

DEVELOPING A SIMPLE ON-FARM BIODIVERSITY ASSESSMENT TOOL

The New Zealand Sustainability Dashboard is developing a simple, online tool that evaluates farm management practices and their effect on biodiversity.

New Zealand has committed to demonstrating that its primary sector can operate sustainably, including the protection of the many components of ecosystem services, such as biodiversity. The 2016 NZ Biodiversity Strategy, for example, includes as an action that: “New Zealand businesses will increasingly consider how natural capital and ecosystem services are measured and valued...to ensure that business activities support enhanced ecosystem health.”

Central and regional governments have followed up on this commitment by adopting policies and regulations to enhance biodiversity. However, it is widely recognised that it will be impossible to achieve our collective biodiversity goals without information about what is happening on private land, particularly farms. This is recognised in the Government’s 2013 Environment Domain Plan, which asked: “What and where is environmental protection effort being undertaken to protect and sustain the diversity and condition of indigenous species and ecosystems?”

Fortunately, many individual landowners want to proactively improve biodiversity on their farms for commercial or personal reasons.

An Online Tool for Biodiversity Assessment

The proposed NZ Farm Biodiversity Tool is an online calculator that allows farmers to self-assess the management actions they have taken to enhance biodiversity. The calculator works by scoring the biodiversity effects of each management action, based on an expert evaluation of the available scientific evidence. It then calculates an overall score that estimates the biodiversity performance of a farm as well as an assessment of the expected outcomes for a range of species groups.

The proposed tool is based on an idea originally developed by the Cool Farm Alliance for northern European farms.¹ However, the NZ Sustainability Dashboard team is working with the Alliance on adapting it for use by NZ’s agricultural industries.

¹ <https://coolfarmtool.org/>



How it Works

The Cool Farm Biodiversity Tool is an online questionnaire in which each yes/no answer corresponds to a single management action related to various production practices (e.g. pesticide use, mowing techniques). The tool uses evidence from the online Conservation Evidence database² to score the expected biodiversity benefits of each management action. The Conservation Evidence database provides a synthesis of the available evidence in the scientific literature on the effects of a management action on biodiversity. The tool's scoring system allows for management actions to receive greater credit when there is high quality evidence of their effectiveness, and can be easily revised if new evidence becomes available.

Benefits of adapting the tool for New Zealand

By adapting the tool for NZ's farming context, we can capitalise on the investments already made in developing the Cool Farm Tool. Specifically, we can adopt the research processes used to develop the tool, as well as benefit from the resources available within the Conservation Evidence database.

It is essential that the tool be adapted and refined collectively with NZ stakeholders to ensure it is trusted and would be widely used. The NZ Sustainability Dashboard provides a strong platform for achieving this and for integrating biodiversity with other aspects of sustainability.

The NZ Farm Biodiversity Tool can provide direct benefits to multiple stakeholders:

- **Farmers:** can use the tool to gain recognition for good practice by quantifying and communicating environmental benefits of their practices. The tool allows farmers to carry out a rapid self-assessment of the farm-scale biodiversity benefits of their management actions, without having to directly monitor the biodiversity outcomes themselves. It also acts as a learning tool, allowing the farmer to explore the expected biodiversity benefits of different management actions on their farm. Currently, there is no other tool that does this for NZ farmers.
- **Industry bodies and value chains:** can track environmental impacts and improvement over time. The tool also can engage suppliers by encouraging, motivating and rewarding good practice in an industry-standard way.
- **Public agencies:** gain another mechanism to measure the effectiveness of policy and changes in farmer behaviour. It also enables voluntary uptake of biodiversity enhancement actions by farmers, rather than government having to impose them as a regulatory requirement.

² <http://www.conservationevidence.com/>





Recognising New Zealand's Special Features

The Cool Farm Biodiversity Tool was developed for farming systems of north-western Europe. While some aspects are transferable to NZ farming systems, others will not be relevant. The tool must therefore be adapted to take into account the special features of NZ ecology, including:

- controlling pests and restoring indigenous habitat
- managing agricultural biodiversity that is largely composed of introduced species, both beneficial and pest species
- maintaining biosecurity, which sometimes involves using biocontrol agents

What the Tool Will Provide

Farmers and Industry Bodies: This online biodiversity assessment tool would assist farmers to develop a plan for enhancing biodiversity on their farm and to report progress toward that plan's goals and targets. The tool itself and the evidence database behind it would support autonomy in farmer decision-making for setting biodiversity goals and planning how to meet them using the best-available evidence to select effective management practices.

The assessment tool would be directly accessible to farmers to quickly produce consistent reports showing their progress in implementing these on-farm practices and the expected benefits to overall biodiversity or particular species groups. The tool's output can clearly distinguish benefits to particular species groups that the farmer has identified as targets for enhancement, such as native species or species that provide ecosystem services. The tool would thus support development of and reporting on biodiversity plans that are tailored to each farmer's goals and the environmental context of their farm. Reports to industry bodies would be consistent among farmers and over time, enabling tracking of the organisation's progress toward sustainability goals in an industry-standard way.

Regional Councils and Other Managers: Regional councils need to measure progress toward the ambitious biodiversity objectives in their regional policy documents. The proposed tool would help councils and other biodiversity managers measure behaviour change by farmers and how those changes affect biodiversity. There is currently no widely accepted, evidence-based tool to authoritatively link land management actions with impacts on NZ biodiversity.

The Regional Council Biodiversity Working Group hosted a workshop in late February 2017 at which there was agreement that widespread use of this tool could provide councils, farmers and agencies with high-quality data to inform environmental reporting for multiple purposes.





Next Steps

In the near term, the NZ Sustainability Dashboard will develop an on-farm biodiversity assessment tool as a proof-of-concept for New Zealand. Discussions are underway with farmers, public agencies and industry bodies to determine what stakeholders need from the tool and what research is required to make it scientifically robust for New Zealand. The overall research process will include:

- Identifying biodiversity groups and management actions to include in the tool, drawing from stakeholder priorities
- Evaluating the effectiveness of management actions on each biodiversity group, using a panel of experts to establish a two-part scoring process that draws on consensus of expert opinion and evaluation of available scientific evidence
- Developing and testing a prototype of the online tool with stakeholders, and revising the tool's content and design following stakeholder feedback
- Incorporating discussions of tool sovereignty and support as well as data management strategies throughout the tool's design to determine the best way to host the tool for long-term usability and trust by NZ stakeholders

In the longer term, we will explore how this generic tool-building approach could be applied to other sustainability components on farms or beyond the production landscape. Ultimately, such a tool would enable a range of industry and government bodies to better predict outcomes of different land management policy options and set realistic sustainability goals.

Contacts:

Kevin Collins
KCollinsConsult@gmail.com

Catriona MacLeod
macleodc@landcareresearch.co.nz



COOL FARM ALLIANCE



REFLECTION
GRAPHICS



University of East Anglia

**Conservation
Evidence**
Evidence to improve practice

NEW ZEALAND SUSTAINABILITY DASHBOARD

The NZ Sustainability Dashboard is an online tool for sustainability assessment, monitoring, reporting and learning for the country's primary sectors. The NZSD aims to help stakeholders address market, regulator and business drivers for improvements in sustainability performance. The tool is being developed and tested in partnership with NZ's production sectors (including kiwifruit, wine, pastoral, forestry and aquaculture), Māori iwi and regulatory bodies. The six-year research project started in October 2012 and is jointly funded by NZ government and industry bodies. The NZ Sustainability Dashboard's environmental research stream is led by Landcare Research, a national research institute that drives innovation in the management of terrestrial biodiversity and land resources.

FOR MORE INFORMATION:

<http://www.nzdashboard.org.nz/biodiversity-assessment-tool>



Manaaki Whenua
Landcare Research