage. Warren and Andrea then sought to compare growth rates in Murray Grey heifers with two mobs of dairy grazers all offered a diet of 70% fodder beet, 15% grass baleage and 15% hay or straw.

The costs of crop establishment were recorded along with stock growth rates. Grazing rates and sale price per kilogram were also analysed to determine whether beef finishing was economically competitive with dairy grazing.

They found beef was competitive with dairy grazing when the beef cattle grew at an average of 800gms/head/day.

In the dairy grazers, they found the most economic fodder beet-based diet was 70% fodder beet, 15% silage and 15% straw. The majority of dairy grazers grew at 500gms/day on this diet - which had a crude protein content of 10% - and there was no benefit in providing extra protein.

A proportion of the dairy cattle - around 10% - did not do well on the fodder beet and had to be offered an alternative forage over winter.

OVER THE THREE YEARS THE LESLIES DID REDUCE THE NUMBER OF TRIPLETS, BUT INCREASED THE NUMBER OF SINGLE-BEARING EWES.

CONCLUSIONS

While developing a strategy to increasing scanning percentages without increasing the number of triplets remained elusive, the Leslies' identified that most lamb losses in mated hoggets occurred between birth and tailing. They found fodder beet fed with minimal silage was the most economic fodder-beet based diet for cattle and beef was competitive with dairy grazing when the beef cattle grew at an average of 800gms/head/day.



Eye in the sky

AIM

Demonstrate how drones could be incorporated into an everyday sheep and beef operation.

FINDINGS

- » The drone was particularly valuable at monitoring stock on hill country. It was used for finding cast ewes and checking ewes at lambing. The drone saved the Gardyne family significant amounts of time and fuel.
- » It proved valuable for checking water troughs.
- » In a proof-of-concept exercise, a sward stick attached to the leg of the drone allowed pasture covers to be measured remotely.

CONCLUSIONS

The drone proved to be a valuable farm tool, saving time, money and reducing the risks of accidents. While the Gardyne family found its immediate value to be in everyday farm monitoring, they believe the possibilities for on-farm drone use are endless.

When the BBC's Natural History unit turns up at your farm, you know you must be doing something of interest.

Pip and Neil Gardyne recently played host to the BBC who were interested in both the scenery on the couple's Southland farm and how the family were using a drone as a farm management tool.

Drones have proved to be life-changing for the family. The way they have adapted the aerial technology for use on their 466 ha farm has captured the attention of the world's media, agricultural scientists and most importantly, technologically-savvy young people considering agriculture as a career option.

In a recent TED Talk, Neil said the most important message to come out of the drone story was that we are connecting technology with food production and making agriculture an attractive vocation again.

Certainly the couples' three children have been instrumental in applying the technology on-farm; and it was their eldest son Mark, who, at age

of 11, suggested that drones might be the perfect solution for checking stock on their hill country property, particularly looking for cast ewes.

Investigation into the technology led to the family buying a drone; and through Beef + Lamb New Zealand's Innovation Farm programme, they put the technology to the test.

Over the three-year programme they proved the value of drones in every-day sheep and beef operations such as counting sheep, finding cast ewes, monitoring lambing ewes and checking water troughs.

THE MOST IMPORTANT MESSAGE TO COME OUT OF THE DRONE STORY WAS THAT WE ARE CONNECTING TECHNOLOGY WITH FOOD PRODUCTION AND MAKING AGRICULTURE AN ATTRACTIVE VOCATION AGAIN.

By attaching a sward stick to the leg of the drone they also measured pasture covers, but this was just scratching the surface as far as future possibilities for drones is concerned. To date, the family has come up with 400 possible applications for these unmanned aerial vehicles.

Farm applications

The majority of the Gardynes farm is class 6 and 7 hill country, so checking stock is a time - and fuel - consuming exercise. In the first year of the Innovation Farm programme, the family focused on developing a proof-of-concept for counting sheep, and developing a software programme to accurately count sheep using images taken from the drone.

But the real value of the drone became apparent in the second year of the programme when it was used to monitor ewes at lambing.

Neil estimated that about half of the cast sheep flown over by the drone managed to right themselves.

Using the drone, the Gardynes saved 40 ewes which equated to an annual saving of around \$12,000.

The drone also reduced the time and money spent doing unnecessary lambing rounds. This amounted to around 2000 km of quad bike commutes saving a further \$8000. More importantly, it reduced the risk of accidents.

A third, practical application for the drone was checking water troughs over the farm.

The drone flew a set flight path which allowed photos to be taken of designated water troughs. Once downloaded, the photos gave a clear picture of the water situation on the farm.

The pasture measurement was another proof of concept. With the sward stick attached, the drone landed on a waypoint and a photo was taken of the measurement, the ground and the pasture.

The photos were downloaded and Neil was able to make a visual estimate of pasture covers.

Finding its niche

Two years after the Gardynes completed their Innovation farm programme, Neil says they are now in a consolidation phase; using the drone for applications that work, that tick all the boxes.

The technology has captured the attention of farmers, and Noel Leeming stores are selling an average of five drones/day to farmers throughout the country.

Neil says drones are proving popular for absentee farm owners. The captured footage can keep these owners up-to-date with conditions on farm and progress being made.

Many farmers are valuing drones as simply an eye-in-the-sky but are increasingly thinking of new ways the technology can help their business in the future. But to make the most of this aerial technology, agricultural scientists need to work alongside drone manufacturers and engineers to design and develop applications specifically for agriculture that are farmer-friendly and readily available.



Timeliness critical in Facial Eczema management

Facial Eczema is a production-limiting disease, but a Waikato trial has shown that timely zinc treatments are a cost-effective way of reducing its impact on bull-beef production.

Through Beef + Lamb New Zealand's Innovation Farm programme, bull-beef producers Steve and Sandra Parrott spent three years trying to quantify the true cost of this disease by looking at its impact on liveweight gains, as well as the expense associated with remedial and preventative animal health treatments.

Through the programme, the couple, who farm 800 ha at Te Akau, also sought to find the most cost-effective preventative treatment to maintain livestock performance in the face of a Facial Eczema challenge.

Setting up the trial

The trial involved assigning different treatment options to three mobs of R2 bulls over three years.

Group one was treated with a Face-Guard™ bolus, with six left untreated as a control. Group two were treated with zinc via a dosatron; while the third group had their pastures sprayed with Mycotak® and Mycowet® during the summer.

Before starting the treatments, the bulls were weighed and blood tested to determine their immune and mineral status.

Once the trial was underway, the bulls were blood tested monthly and weekly grass and faecal spore counts were taken.

After three years, the Parrott's concluded that while the appropriate treatment – in their case zinc boluses – reduced the impact of the disease on livestock production, treatment needed to be timely.

They found treatment needed to start before grass spore counts began to rise and repeat applications needed to be done while the previous treatment was still at protective levels.

If follow-up treatments are administered too late, they are a waste of money; the effects of the spore challenge will be occurring and the animal's response would have kicked-in at the expense of liveweight gains.

Zinc offers best protection

They say grass spore counts are a good guide to a spore challenge, however they suggest taking several samples from throughout the paddock to ensure a more representative sample.

Steve and Sandra found the boluses to be the most effective at consistently lifting serum zinc levels and protecting stock against Facial Eczema.

Zinc administered through the dosatron proved inconsistent and did not provide protective serum zinc levels.

The paddock sprays also proved inconsistent as the entire paddock has to be sprayed. It is expensive to do this with a helicopter – and on the Parrott's farm – a ground sprayer could not cover the entire area.

Follow up sprays need to be done when there is active grass-growth as uptake of spray is not consistent in dry conditions.

Weighing the bulls showed that Facial Eczema reduced liveweight gains in two out of three years, but provided the disease did not cause severe or permanent liver damage, compensatory growth did occur once the challenge had passed and feed was available.



AIM

To determine the “cost” of Facial Eczema to the Parrotts' bull-beef finishing operation.

FINDINGS

- » Facial Eczema reduced liveweight gains in two out of three years.
- » Zinc boluses proved to be the most effective treatment for Facial Eczema.
- » Timeliness of treatment is critical and needs to start before grass spore counts rise.
- » Compensatory growth occurred in animals that did not experience severe or permanent liver damage.

CONCLUSIONS

- » Facial Eczema did cost in lost production. Zinc boluses proved to be the most cost-effective treatment for Facial Eczema, although timeliness of treatment was critical.





Preventing pugging

Mud and rain are perennial winter challenges on Grant and Christine West's hill country farm in Northland.



AIM

To quantify the damage caused by pugging and change the cattle wintering system to mitigate soil damage.

FINDINGS

- » Over two winters (2012 and 2013) R2 cattle caused between 58% and 65% of land to have significant soil disturbance.
- » Plots trodden in winter showed a marked reduction in pasture production in subsequent months.
- » Building a herd home for wintering cattle has reducing pasture and soil damage and provided peace-of-mind during wet winters.

CONCLUSIONS

Over the two-year trial period, R2 cattle wintering on wet, heavy clay soils caused significant damage resulting in a loss of pasture production in the subsequent eight to 12 months of 17%-30%.

Wintering 600 cattle (along with 1300 mixed-age ewes and 400 hoggets), pugging was a production-limiting problem and Grant estimates that every year they were losing 9% of total pasture production through pugging-related soil damage.

He admits he was getting to the end of his tether when the couple joined Beef + Lamb New Zealand's Innovation Farm programme.

The programme gave them the opportunity to quantify the damage caused by pugging and to change their beef finishing system to mitigate soil damage.

“WE WERE KILLING OUR SPRING PRODUCTION BY BUTCHERING OUR SOILS OVER WINTER.”

Grant and Christine explored various options but elected to build a herd home to house 110 of their heaviest cattle over the wettest part of winter.

At a cost of \$1000/head, the barn has been a significant investment, but the couple calculated that if, by removing the cattle, they saw a 5% increase in annual pasture production, then it would have paid for itself.

Pasture protection

Possibly of even greater value is the peace-of-mind the barn has given the couple, knowing the cattle are not destroying soil and pasture in wet weather.

Grant says the barn comes into its own when the soils are saturated and the cattle are due to go into a second rotation of their wintering system.

The damage is cumulative, so having the ability to remove the cattle, stops the damage before it gets to the stage of hindering pasture production.

“The gains become exponential.”

They have struggled to quantify the value of the barn, as immediately after building it they had two droughts and a severe storm that blew the roof off – but have seen the benefits in terms of reduced soil damage and increased pasture production.

Building a team

Building a herd-home was just part of a complete re-think of the West's farm business.

They say one of the most important outcomes of the Innovation Farm programme was building a team of agribusiness professionals around them.

Through the programme they began using FARMAX, employed a farm consultant and started making better use of their local vet services.

“As sheep and beef farmers we tend to be very individualistic and while that is a positive, it's also a weakness,” says Grant.

Grant and Christine will now actively seek professional advice when it is required.

They say the programme gave them real direction and the opportunity to surround themselves with other positive and innovative farmers.

Amongst the changes they have made since being Innovation Farmers include intensifying parts of the farm while retiring more marginal areas.

They are also growing summer crops such as plantain and chicory for growing out lambs and hoggets and intensifying their beef system by building a permanent cattle-grazing unit. They are now wintering 700 cattle, 1100 ewes and 380 hoggets.

A permanent system

In the past, the grazing system was temporary – built in winter and pulled down in summer as water availability becomes an issue.

Building a permanent system will give the couple greater control of their rotation lengths, grazing pressure and feed intakes and will enable them to finish cattle 12 months of the year. It is, however, a work in progress as building permanent fences on broken hill country is neither cheap or easy.

The value of having clear plans and farm systems in place was highlighted when Christine was involved in a serious car accident.

Grant could leave the farm in the knowledge that it was running smoothly without him.

Today, Grant operates the farm with the help of casual labour as required, but by running a simple and systemised farm operation, the couple know the business can carry on without them when need be.



The triplet opportunity

Having the ability to maximise triplet lamb survival would represent a step-change in this country's sheep industry.

As ewe fertility has increased over recent years, so too has the number of triplets being born – but getting these lambs to survive and thrive is a challenge.

Wairarapa farmers, Andrew and Gretchen Freeman, saw the opportunity these lambs present and through Beef + Lamb New Zealand's Innovation Farm programme, set out to develop a repeatable, commercially viable system that maximised triplet lamb survival and gave the lambs every opportunity to thrive.

The key objectives of the project included creating a repeatable, cost-effective transfer system for triplets, increasing the overall lambing percentage by improving lamb survival and reducing wastage. They also aimed to increase the feed conversion efficiency of their ewe flock by utilising single-bearing ewes.

The system the Freemans' developed – the Triplet Transfer System – takes one lamb from a set of triplets and

mothers it onto a single-bearing ewe within a mothering facility.

Ewes carrying single lambs are kept close to this facility and once they have given birth, their lambs are removed and mixed with other lambs. The ewes are then given two "new" lambs and held within a confined area until they have bonded with their new family.

Typically, the ewes take one to two days to successfully bond, after which time the ewes and lambs are run out on to high quality pastures including red clover and plantain.

Refining the system

Over the three-year Innovation Farm programme, the Freemans refined their system and developed a blueprint that could be adopted by other sheep farmers.

Amongst the refinements were running single-bearing ewes on a hill block, which made it easier for the Freemans to cut-out lambed ewes.

The new-born lambs are brought into the shed, and while initially they were tagged, Andrew and Gretchen found there was no benefit to tagging. Rather the lambs are left together overnight so their smells inter-mingle. This helpfully confuses the ewe and makes it easier to mother-on the two new lambs.

Over the lambing period, the Freemans are mothering new lambs onto around 450 ewes and Andrew believes they could manage up to 500 ewes over 30 days lambing. They have a 95% survival rate in their new families.

The cost of this system amounted to \$22.33/lamb but the net financial benefit was \$60-\$70/transfer.

Andrew points out that two sets of twins will wean more kilograms of liveweight than a set of triplets and a single – this amounts to 108 kg/ewe compared to 75 kg/ewe. The cost benefit doesn't take into account the benefits to the triplets of removing one lamb. The Freemans generally leave the smallest of the three lambs on the ewe and find these lambs quickly grow and catch up with their twin. This means there are no "runts" at weaning.

This jump in the kilograms of liveweight weaned per ewe reflects the dramatic lift in survivability rates and the more even lines of well-grown lambs thanks to a more even distribution of milk between the ewes.

Andrew says the key is that they are raising four lambs (originally one single and three triplets) with two mums – thereby optimising two mouths, two stomachs and four teats.

"We have confidence that feed conversion efficiency – at 32-40 c/kg DM – is well ahead of anything else we do during mid-spring."

He does stress the value of using high-energy pastures, such as red clover and plantain, to help drive lactation and pre-weaning growth rates in the lambs.

Harvest time

Andrew and Gretchen farm 733 ha east of Masterton, running 2,500 Romney breeding ewes and finishing 15,000 lambs and 600 bulls and steers.

The farm is balanced with one third sheep breeding, one third lamb finishing and one third cattle finishing.

They view lambing as their harvest time and believe the Triplet Transfer System helps them to maximise that harvest.

"WE ONLY HAVE TO TRANSFER FIVE EWES PER DAY TO BREAK EVEN – AND WE'RE AVERAGING 20."

An unexpected benefit of having a mothering-on facility set up is that it has become a go-to place over the lambing period as there is always someone available to help with other lambs that need attention from across the farm.

Andrew says the shed is a professional place and makes lambing a far more proactive and positive time. But most importantly, there has been a mind-shift in the way they view triplet lambs – where once they were a problem, they are now an opportunity.

AIM

Develop a system to maximise triplet lamb survival.

FINDINGS

- » Taking one lamb from a set of triplets and mother it onto a single-bearing ewe within a dedicated facility proved effective.
- » Lambs were removed from single-bearing ewes. The single and triplet lambs were kept together overnight so smells mingled and two "new" lambs introduced to the single-bearing ewe.
- » It took one to two days for the ewes to bond with her new family.
- » A 95% survival rate in triplet lambs was achieved.
- » Two sets of twins wean more kilograms of liveweight than a set of triplets and a single – this amounts to 108 kg/ewe compared to 75 kg/ewe.

CONCLUSION

The triplet transfer system is a cost-effective way to maximise survival of triplet lambs.





Transforming unproductive hill country

Making uncultivable hill country productive was the aim of a five-year Beef + Lamb New Zealand Innovation Farm programme on the 8500 ha, 80,000 su Whangara Farms enterprise near Gisborne.

The focus was on increasing the productivity of the East Coast hill country by establishing plantain and clover into hard hill country – and it worked. The extra dry matter grown generated enough extra income to cover establishment costs within just one year.

Whangara general manager, Richard Scholefield, says the trial evolved over five years to include a number of components, including stocking rates, weaned lamb performance, triplet-bearing ewe management, persistence of plantain and the performance of hoggets on the forage.

As Whangara Farms, which is a partnership between three Maori incorporations and is also part of Farm IQ, all sheep are individually electronically identified which ensures the accuracy of the data collected.

The initial hill country development programme began in 2012 at a cost of \$521/ha. Within that first year, the stocking rate doubled from 5.5/ha on old pasture to 11/ha on the developed area. The kilograms of liveweight produced lifted from 235 kgLW/ha on the old pasture to 442 kgLW/ha on the plantain and legumes. This is an extra 207 kg of liveweight/ha, which at a value of \$2.50/kg, is worth \$517/ha.

AIM

Investigate the establishment of productive, high quality permanent pastures on steep uncultivable hill country.

FINDINGS

- » Plantain and clover can be successful on uncultivable hill country and increase both quality and quantity of pastures.
- » Establishment costs were recovered within one year.
- » Plantain proved to be a good companion plant for legumes which drive productivity gains.
- » A summer brassica was a valuable break crop and helped with weed control prior to establishment of permanent pasture.
- » Spinning seed uphill proved more effective than broadcasting downhill.
- » Timing was critical in forage establishment.

CONCLUSION

With the right legume-based forage mix and management, it is possible to establish high quality permanent pastures on uncultivable hill country.



Based on the success of this initial trial, Richard has been extending the area in plantain and legumes and is aiming to double the developed area from 200 ha to 400 ha within the next three years. Having seen the value of the development programme, he urges other hill country farmers to consider doing the same.

“EVEN A SMALL AREA OF IMPROVED FORAGES CAN HAVE A SIGNIFICANT IMPACT ON THE WHOLE FARM SYSTEM.”

He says the plantain clover mix did generate some fantastic summer growth rates over February and March of 128 kgDM/ha/day compared to grass which grew at just 26 kgDM/ha/day. The forage mix can also handle hard-grazing which allows it to carry a high stocking rate throughout the year.

“It’s almost idiot proof. Even under hard grazing it just keeps bouncing back.”

Lessons learnt

The management team learnt a number of lessons through the programme, including the value of putting the area earmarked for development through a summer crop such as Pasja®. The break crop enabled better weed control.

Richard recommends not spraying out steep gullies or marginal hill country as they found it difficult to establish pasture on these areas. Once sprayed, these areas tended to fill up with weeds – especially thistles.

Through trial and error, they have found spinning the seed on uphill is more effective than dropping the seed downhill. Richard says the updraft from the aircraft tends to force the seed into the hillside and gives better establishment. While they have tried different seeding rates, Richard says half and half mix of plantain and legume is what works best for them. This 50/50 mix is sown at 13-14 kg/ha.

He stressed the importance of creating good seed to soil contact and uses a large mob of sheep to achieve this. Typically, a shepherd will spend a couple of hours hunting stock across the newly-sown block.

Timing was critical, and Richard says while it is tempting to keep grazing the summer break-crop, it is more important to spray it out and get the forage sown in early autumn so it can establish and be used for ewes and lambs in spring and summer.

Spring growth in the new forages can be explosive – particularly in the first couple of years – and cattle proved a valuable tool for controlling feed quality.

Thistles are the main problem on the developed blocks and Richard is continuing to look for the most cost-effective control options.

Clover dominates

Plantain’s lack of persistence has been another issue and four years after establishment, plantain only made up 15-20% of the sward. Conversely clover has flourished and while it initially made up just 5% of the sward, it now makes up 20%. Richard points out that legumes are the most important plant for driving stock performance and plantain is ideal for assisting clover establishment.

“Plantain seems to be a great partner crop for the clover. It really helps get clover established and stock do well on it.”

While the Innovation Farm programme has allowed the management team at Whangara to try different sowing rates and establishment methods, Richard stresses the importance of still “doing the basics” well. He says sub-division, fertiliser, stock and pasture management have all been critical in developing the hill country and have been carried out hand-in-hand with the pasture renewal programme.



Plantain – a risk management strategy

With the correct management, plantain can be a valuable forage crop and risk management strategy in a dryland farming system.



This was the key finding of a Beef + Lamb New Zealand Innovation Farm programme run on William and Karen Oliver's Te Kuiti farm.

The couple farm 730 ha effective east of Te Kuiti on a mix of easy, medium and steep hill country. They winter 10,000 su which includes 2,100 Romney ewes and 550 replacements, 400 Friesian bulls, 30 heifers and 2,200 deer. When conditions allow, they will finish 2000 trading lambs.

The Olivers' programme focused on the best management practices around the establishment and utilisation of plantain, comparing the

forage's performance against ryegrass and clover pasture. While plantain proved its worth for lactating ewes, it really came into its own in hot, dry summer conditions.

Plantain versus grass

The programme team compared livestock performance off an 18.6 ha conventional clover and ryegrass sward with that of 15 ha of plantain. The comparison was made over two phases; the 100 days between 1 November to 1 February, and then from February through until May.

In the first-year post-establishment, ewes and lambs grazed the plantain from November to 4 December and the lambs grew at 190 g/day. From 4 December until 1 February, a mix of calves, deer and lambs all grazed the crop. Over this period, lambs grew at 220 g/day, while the lambs on the ryegrass and clover grew at 190 g/day.

Farm consultant, Rob McNab, who oversaw the trial, says during the magic 100 days when farmers make money out of finishing lambs, there was not a significant difference between plantain and grass.

However, in the subsequent 119 days, plantain outperformed pasture by five-and-a-half times – and it was up against the best grass available on the property. This was during the worst drought in 72 years.

“WE SAW STOCK GO BACKWARDS ON GRASS, BUT THEY HELD THEIR OWN ON PLANTAIN.”

In the first year of the programme, the plantain area produced 44% more than the ryegrass and the additional revenue generated was more than enough to cover establishment costs.

Grazing management critical

The plantain did require specific management, and critically, the Olivers found the forage should not be grazed below 8 cm. Hard grazing destroys the crown of the plant and reduces longevity which allows weeds to encroach into the sward. The couple found the optimal pre-grazing height to be 25-30 cm.

Weed control proved to be a challenge, and various herbicides were used in plantain with mixed success. The couple recommend spot-spraying rather than broadcasting herbicides, but found running higher covers was the best way to prevent weeds from establishing.

The Olivers found plantain was beneficial to lactating ewes and lambs and they saw the body condition score

of lactating ewes lift from 2-2.5 to 3.5-4 while they were grazing the crop. Their lambs were 1 kg heavier at weaning than equivalent lambs on pasture.

As part of the Innovation Farm programme, the Olivers, in conjunction with Ballance™ Agri-Nutrients, trialled the use of nitrogen (N) on plantain crops.

They found plantain did respond to N and the trial team recommended using N at 200 kg/ha annually, ideally applying a small amount after every second grazing.

So, if a stand is grazed 10 times, then N should be applied at 40 kg/ha after every second grazing.

If the crop is established with clover, then the quantity of N can be reduced.

Having realised the value of plantain in dry conditions, the Olivers intend growing 20 ha of plantain every year; and with careful management, will aim to get a minimum of four years out of the crop.

AIM

To find a forage option to better capitalise on spring growth.

FINDINGS

- » Plantain sustained a higher level of production within the first year.
- » While spring production was similar to clover and grass, plantain came into its own during drought.
- » Plantain required specific management and should not be grazed below 8 cm.
- » Spot-spraying is a better weed control option than broadcasting herbicide.
- » Plantain responded well to nitrogen.

CONCLUSION

While not necessarily capitalising on spring growth, plantain proved its worth in summer-dry conditions and has become an important part of the Olivers' farm system.



10



Chemicals allow clover to flourish

AIM

Grow an additional three tonnes of drymatter per hectare on uncultivable hill country by increasing the legume content of the sward.

FINDINGS

- » Chemical topping is proving effective at controlling low quality grasses to allow resident clovers to flourish.
- » Grazing management is essential to allow the regeneration of resident and introduced clover species.
- » Chemicals are used to break down "thatch" after which grazing management should be sufficient to control grass and allow clovers to proliferate.

CONCLUSION

The strategic use of chemicals, combined with sound grazing management, means the Craws have clover-rich swards in spring to drive lactation, pre-weaning growth rates and ultimately grow more kilograms of lamb.

Chemical topping is proving a cost-effective way of increasing the quality and quantity of pastures on uncultivable parts of Hamish and Annabel Craw's Banks Peninsula farm.

The couple, who farm 422 ha at Little Akaloa on the northern side of Banks Peninsula, have been trialling different chemical options to control poor quality native grasses and allow clovers to flourish and fix nitrogen (N).

While chemical topping is nothing new, they have been trialling new chemistry in conjunction with grazing management practices to build the legume content of the sward on their higher hill country. Effectively lifting the energy value - or ME (metabolisable energy) - of the pasture. This work was carried out through Beef + Lamb New Zealand's Innovation Farm programme.

Lifting quality and quantity

The couple weren't satisfied with the legume content in their hill country pastures which were dominated by poorer grass species.

While mindful of the value of increasing the ME of their pastures, the couple also aimed to lift the quantity of drymatter grown by 3T/ha and believe this would be achieved by getting more legume-fixed nitrogen into the system.

Rather than just introducing new clovers, the couple wanted to promote the existing, naturalised clovers such as subterranean clover, by chemically removing competing, poor quality grass species and managing the legume to allow it to set-seed and regenerate.

Through the Innovation Farm programme, the couple were given the opportunity to work alongside scientists and agronomists to determine the best chemical options - including rates and timings - to control these poor-quality grasses without harming the clover.

Starting small

In the first year of the three-year programme, the project team set up small trial sites and tested various chemical control options, specifically looking at a light chemical top, a heavy chemical top and grass eradication.

Grass eradication using Valiant® (active ingredient haloxfop-p) emerged as the preferred option, so in year two, they continued with the plot trials looking at different rates of Valiant to determine the most cost-effective and effective grass-control option.

In year three, the chemical trial was up-scaled to a hill country block and Valiant, applied at a rate of 500 ml/ha, was used in conjunction with grazing management to allow existing clovers to proliferate.

In the first winter following a December spray, the Craws noticed a lot more clover in the ground; and in the spring of 2015, had a clover-rich sward in the treatment area - which is exactly what they were aiming to achieve.

"Typically, in our environment, we start to lose pasture quality in November and December, now we are retaining that quality for longer and that is the key," says Hamish.

Chemicals versus grazing

While some hill country farmers are looking to build clover content in hill country by fine-tuning their grazing management to remove competing vegetation and allowing seed to set, the Craws' have chosen to use chemicals to break down thatch that has built up over the years.

Unpalatable to stock, once that thatch is opened up and clover allowed to flourish, then grazing management should be sufficient to keep the sward open and the clover content high.

With more N in the system, poor quality grasses become more palatable and this makes grazing management so much easier.

Realising the potential

The Craws believe their hill country has more productive potential than they ever thought possible.

They say N is the key to unlocking this potential and the cheapest and most efficient way of getting N into a hill country system is by using legumes.

By using chemicals to control weed and poorer grass species, they are allowing existing, naturalised clovers to flourish and fix N improving pasture quality, quantity and palatability.



Pushing the fodder beet boundaries

Fodder beet crops have become ubiquitous on farms throughout the country valued for both their feed quality and potential to generate high yields.

They are, however, expensive crops to establish, so realising the yield potential of fodder beet is important to off-set growing costs. This can be difficult in windy and dry environments, especially as planting occurs in spring – typically the windiest time of the year.

Manawatu farmers and contractors, Scott and Paul Linklater, saw the potential of using strip tillage as a way to reduce establishment costs while maximising yields in fodder beet crops. Through Beef + Lamb New Zealand's Innovation Farm programme, the pair set-up a trial comparing the productivity and profitability of conventionally-established fodder-crops with those established using strip tillage.

Having designed and developed a strip tillage machine, the brothers believed strip tillage had several advantages over conventional tillage. These included increased plant establishment and vigour by reducing wind erosion of soils, reduced moisture loss, minimal soil disturbance and a reduction in fertiliser and spray inputs with precision strip application.

The second part of their Innovation Farm programme looked at maximising per hectare returns by

using fodder beet – as part of a crop rotation – for finishing winter-contract trading lambs.

PROJECT ONE

Strip tillage vs conventional establishment

The trial involved five different replicated treatments covering 5 ha. Three different varieties of fodder beet were grown in each treatment, so totalled 15 trial plots.

Two of the treatments were conventionally cultivated with banded and broadcast fertiliser, the other three used strip tillage with banded fertiliser applications. The variables in the strip tillage were the use of post-emergence chemicals and fertiliser dressing, applied either broadcast or along the band line.

The entire trial area was sown on 1 December 2013 and yield tests were carried out in March and June 2014.

The results showed very little difference between the yields of the different treatments and fodder beet varieties. Yields ranged from 17.3 tDM/ha to 21 tDM/ha.

The results did show there was no yield disadvantage to strip tillage, highlighting the potential for its use in suitable environments.

There was also a slight cost-benefit to the strip tillage treatment. Of the five treatments, the strip-tillage cultivation and planting with banded chemical and fertiliser application, was the cheapest method of establishment costing \$2088.40/ha.

The most expensive establishment method, costing \$2471.04/ha, was the conventionally cultivated treatment with banded fertiliser application. The other three treatments fell in between.

While the brothers were aiming to use strip tillage to reduce the cost of establishment to \$1500/ha, this was not achieved, neither were their yield targets of 35 t/ha.

The trial did however show that strip tillage can be used to successfully establish fodder beet which could be advantageous in areas prone to wind erosion and where moisture needs to be conserved.

PROJECT TWO

Lamb trial

The second part of the Linklater's Innovation Farm programme was using fodder beet as a forage crop for growing out trading lambs in autumn. The fodder beet was part of an arable crop rotation that sought to maximise per hectare production.

Scott designed the trial to maximise the profitability and productivity of lambs on fodder beet, and while the focus was on lamb production, Scott found that once the crop was finished

at the end of May, he was able to put the paddock straight into a dual-purpose winter wheat crop. Over a 16-month period, this cropping regime maximised per hectare returns.

Due to fodder beet's high yield – 27tDM/ha compared to 5.5 tDM/ha of grass – Scott was able to run 280 lambs/ha on the crop for 60 days – and this, he says, is where the real value lay. "That is why the product is so good."

The trial began on April 2016 and ran for 61 days. It involved three mobs of bought-in store lambs; a control mob remained on grass while two were on fodder beet with different supplement regimes. The lambs were weighed every two weeks.

Once the lambs had grazed the fodder beet, they were finished on pasture and processed over July and August.

Net lamb production off the fodder beet and pea hay treatment was 1200 kgLW/ha compared to just 419 kgLW/ha off the grass. This translated into a net margin of \$4,416/ha off the fodder beet and pea hay, \$3,435/ha off the fodder beet and meadow hay and \$1,310/ha off the grass.

Scott says the lambs on the fodder beet treatments were not "transitioned" onto the crop because they took a while to learn to eat the bulbs anyway. This meant they did initially lose weight when compared to the control mob, but this check was only temporary. The lambs on the fodder beet were on two or three-day breaks.

Scott says he was rapt with the trial results and plans to implement the fodder beet system again, although he will be looking to further fine-tune supplement management.

PROJECT TWO

AIM

To use fodder beet as a forage crop for growing out trading lambs in autumn. The fodder beet was part of an arable crop rotation that sought to maximise per hectare production.

FINDINGS

» Because of its high yields, fodder beet crops can be used to feed winter trading lambs between April and June. The paddock can then be put into an arable crop thereby maximising per hectare returns.

CONCLUSION

Fodder beet is a valuable component of a system that seeks to maximise per hectare returns over a 16-month period using trading lambs and arable crops.



PROJECT ONE

AIM

To determine whether strip tillage can reduce establishment costs while maximising yields in fodder beet crops grown in dry and windy environments.

FINDINGS

» While using strip tillage did not significantly reduce establishment costs or improve yields in fodder beet, there were no yield penalties to this form of establishment.

CONCLUSION

Strip tillage can be used to successfully establish fodder beet which could be advantageous in areas prone to wind erosion and where moisture needs to be conserved.





AIM

To assess the ability of commercial farmers to make better breeding decisions on-farm through the utilisation of EID tags.

FINDINGS

- » There was little immediate value in EID matching lambs to ewes.
- » Improvements in data collection technology were required.
- » Costs were significant.

CONCLUSION

While the idea could have potential within a stud operation, it was not cost-effective in this situation.

EID use proves challenging

Electronic identification is a valuable tool in the stud sheep industry, but the technology's value in commercial lamb production has yet to be realised.

Through Beef + Lamb New Zealand's Innovation Farm programme, Southland farmer Warren Ayers wanted to find out whether it was cost-effective to use electronic identification (EID) to link kilograms of lamb weaned back to individual ewes.

Warren, who runs a Perendale stud, has been using EID in his stud ewes since 2006 and in his commercial ewes since 2009. Aware that he hadn't been using EID to its full potential, he used the Innovation Farm programme to run a three-year project to determine whether an EID panel reader could easily and effectively measure the pre-weaning weights of individual lambs. These weights would then be linked back to their mothers.

The lambs in the project were tagged at tailing and an EID panel reader was set up within a single-file gateway between paddocks. Ewes and lambs could walk freely between paddocks.

The theory was, that after 10 paddock shifts, the reader had recorded enough data to confidently link ewes and lambs based on their proximity to each other during paddock-to-paddock movements.

However, in practice, the ewes and lambs were reluctant to move through the gates in single-file. The quality of the data was therefore variable and the costs were significant.

Modelling shows poor gains from ewe selection based on weaning weights

Simon Glennie, AbacusBio Consultant

Commercial farmers were very interested in the concept of being able to make selection choices based on lamb weaning, so a model was created to explore the economic impact on a commercial farm if lambs could be matched to ewes. The model used a commercial farm situation with realistic death rates, survival of single, twin and triplet born lambs along with other culling pressure from ewe age, death and faults including dry and wet dry ewes.

The new information available for all ewes (should the tag matching be possible) is the number of lambs reared to weaning, the weight of each lamb reared and the kilograms of lamb weaned per ewe.

By using ram harnesses or foetal aging, some adjustments were able to be made for age at weaning. There was also some correction for the sex of the lamb as ram lambs grow faster. After making these adjustments, ewes could either be culled - or more likely - be re-assigned to terminal sire. Using scanning data, ewes were assessed on their efficacy of rearing scanned lambs.

We at AbacusBio looked at the economic impact of making selection decisions on the basis of weight of lamb weaned. Large data sets of recorded animals were used to evaluate the financial outcome of a change in this trait and how repeatable the trait was from year-to-year.

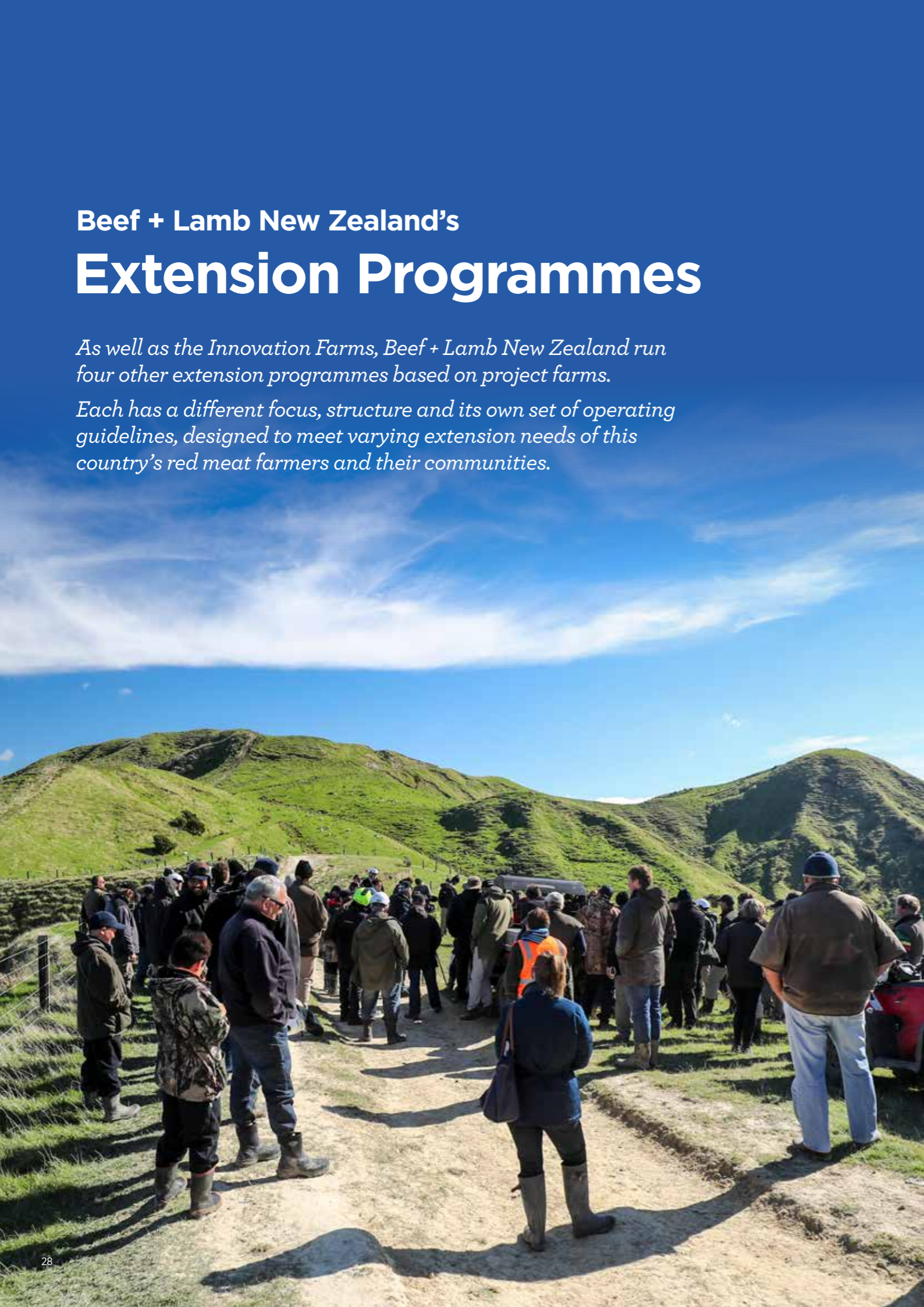
Taking into account the limited room to cull or change the allocation to terminal sire, along with the lack of repeatability of weight of lambs weaned year-by-year, the gain per breeding ewe worked out at 24c. However, due to the difficulty in collecting the data, only two-tooths were considered, so the 24c/ewe value only occurred once all ewes had been subject to the selection.

Given the difficulty and high cost to collect the information, along with the relatively low return, the idea was shelved. One of the reasons for the Innovation Farm program is that farmers are able to explore opportunities they see as game changers. In this instance, the reality was somewhat different once the modelling was completed.

Beef + Lamb New Zealand's Extension Programmes

As well as the Innovation Farms, Beef + Lamb New Zealand run four other extension programmes based on project farms.

Each has a different focus, structure and its own set of operating guidelines, designed to meet varying extension needs of this country's red meat farmers and their communities.



Profit Partnership Programme

As the name suggests, the focus of this programme is on improving the financial returns of the 10-15 farmers involved. Rather than taking a whole farm system approach, the Profit Partnership Programme benchmarks and analyses a component of the business- such as sheep - and measures the impact innovative management practices have on it.

Typically, the aim of this programme is to add an extra 5% in annual profit to the balance sheets of participating farmers by helping them make rapid improvements in productivity, profit and business growth.

The outcomes of this three-year programme is shared with the wider community through annual field days, the B+LNZ website and B+LNZ publications and rural media.

Farming for Profit

This programme addresses issues affecting farming communities rather than individual farms. A committee of local farmers identifies the issues they would like addressed within their community and will develop a series of activities around these.

The aim of the programme is to find practical tools and solutions for these issues which will help farmers within this community grow their individual businesses.

Farming for Profit groups runs events, such as field days, four to five times a year to share information and the outcomes of its activities.

Monitor Farm Programme

Developed in 1991, the Monitor Farm programme is organised around a single farm - although the issues addressed are determined by a local community group and reflect the challenges and opportunities facing farmers within an area.

The community group selects a facilitator to run the programme and together they develop a three to four-year business plan for the Monitor Farm. Specialist input from agribusiness professionals is brought in where appropriate.

By taking a whole-of-farm approach, the impact of management decisions can be seen on the farm system and business, not just on a specific enterprise within it.

Progress and outcomes of the Monitor Farm programme are made available to the wider community through annual field days and reports.

Farmer Focus Group

Locally focused, these groups receive support from B+LNZ to address issues related to sheep and beef production, profitability and marketing not covered by other extension programmes. These may include discussion groups, trial groups or subject-specific activities dealing with regional or farm-specific issues and opportunities.

It is expected the outcomes of these Focus Group projects will, through field days and events, provide the wider farming community with new or additional information that will ultimately help farmers increase productivity and profitability.

Farmer Initiated Technology and Transfer Trial

The Farmer Initiated Technology and Transfer trial (FITT) sits outside the "project farm" extension programmes. FITT offers local farming groups (a minimum of three farmers) funding for up to \$10,000 to test a new technology or management practice that addresses a particular issue.

The funding, which is a one-year grant, will help cover some of the costs associated with the trial. This usually includes paying for technical help. There is an expectation that farmers will also contribute some of their own time and money to the trial.

The outcomes of FITT projects are communicated in reports which are made available to the wider public on the B+LNZ website.

Beef + Lamb New Zealand Farmer Council

The embodiment of Beef + Lamb New Zealand's motto By Farmers For Farmers, the Farmer Council is made up of farmer representatives (elected by farmers) as well as co-opted members - typically agribusiness professionals. Each region has its own Farmer Council and this Council works with the B+LNZ extension manager to determine the nature of extension activities within the region.

Representatives from each regional Farmer Council also help advise B+LNZ research investment and the structure of environmental projects.

*For more information about Beef + Lamb New Zealand's projects or programmes please contact B+LNZ's regional extension managers **Freephone 0800 BEEFLAMB (0800 233 352)** or visit www.beeflambnz.com*



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