MINISTRY OF AGRICULTURE AND FORESTRY › SUSTAINABLE FARMING FUND

TEN YEARS OF GRASSROOTS ACTION 2010

Ministry of Agriculture and Forestry
Te Manatū Ahuwhenua, Ngāherehere

ACKNOWLEDGEMENTS

Small front cover images (from left to right):
Working together is key to the successful management of water resources (Image courtesy NZ Landcare Trust).
Checking for insects in a crop of canola as part of an integrated pest management monitoring programme (Image courtesy Plant & Food Research).
Field days and workshops were one method used to demonstrate the use of the new kiwifruit spray technology (Image courtesy S Max, Zespri).

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FOREWORD

A decade ago, the words "environmental sustainability" appeared misunderstood by many and favoured by a few. Now, ten years on, attitudes have certainly changed.

There has been a quantum leap both in New Zealand and internationally, in consumer awareness and concern for the environment. No farmer, no food producer, in fact no New Zealander can afford to disregard the environmental component of "Brand New Zealand".

Through the MAF Sustainable Farming Fund, the Government continues to support our farmers, growers and foresters to become economically, socially and environmentally sustainable.

This *Ten Years of Grassroots Action* report provides an excellent snapshot of some of the projects funded by the Sustainable Farming Fund. It highlights why the initiative works so well – because it is a "grassroots up" fund supporting a broad range of innovative projects across our primary industries.

Through the Sustainable Farming Fund, many strands of the primary sector have been drawn together to address problems and to seek opportunities. The projects featured in this report have helped turn a sustainable primary sector from a wish into a reality.

I encourage you to read this report. These projects are inspiring examples of proactive collaboration between government, industry, community groups and individuals.

Hon David Carter
Minister of Agriculture and Forestry

Sustainable Farming Fund
Ministry of Agriculture and Forestry
Te Manatū Ahuwhenua, Ngāherehere

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1 INTRODUCTION

TEN YEARS OF GRASSROOTS ACTION

The Ministry of Agriculture and Forestry's Sustainable Farming Fund (SFF) was set up in 2000 to fund projects that contribute to the economic, environmental and social wellbeing of New Zealand's land-based primary industries. Ten years on, the SFF has invested close to $100 million in nearly 700 farmer, grower and forester-led projects. This funding has been matched in cash and in-kind by industry, community groups and individuals.

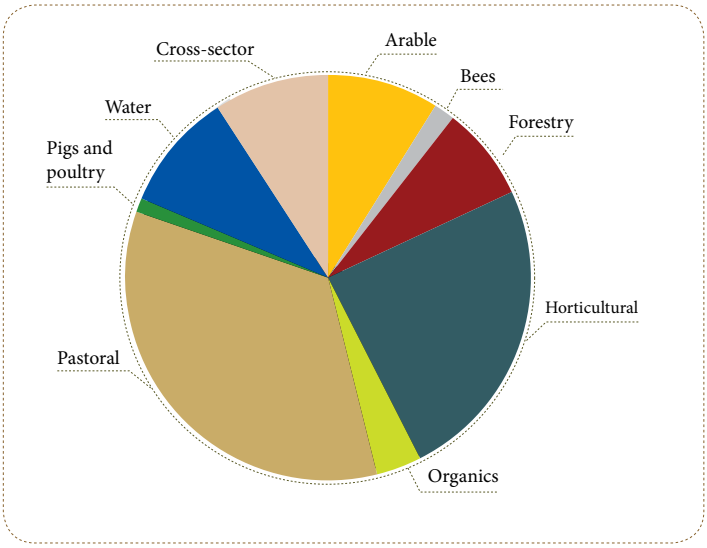
This report looks back over the past ten years and illustrates just some of the projects funded over that time. The SFF will continue to support a wide range of projects based on innovation and leadership within the primary sector. We hope you enjoy the read.

(Image courtesy Plant & Food Research).

"The SFF is the fuel to the primary industry engine. It provides vital funding to help innovation, research and environmental projects make a sustainable primary industry a reality," Duane Wells, General Manager, NTL Horticulture, Northland.

"It is a privilege to be working on projects that are grown from the grassroots up, and that I know will make a huge amount of difference to the farming sector, as well to our general knowledge," Kate Wilson, Otago sheep and beef farmer.

FIGURE 1.1: PROPORTION OF GRANTS BY SECTOR 2000–2009

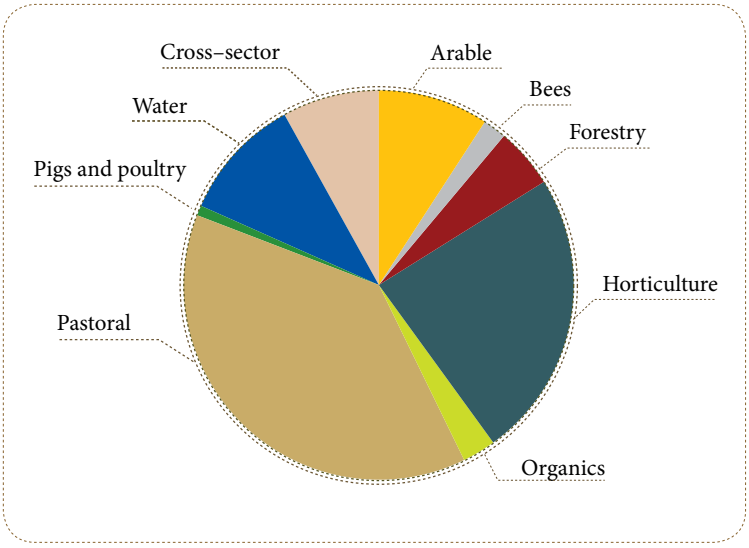


ACROSS THE SECTORS

The SFF partners with all of New Zealand's land-based primary industries. Many of our projects involve two or three industries working together on common problems or opportunities.

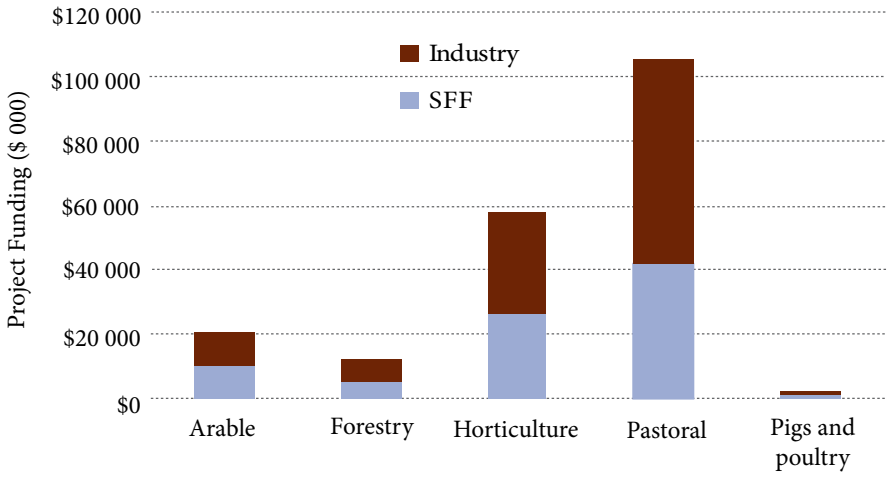
Pastoral and horticultural projects have received the largest proportion of SFF grants to date. SFF grants have also often enabled critical work to occur in the smaller sectors which have limited resources of their own.

FIGURE 1.2: SFF FUNDS ALLOCATED BY SECTOR 2000–2009



SFF projects are all about collaboration and groups of farmers, growers or foresters having ownership of the project from conception through to adoption. One of the SFF's main strengths is that projects are led by a "Community of Interest", a group of people from different backgrounds or organisations, who come together around a common issue. Most successful projects have gained a high proportion of other funding or in-kind support to complement the SFF request.

FIGURE 1.3: TEN YEARS OF COLLABORATIVE FUNDING (INCLUDING CASH AND IN-KIND)

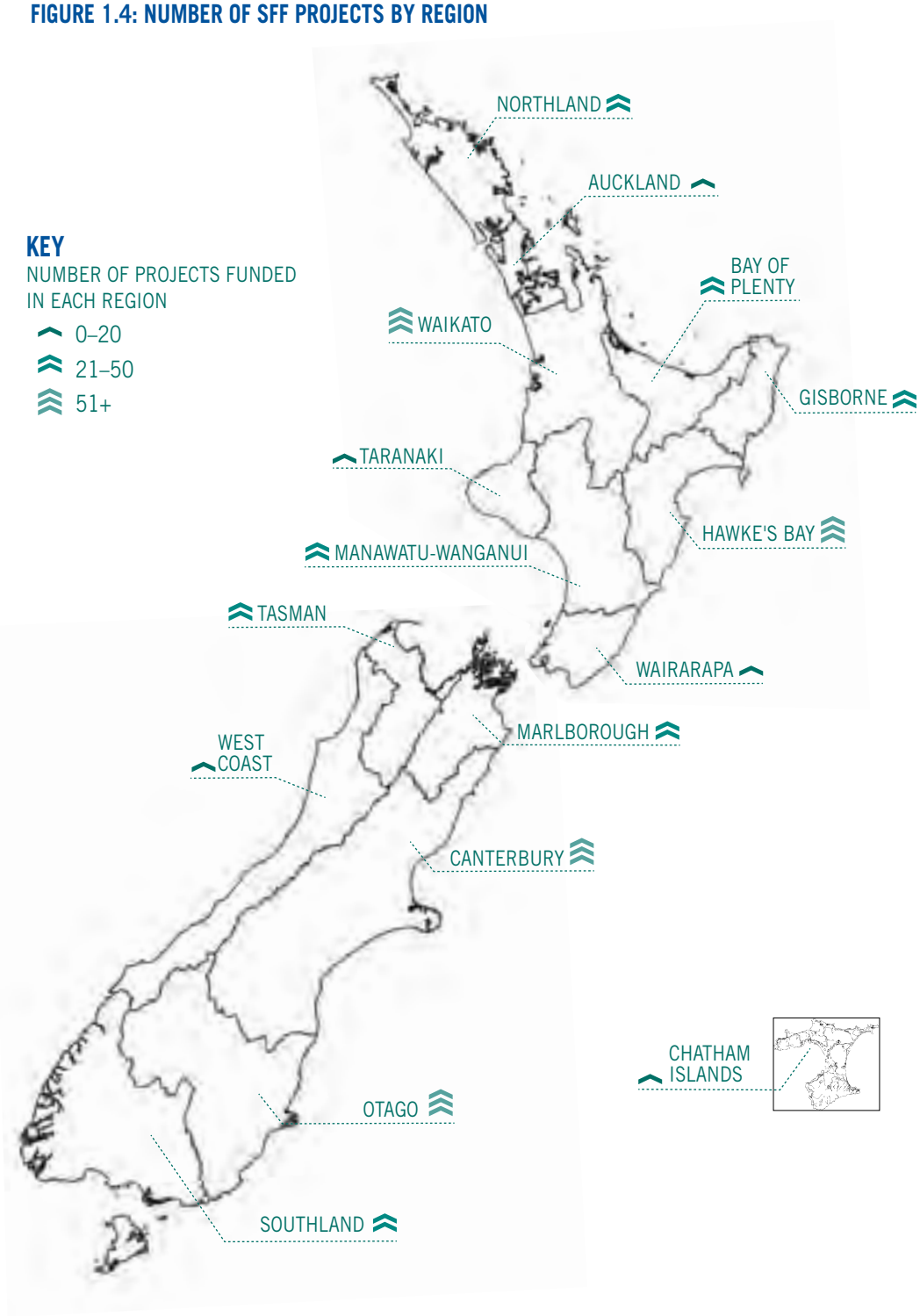


Farm forestry (Image courtesy A Reid, MAF).

ACROSS THE REGIONS

Funded projects are currently underway across New Zealand – from the Far North right through to Southland. There are many projects that cover multiple regions, as well as others that are carried out on a national level.

FIGURE 1.4: NUMBER OF SFF PROJECTS BY REGION



Our project advisers are often out in the regions. They are always available to meet with existing project teams as well as any new groups who are considering submitting a project application.

ALL PROJECTS – BIG AND SMALL

SFF funding falls into two categories. As at 2009, the categories were grants under $20 000 and grants over $20 000. The maximum investment the SFF can provide to any one project is $200 000 per year for three years.

Smaller grants provide a good opportunity to carry out scoping studies and test new ideas. Many applicant groups start with a smaller grant and then apply for a larger, more detailed follow-up project.

FIGURE 1.5: PROPORTION OF GRANTS BY PROJECT SIZE

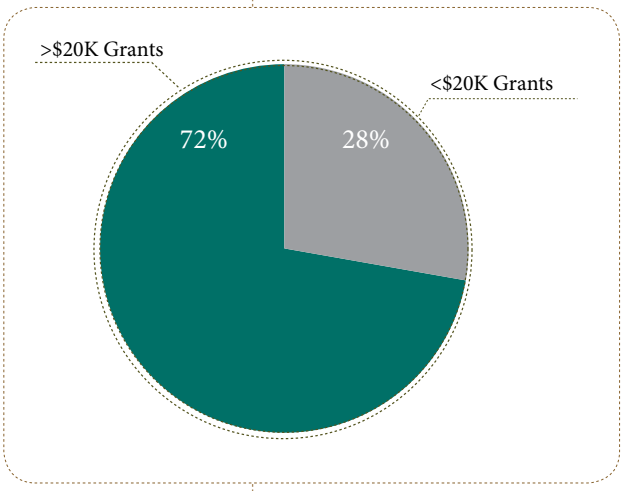
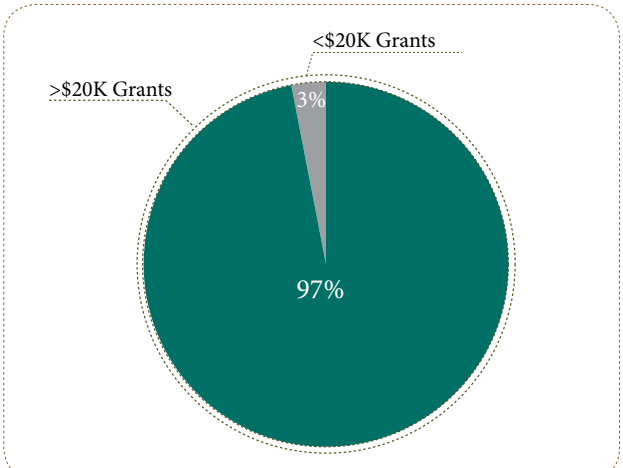


FIGURE 1.6: SFF FUNDS ALLOCATED BY PROJECT SIZE



Larger projects often run for three years and have the potential to produce significant results, or kick start a longer term self-sustaining programme.

WHAT MAKES A SUCCESSFUL SFF PROJECT?

The examples in this report provide a snapshot of successful SFF projects. They all share the following attributes:

- Driven by a strong "Community of Interest", which is farmer, grower or forester-led.
- Make a contribution to the sustainability of New Zealand's land-based primary industries (including adapting to or mitigating the impacts of climate change).
- Undertake a programme of applied research and development and/or knowledge sharing or technology transfer. This includes scoping or feasibility studies and irrigation feasibility studies.
- Create information or intellectual property that is available to all and is not for the commercial benefit of an individual or single business.

2 SUCCESSFUL INNOVATIONS

Field days and workshops were one method used to demonstrate the use of the new kiwifruit spray technology (Image courtesy S Max, Zespri).

The SFF encourages the use and demonstration of innovative technologies to improve sustainable farming practices.

REDUCING SPRAY DRIFT IN THE KIWIFRUIT INDUSTRY

"Adoption of new technology" sounds simple, yet in reality it is a complex process that takes place incrementally over a number of years. However, here is a great example of a new technology – a system to minimise spray drift – which has been trialled, rolled out and adopted within a short timeframe.

Air Inclusion (AI) nozzles fit onto the standard air blast sprayer that is widely used in the kiwifruit industry. As the name suggests, an air blast sprayer typically blasts the spray onto the kiwifruit vines and small droplets often drift over shelter belts into neighbouring properties.

AI nozzles produce droplets of spray that are much larger than the droplets produced from conventional nozzles. These larger droplets simply don't drift as far. They also have small air bubbles inside them so when the drop lands on the kiwifruit vine it shatters into smaller droplets. A special adjuvant, Driftstop®, helps to stick and spread the drops, further reducing drift. The third component is the correct set-up and calibration of the sprayer to avoid excessive air volume or speed.

Three years after this SFF project was initiated, up to 80 percent of kiwifruit spray contractors are using the new technology. Consequently, spray drift–related complaints to

the Bay of Plenty Regional Council have decreased from 20 in 2006, to 3 in 2008.

"The project was a success," says Peter Ombler, project chair and President of New Zealand Kiwifruit Growers Inc. "One of the reasons for that success was we were able to bring together a team of practical researchers, industry people and people on the ground who could demonstrate the new technology."

"Another reason," adds Peter, "is that the cost of changing to AI nozzles is relatively small (about $300 each) so price is not a huge barrier. We were able to demonstrate the advantages in the field and at field days – it is a very visual concept – and the benefits were obvious. A flyer or a report wouldn't have had the same impact."

"From a marketer's viewpoint, it is vital that New Zealand kiwifruit is produced in a sustainable manner," comments Shane Max, Zespri Orchard Productivity Manager of Global Supply. "Zespri will continue to invest in research and technology that decreases our pesticide footprint as much as possible. The MAF Sustainable Farming Fund helps us to leverage our investment for the good of the industry."

AT A GLANCE

SFF project	06/090 **Minimising off-target impacts of kiwifruit orchard sprays** SFF investment: $300 000
Other cash contributors	Zespri, NuFarm, Total Horticulture Ltd, Environment BOP

Total project value (including in-kind contributions) $877 425

Kiwifruit sprayer fitted with AI nozzles on the right hand side and conventional nozzles on the left hand side to demonstrate the difference in spray output.

THE PORK INDUSTRY LEADS THE WAY IN BIOGAS

Over half of New Zealand's pork production is based in Canterbury. Like all pig farmers around the country, Canterbury farmers are under pressure to effectively manage their manure wastes – in particular liquid manure. Biogas plants could potentially provide a practical option to generate on-farm heat and electricity (an annual energy spend in excess of $100 000 is not uncommon on a pig farm), reduce greenhouse gases and reduce odour.

"Our driving factors are the environmental benefits. The energy recovered would help reduce our electricity base load as well," S Shivas, pork producer.

Farm anaerobic pond: The bubbles indicate good biogas activity which can be captured and used to reduce greenhouse gas emissions.

Although biogas technology has been used by piggeries in Europe, the European systems have been developed for high density livestock populations whereas New Zealand farmers require smaller farm-scale systems.

The New Zealand Pork Industry Board has been leading the way in identifying opportunities for biogas systems within the New Zealand pork industry. Their one-year SFF project investigated four different systems and their associated costs.

"The SFF 'waste to wealth' project has provided an excellent platform for the pork industry to explore the feasibility of farm biogas systems," says project manager, Liz McGruddy. "The project provided a forum to update producers on the state of the technology, identify issues from international experience, and develop ballpark costings on farm configurations at a range of scales. At the conclusion of the project, producers were keen to take the next steps in undertaking more detailed, farm-specific technical and economic assessments, and this work is now underway in collaboration with MAF and EECA."

AT A GLANCE

SFF project	L07/009 **Waste to wealth** SFF investment: $17 000
Other cash contributors	New Zealand Pork Industry Board
Total project value (including in-kind contributions) $27 000	

USING BEES TO DELIVER FUNGICIDES TO BERRIES

Successful innovations are not always about developing new technologies – sometimes it is about harnessing nature to do the job for you!

Blackcurrants, boysenberries and blueberries are high value crops in New Zealand – export crops were worth $36.68 million in the 2008/09 season. However, production is limited by substantial losses from the disease pathogens which cause flower blight and grey mould on berries.

Bumble bees have been shown to transfer fungicides to berry crops, potentially reducing the need for spraying (Image courtesy J Bosgra).

In 2006, the berry industries teamed up with Plant & Food Research to look at using bees to control the pathogen *Botrytis cinerea* instead of conventional control by spraying. The team carried out trials in commercial berry gardens where both bumble bees and honey bees were used to transport chemical and biological fungicides to flowering plants.

"We showed that bumble bees were excellent at transmitting fungicides to blackcurrants, as were honey bees to boysenberries. Additional research in the United States showed that bumble bees were also excellent vectors for blueberries," says Dr Monika Walter of Plant & Food Research.

Because conventional fungicides left residues in honey, the biological fungicide proved a promising option. The next step is to identify an effective biological fungicide for New Zealand conditions so the innovative new technique can be used more widely.

AT A GLANCE

SFF project	06/007 **New disease management tools for botrytis in berries** SFF investment: $353 000
Other cash contributors	NZ Boysenberry Council Ltd, Blackcurrants NZ Ltd, Blueberries NZ Inc, Heinz Watties, Trimble Travel Award
Total project value (including in-kind contributions) $904 950	

3 CATCHMENTS WORKING TOGETHER ON WATER MANAGEMENT

Working together is key to the successful management of water resources (Image courtesy NZ Landcare Trust).

Water quality and the fair allocation of water have become huge issues for rural communities over the past ten years. SFF works with community groups to help address the complexities around sustainable water management.

IMPROVING WATER QUALITY – FARMERS LEADING THE CHARGE

In 2005, there was conflict in Golden Bay's Aorere community over water quality. Operating in a high rainfall and rapid runoff environment, dairy farming was believed to be impacting mussel farming in the bay. Mussel farming had almost become unviable due to restrictions on the number of harvesting days resulting from poor water quality. With the help of the NZ Landcare Trust, local dairy farmers began to proactively address the issue.

A team of farmers applied for SFF funding in 2006 to run a three-year project in the catchment. The project used local science, farm-scale environmental plans and farmer leadership as the tools to improve water quality.

Local dairy farmer, Sue Brown says, "it's about dairy farmers taking ownership of our environmental performance and seeing it as an integral part of future business success – not a compliance issue."

Four years on, the community has seen huge on-farm investment in dairy effluent management and a significant increase in mussel harvesting days. Better relationships

Local dairy farmers led the project (Image courtesy NZ Landcare Trust).

between the two sectors of the community was symbolised at a mussel chowder lunch which celebrated the best of the catchment – milk and mussels!

This first project finished in 2009 and SFF funding has since been granted to extend the Aorere approach to the neighbouring Rai catchment. The Aorere experience illustrated how a community can take ownership of a problem and bring about on-the-ground change. The local community sits at the core of catchment management. This project provided farmers with the information and ownership to act – a catchphrase of the project was keeping "experts on tap, not on top."

SFF is pleased to have supported this community's efforts over the past three years. We hope that other catchments can use some inspiration from the Aorere approach to improve the wellbeing of their own catchments – socially, economically and environmentally.

The success of the Aorere catchment project is celebrated in a colourful booklet (Image courtesy NZ Landcare Trust).

AT A GLANCE

SFF project	06/005 **A community approach to improving catchment wellbeing** SFF investment: $218 000	09/160 **Farmers as leaders in water quality action** SFF investment: $259 000
Other cash contributors	NZ Landcare Trust, Tasman District Council	NZ Landcare Trust, Tasman District Council, DairyNZ
Total project value (including in-kind contributions)	**$503 473**	**$585 000**

SUSTAINABLE FARMING FOR THE REREWHAKAAITU CATCHMENT

Lake Rerewhakaaitu lies about 29 km south east of Rotorua, and is a site of special wild life interest, supporting numerous populations of breeding birds in the Rotorua Ecological District. The surrounding catchment is primarily in pastoral farming and although the water quality of the lake is satisfactory at present, the local farmers and regional council want it to remain that way.

A two-phase SFF grant has provided the farmers in the catchment with some of the knowledge and tools to enable them to continue to farm without compromising the lake water quality.

"The project has been a good opportunity to help us focus on water quality when making management decisions. I understand my nutrient budgeting much better now," Mac Pacey, dairy farmer.

On 25 June 2009, Mac Pacey, who has been dairy farming in the catchment since 1981, summed up his thoughts on the SFF project to the assembled group of farmers and policy makers at the Rerewhakaaitu Hall:
"The project has been a good opportunity to help us focus on water quality when making management decisions. I understand my nutrient budgeting much better now. I'm conscious of how our 20 hectare effluent area works. We give far more consideration to what fertiliser we use – how much and when to apply it. We are now aware of where our sediment is going. We are going to enlarge our effluent area and we have a no-pugging policy. All these things have been helped and reinforced by the project."

Part of the help Mac refers to has been having AgResearch scientists identify nitrogen and phosphate losses in the catchment. Their work involved using OVERSEER® nutrient modelling to determine losses, and then suggesting management changes and testing mitigation options.

"Over the course of the project, a high level of trust has developed between the farmers, scientists and Environment Bay of Plenty," reflects project manager Bob Parker from

Fruition Horticulture (BOP) Ltd. "This has been a crucial feature in farmer uptake of the results." Bob lists the main changes as increases in the size of effluent areas, better timing of phosphate applications to avoid runoff, reducing phosphate application in relation to Olsen P levels, and better use of nutrient budgeting.

Environment Bay of Plenty has recognised the success of the project by offering funding and support for the farmers to write and implement their own catchment plan for the lake.

AT A GLANCE

SFF projects	02/032 **Project Rerewhakaaitu** SFF investment: $88 862	06/032 **Project Rerewhakaaitu: Phosphate mitigation** SFF investment: $200 000
Other cash contributors	FertResearch, Environment Bay of Plenty	DairyNZ
Total project value (including in-kind contributions)	**$259 778**	**$330 800**

The Rerewhakaaitu catchment south east of Rotorua where farmers have worked together since 2002 to maintain water quality in Lake Rerewhakaaitu (Image courtesy AgResearch).

COMMUNITY WATER RESOURCE MANAGEMENT IN THE UPPER TAIERI

The sustainable management of water resources is critical to primary production, ecosystem health, and vibrant rural communities. This is nowhere more evident than in Central Otago where average annual rainfall is as little as 350 mm.

"The future of irrigation relies on fair, sustainable allocation, involvement of the wider community and transparent monitoring and reporting," Geoff Crutchley, project chair.

The Upper Taireri catchment (Image courtesy NZ Landcare Trust).

Coupled with this is a complex system of water allocation based on historic mining rights, which have no relation to the actual water resource. These mining rights expire in 2021 and holders must apply for RMA consents before this time.

The Upper Taieri Water Resource Management Group of multi-stakeholders, has developed a vision of community management of the resource. This will involve users moving from individual mining rights and fragmented self interest, to single RMA consents for multiple users and community-based supply agreements. The five sub-catchments of the river are all working towards supply agreements and group consents. These will provide the flexibility to transfer water within the consent area based on agreed principles, mechanisms for metering and reporting to the regional council, reduced consenting fees, a single voice, and a mechanism to manage for multiple values.

The value of such an approach is that it brings together all the stakeholders and gives joint responsibility to resolve water allocation. It creates a space for communities to sort out how they will manage the resource, within agreed environmental limits and a community framework. This approach could be applied across New Zealand.

AT A GLANCE

SFF project	07/134 **Effective community water resource management** SFF investment: $100 000
Other cash contributors	Otago Regional Council, Fish and Game Otago, NZ Landcare Trust
Total project value (including in-kind contributions) $364 397	

4 SUSTAINABLE FORESTRY

The SFF works with a range of forest industries and farm forestry associations to encourage the use of trees as an integral part of sustainable land management.

PROMOTING THE BENEFITS OF TREES ON FARMS

"Developing a simple clear message promoting the multiple benefits of planting trees on farms, supported with well-researched practical examples was the key objective of our project," says past President of the New Zealand Farm Forestry Association, Patrick Milne.

"We collected information from practising farm foresters throughout New Zealand. We asked why and how each owner planted trees in the first place, and why they are continuing to plant them. Each of the case studies examined the role of farm forestry in an integrated land management strategy."

The case studies are now on the New Zealand Farm Forestry Association website and are being promoted through the Association and regional councils. Here is a small sample from two of the case studies.

WENSLEYDALE STATION: THE EPITOME OF "TREES FOR ALL REASONS"

Nick and Pat Seymour's Wensleydale Station lies in the Waiomoko catchment at Whangara, around 30 km north of Gisborne. The plantings on Wensleydale

have gone through several distinct phases, starting with planting for soil erosion control, followed by agroforestry, and finally looking to a future where forestry could provide a financial benefit for the next generation.

"It is all about planning and getting the trees in the ground," says Nick, stressing that trees and livestock farming should complement each other – not compete. "The concept of the farm forestry model is all about planting trees on lower fertility soils that do not have the capacity to carry more that eight stock units per hectare."

The main access track on Wensleydale Station, uphill of the area saved by tree planting (Image courtesy P Milne, New Zealand Farm Forestry Association).

HILL AND HIGH COUNTRY FARM FORESTRY: SUSTAINABILITY AND SURVIVAL

Dugald and Mandy Rutherford have farmed Melrose since 1975. The 3477 hectare property lies 20 km inland from Hawarden, North Canterbury, and ranges from moderate to hard hill country, through to classic South Island high country. Forestry and trees are inextricably entwined with their farm management.

"I've always believed income from forestry would be a good complement to our farm income," says Dugald. "Over the years, snow, drought and animal diseases such as TB and footrot have all caused us significant financial losses. These aren't a risk to appropriately sited forests."

AT A GLANCE

SFF project	LC08-043 **Adding to the farm forestry model** SFF investment: $20 000
Other cash contributors	Neil Barr Foundation, New Zealand Farm Forestry Association
Total project value (including in-kind contributions) $35 046	

"A lot of our country is almost bare shingle – no grazing on there, yet you can put a crop of trees on and they'll do extremely well," Dugald Rutherford, Melrose farm.

(Image courtesy P Milne, New Zealand Farm Forestry Association).

NORTHLAND TOTARA WORKING GROUP – PROFILING A VIABLE TIMBER SPECIES

A practical demonstration of totara pruning at one of the well-attended field days (Image courtesy NZ Landcare Trust).

Northland farmers sometimes view regenerating totara on their land as a weed – at best a source of firewood, at worse a nuisance to be rid of. But can these stands of trees be managed sustainably as a viable timber species?

"There has certainly been plenty of interest amongst landowners," confirms Helen Moodie, NZ Landcare Trust Co-ordinator and project manager for the three-year SFF project. "We've had great turnouts at our field days and workshops, and huge interest when the project was profiled at the Northland Agricultural Field days. We now have over 250 interested people on our database."

Initially, there was a lot of scepticism that a "slow-growing" native could have any value as a timber species – could thinning dense stands produce a growth rate that could be classed as productive? With help from Dr David Bergin of Scion, the group established 38 permanent sample plots on 10 selected farms throughout Northland. Results to date indicate that, although there will be variability between stands of totara, thinning will significantly increase the diameter growth of the trees.

Measurements of the trial plots will continue. However, the potential is there for farmers to incorporate the management of their totara stands as part of a whole farm system – selectively removing the larger trees as a timber source, while retaining the benefits from trees including biodiversity, shade and shelter, and erosion control.

AT A GLANCE

SFF project	06/082 **Sustainable management options for wood production from regenerating totara** SFF investment: $149 953
Other cash contributors	Northland Regional Council, Far North District Council, Tāne's Tree Trust, Transpower Landcare Trust Grant
Total project value (including in-kind contributions) $403 089	

TĀNE'S TREE TRUST – CHAMPIONING NATIVE TREES

Ian Barton is an enthusiast. A retired forestry consultant with a lifelong interest in kauri, he is passionate about the use of native New Zealand tree species for biodiversity, landscape enhancement, and for the production of high quality timber products.

Ian chairs Tāne's Tree Trust, a group that shares the vision of the widespread use of indigenous trees. Tāne's Tree Trust trustees draw on their combined expertise and networks from scientific, forestry, nursery, legal and farming backgrounds to educate others. As a "Community of Interest", Tāne's Tree Trust has partnered directly with the SFF in seven projects since 2000, as well as participating in other projects.

With funding from the SFF, the Tāne's Tree Trust has produced the booklet *Farming with Native Trees*. Currently in production is another publication on the beech species, as well as a technical manual *Planting and Managing Native Trees*. Also in progress is a nationwide survey of indigenous plantations to determine the carbon sequestration potential of the major indigenous timber tree species.

"Tāne's Tree Trust originally set out to be an organisation involved in research. However, it has evolved into one more involved in communicating that research by means of workshops and publications. That it does this so successfully, and to a very wide range of people, is due in no small part to the funding assistance provided by the Sustainable Farming Fund," says Chair, Ian Barton.

AT A GLANCE

SFF project	03/024 **Opportunities for native trees on farms** SFF investment: $57 500	L07/060 **Development of new workshop programme on planting native trees for timber** SFF investment: $15 200	C08/036 **National survey of indigenous plantations for carbon accounting** SFF investment: $169 470
Other cash contributors	Environment Waikato, Northland Regional Council, FITEC, NZ Forest Owners Association	FITEC, Tāne's Tree Trust	Tāne's Tree Trust, FIDA
Total project value (including in-kind contributions)	**$116 000**	**$82 600**	**$271 490**

5 INTEGRATED PEST MANAGEMENT FOR HORTICULTURAL AND ARABLE CROPS

Checking for insects in a crop of canola as part of an integrated pest management monitoring programme (Image courtesy Plant & Food Research).

The SFF has partnered with our horticultural and arable industries to develop and refine Integrated Pest Management systems.

THE ARABLE ECOSYSTEM – THE GREENING OF A SECTOR

Integrated Pest Management (IPM) is an effective and environmentally sensitive approach to pest management. Farmers and growers using IPM have an understanding of their ecosystem and take advantage of the benefits of predatory insects and parasites to reduce their reliance on chemical pesticides.

"IPM practices are widely used by fruit and vegetable growers but the concept is relatively new for arable farmers," explains Nick Pyke from the Foundation for Arable Research (FAR).

"It's not that we don't care about the environment, but rather we have been stymied by the complexity of the systems which involve a variety of crops in rotating locations. Pest and disease control has been a major challenge for arable farmers, so about six years ago we posed the question, 'could IPM work for us and if so, where to start?'"

The first step was the joint SFF and FAR project *Integrated management of slugs in cropping systems*. Slugs are a persistent problem for farmers but little was known about which species were causing the damage and whether there was any control by predators.

Monitoring slugs as part of the IPM research programme (Image courtesy Plant & Food Research).

Dr Paul Horne of IPM Technologies PTY Ltd and Plant & Food Research entomologists worked with a small group of farmers teaching them how to monitor and identify slug species and other beneficial insects on their farms. After three years, a successful IPM strategy was developed and implemented and five years down the track one farmer noted, "we don't often hear slugs talked about in the local pub these days."

The farmers involved with this work realised that a widespread change to an arable IPM system wouldn't happen until the financial and environmental benefits could be demonstrated. They joined forces with researchers and industry representatives to form the Canterbury Arable Farmer IPM Initiative, and in 2007 the group was funded by SFF to take the next step.

The lead farmers in the group are working with researchers to develop an integrated approach for controlling aphids and the spread of viruses in cereals. A large focus of the project has been demonstrating the IPM approach alongside conventional systems so farmers can compare the benefits. Now a wider group is learning from the experience of the initial lead farmers.

Field days and workshops are being used to spread the message that brassica pests can be successfully controlled through IPM principles, without the need for calendar spraying.

The carabid beetle is a slug and aphid predator (Image courtesy Plant & Food Research).

Many arable growers also grow brassica crops in their rotations and these are bothered by diamond back moths, white butterflies and leaf miners. A successful brassica IPM system has been developed and implemented in the North Island but success for the South Island growers has been elusive. One of the main challenges is the number of different sectors involved in growing brassicas and the lack of understanding of IPM principles.

A wide network of industry bodies and farmers has been drawn together under the umbrella of a SFF project to apply the IPM principles to all brassica crops. Field days and workshops are being used to spread the message that brassica pests can be successfully controlled through IPM principles, without the need for calendar spraying.

AT A GLANCE

SFF project	04/052 **Integrated management of slugs in cropping systems** SFF investment: $130 852	07/010 **Sustainable IPM systems in arable crops** SFF investment: $255 000	08/050 **Foliage Insect Pest Management in South Island brassica growing systems** SFF investment: $263 182
Other cash contributors	Foundation for Arable Research Ballance Agri-Nutrients	Foundation for Arable Research PGG Wrightson Elliot Chemicals Foundation for Research Science and Technology	Foundation for Research Science and Technology, DairyNZ, Horticulture New Zealand, Foundation for Arable Research, Meat and Wool New Zealand, PGG Wrightson, Agrichemical companies
Total project value (including in-kind contributions)	**$371 874**	**$508 839**	**$641 870**

AN IPM PROGRAMME FOR OUTDOOR LETTUCE GROWERS

As with all IPM programmes, science alone is not enough – these are complex programmes and an extension component is necessary to provide growers with the confidence to use the techniques. With the smaller product groups, such as lettuce, there is very little existing research, hence there was a big emphasis and investment in the initial science programme.

The Leafy Crops Product Group of Horticulture New Zealand partnered with the SFF to do the research programme, then an additional two years of SFF funding enabled the group to develop grower-friendly tools, including a manual, ute guide and CD, and to provide training on IPM methods.

Although the project was originally planned before the arrival of the currant-lettuce aphid in New Zealand, the work plan was adapted to assist the industry to cope with the major new pest.

Scouting for pests and beneficial predators is key to any IPM programme, "you need to get your boots on and scout the crop," Plant & Food Research entomologist, Dr Graham Walker.

Project leader, Stuart Davis, General Manager Operations at LeaderBrand Produce, says the project is a good example of how the industry can come together to work on common problems.

"It has been very encouraging to have the MAF Sustainable Farming Fund come on board to help with the development of the tools, particularly at the implementation stage where they were validated and demonstrated to growers in commercial crops," Dr Davis says.

AT A GLANCE

SFF projects	02/027 **Integrated pest and disease management for lettuce** SFF investment: $600 000	05/059 **Implementation phase of the integrated pest and disease management (IPM) for outdoor lettuce project** SFF investment: $293 760
Other cash contributors	VegFed (now Horticulture NZ), Agrichemical companies	Horticulture NZ Fresh Vegetable Product Group, Agrichemical companies, Seed merchants
Total project value (including in-kind contributions)	**$995 694**	**$543 266**

MANAGING THE TOMATO POTATO PSYLLID

Scouting for tomato potato psyllid in a potato crop (Image courtesy D Manktelow).

The tomato/potato psyllid (TPP) is believed to have invaded New Zealand in the summer of 2005/06, with the first formal identification made in March 2006 in South Auckland. Through an existing SFF project, Plant & Food Research entomologists, in conjunction with industry, established the distribution of the pest. TPP has been found throughout the country and is considered a significant pest of capsicums, tomatoes (both greenhouse and field), potatoes (including Māori potatoes), and tamarillos. It is a prolific breeder and is believed to vector micro-organisms that may play a role in disease development. The costs to the industry have been significant – field tomato, tamarillo and potato growers continue to experience crop losses.

A large industry and SFF project, funded in 2009, is focused on developing sustainable controls for the pest. What this means varies between sectors. For example, there are scientists from Plant & Food Research and Agribusiness Training working with the potato and tamarillo growers to develop an insecticide programme based on action thresholds and using effective spray application technology. The greenhouse industry is pursuing IPM-compatible chemical control options as well as biological control agents with the assistance of Plant & Food Research and BioForce.

And while the pysllid control options are being developed, the project team has contracted Market Access Solutionz to provide growers with the latest information from New Zealand and offshore.

The ultimate aim of the project is to provide growers with a range of tools to manage this new pest while still meeting quality and profit targets.

Tomato potato psyllid (Image courtesy G Walker, Plant & Food Research).

An insect incursion such as TPP can disrupt our horticultural industries – a collaborative approach is needed and that is what is being demonstrated with this project.

AT A GLANCE

SFF project	09/143 **Sustainable tomato/potato psyllid management** SFF investment: $600 000
Other cash contributors	HortNZ Potatoes NZ HortNZ Fresh Tomato Product Group HortNZ Fresh Vegetable Product Group McCains Food Ltd, NZ Tamarillo Association, Bluebird Food Ltd, Mr Chips
Total project value (including in-kind contributions) $1 537 700	

6 LEARNING FROM OTHERS

Elk/Wapiti bulls on Edendale Station (Image courtesy T Pearse, Deer Industry New Zealand).

"It has been great to see other farmers learning from what we are doing and applying it on their own places," John McLean, focus farmer.

Learning takes different guises and for many farmers and growers nothing beats seeing and experiencing something first-hand. Focus farms are a powerful way for a community to observe the implementation of new techniques on a real farm over several years, and then transfer that learning back to their own situation. Most SFF projects have aspects of experiential learning built into them in conjunction with other forms of communication.

FOCUS ON DEER

When the focus farm project was initiated five years ago, deer farmers were facing falling profits and increasing concerns over the environmental impacts of deer farming. Although farming best practice for deer had been established, the levels of uptake amongst farmers were extremely variable.

Two focus farms – one in Otago and one in Southland – were set up to provide demonstrations of environmental and productivity practices specifically developed for each farm by the farmers, scientists and regional council staff. By the end of three years, both focus farms had increased their stocking rate, improved feed management, increased animal performance and improved environmental performance. However, more importantly, other deer farmers were making positive changes on their own farms based on what they had

learnt from the focus farms. These included:

- Improved winter management.
- Improved weaner growth rates.
- Adapted animal handling.
- Managed wallows.
- Restored riparian zones.

Considerable on-farm changes have occurred which have lifted productivity and reduced environmental impacts.

Social science research found that regular attendees to the focus farm field days made an average of 4.6 changes on-farm as a result of what they saw, and farmers who never attended a field day but still read the newsletters, made an average of two changes. Overall, out of all farmers involved: 47 percent had planted more trees, 73 percent had increased the amount of waterway fencing, and 43 percent had changed their wintering system.

An evaluation of the cost benefit of the project, based on the productivity strategies, has shown a return on SFF investment of 29:1.

Both farms, Totara Hills and Coleraine, entered the farm environment awards with Totara Hills winning three awards, including the Premier Award. Four new focus farms have been established by the industry, in Hawke's Bay, Rotorua, North and South Canterbury, leveraging off the success of this project.

Other benefits identified were the positive interactions between farmers, farm consultants, AgResearch scientists and regional council staff.

"It gave me great hope, as a regional council person, that the deer industry is going in the right direction. We saw a lot of innovation and top productivity. Sustainability was really strong on all the farms we saw," says Nicola McGrouther, Land Resource Officer, Otago Regional Council and lead judge for the Deer Industry Environmental Awards.

Hinds and fawns on summer crop (Image courtesy T Pearse, Deer Industry New Zealand).

AT A GLANCE

SFF project	05/103 **Focus on Deer** SFF investment: $343 508
Other cash contributors	DEEResearch, Otago Regional Council, Environment Southland
Total project value (including in-kind contributions) $854 368	

MERINO FARMERS MANAGING RIPGUT BROME

Ripgut brome *(Bromus diandrus)* is an annual grass weed of the dry hill and high country of Canterbury, Otago and Southland. The seeds can penetrate fleeces and lodge in the flesh of sheep which affects animal health and performance, and carcass grading. Up to five percent of merino lambs killed in any one season can have seeds in the carcass.

The merino industry, through the industry body Merino Inc, used a SFF grant to develop and demonstrate practical on-farm strategies to reduce the level of contamination by ripgut brome in their flocks.

"Since being involved in this project I am more aware of the presence and impact ripgut brome has on my sheep operation," says Simon Williamson from Glenbrook Station in the MacKenzie Basin. "Ripgut brome contamination is going to be a major issue for farmers, store lamb producers and finishers, cropping farmers, and meat companies in the future."

Ripgut brome is a grass weed that causes animal health and performance issues in the South Island (Image courtesy T James, AgResearch).

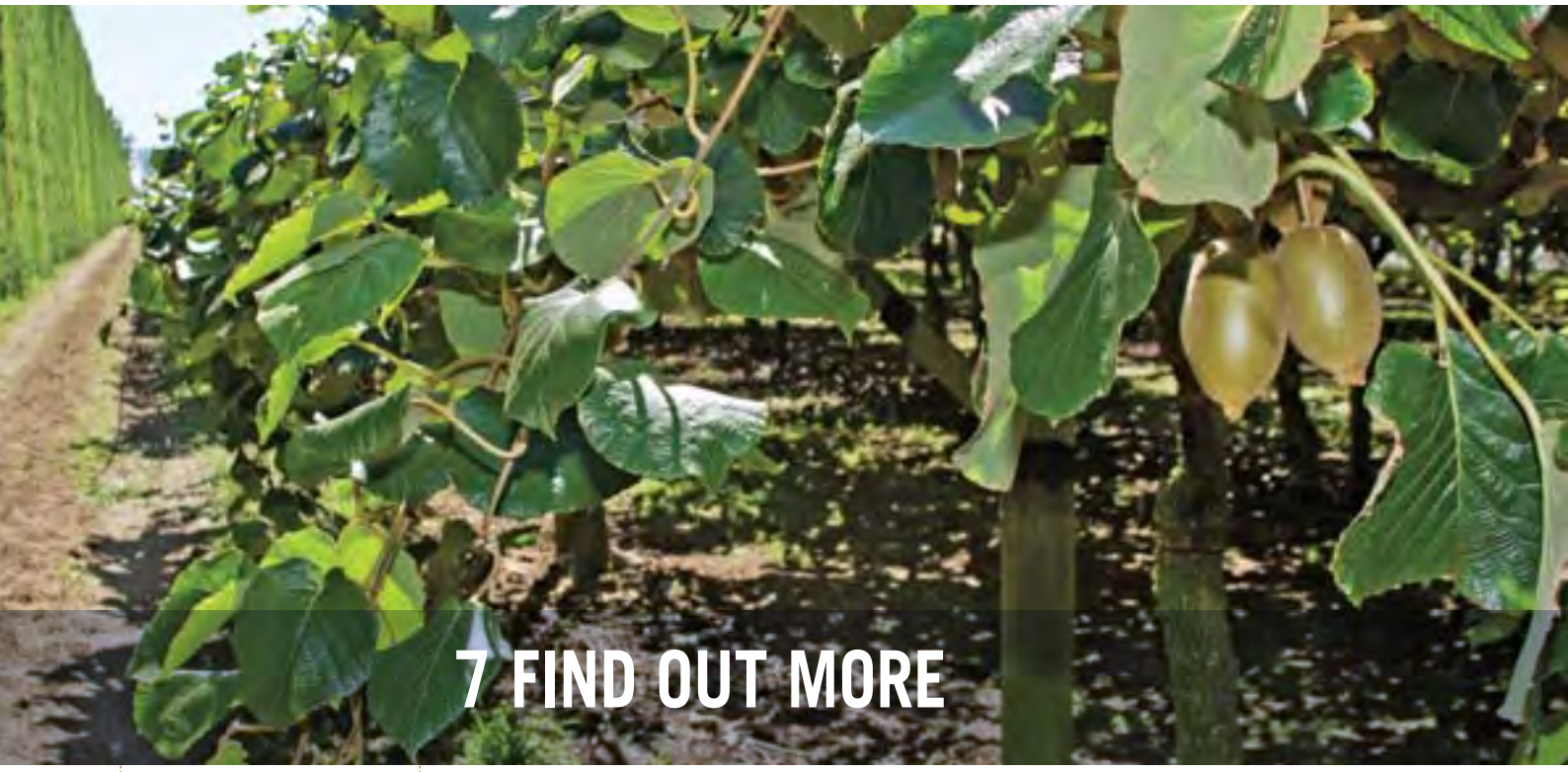
The merino farmers involved in the project developed and tested a number of strategies themselves, which increased the integrity and applicability of the result. Merino farmers are now aware of management techniques such as:

- intensively grazing infected paddocks in early to mid-spring before seed production;
- avoiding grazing the worst paddocks with lambs from November to January;
- encouraging lambs to graze ripgut brome free areas of paddocks by using salt to attract the stock; and
- shearing lambs after weaning in years when there is a high concentration of seeds.

Demonstrations of the management techniques were held on three farms and management guidelines were distributed to over 600 farmers.

AT A GLANCE

SFF project	06/072 **Ripgut brome management** SFF investment: $131 236
Other cash contributors	Meat & Wool New Zealand, Lincoln University
Total project value (including in-kind contributions) $300 183	



7 FIND OUT MORE

Kiwifuit (Image courtesy B Zuur).

This report has illustrated just a few of the projects funded by SFF over the past ten years. You can find more information on all past and current projects on the MAF website under SFF at www.maf.govt.nz. Copies of reports and resources produced by projects are available on the website or in hard copy on request.

SFF also produces regular email newsletters containing information about projects and upcoming funding rounds. To subscribe to the newsletter, email sff@maf.govt.nz.

If you're interested in applying for project funding please contact one of our project advisers, based in Hamilton, Wellington and Christchurch. They can help you develop your project application or can put you in touch with any projects that you are interested in. To talk to a project adviser please call us on 0800 008 333.