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Introduction

Starting from the overseas observation that New Zealand offers clear approaches on demonstration, innovation and extension and as NEFERTITI has the aim to improve demonstration and peer learning approaches throughout Europe, we organised a study trip to New Zealand with a team of five people from very different regions in Europe. We had three main objectives.

Firstly, we wanted to **understand and be inspired** by the **New Zealand approach to on-farm demonstrations**, the promotion of **reflexive learning** during demo events and in the wider context the organisation of the New Zealand AKIS.

Secondly, we wanted to draw some **take-home messages** and **recommendations for NEFERTITI** on **knowledge exchange facilitation** and the **organisation of demonstration events**. This is the focus of this pocket report.

Finally, we wished to explore areas for **international collaboration** and future scientific publications which will be valued during the next steps of the NEFERTITI project.

Our approach was to generate **insights** based on discussions with key actors in the New Zealand AKIS, as well as through the observation of farm demonstration events. While we followed an unstructured approach during our interviews, we had clear overall objectives and guiding questions. We noted down our observations and reflected on our discussions and visits every day within the team. Annexes 1, 2 and 3 provide details of the programme, delegation members and the relevant questions for each of the themes explored.

This report is a synthesis of our discussions and the lessons we learned during our study trip, not a complete and detailed report of all our activities. It is laid out in five sections. The first section summarises the key role of agriculture in the New Zealand economy plus our interpretation of how the New Zealand culture impacts the approaches to on-farm demonstration. This is followed by a section which explains the political context for the New Zealand AKIS, namely a life without subsidies and a culture of negotiation. The third section describes how the main AKIS organisations operate and have an impact. The fourth section recaps our observations about the demonstration approaches employed in New Zealand. The report concludes with our reflections on how the lessons learned can be relevant for NEFERTITI, and the EU AKIS system.

1. Agriculture's key role in the New Zealand economy



Vineyard in Marlborough region



1.1. Introduction

While the agricultural share of New Zealand GDP has declined over the past twenty years, the New Zealand economy still depends on agriculture as a driver of economic well-being (especially in rural areas). Agriculture has in turn relied on pasture, or rather on the livestock that eat pasture, to drive output and export growth. Dairy products, meat and wool have, and continue to, generate significant export earnings, with horticulture and viticulture also growing in importance. The Ministry of Primary Industries (MPI) recognises this:

“To maintain our way of life, New Zealand needs its primary industries to do well. This is important for the future of the food and primary sectors themselves, of course, but also for the wellbeing of all New Zealanders.” (MPI Annual Report 2018/19^[1])

Pasture based production systems have a long history, albeit with evidence of new management systems emerging e.g regenerative agriculture. On the other hand, the viticulture sector is relatively new (30 years approximately). It has not carried the “historical baggage” often associated with more traditional sectors, and “growers learning from growers” and “learning together” have been features of sector development.

1.2. Supplying the global marketplace and meeting its requirements

Primary sector export revenue exceeded 27.3 billion €uro in 2019, with a small increase forecast for 2020 (year ending 30th June). The main export markets for all primary sector (agriculture) exports are: China 31%, Australia 10%, United States 9% and the EU (except UK) 7%.

Given the export dependence of the sector, producers and industry stakeholders are very attuned to the needs of the global marketplace. The challenges faced by European producers are also faced by New Zealand producers, including care for the environment (improving water quality, reducing agricultural emissions and halting biodiversity loss) and animal welfare. There is a strong focus on meeting the environmental challenges:

“We need to preserve the very environment we depend on, both for the primary industries to exist and for life itself.” (MPI Annual Report 2018/19^[1])

The New Zealand approach to meeting the environmental challenge appears interesting. There is a real belief that participatory extension approaches, in combination with regulation, can bring about change. Bruce Thorrold, Dairy NZ, also suggested that dairy farmers prefer clarity around the end goal, rather than limits on inputs:

“Don’t tell us what to do, tell us what you want to achieve; let’s agree on that and then we will do it. Input limits don’t drive innovation, output limits do.”

All this points to an approach involving farmers in decision making, albeit within a framework or an agreed end point, rather than a “top down” approach to achieving practice change.

1.3. A professional industry with farmer funding for research and extension

We observed that the majority of New Zealand farmers pay an annual levy to fund research and extension organisations. For example, dairy farmers pay a levy of NZ\$0.036 per kg MS to fund Dairy NZ^[2], while arable farmers fund the Foundation for Arable Research^[3] (FAR) in a similar fashion (the current levy is 0.9% of sale value of grain and seed crops (with other rates for different crops). The fact that the farmers can vote on whether the levy should be renewed (or not) brings a level of accountability to the levy funded organisations. If the vote is passed (50% support from voting farmers required) then it is collected under the terms of the Commodity Levies Act (1990).

Another feature we noticed was a strong focus on benchmarking for multiple purposes including learning, driving improvements, productivity, profitability, research and marketing e.g. DairyBase, SWNZ (Sustainable Winegrowing New Zealand).

1.4. Yet dairy farmers perceive a media bias



Lee Cowan, Dairy NZ, facilitated a very interesting workshop at the Taranaki DairyNZ Farmers' Forum event, on the topics of building trust and preventing misconceptions.

While dairy farmers and dairy industry stakeholders perceive a media campaign against dairy, Dairy NZ research has shown that media about dairy, across all forms of media, has remained over 90% positive / neutral for almost three years. DairyNZ spends a significant amount of time correcting misinformation, building relationships with journalists (and hopefully educating them), pitching stories that media may want and working to a deliberate and detailed media strategy.

Despite this finding, one statistic we learnt from Bruce Thorrold, Dairy NZ, was quite stark:

“When New Zealand dairy farmers were asked recently if the effort is worth the reward, 75% (3 out of 4) answered “No”.”

There are different reasons suggested for this response, including age/ succession, debt levels/ ability to repay debt, and an inability to sell the farm. This, for the authors, was a shocking statistic and raises the question as to how European farmers would answer a similar question. Consequently, Dairy NZ has two priorities: (1) to “clear the fog” for New Zealand dairy farmers, to reassure dairy farmers that they are on the right track, and (2) to enable dairy farmers to reconnect with the wider community so as to strengthen their connectivity with local communities.

1.5. The New Zealand culture and mindset

We experienced a slice of New Zealand culture during our relatively brief stay in the country. We observed:

- a willingness to share information, with a direct and participative communication style;
- an emphasis on facilitation, peer-to-peer learning, farmer involvement/ leadership of extension initiatives e.g. Extension 350, Dairy Trust Taranaki, LUDF, RMPP Action Networks;
- a willingness to make things happen, to take charge e.g. “there are solutions to most challenges”;
- a sense of pride in their achievements/ successes (without being boastful);
- a respect for tradition as evidenced by the connection with the Maori culture⁽⁴⁾ e.g. *He waka eke noa* partnership environment improvement plan;
- that people tend to enjoy life and have fun, with a tendency towards a positive attitude and a tendency towards optimism e.g. “a lot more relaxed than in the Netherlands”

The Hofstede Insights^[5] suggest that the key drivers of New Zealand culture are as we experienced.

1.6. Summary

Agriculture plays a significant role in the New Zealand economy, with a significant focus on exports. It faces similar challenges to European farmers in relation to sustainability, especially environmental and societal sustainability. It appears to be a professional industry with evidence of significant use of benchmarking and a focus on farmer development and learning. Farmers contribute to the funding of research and extension through the payment of statutory levies. Finally, our observation was that the New Zealand mindset confers some advantages to New Zealand farmers and its agriculture sector.

2. The political context: autonomy comes with responsibility

2.1. Introduction

The analysis of the political context is of importance to understand the functioning of the AKIS (Agriculture Knowledge and Innovation System) and the organisation of demonstration activities. The political changes that occurred in recent decades substantially impacted the organisation of extension activities, with a change from public-based to private or sector-led extension since the early 1990's. Moreover, the political dialogue between the agricultural sectors and the public authorities is very different from the European model. This dialogue is based on objectives of results rather than objectives of means in environmental matters and gives greater autonomy to industries that organise themselves to respond to societal challenges.



Dairy NZ field meeting in Taranaki

2.2. From public-funded to industry-led extension

The New Zealand AKIS has significantly evolved across the last 35 years. By the early 1980's, the Ministry of Agriculture and Fisheries (MAF) was the government agency responsible for applied agricultural research and extension, employing over 300 farm advisors who worked with farmers and growers on a one-to-one and group learning basis. These advisory services were largely provided free of charge.

In the late 1980's, the Government removed direct support to farmers, and reduced funding to MAF for agricultural research and advisory services. To offset this, the advisory service began charging farmers and growers for their services and a period of privatisation of the advisory services followed.

Today there is no government funded advisory service; however, there are several private farm consultancies with specialist consultants that charge farmers and growers for on farm one-on-one consultation. In addition to private consultants, agribusinesses, including fertiliser companies and veterinarians, provide on-farm advice, usually tied to sales of products or services. Representatives of meat and milk processing companies provide farmer advice and support to their suppliers. Although there is no direct funding for public good extension, government funds, such as MPI's Sustainable Food and Fibre Futures, support industry-led extension and research. For example, Red Meat Profit Partnership (RMPP) is a consortium of agribusinesses and the government, which have partnered up to invest in a €37.3 million programme to drive sustainable, long-term profits for New Zealand's red meat sector.

Following the Commodity Levies Act (1990), primary industries have been able to form industry good bodies that can levy members to undertake industry-good activities. In some cases, this includes extension activities (e.g. DairyNZ, Beef and Lamb NZ, Foundation for Arable Research), although the focus is on group or mass



extension rather than one-on-one advice. Within the current extension system, research organisations (the Crown Research Institutes, CRI's) have a key role in knowledge development and are required to partner with next users to ensure impact.

“With the lack of subsidies, farmers had to generate more profits, so they had to milk more cows per labour unit and significantly improve their productive platform. Looking back, it was a very painful process when the subsidies ended. But now we're probably better without the subsidies in place and also no cap on productivity”. (Brendan Atrill, chairman Dairy Trust Taranaki)

“For me the subsidy is the key difference between European system and the New Zealand system. We don't have subsidies in New Zealand. (...) If you don't innovate or keep ahead, you're out! This drives desire to learn, to be ahead of the game, to be changing, to be looking, to be transformational in your thinking”. (Heather Collins, facilitator and rural social scientist)

2.3. A culture of negotiation and goal-oriented policies

The organisation of the policy dialogue with farmers is substantially different between New Zealand and the European Union. The European approach is more prescriptive, whereas the New Zealand approach is result focussed. There are a number of characteristics in the policy dialogue that all together make the New Zealand approach different:

- i. The key role of national policies as incentive to define implementation roadmaps.
- ii. The environmental concerns as main drivers of the agriculture regulation.
- iii. Ex-ante negotiation with stakeholders to define the objectives of the policies.
- iv. Local/regional dimension of the objectives and their implementation with “tangata whenua” (i.e. local stakeholders and population); and
- v. Iterative revision of the process to reach the common objectives

For the past two decades, environmental concerns have played a significant part in the New Zealand agricultural policy dialogue. The National Policy framework incentivises changes in farming systems and defines the overall objectives to be reached by both individual farming sectors and the overall industry. As highlighted above, the main drivers for policy regulation are the environmental challenges that emerged in the 1990's and that concern the policy sector, the private sector, research bodies and citizens (quadruple helix). Stakeholders consultations are organised to define common achievable objectives in a given timeframe that will be translated into concrete action plans in each sector/industry. In comparison with Europe, in New Zealand the policy dialogue with farmers on environmental challenges is based on the capacity of the sector to reach the expected output defined collectively rather than on the means to reach the objectives.

“ Farmers are slow to adopt things that other people think they should adopt. They're very good at adopting things that make their businesses work better, or their lives easier”. (Bruce Thorrold, Dairy NZ)

Environmental regulations are implemented at regional level taking account of the high diversity of the landscape and the diversity of the agricultural systems within the landscape. In some cases (water quality) targets are set even at catchment level, to deal with the context and needs within a specific catchment. If the agreed common objectives are not met in time within the region, then a regulation is set to update the objectives for the upcoming period.

2.4. Autonomy for sectors and regions

Policy developments in recent decades have led to greater autonomy of action for the agricultural sectors both in terms of the organisation of advice and knowledge transfer and in terms of policy dialogue and the



environmental objectives to be achieved. This autonomy allows the sectors to have better control over their own strategy and to organize all the actors of the sector around this strategy.

These characteristics have a strong impact on the organisation of exchanges of know-how and knowledge, which remain mainly structured around sectors and their organisations. Demonstration activities and peer learning are therefore mainly orchestrated sectorally and regionally to take into account the diversity of the territories.

However, this autonomy for the sector has created several silos that can hinder cooperation between sectors. Indeed, if the sectors seem very well structured and organised, the cooperation among them looks quite poor in terms of common programmes and exchanges between farmers, research and levy-based organisations from different sectors as well as in terms of policy coordination to defend farmers' interests

2.5. Summary

While turning the agricultural sector into a major national industry, significant changes occurred in the New Zealand Agricultural Knowledge and Innovation Systems in the past three decades. First of all, the extension services moved from public organisations to levy-based organisations closely linked to the agricultural sectors and the subsidies became quite rare. Secondly, in line with the agricultural growth and the emerging drawback effects (mainly environmental) that trigger the need for regulations, a policy dialogue with the several agricultural industries has been put in place in order to collectively reach the common objectives, both for agriculture and the society. This dialogue gives a certain autonomy for the sectors in driving their changes with realistic adaptation at regional level to take into account the characteristics of each sector and each territory.

3. A science based, farmer led approach



Dairy demonstration farm in Taranaki

3.1. Introduction

As already mentioned in the first section, the New Zealand AKIS system is strongly based around levy funded organisations. These are sector-oriented organisations, delivering a range of activities including contextual research, advice, communications, and advocacy. Furthermore, other actors, such as individuals from co-



operatives, private businesses (both supplying and sourcing products), private consultants and advisors (including those in the financial sector) participate in the AKIS^[6]. Depending on the levy organisation, each five or six years, farmers have to vote to renew the levy. Consequently, farmers feel strong ownership of the levy-funded organisation.

The main levy funded farmer and research organisations encountered during our trip were :

DairyNZ	<ul style="list-style-type: none"> · Industry organisation: levy funded · Research and extension, policy and advocacy, education, · Dairy cows, grass, profit, environment, animal welfare · Website: www.dairynz.co.nz
Beef&Lamb NZ	<ul style="list-style-type: none"> · Farmer-owned industry organisation, levy funded · Research and extension, policy and advocacy, education, · Beef and lamb, grass, profit, environment, animal welfare, market development · Website: www.beeflambnz.com
Foundation for Arable Research (FAR)	<ul style="list-style-type: none"> · Applied research and information transfer organisation, levy funded · Research, technology transfer and extension · Arable: wheat, barley, oats, maize, pulses, herbage seeds, brassicas, borage and vegetable seeds, cereal silage · Website: www.far.org.nz/
Bragato Research Institute	<ul style="list-style-type: none"> · Levy-funded research organisation for New Zealand wine growers · Research, commercial trials, education · Website: www.bri.co.nz/

3.2. Farmers in the driver's seat

Our experience was that the main organisations are putting more effort into involving farmers in the AKIS.

For example, during their regular interactions and mainly in the run up to the levy vote, DairyNZ consults farmers on their needs and proposes an agenda for the next period. For this year's vote (2020), they communicated their plans under three headings: (1) developing better solutions through science (farm systems research and development); (2) shaping a better future for the sector (public perception, policy and advocacy); and (3) supporting better farming locally (supporting change on the farm, building farmer skills and capabilities, industry and data analysis).

Another example FAR clearly brings forward this idea with the “growers leading change” principle and is working towards implementing this more broadly. FAR has, historically, provided technical experts and they might continue to be experts in particular areas. But FAR is now looking into employing facilitators who can build up good relationships with growers to be able to understand what they want, to collect the relevant pieces of information and the experts (also from other organisations) who can provide this information to the growers. Furthermore, they also want growers to take actions themselves and to work as collective groups.

“But what we also know is that we're not always the experts and neither are the farmers. We have to try to facilitate this process of developing knowledge. So, we have increasingly started to try to understand how we might facilitate the development of our farm systems. by trying to work with groups of growers, facilitate that process, get experts in, so that you don't have to be the expert on everything. And then to get those growers to go out and get other growers involved.” (Andy Pitman, FAR)

In DairyNZ, they strongly make use of leading farmers as a source of demonstration. Leading farmers are famers that are really good at one specific aspects or even have an exemplary good whole farming system (for example, getting good quality cows and calves, a really profitable system, good staff management). Other farmers can come and see what they're doing, exchange opinions and look at their data benchmarked against the local averages. Leading farmers tell their story, including both successes and failures, and visiting farmers listen to these very practical tips and tricks.



“The old linear knowledge transfer approach was that the scientists would figure something out, teach the advisors and the advisors would then tell the farmers what to do. I think with the complex problems that we are addressing at the moment this is not working anymore. The farmers become researchers, the consultants become facilitators of the processes of the communication etc. People still have a role, but they might be slightly different than what it used to be. But you still need to have all the roles, I think, because you cannot expect one person or one farmer to take all those roles.” (Ina Pinxterhuis, DairyNZ)

The [Red Meat Profit Partnership action groups](#) (see next section) are clearly an example of putting the farmer in the driving seat towards innovation on the farm. Also in viticulture, a relatively young industry in New Zealand, the [NZ Winegrowers](#) use their levy to support the research programme of Bragato. In February 2020, Bragato opened a new state-of-the-art research winery, used as a living lab to support cooperation between New Zealand winegrowers, the industry and other research organisations.

3.3. Science based knowledge

Farmers strongly believe in the added value of scientific research, the levy-based organisations see it as their duty to test overseas innovations in the context of New Zealand and provide farmers with scientifically based answers.

“During the last decade, organisations changed their approach to fit the needs of the farmers.... we make mistakes so farmers don’t.” (Bruce Thorrold, Dairy NZ)

To demonstrate their science-based innovations, several tools are used, of which systems comparison and benchmarking are the two most important ones. Systems comparison is a typical twofold key tool used by DairyNZ, it consists of running today's standard system (herd) parallel with a system inducing an innovation (whether it is a new technology or new options for management). This is a well-known and valuable science-based approach. In addition, when a demonstration farm can run and showcase the two systems in parallel it is a very strong, nevertheless expensive, way of doing demonstration.

“By running those two systems next to each other, we have a really powerful demonstration, because we remove the effect of the individual farmer, and their skill and belief and we have the two systems with strong data collection and cows and pastures and technologies that farmers can see working.” (Bruce Thorrold, Dairy NZ)

Another science-based tool very commonly used in NZ is benchmarking, of which the NZ Winegrowers are a good example. They play the card of being a world leading sustainable wine industry. Through the SWNZ ([Sustainable Winegrowing NZ](#)) programme, they monitor and measure about 1,900 winegrowers (three times yearly) to reduce environmental impact and to grow as a sector. SWNZ was designed to provide a 'best practice' model of environmental practices in the vineyard and winery. Today, 98% of New Zealand's vineyard producing area is Sustainable Winegrowing NZ™ certified, with 7% also operating under recognised certified organic programmes.

“The wine industry is unique in the terms that we're not marketing a commodity. We're marketing a premium product. It's a luxury good. It's not milk, it's not a piece of wood which could have come from anywhere” (Mike Collins, viticulturist)

In addition, many organisations also address the extension and demonstration landscape in a way that they can support different ways of learning.

“DairyNZ places a lot of value on demonstration to farmers. The reason we do that is because farmers like to learn in a range of ways: learning by seeing what is happening, learning by looking at the data that's collected from disciplined demonstration activity and learning from talking with researchers and farmers and demonstration managers about what they've done. We are convinced that those are all really powerful means of growing farmer awareness and allowing them to test ideas before they start to pick things up themselves. (Bruce Thorrold, DairyNZ)



All these efforts should support the focus on clarity. In the absence of farm subsidies, the focus is on running profitable, sustainable farm businesses. Also at the [Dairy NZ Farmers' Forum](#), dairy farmers were reminded to focus on those things that are within their own control (mostly within the farm gate) while keeping themselves informed of things outside their control (mostly in the wider world). Good advice in our opinion!

*“Check your why. Dairy farming is tough enough, but if you have lost your “why” it can be a real slog.”
(Bruce Thorrold, DairyNZ)*

Furthermore, most organisations do pay a lot of attention on their dissemination and communications towards farmers. The resources used for communication are a big part of the budget. For example, DairyNZ has around 30-40 out of 300 employees focussing on a high-quality communication. This results in [publications](#) of user friendly tools and leaflets for farmers on very diverse topics. Some examples are: [Fact and Figures](#), [Reducing nitrogen loss](#), [Getting started with social media](#), ...

3.4 Systemic challenges of the levy-based structure

Previous paragraphs clearly addressed the strengths of the levy-based farmer led approach. However, this approach also contains some drawbacks and challenges. As the main organisations depend on a vote from farmers, they tend towards and serve the majority, so they might miss the inclusion of rather minority groups such as the very innovative farmers, farmers that are aware of societal demands or the new entries. For example, we are aware of a few projects focusing on organic in DairyNZ. Because of this farmer led approach, especially DairyNZ and Beef&Lamb NZ also focus more and more on advocacy. Because of budgetary constraints, a possible tension could arise between the innovation and advocacy roles of organisations such as DairyNZ and Beef&Lamb NZ. Can it be possible to innovate and advocate at the same time?

During our visit in NZ, when we asked for examples of collaboration between organisations, we could see a lot of good will, but only few examples. Also, now and then, we could even grasp some tensions between sectors. We experienced that there is quite a lot of work done in silos and little cross-over between sectors and thus the necessary integrated agricultural systems view is lacking. One of the reasons is that the individual sectors play at very different levels of income, export, land share etc. However, many AKIS organisations and farmers acknowledged that success depends on collaboration and a systemic view is more and more necessary to handle today's challenges. A high level of engagement to reinforce collaboration between sectors was expressed several times during our NZ visit.

*“The levy model means that, because sheep and beef farmers have paid for sheep and beef resources, their expectation is that their money will be spent on sheep and beef issues. Rather than this big melting pot that benefits all farmers. Now, DairyNZ and Beef&LambNZ, I am sure, would say: “we are collaborating”. And I am sure they are. But there is still this “siloing” that if we're going to be effective as a country, I believe we need to be thinking about the future of agriculture out there, the future of farming.”
(Heather Collins)*

To conclude, the levy-based organisations mostly take the lead in directing the future of the primary industry sector which is a good thing; however a realignment of industry roles towards more collaboration could increase an integrated agricultural system view.

3.5. Discussion groups, networks and farmer learning

We formed a view that discussion groups, networks and farmer learning are an integral part of the success of New Zealand agriculture.

“Successful farmers are embedded in groups.” (Sam Lang, farmer)

One interesting service which caught our attention was one offered by DairyNZ, namely Dairy Connect. This free and confidential service involves farmers supporting farmers; it is available to all dairy farmers (owners, sharemilkers, managers, contract milkers, and farm assistants) and works as outlined in the figure below.



Figure 1: How does Dairy Connect work? (Source: Dairy NZ)



3.6. Summary

The NZ AKIS is making clear steps towards a more integrative multi-actor knowledge exchange system. We came across examples which matched up with a MA approach, for example, the Forages for Reduced Nitrate Leaching programme or the research on autumn calving cows at Taranaki dairy research station. It is not really a new concept but expressed more clearly in the approach nowadays. When an overseas innovation, a new practice or a new farm system comes in, intensive peer-to-peer learning, often with researchers and advisors alongside, is set up.

Because of the levy-based approach, farmers have a central position. First of all, they have the opportunity to steer the mission and vision of the organisations each time a new vote for levy is organised. Next, leading farmers are a source of demonstration and also during action and discussion groups farmers can steer the innovation process.

What is remarkable in New Zealand is that farmers have a strong belief in science-based research. As such, this gives the opportunity for a strong AKIS system built around these farmer-led research organisations and their demonstration farms. The most important tools being used are research trials, system comparisons and benchmarking activities. However, the fact that these organisations are mostly sector-oriented has some drawbacks. The focus on the majority of the farmers can be a barrier for high end innovations. Furthermore, the implementation of a systemic approach to tackle the complex challenges of today experiences some difficulties. Upon today, the necessary collaboration between organisations is admitted to be lacking, however, many expressed their engagement to make steps forwards for more interaction between organisations to create more systemic innovations.

4. Demo farms and peer-to-peer learning



Dairy demonstration farm in Lincoln area (left) – Field demonstration on regenerative agriculture in Lincoln area (right)



4.1. Introduction

According to our experience and the testimonials of local actors, demonstration farms and facilitation play a crucial role in agriculture in New Zealand. There is a long tradition of demonstration farms, and there is a deeply rooted trust among stakeholders in this way of working. Many of these farmer's communities originate from the demand of solving a particular problem. Furthermore, the basis of efficient demonstration consists of the combination of different activities supplemented with the interaction between farmers being led by good facilitators. Most organisations use a set of diverse activities, regular demo events (big fairs and yearly/quarterly events) but often this is complemented with a long tradition of multi-functional demo farms, and a rather long history of discussion groups (for example, the Regional Arable Groups, RAG) where facilitation plays a crucial role.

"I guess what we've found is that you need to think about that whole extension landscape and have those large events, those medium-sized events, the small group, and then one-to-one support. And to have an effective extension landscape, you need all of that to happen well. So, my recommendation out of this program is: take the time to scan the landscape and see where the gaps are and so where you can add to get on-farm change." (Denise Bewsell, Specialist Extension Manager)

4.2. Multi-functional demonstration farms

In New Zealand, there are demo farms with different aims such as knowledge transfer, setting up different experiments, or presenting research results. These farms can be research, experimental or commercial farms. Visiting them or participating during on farm events can offer several opportunities for farmers, like developing their knowledge as well as for peer learning.

Demo farms serve as a breeding ground for cooperation and further development. We observed a good example for how *Lincoln University* and other market players (*DairyNZ*, *Ravensdown*, *Livestock Improvement Corporation*, etc.) came together to create the South Island Dairying Development Centre (SIDDC). The demo farms are commercially led – businesses, without subsidies, research is funded by organisations (levy), input products by industry and staff paid by sector organisations and industry. Research and demo go hand in hand, they focus on showing research based best practices and farmer experience at same time.

As for another farm, the operation of the [Dairy Trust Taranaki](#) (DTT) is a good example for transferring research results to practice through demo farms. DTT works with four different demo farms and the farmers have a possibility to learn and see new technologies and best practices. DTT provides the following services to its members:

- Facilitates relevant research relating to farming methods and the communication of the results of experiments.
- Assists in the development of strategies for securing the future of the New Zealand dairy industry.
- Trains and educates young farmers and provides scholarships and grants to persons for the purpose of research and development; and
- Supports and donates to other charities and non-profit entities within New Zealand with similar objectives.

There has been more emphasis on education and linking with the wider society in the last five years. As a result of this, demo farms are willing to open and show their activities to urban dwellers (e.g. school visits). In this way multiple win-win situations are created. Furthermore, the demonstration farms also support community building in remote areas as is nicely illustrated by this quote:

"The other issue that demonstration farms do is that they create a network in our communities, and they allow us to bind our communities with the dairy sector, being the vehicle. It is very important because we're isolated on our dairy farms. They allow us to keep our families and communities together, well connected and supported in all our bits and pieces that we're doing." (Brendan Attrill, chairman Dairy Trust Taranaki)



4.3. Peer learning: action groups and facilitation

Regarding facilitation, we observed that a facilitated dialogue plays a crucial role in the learning process of farmers in New Zealand. The facilitators we met were very well trained, had significant experience and a high reputation. Facilitation is seen as a strong instrument for peer learning, as a tool to acknowledge the different perspectives on the topics discussed.

Organisations offer training for facilitators. For instance, DairyNZ has a full-time employee to 'train the trainers'. [Heather Collins](#) developed modules for soft skills training. During the field activities, we noticed that most facilitators and speakers reached a high level of professionalism using many different facilitation techniques.

"I guess the way I do things is giving people space for change. By space for change I mean using facilitation techniques, give people the ability to think about what they are learning and seeing and thinking about what it means for them. You're not talking at people; you're helping them work out what it means for them." (Heather Collins, facilitator)

An example of such a concrete technique is ORID, where you start the discussion with a question on the *Objective* representing the head: What have you seen, what have you heard, what have we done, where have we been, who have you met? The next is the R which stands for *Reflection*, or the heart: What excites you, what is challenged your thinking? The next is the I reflecting *Interpretation*: What does this mean? What does it mean for me, what does it mean for my business? The last one is D, the *Decision* to take, based on your learnings: What will you do tomorrow, what will you think about, what will you do differently tomorrow as a result of what you've done today? ORID supports people in a logical progression which enables them to think about where they have been, what they have done, how they feel, and where they could go.

However, techniques are the tools for facilitation which is more about a way of working and being than just implementing the tools. This is very nicely expressed in the following quote:

"I think facilitation is a way of being. It is not about the techniques. It is the way you think. Facilitation is not about me, it is about the group that I work with. ... I use a range of techniques to help them." (Heather Collins, facilitator)

The significance of facilitators shows itself via the RMPP programme which is financed by [MPI](#) by providing "seed funding" to support facilitation costs. The RMPP Action Network (200 group in New Zealand) can help farmers develop the confidence to turn great ideas into action to improve a farm's productivity and profitability. Each group is farmer driven and facilitators are hired by the group.

One Action Group (which we visited) is centred around a small group of nine farming businesses. [Facilitator training](#) was provided by RMPP, based on lessons learned from a previous initiative.

"When we went into it, we knew that facilitation was key. From some work we'd done earlier in RMPP when we hadn't done well helping facilitators and giving them enough training. Before we started Action Network for sheep and beef farmers, we knew that we needed to provide some training for facilitators. We developed a couple of training programs which were offered to rural professionals and farmers." (Denise Bewsell, specialist extension manager)

Generally, farmers are quite open to sharing information (although this may vary depending on the competition and the sector). Where the prices of individual products are fixed (e.g., there is no competition between farmers), the willingness to share knowledge is very high. This might be a reason that the NZ system focussing on facilitation between farmers rather than on expert driven approaches can be successful. For example, mainly in the organic sector we could really sense this spirit.

"I think all those involved in the organic industry have always been quite open to anyone wanting to learn their way of doing things. Therefore, having someone walk around on your farm or your vineyard that has experience and can point out any potential difficulties you might find as you move into organic growing is very beneficial. It's often things that can't be taught in a classroom so that one-to-one work."



Organic growers are generally very free with their information and quite happy to talk to anybody that's willing to learn.” (Bart Arnst, Organic Viticultural Consultant)

Furthermore, storytelling is seen as a powerful instrument for farmers and many farmers were very good speakers. For example, during the Organic Regenerative Agriculture Days, main demonstrations were executed by farmers with strong personalities and personal stories. Some examples to be found [here](#) and [here](#).

Finally, although facilitation and storytelling is highly valued in agricultural extension, education for soft skills appears to be missing at university/high school level.

4.4. Summary

1. There is a deep-rooted trust between demonstration farms and other stakeholders, as there is a long tradition of support in the sector. Nowadays several communities of farmers originate from the demand of solving a particular problem. By exploiting this relationship, a well-built system has developed organically. Research and demo go hand in hand, they focus on showing research based best practices and farmer experience at same time.
2. Demo farms are typically research, experimental or commercial farms. Visiting them or participating in farm events can offer several opportunities for farmers, for instance developing their knowledge and peer to peer learning. This way demo farms serve as a breeding ground for cooperation and further development.
3. As far as facilitation is concerned, we experienced that the learning process of farmers has become more efficient via facilitated conversations. This is the result of the facilitators' experience, knowledge, and good reputation. Facilitation is widely accepted as a useful tool to achieve high performance.



5. Take home messages for EU demonstration

Demonstration is the most impactful mean for knowledge exchange and knowledge transfer

H2020 projects PLAID and Agridemo-F2F recently highlighted on-farm demonstration activities as an important lever accelerating knowledge flows and sharing of experiences in the agricultural sector. Our observations in New Zealand match these recommendations as demonstration seems central to farmer development. As “seeing is believing”, peer-to-peer learning is highlighted as very important for farmers in New Zealand. Sharing knowledge through on-farm demonstration activities is certainly the most efficient way to disseminate any relevant practice or concrete results from Research and Innovation projects and probably the very last step before farmer adoption. Moreover, all kinds of demonstrations must be considered (ranging from commercial farms, research farms, agricultural fairs etc...) considering the diversity of learning among sectors, countries, territories, cultures and types of farmers.



Discussion group in Marlborough area

To promote facilitation skills to accelerate/empower knowledge sharing and cross-fertilisation

Farmers need to be accompanied in the process of modifying and changing their practices and systems. In order to foster efficient knowledge exchanges between farmers and other actors during demonstration events, facilitation skills constitute a powerful enabling factor for change. From our observations in the New Zealand AKIS, the quality of the facilitation techniques have a significant impact on the quality of the demonstration and the capacity of the different actors to share relevant knowledge. As provided in New Zealand, some specific training and education courses on soft skills and specifically on facilitation techniques toward advisors and any relevant actors organising demo events must be generalised in Europe. These training activities must be based on practice and empirical experiences rather than on theoretical concepts, in order to match real farmers needs. To highlight the importance of facilitation in the New Zealand AKIS, one of the few funded programs in the country (RMPP - Red Meat Profitable Partnership : <https://www.rmpp.co.nz>) only funds facilitation activities for all the farmers' discussion groups settled in the country.

To develop long-term demonstration programs improving trust and learning

There is evidence of long-term demo farms in New Zealand managed by Levy based organisations as well as Universities. These long-term demo farms hosting farmers, advisors, technicians of companies, students and even children on a regular basis have several positive impacts on the New Zealand AKIS. First, they allow long-term exchanges of knowledge around the demo-farms and create long term trust among farmers and actors. Then, the embedment of these demo-farms in their territories create a community of knowledge around certain sectors and certain topics in a specific geographical area and the cultural habit of demonstration. Even if cross sector exchanges between these demo-farms seems poor in New Zealand, the networking of long-term demo-farms seems a very suitable solution to improve learning in the farming community.

To strengthen the direct link between farmers' organizations and science

As mentioned throughout this report, in most of the major agricultural sectors of the New Zealand AKIS, the Levy based organisations play a key role in sharing and transferring knowledge to farmers. We discovered that this knowledge was almost always scientifically grounded and the result of internal (at levy-based organisation level) research and experiments or in partnership with other organisations (Universities, Public research Institute, private organisations/companies). New Zealand farmers seem to believe a lot in research results and are searching for scientifically proven techniques and methods to change their daily practices and systems. Connecting farmers organisations with science is a good lever to improve the acceptability of the knowledge transferred and shared through demonstration activities and peer to peer exchanges.



6. Thematic videos from the New Zealand study tour

The role of facilitation for innovation and change in agriculture

<https://www.youtube.com/watch?v=6W1xVZIkGj0>



[The role of facilitation for innovation and change in agriculture - Experiences from New Zealand](https://www.youtube.com/watch?v=6W1xVZIkGj0)

0:00 Introduction
1:10 Understanding Learning
2:38 The role of the facilitator
3:31 Tips for facilitation
4:30 Focussed discussion - the ORID method
5:28 Conclusi...
www.youtube.com

Forms of demonstration activities in New Zealand

<https://www.youtube.com/watch?v=uc2YPxT7qQ8>



[Forms of demonstration activities in New Zealand](https://www.youtube.com/watch?v=uc2YPxT7qQ8)

0:00 Introduction
0:42 Research trials for demonstration
1:09 Demonstration farms
1:42 Leading farmers
2:21 Demonstrating processes
3:09 Additional benefits of De...
www.youtube.com

Action groups to foster peer to peer learning - example of Red Meat Profit Partnership

<https://www.youtube.com/watch?v=k45Ld4jWkZE>



[Action groups to foster peer to peer learning - example of Red Meat Profit Partnership, New Zealand](https://www.youtube.com/watch?v=k45Ld4jWkZE)

0:39 Difference between discussion and action groups
0:59 Topics addressed in action groups
2:25 Recommendations For sheep and cattle farmers in New Zealand, th...
www.youtube.com



New Zealand's Agricultural policy - Influence on innovation and change

<https://www.youtube.com/watch?v=cGYguQCGWuU>



[New Zealand's Agricultural policy - Influence on innovation and change](https://www.youtube.com/watch?v=cGYguQCGWuU)

0:00 Introduction0:34 Subsidy-free agriculture1:50 Result-oriented policy dialogue3:04 Challenges5:15 ConclusionNew Zealand's agricultural policy differs sig...
www.youtube.com



Annex 1- Programme of the New Zealand visit

Day 1: Thursday 5th March - Christchurch and Lincoln : Kick of meeting (Heather Collins-APEN, Denise Bewsell-RMPP, DairyNZ/demo farm Uni-Lincoln, MPI politician, others) + visit Dairy NZ / Uni-Lincoln demo farm in the afternoon

Day 2: Friday 6th March - Canterbury Area : FAR and RMPP (Beef and Lamb NZ) : <https://www.rmpp.co.nz>

Day 3: Saturday 7th March – Organic dairy and pastoral group field days (regenerative agriculture), UniLincoln near Christchurch (<https://organicpastoral.co.nz/event/the-regenerative-soil-solution-odpg-conference-2020>)

Day 4: Sunday 8th March - Day Off : Kaikura beach, Wine Marlborough region (*driving from Christchurch to Blenheim*) Vicky Robinson – Nuffield Scholarship

Day 5: Monday 9th March – Wine (Marlborough) : visit to Nautilus Winery, <https://www.nzwine.com/en/sustainability/swnz> ,Plant and Food research centre, BRI facilities and meeting with organic NZ

Day 6: Tuesday 10th March – Commuting from Southern Island to Northern Island /Taranaki (*morning flight Bleinheim-New Plymouth, driving to Taranaki*), afternoon visit to DairyTurst demo farms, meeting and dinner with Debby McCallum and Bruce Thorrold from DairyNZ

Day 7: Wednesday 11th March – Taranaki DairyNZ demo farms (Farmers Forum series, field days : <https://www.dairynz.co.nz/about-us/event-activity/farmers-forum/>, Tim Mackle and Bruce Thorrold will be present) (*late afternoon driving from Taranaki to Hamilton*)

Day 8: Thursday 12th March afternoon - Hamilton: AgResearch/DairyNZ social scientists (confirmed from AgResearch : James Turner and Alvaro Romera, also invited for the moment : Helen Percy and Tracy Nelson) (*morning : internal debrief point*)



Annex 2 - NEFERTITI delegation members



Adrien GUICHAOUA (France) works at ACTA (since 2012) and is Director of European and Regional Affairs. He is Research & Innovation programme coordinator and Policy Officer. Graduated in Policy Science, he is an expert on innovation policies related to the agricultural sector. He was Chairman of the SCAR (Standing Committee for Agriculture Research) Strategic Working Group on Agriculture Knowledge and Innovation Systems (AKIS) and French National Contact Point for Horizon 2020 Societal Challenge 2 (Bioeconomy) from 2014 to 2019. He coordinates the H2020 NEFERTITI project. Over the past 12 years, he coordinated several Research and Innovation programmes for the French National Research Agency (ANR) and for the National Institute for Agricultural Research (INRA).

Dr. Fleur MARCHAND (Belgium) works at ILVO (Institute for Agriculture, Fisheries and Food Research) since 2007 and is Scientific Director of the Social Science Unit. She builds her expertise mainly on empirical case-studies of learning processes with stakeholders striving for sustainable agriculture and food chains. She uses mainly a transdisciplinary and system approach focusing on the following research topics: knowledge exchange, agroecology and transition of the food system. She was coordinating the H2020 Agridemo-F2F project and is now involved in many H2020 projects (NEFERTITI, I2CONNECT, FAIRSHARE, COCOREADO, RUSTICA,...). Furthermore, she is professor at the University of Antwerp where she is responsible for courses on methodologies and techniques for interdisciplinary research.



Dr. Thomas ALFÖLDI (Switzerland) works in the FiBL communication group producing online videos for farmers, advisors and researchers in English, German, French, Spanish, and Italian. Currently he is leading the work package on dissemination in the ERA-net CORE Organic Plus. He is coordinating the national stakeholder platform on organic agriculture. He is on the editorial board of Agrarforschung Schweiz/Recherche Agronomique Suisse.

Dr. András VÉR (Hungary), is working at the Széchenyi István University, Faculty of Agricultural and Food Sciences. He is the leader of the West-Transdanubian Regional Consultancy Centre and member of the National Agricultural Advisory Board. He is President of the board of trustees of the university Demo farm Network. He is member of the International Academy of Rural Advisors (IALB). He has several years of experience in managing international projects in the field of education and training, science dissemination, rural development, ecological agriculture and agricultural advisory.



Dr. Tom O'DWYER (Ireland), is Head of Dairy Knowledge Transfer, with responsibility for the development, delivery and evaluation of the Teagasc Dairy Advisory programme. In this role, he collaborates extensively with researchers, advisers and industry stakeholders (external). He has extensive knowledge of knowledge transfer, facilitation, demonstration farms and leadership of development programmes. Within the NEFERTITI project, he is a network leader for the "You can farm - farm attractiveness" network.



Annex 3 - Guiding questions & State of the art in Europe on the themes of interest

DEMO and peer learning

1) Policy framework and instruments

Questions:

How does the policy context in New Zealand facilitate/ enable peer-to-peer learning and the goal of empowered knowledgeable farmers? What are the strategies at policy level?

General lessons learned from European case studies:

The European Commission proceeded with an important change of the Agricultural Research and Innovation Framework and mindset from 2014. The General Directorate for Agriculture (DG AGRI) of the European Commission (EC) launched the **European Innovation Partnership on “productive and sustainable agriculture”** (EIP-AGRI). This new policy is based on the following principles in the Research and Innovation projects:

- i) the **multi-actor approach** bringing together all relevant actors (ranging from farmers to researchers through advisors, NGO's, policy makers, enterprises etc...) to engage and find solutions to a given agricultural challenge.
- ii) the **interactive innovation approach** (as alternative to the linear innovation approach, from research to practice). This new paradigm substantially moved the lines, the partnerships and the way to organise the R&I project in agriculture.

The operational translation of this policy relies on two funding mechanisms and pillars:

- i) **Horizon 2020** (the Framework Programme for Research and Innovation, H2020) and the funding of cross-border multi-actors research projects and thematic networks (from €2m to €3m);
- ii) **RDP** (Rural Development Plans – **2nd Pillar of the Common Agricultural Policy**) and the funding of regional and local multi-actor Operational Groups, for smaller project linked to co-innovation, transfer and demonstration.

Three “demonstration related projects” have been funded under H2020 ((1) [PLAID](#) (2) [AGRIDEMO F2F](#) and (3) NEFERTITI and created together the [FARMDemo](#) brand. Another €6m demonstration project dedicated to IPM will be funded in 2020. So far approximately 1,000 Operational Groups have been funded across the 27 EU countries and some of them are using demonstration to share and exchange knowledge.

Finally, for the next EU programming period (2021 – 2027), the European Commission foresees more budget (“Horizon Europe” new R&I framework programme) for interactive innovation and demonstration at cross-border level. On the other hand, the EC asks all 27 members states to set-up strategic AKIS plans that facilitate knowledge flows and exchanges between actors and organisations and will make available some measures of the 2nd Pillar of the Common Agricultural Policy dedicated to knowledge exchange and transfer at regional/national levels.

2) Organisations in the European AKIS, collaboration and networking approaches

Questions:

What are the different key organisations and advisory systems? What is their role in the AKIS? What are the main organisation types in New Zealand that are involved in farm demonstrations? Do we see collaboration and networking between the different organisations? (formal structures, collaborations and partnerships, informal networks, ...) What are the main objectives and strategies at organisational level? What



about farmer involvement in decision making (at programme level, selection of topics, and in the development of the demo set-up and activities)?

General lessons learned from European case studies:

EU countries span a range of AKIS ‘types’. In countries with a public advisory service (Ireland, Wales, Portugal, Austria); a strong Farmer Organisation (FO) presence like the Chambers of Agriculture (France) or an integrated advisory service at national level like Seges (Denmark), demo programmes can benefit from:

- stronger coordination;
- being embedded into existing formalised structures and networks at many spatial levels, from resources and continuity of funding.
- having access to research institutes.
- having adviser support in terms of facilitation; and
- better recognition (trust, respect) of farmers.

Whereas, where the AKIS is weaker or more fragmented, demonstration programmes are not supported or integrated to the same extent (Poland, Greece), demo organisers are more likely to have to forge their own links with other actors or networks in the AKIS, are more reliant on commercial partners and sponsorship for funding and may be more temporary or project based in nature.

AKIS provides a framework for understanding what determines demo programme organisation, however there are clearly different social and cultural interactions at play as well.

To conclude, in many countries in Europe, demonstrations already play a key role in contributing to or as part of existing advice programmes or dissemination activities but this role can be further enhanced. Positioning demos within the wider advisory landscape and assessing the influence beyond participants is important but needs to be strengthened by demo organisers.

3) Farm and event level: organising demo events with impact

Questions:

What is the goal of the demonstration? How is the demo organised (set-up and logistics)? Who is the host farmer and demonstrator? Which types of participants are recruited and what are their roles? What are the knowledge exchange methods? Can clear learning outcomes be detected? How is the evaluation and follow up organised?

General lessons learned from European case studies:

When a farm demonstration offers **opportunities for peer-to-peer knowledge exchange**, participants will be more likely to internalise the practices. Furthermore, a wide range of diverse activities can increase effectiveness as demonstrations have to suit different learning styles.

A demo event is preferably hosted on **a commercial working farm, and at field scale**. Then, it relates better to the farmer's everyday practices and more effective peer-to-peer learning can be realised when the host farm operates under similar “real life” conditions, meaning similar production systems, agricultural practices, technologies and constraints.

The host farm should have **good and easy access** for the targeted audience. Several conditions regarding the **facilities, such as seating, toilets, audio**, etc. should be taken into account.

The (perceived) **trustworthiness of the host farmer** is also important. Ideally, the host farmer should be knowledgeable, dedicated and recognised for being innovative and productive. **Group size and group dynamics are also crucial**; participants have a preference for smaller demonstrations. Small groups make it easier to ask questions and give everybody the chance to take part in group discussions. Recruitment determines group dynamics, the target group will relate to the goal or objective of the demo and there are significant differences between how participants were recruited for different sized demonstrations.

These key characteristics and key messages **at event and farm level** were further operationalised or translated into **more concrete ‘best practices’ for delivering a demonstration**. The concrete ‘best practices’ are described with more depth within the farm demonstration design guide; this guide was developed as a FarmDemo collaboration and is available at <https://trainingkit.farmdemo.eu/>



Thematic topics

1) Animal production

- How important is livestock farming to (1) New Zealand agricultural production and (2) the overall New Zealand economy?
- What are both the opportunities and challenges currently facing New Zealand livestock farming and livestock farmers?
- How are New Zealand livestock farmers responding to the emerging challenges?
- What support services are available to help New Zealand livestock farmers better address animal welfare and environmental issues on their farms? What agencies/ actors are guiding New Zealand livestock farmers, and how is this support offered?
- What roles do demonstration farms (including events) play in influencing change in animal welfare and environmental issues?
- How do New Zealand livestock farmers better communicate the role livestock production plays to the general public, while emphasising the high welfare and environmental standards being met?
- What strategies are being pursued to promote livestock farming's role in the rural economy of New Zealand?

State of the art in EU

The EU has a substantial population of livestock. Compared to the human population of 500 million, the EU has around 335 million farm mammals (cattle, pigs, sheep and goats) and around 1.6 billion poultry. There were 148 million pigs, 87 million bovine animals and 98 million sheep and goats in 2018. The majority of livestock are kept in just a few Member States. Three quarters of the EU's 2018 bovine population was kept in France (21.2 %), Germany (13.7 %), the United Kingdom (11.0 %), Ireland (7.5 %), Spain (7.4 %), Italy (7.2 %) and Poland (7.1 %). Almost three quarters of the EU's pigs were found in Spain (20.8 %), Germany (17.8 %), France (9.3 %), Denmark (8.5 %), the Netherlands (8.1 %) and Poland (7.4 %). Two thirds of sheep were in the United Kingdom (26.3 %), Spain (18.5 %), Romania (11.9 %) and Greece (9.9 %)¹.

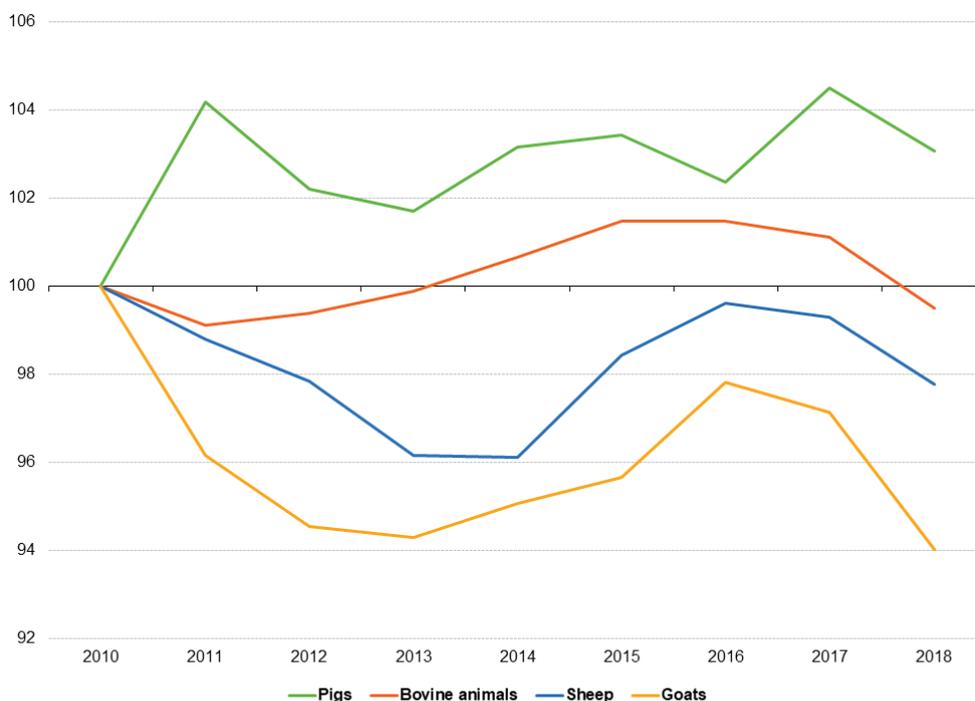
Livestock production accounts for almost half (48%) of total EU agricultural activity, with an estimated €130 billion output value annually (at producer prices) and creates employment for almost 30 million people². Besides contributing to the EU's economy, the livestock sector supports livelihoods in rural areas and has the potential to bring about a better functioning agro-ecosystem and climate-smart agriculture. The largest components of the animal output are milk (33%), pigmeat (22%) and cattle (18%). The share of animal output in total agricultural output is more important in some Member States than in others. It is highest at 75% in Ireland (cattle and dairy), 64% in Denmark (pigs), 62% in Finland (dairy) and 60% in the UK (cattle, dairy and poultry).

¹ Eurostat, Agricultural production – livestock and meat, available https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Agricultural_production_-_livestock_and_meat#Meat_production,

² Animal Task Force (2016), <http://animaltaskforce.eu/About/Publications/ATF-publications>



Figure 1: EU livestock population (EU-28, 2010 - 2018, index 2010 = 100. Source: Eurostat)



Note: The EU-28 aggregates for goats correspond to the sum of the available data from Member States, which covers all the Member States with a significant number of goats.

Source: Eurostat (online data code: apro_mt_lscattl, apro_mt_lspig, apro_mt_lssheep and apro_mt_lsgoat)

eurostat

There are more pigs, but less cattle and sheep in the EU than in the 1960's, while the livestock sector is tending towards fewer, larger and more specialised farms over time.

The European Union (EU) is faced with a dual challenge: on the one hand to produce larger quantities of high quality and affordable meat, milk, and eggs in response to an increasing global demand, while on the other hand doing so through production systems that are environmentally sound, socially responsible, and economically viable³.

The benefits of livestock include⁴:

- meat, dairy products and eggs provide high-quality protein, minerals, vitamins and other essential nutrients; and
- ruminant livestock, principally cattle, sheep and goats, consume cellulosic materials such as grasses which humans are unable to digest, enabling large land areas not suitable for crop cultivation to produce food.

However livestock production also has some negatives, which include³:

- the impact of livestock on the climate through livestock farming's contribution to both GHG and ammonia emissions;
- the loss of nutrients (especially nitrogen and phosphorus) leading to water pollution;
- the loss of bio-diversity;
- the development of anti-microbial resistance (AMR) through the misuse of antibiotics in farm animals;
- failure to meet the highest animal welfare standards; and
- the competition between human and animal for feed resources.

³ Sustainable livestock production in Europe: a question of food security, climate and innovation, available here http://www.eaap.org/wp-content/uploads/2015/11/Sustainable_livestock_A4_AW_261015_LoRes.pdf

⁴ Buckwell, A. and Nadeu, E. (2018) What is the safe operating space for EU livestock?, RISE Foundation, Brussels, available here www.risefoundation.eu/publications



A communication gap between citizens and farmers in the modern livestock sector is increasingly widening and the general sentiment is shifting from an overall good opinion of those who keep feeding the world toward a negative view on farmers' role in today's society. According to livestock sector stakeholders, this communication gap is leading to misinterpretation of the reality of animal farming, if not intentional disinformation. Some criticism is well-founded and there is a general consensus on the need to reconsider all aspects of modern animal farming in order to better address animal welfare and environmental issues. A key future challenge is how to better communicate these changes to the general public and bridge the gap between farmers and citizens⁵.

Three of the ten NEFERTITI themes relate to animal production; they are (1) grassland management and carbon sequestration; (2) robust organic livestock systems; and (3) data driven management in animal husbandry.

2) Organic and agro-ecology

- What is the role of organic food and farming in New Zealand agricultural production?
- What is the consumer demand and attitudes to organic farming in New Zealand?
- How is the concept of agro-ecology understood and implemented in New Zealand?
- What is the relationship between organic farming and regenerative agriculture and between organic and conventional farming?
- What are both the opportunities and challenges currently facing New Zealand organic farming and farmers?
- What is the role of digital technologies in organic farming in New Zealand? What are the cutting-edge technologies currently in use in organic farming and on what scale?
- How are New Zealand organic farmers responding to the emerging challenges of climate change?
- What kind of support is available for New Zealand organic farmers? What agencies/ actors are guiding New Zealand organic farmers, and how is this support offered?
- What roles do demonstration farms (including events) play in increasing conversion to organic farming and knowledge exchange between the farmers?
- What strategies are being pursued to promote organic farming's role in the rural economy of New Zealand?
- How is the research and innovation for organic farming funded and organized in New Zealand?

In Europe, 15.6 million hectares were organic in 2018 (European Union: 13.8 million hectares). With 2.2 million hectares, Spain continues to be the country with the largest organic area in Europe, followed by France (2.0 million hectares), and Italy (2.0 million hectares).

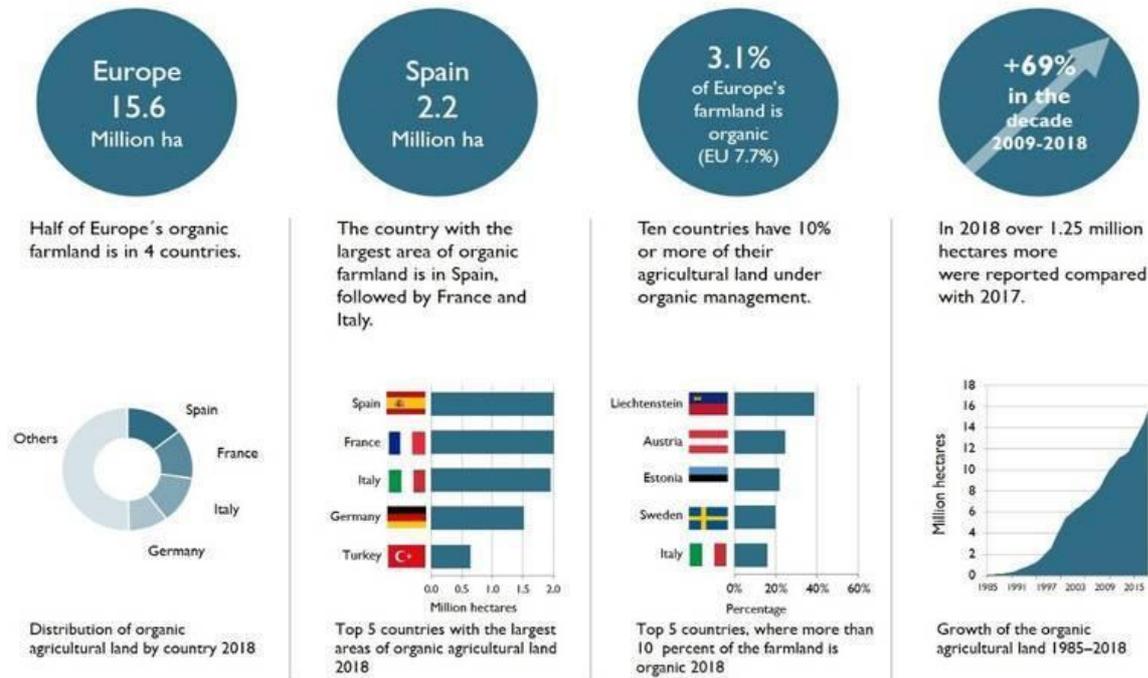
The organic land increased by 1.25 million hectares in Europe and by one million hectares in the European Union, representing an increase of 8.7 percent and 7.6 percent, respectively. France reported over 290,000 hectares more than in 2017 and Spain reported over 160,000 hectares more.

Organic farmland in Europe constituted 3.1 percent of the total agricultural land and 7.7 percent in the European Union. In Europe (and globally), Liechtenstein had the highest organic share of all farmland (38.5 percent) followed by Austria, the country in the European Union with the highest organic share (24.7 percent). Ten European countries reported that at least 10 percent of their farmland is organic.

⁵ Euractiv, Communicating modern animal farming, <https://eurac.tv/9QTp>, accessed 9/2/20



EUROPE: ORGANIC FARMLAND 2018



Source: FBL-AMI survey 2020, www.organic-world.net

Retail sales in Europe were valued at €40.7 billion (€37.4 billion in the European Union). The largest market was Germany (€10.9 billion). The European Union represents the second largest single market for organic products in the world after the United States (€40.6 billion).

The European market recorded a growth rate of 7.8 percent. Among the key markets, the highest growth was observed in France (15.4 percent). In the decade 2009-2018, the value of the European and European Union markets has more than doubled.

In Europe, consumers spent €50 on organic food per person annually (European Union: €76). Per capita consumer spending on organic food has doubled in the last decade. Danish and Swiss consumers spent the most money on organic food (€312 per capita in 2018).

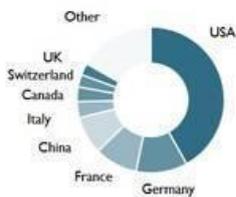
Globally, European countries account for the highest shares of organic food sales as a percentage of their respective food markets. Denmark is the first country to surpass the ten percent mark and has the highest organic share (11.5 percent) worldwide. Individual products and product groups hold even higher shares. Organic eggs, for instance, reach around 30 percent of the value of all eggs sold in some countries.



EUROPE: ORGANIC RETAIL SALES 2018



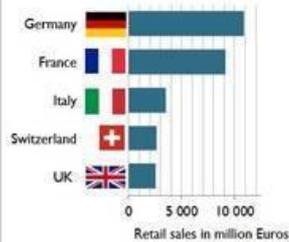
The European Union (37.4 billion €) is the second largest single market after the US (40.6 billion €) and China. By region, North America has the lead (43 billion €), followed by Europe and Asia.



Distribution of retail sales value worldwide by Country 2018



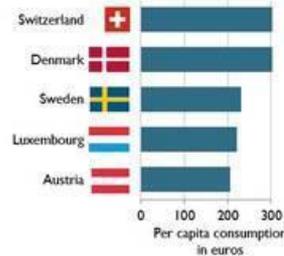
The European countries with the largest markets for organic food are Germany, France (9.1 billion €), Italy (3.5 billion €), and Switzerland (2.7 billion €).



The countries with the largest markets for organic food 2018



Denmark and Switzerland have the highest per capita consumption worldwide, followed by Sweden, Luxembourg and Austria.



The countries with the highest per capita consumption of organic food 2018



The country with the highest organic share of their total market is Denmark, followed by Switzerland, Sweden, Austria, and Luxembourg.



The countries with the highest organic shares of the total market 2018

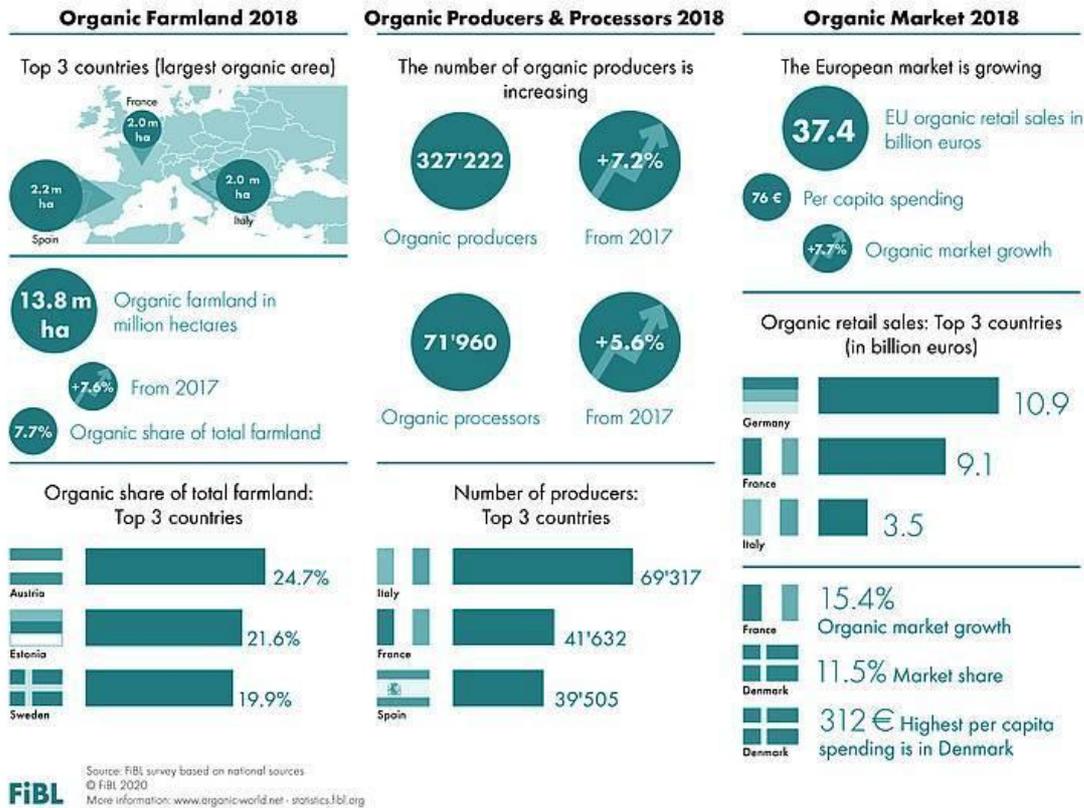
Source: FiBL-AMI survey 2020. www.organic-world.net

There were almost 420,000 organic producers in Europe (European Union: almost 330,000), and the largest numbers were in Turkey (almost 80,000) and Italy (more than 69,000). The number of producers grew by 5.4 percent in Europe (7.2 percent in the European Union) in 2018.

There were almost 76,000 processors in Europe and almost 71,000 in the European Union. Almost 5,800 importers were counted in Europe and more than 5,000 in the European Union. The country with the largest number of processors was Italy (more than 20,000), while Germany had the most importers (more than 1,700).

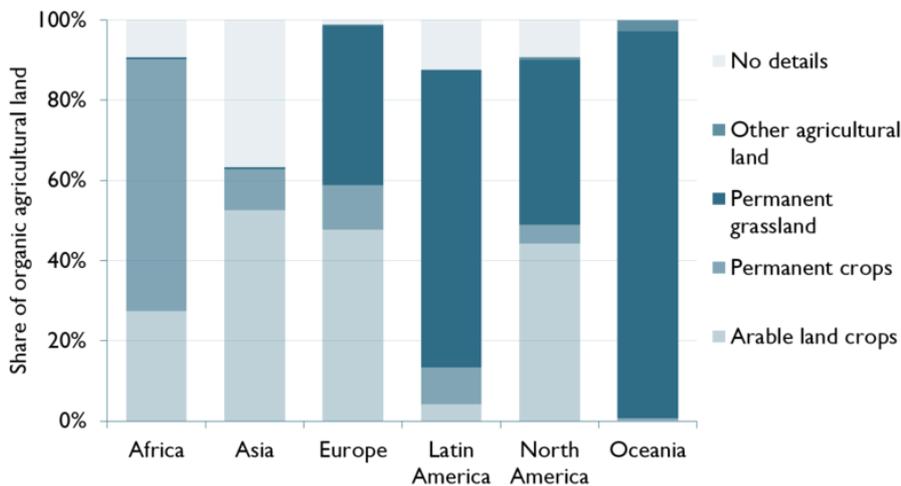


Organic Agriculture in the European Union 2018



Distribution of main land use types by region 2018

Source: FiBL survey 2020



Data sources:

"The World of Organic Agriculture (2020)" available for download at: <https://www.organic-world.net/yearbook/yearbook-2020.html>

Infographics:

<https://www.organic-world.net/yearbook/yearbook-2020/infographics.html>

Organic wine in Europe: https://www.beveragedaily.com/Article/2019/04/09/European-markets-drive-demand-for-organic-wine?utm_source=copyright&utm_medium=OnSite&utm_campaign=copyright

3) Generational renewal, new entrants and farm attractiveness



- What is the current age profile of the New Zealand farming population? Is generational renewal a challenge for New Zealand agriculture?
- What strategies are currently being used in New Zealand to address this challenge?
- What actors can influence generational renewal?
- What training is available to enable actors to facilitate the complex issues associated with succession planning?
- What supports, including financial, training, facilitation etc. are available to both the older and younger generations?
- What roles do demonstration farms (including events) play in influencing change in farm progression/ generational renewal in New Zealand?
- What strategies are being pursued to promote involvement in the agricultural sector as an attractive career choice?

An age diverse farming population is required for the survival and future prosperity of the agricultural sector and broader sustainability of rural society. Yet, almost one third of all farms (31%) in Europe are run by farmers older than 65, whilst young farmers represent only 6% of European farmers. An aging farming population and steady decline in the number of young farm families is affecting rural communities and challenging the continuation of farming activities in a number of geographical areas. Indeed, generational renewal has been described as one of the most challenging agricultural/ rural sustainability issues of our time, so much so that generational renewal has become a priority for future Common Agricultural Policy (CAP) objectives.

The senior generation's reluctance to transfer the ownership and management of the farming business is strong within the farming community. This phenomenon has created challenges for young people seeking a career in farming. Most elderly farmers opt to maintain the facade of normal day to day activity and behaviour instead of retiring. Without the incumbent's wholehearted commitment, it is almost impossible to affect a transition from one generation to the next. The reasons why older farmers fail to plan for the future are extensive, and range from the potential loss of identity, status and power that may occur as a result of engaging in the process, to the intrinsic multi-level relationship farmers have with their farms. These so-called 'soft issues' i.e. the emotional and social dimensions involved, are really the 'hard issues' which must be tackled if farm succession/ progression is to be successful⁶.

Access to land for the younger generation (either to purchase or lease/ rent) and availability of credit have been identified as issues of "considerable concern", with this situation compounded by the low profitability margins in many enterprises. In addition, the structure of the direct payment subsidies, combined with inadequate support measures, often combine to hamper the entry of prospective farmers. A further disincentive to young people seeking careers in agriculture relates to the current somewhat negative narrative about the agricultural sector.

There have been a number of initiatives at member state level that facilitate the transfer of land between the older and younger generations of farmers. These include financial incentives such as Installation/ Start-up Schemes (for the younger farmer), Early Retirement Schemes (for the older farmer), the creation of joint farming ventures/ partnerships (between the younger and older farmer) and the provision of land mobility/ succession planning services. Yet the problem of intergenerational transfer and attracting young people to farming remains stubbornly unsolved.

The theme of "Farm attractiveness for new entrants" was chosen as one of the ten themes in the NEFERTITI project.

⁶ Conway, S.F. *et al.* (2019) Human dynamics and the intergenerational farm transfer process in later life: a roadmap for future generational renewal in agriculture policy, *International Journal of Agricultural Management*, Vol. 8, No. 1, pp. 22 – 30.

NEFERTITI

Networking European Farms to Enhance Cross Fertilisation and Innovation Uptake through Demonstration: New Zealand Study Tour Report



[1] Situation and Outlook Primary Industries (SOPI), MPI, March 2020

[2] A vote is taken of all dairy farmers every six years, with a vote being taken in May 2020. In the 2018/19 production year the total levy from dairy farmers amounted to almost NZ\$68m (or almost NZ\$6,000 for the average farm).

[3] In this case the levy vote takes place every five years, with the most recent vote in 2017.

[4] The Maori philosophy is of a longer term, rather than shorter term view; a more holistic approach, rather than a short term profit focus

[5] <https://www.hofstede-insights.com/country-comparison/new-zealand/>

[6] Bailey *et al.* (2019), Enhancing the role and impact of farmer business networks/ Advisory Services on New Zealand's Agricultural Knowledge and Innovation System: the rural professional perspective, proceedings of the 22nd IFMA Congress



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