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AHEAD**
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Get a future
in agriculture

Your guide
to a career in
**AGRICULTURAL
SCIENCE**

***Your New Career
Starts Here***

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Make your mark!


As the biggest export industry in New Zealand, agriculture provides plenty of career opportunities. It employs thousands of people in a whole range of jobs, directly on farm and in support of its activities.

New Zealand research scientists have long been world leaders in applying new science technologies to this dynamic industry – such as gene discovery, plant and animal physiology and molecular genetics.

As a scientist or research technician working in New Zealand's largest industry the career opportunities are many and varied. Agricultural scientists can find work in institutions such as universities and crown research institutes and also in a diverse range of private and industry-funded companies.

And there is plenty of support out there for you, including scholarships and internships for enthusiastic young scientists. With determination and the investment of your time into achieving the right qualifications you can make your mark in a rewarding, valued career.

This guide has been put together to help people like you, who are thinking about a career in the agriculture industry, but aren't sure what's involved or where to begin.

A large, stylized green cloud graphic is located in the bottom right area of the page. It has several smaller green circles and swirls trailing off from its top right side. Inside the cloud, the text 'So come on, let's get started!' is written in a white, bold, sans-serif font.

***So come
on, let's get
started!***

Agriculture is one of New Zealand's largest industries and one of the fastest growing. It is a significant employer and contributor to New Zealand's standard of living.

Some agricultural facts:

- In 2009/10 dairy companies processed 16.5 billion litres of milk
- In 2010 there were more than 4 million dairy cows, 33 million sheep and just under 4 million beef cattle
- NZ exports 90% of sheep and beef meat.
- In 1990 the average dairy herd size was 160 cows, in 2010 it was 376
- Agriculture is New Zealand's largest export earner.

***For more information
on agriculture go to
getahead.co.nz.***



Your New Career Starts Here

What are employers looking for?

Employers are looking for many things in their scientists and research teams:

- Being reliable – science is an exacting discipline
- Being trustworthy – you are in a position of trust and must always live up to that
- Being an expert – staying up to date with the latest information and trends is critical
- Being innovative and organised – coming up with new ideas and having the skills to carry the research out to prove your ideas
- Being able to work on your own – employers want to leave you to work unsupervised
- Having the right attitude – employers don't employ degrees; they employ the right people who have degrees/doctorates
- Having attention to detail and accuracy.

A career where you can make your mark

Farmers are busy people with big responsibilities. They run businesses that may be worth millions of dollars. To be successful they have to keep up with developments in science, information technology, and animal and plant health.

Farmers need great agriculture research to help them produce more product of higher quality, while safeguarding our environment. And farmers and our community recognise this. Hundreds of millions of dollars is invested each year into the research and development for the New Zealand farmer.

Science is undertaken at many levels – in the paddock, in plots, or in laboratories.

Some examples of how science is used in the agricultural industry include:

- Optimising farm systems to increase production from existing resources
- Development of nitrification inhibitors to prevent nitrogen leaking into waterways
- Innovation in molecular biology and genomic selection technology to speed up plant and animal improvements.

What do you want?

We have put some things in...
but you'll want to add more.

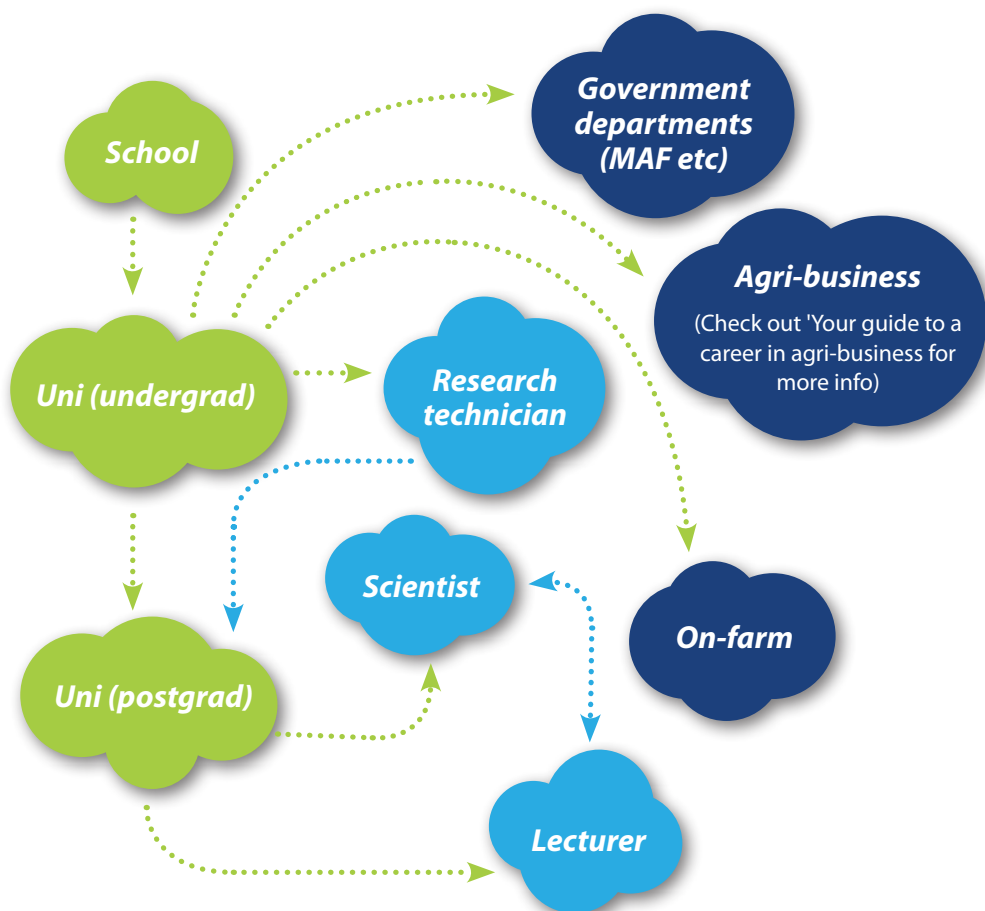
You love science, or you just really like to find out what makes things tick. Want to work in a vital industry with a great future? Help yourself out a bit...find out if working in agriculture science is for you.

<i>"What I Want"</i>	<i>Not Really</i>	<i>Prefer It</i>	<i>Absolutely!</i>
I love science			
I can focus on details			
I am accurate			
I want to be respected			
I want to make a lasting contribution			
I prefer to focus on specialist projects			
I like to solve problems and find solutions			
I am innovative and creative			
I am a strategic thinker			
I want to earn good money			
I like details and don't mind admin			
I can think outside the square			
I am willing to invest the time and money needed to educate myself			
I want to work outdoors			
I'm a practical, 'hands on' type			
I am able to be precise and concise			
I like to work in a team and have good people skills			
I want to work with animals and/or plants			
I am both flexible and organised			
I am able to work effectively by myself			
Add your own:			

If you have lots of ticks in the 'prefer it' and 'absolutely' columns then a career in agriculture science might be just what you are looking for.

Agricultural science career pathways

Starting out in science gives you flexibility. It gives you great skills to diversify into a career on-farm or in agri-business. Or just go hard and lead the industry as a scientist or possibly pass your knowledge on as a lecturer and inspire the next generation of scientists.



Scientists and technicians – who does what?

These roles can be a bit confusing so we have put together this quick guide.

Scientists tend to be creative and strategic and think about the big picture. They continually question how things work, what the effects of different strategies might be or how systems can be better designed. This leads to new ideas for experiments to test their theories.

Once the scientists have the experiment approved they discuss the trial with research technicians. Research technicians tend to be practical, tactical and detail-oriented people. They carry

out more of the outdoors, hands-on measurements required for the experiments, while the scientists are more involved in the administration side.

Once an experiment ends and all measurements have been taken, the data is analysed by a statistician. This tells you what the outcomes of the experiment were. From here it is normally the scientist's role to take the information and present it to the world. This can be done by writing articles, speaking at farmer or science conferences or writing papers for science journals. This is probably the most important job of a scientist – getting what they find out into the community where it can be used to make a difference.

A scientist's job involves:

DELIVERING

- A clear plan for the research to the science technicians
- High quality science results to dairy farmers and public.

DRIVING

- High quality science that pushes the boundaries
- Technicians with potential to achieve the best they can.

INNOVATION

- Always thinking of how things can be improved.

A technician's job involves:

DELIVERING

- High quality science results to scientist
- Schedules, plans etc to farm staff and other people in the field
- Reports, talks to people from all walks of life.

DRIVING

- Projects forward. Making sure things happen when they should
- Our career!

INNOVATION

- Always looking to improve how we do things
- Continual reading within your specialist field to keep knowledge up-to-date
- Each project is different and requires a different approach.

Agricultural science careers

Research scientist

Research scientists focus on dealing with problems experienced by the New Zealand agricultural industry and its communities, and understanding and promoting the adoption of new technologies into current and future dairy farming systems.

A scientist needs good computing skills, organisational skills, analytical and research skills, and good written and oral communication skills.

Different types of scientists in the industry include

- Agronomist
- Animal behaviour scientist
- Biologist
- Crop scientist
- Farm systems scientist
- Geneticist/molecular biologist
- Microbiologist
- Milk composition scientist
- Nutritionist
- Reproduction scientist.

Typical tasks that scientists would do

- Develop farming methods to protect animal welfare and the environment
- Advise farmers, vets, and horticultural and agricultural companies
- Find ways to improve the quality and value of animal or crop production
- Conduct experiments to find ways to control pests and diseases
- Analyse the results of experiments
- Write about their work for scientific and farming magazines
- Write applications for funding grants for research
- Present reports at conferences in New Zealand and overseas
- Manage research budgets, technicians and casual staff
- Develop vaccines and other products to improve animal health and productivity.

Recommended subjects to take at secondary school

Chemistry, Biology, Physics, Calculus, Statistics and Modelling, Computer Studies and English.

How to become a scientist

Becoming a scientist is a two step process – get your first degree before studying a specialised area to achieve your doctorate.

Your first degree, a tertiary entrance qualification, is required to enter further training. Science degrees can be obtained at any university but an agricultural focus is desirable so you could look at either:

- **Lincoln University** – Lincoln, near Christchurch
- **Massey University** – Palmerston North
- **The University of Waikato** – Hamilton.

Getting a doctorate (PhD)

Scientists require a doctorate. This is done through an applied study of a subject that is of interest to you. You get to choose what that subject is! It will typically take you 3-4 years to achieve your PhD studying full time, on top of your science degree.

Websites to visit for more information

AgResearch - www.agresearch.co.nz
Lincoln University - www.lincoln.ac.nz
Massey University - www.massey.ac.nz
The University of Waikato
- www.waikato.ac.nz

Up to seven years at university sound too daunting?

This can mean up to seven years at university, however you don't have to complete your doctorate straight away. You can always leave university after completing your degree and find a job in science as a research technician or search for an internship where you are supported through your doctorate.

Degree options

- Bachelor of Science (BSc)
- Bachelor of Agricultural Science (BAgriScience)
- Bachelor of Environmental Management and Planning (B.E.M.P).

Possible employers

DairyNZ, AgResearch, Massey University, Lincoln University, LIC Corporation, Ambreed, Fonterra, Plant and Food Research, ViaLactia Biosciences, Abacus Biotechnology, On Farm Research, Ag First Consultants.

Pay

On average agricultural/horticultural scientists can earn between \$61,000 and \$65,000 a year.

With several years experience and increased performance and responsibility, pay could rise to about \$100,000.

Agricultural science careers

Research technician

A research technician works with and assists scientists to undertake research. But if you're thinking lab coats and Bunsen burners you couldn't be further from the mark! A research technician working in the dairy industry is far more likely to be found outside working with farmers, animals and on the land.

A technician must have good computing skills, organisational skills, analytical skills and written and oral communication skills. If you have an eye for detail and a high level of curiosity about what makes things tick then this job is for you!

If you really like the job you will also have the opportunity to continue studying and to take over your boss's job.

Where to from here?

Career path for technicians:

Technical -You can become a more senior technician with greater expertise and specialisation into a particular area.

Scientific -You can go on to do a MSc or PhD and become a scientist.

Anything else - Being a technician is a good short-term option if you think you want to work in science, but don't know exactly what you want to do.

Alternative titles

- Laboratory technician
- Assistant research technician
- Field assistant.

Typical tasks that a research technician would do

- Set up and run experiments in a farm or lab environment
- Maintain relevant databases
- Order equipment and chemicals
- Help to write reports based on results from experiments conducted
- Maintain relationships with farmers.

Recommended subjects to take at secondary school

Chemistry, Biology, Physics, Calculus, Statistics and Modelling, Computer Studies and English.

How to become a research technician

To become a research technician it is preferred that you have a tertiary qualification in science and an interest in the agriculture industry. Science degrees can be obtained at any university but an agricultural focus can be useful so you could look at:

- Massey University
- Lincoln University
- The University of Waikato.

Degree options

- Bachelor of Science (BSc)
- Bachelor of Agricultural Science (BAgrScience).

Possible employers

DairyNZ, AgResearch, Massey University, Landcare, regional councils, Lincoln University, LIC Corporation, Fonterra, veterinary centres, privately owned agriculture companies, such as Abacus Biotechnology and Ag First Consultants.

Pay

Scientists at the technician level with a Bachelor's or Master's degree start at \$35,000 a year, moving up to about \$50,000 depending on their experience and performance.

Where to study

The University of Waikato

The University of Waikato has first-class facilities to help you work and play and gives you space to think. Waikato has a relaxed, chilled out atmosphere.

☎ 0800 WAIKATO

🌐 www.waikato.ac.nz

✉ info@waikato.ac.nz

Massey University

Massey Palmerston North is New Zealand's largest institution for the life sciences, agricultural, horticultural and veterinary teaching.

☎ 0800 MASSEY

📞 text 5222

🌐 www.massey.ac.nz

✉ contact@massey.ac.nz

Lincoln University

Lincoln University is one of New Zealand's oldest universities and has a strong focus on agriculture. Lincoln is based on the outskirts of Christchurch and has a relaxed campus surrounded by dairy farms.

☎ 0800 10 60 10

📞 text 8999

🌐 www.lincoln.ac.nz

✉ info@lincoln.ac.nz

Christchurch

Hamilton

Palmerston North

Under the microscope

Scientist Julia Lee used to call herself a real 'townie.'

"People laughed at me when I got a job at DairyNZ more than eight years ago as a lab technician as I knew nothing at all about cows, let alone the dairy industry."

Today Julia is a scientist at DairyNZ having completed her PhD – so she is now Dr Lee.

"To be a scientist you generally need to have completed a PhD, which takes about four years of study on top of an under-graduate degree."

Julia gets to do lots of interesting stuff in her job, like finding out why grass grows back faster following some methods of grazing, than others. This is important work, as farmers depend on good quality grass to feed their cows.

"I have learnt some really cool techniques in the lab – like the ones on CSI. Every day is different – I could be on-farm in the mud collecting samples, processing samples in the lab or sitting at my desk writing up my findings. Sometimes I am even lucky enough to travel overseas."



Julia Lee
Scientist

I got to travel to Australia when I was completing my PhD through the University of Tasmania. More recently I was in Ireland. I also travel overseas to present my research at international conferences."

"A lot of scientists get stuck in the lab all day, but in the dairy industry you're often outside and working with animals."

Her advice for someone wanting to have a career as a scientist is to find an area of science that you are interested in. "Work hard in the science subjects at school and get as much job experience as you can. People will recognise your skills."

Miranda Armstrong

Research and development officer

Ensuring quality through science

Science has always interested Miranda Armstrong. She has an enquiring mind and enjoys learning new things.

Miranda is a research and development officer in the red meat sector – a job she finds exciting.

"My role involves managing and carrying out innovation projects – mainly based around meat quality."

"Understanding the variation in product quality is critical and there are many factors which impact on this. I investigate how variables, such as animal factors – breed, sex, age, size, nutrition – and processing factors – animal handling, slaughter methods, electrical interventions, time, temperature, storage times – can affect the meat quality."

Miranda grew up in a small South Canterbury town called Pleasant Point.

She studied at Lincoln University and completed a Bachelor of Science (honours) majoring in Biochemistry and Physiology.



She is now working at Silver Fern Farms.

"I enjoy my position because I get to work with all parts of the chain for example farmers, processors, marketing and consumers."

There is no average day for Miranda.

"Depending on whether I have projects running or meetings to attend you may find me out and about in a variety of places. Some of these could be testing or collecting samples in the processing plant anywhere around the country, in the sheep yards/company farm, at an industry meeting (sometimes overseas), in front of the computer reading current reviews on new technologies, analysing data or planning future trials."

Support for you

DairyNZ Scholarship

If you are interested in studying to get into dairy related fields and are passionate and motivated, the DairyNZ Scholarship Programme could be for you.

- At least 50 undergraduate scholarships annually at either Lincoln University or Massey University
- 3 gap year scholarships for school leavers (conditions apply)
- Scholarships tenable for up to 4 years
- Full, formal tuition fees of over \$5000 per year
- Opportunities for networking with top industry leaders
- Support and mentoring for every recipient
- Personal development through assisting with career promotion activities
- Graduates gain employment on-farm, near-farm and in research.

Beef + Lamb New Zealand Undergraduate Scholarships

For those keen to follow a path into the sheep and beef industries Beef + Lamb New Zealand offers a range of undergraduate scholarships.

- Up to 18 undergraduate scholarships annually at either Lincoln University or Massey University
- Scholarships tenable for up to 4 years
- Full, formal tuition fees up to a maximum of \$5000 per year
- Support and career guidance for every recipient
- Personal development through assisting with career promotion activities.

The DairyNZ Science Intern Programme

DairyNZ is aiming to build the future capability of the New Zealand dairy industry by helping to create the next generation of dairy scientists.

A DairyNZ science internship is an opportunity to work and get paid while you complete post graduate study on your way to becoming a scientist. And you get exposed to all areas of dairy science which lets you then make a more informed decision about where you would like to specialise.

Training a new science graduate to full proficiency as a major career expert in dairy farming takes time. DairyNZ aims to develop and support new professionals over a timeframe of up to seven years. A comprehensive programme exposes the new scientist to a variety of industry skill, while completing postgraduate degrees. Candidates also get to work in a supported environment with the world-class scientific minds. On final qualification permanent posts may be made available to suitable candidates.

To apply or to find out more

- 📍 www.getahead.co.nz
www.lincoln.ac.nz
www.massey.ac.nz
- ☎ 0800 4 DairyNZ
(0800 4 3247969)

To apply or to find out more

- 📍 www.beeflambnz.com
www.lincoln.ac.nz
www.massey.ac.nz
- ☎ 0800 BEEF LAMB
(0800 233 352)

To find out more

- 📍 www.dairynz.co.nz/scienceinterns



Starting-out checklist

Now that you know that the dairy industry is right for you take your first steps:

Investigate your options

Have a good look at each of your training options. You may spend the next three to seven years at university so find out about the course as well as the campus, city life and lifestyle you can expect.

What next?

Find out:

- Application deadlines
- Course deadlines
- Hall of residence deadlines
- Scholarship deadlines

And make sure you meet them.

Support is out there

The first year of tertiary study is scary. While it is really exciting embracing all your new found freedom sometimes you may wonder if you have anyone on your side. You do! Find help by:

Talking to student financial advisors

Make not very much go a long way.

Using careers advisors, liaison officers and recruitment services

They can give you advice on appropriate courses and scholarships, give advice on career paths and keep you focused.

Getting a mentor

A mentor is someone already working or familiar in the career you choose and who you respect and can use as a sounding board for your ideas.

Maybe even join the Young Farmers Club where you can rub shoulders with the people you will be working with in the future.

Don't stop here!

Find out more at:

Get Ahead

The agriculture industry can take you anywhere - from developing new vaccines for animals, to owning your own farm! It's an industry with huge potential and it's yours for the taking. Find out how.

🔗 www.getahead.co.nz

Careers

Helping you make decisions about work and training in New Zealand. Use the interactive tools and information to make work and study decisions that fit in with the life you want to lead.

🔗 www.careers.govt.nz

Beef + Lamb New Zealand

Find out about what the beef and lamb industry has to offer and what work is being done to help farmers – you may be able to see yourself doing some of this work in years to come. Plus check out the details of their scholarship programme.

🔗 www.beeflambnz.com

DairyNZ

Information about our comprehensive scholarships programmes and profiles of current scholarship recipients and graduates.

🔗 www.dairynz.co.nz

AgResearch

Visit where some of the most important agricultural science in New Zealand happens.

🔗 www.agresearch.co.nz

The Ministry of Science

The Ministry of Science and Innovation website will give you an idea of what sort of science gets funded by Government.

🔗 www.msi.govt.nz

Study Link

A comprehensive guide to courses, scholarships and support services for New Zealand tertiary students.

🔗 www.studylink.org.nz

Massey University

🔗 www.massey.ac.nz

Lincoln University

🔗 www.lincoln.ac.nz

The University of Waikato

🔗 www.waikato.ac.nz

