

Building co-innovation into your research proposal

Boyce, W; Percy, H; Turner, J; Fear, A; Mills, T and Craven, C.

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What is co-innovation and how does it apply to research proposals?

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– what is co-innovation and how to apply it to research proposals

This guide is about building co-innovation into your research proposal by applying five principles of successful co-innovation. It includes tools, tips and examples from other AgResearch proposals.

What is co-innovation?

Co-innovation is the process of jointly developing new or different solutions to an agricultural problem through multi-participant research processes (and keeping these processes alive through-out the research). Here is a definition:

co-

prefix

1. together; joint or jointly; mutual or mutually: coproduction
2. indicating partnership or equality: cofounder, copilot
3. to the same or a similar degree: coextend

innovation

[in-uh-**vey**-shuh n]

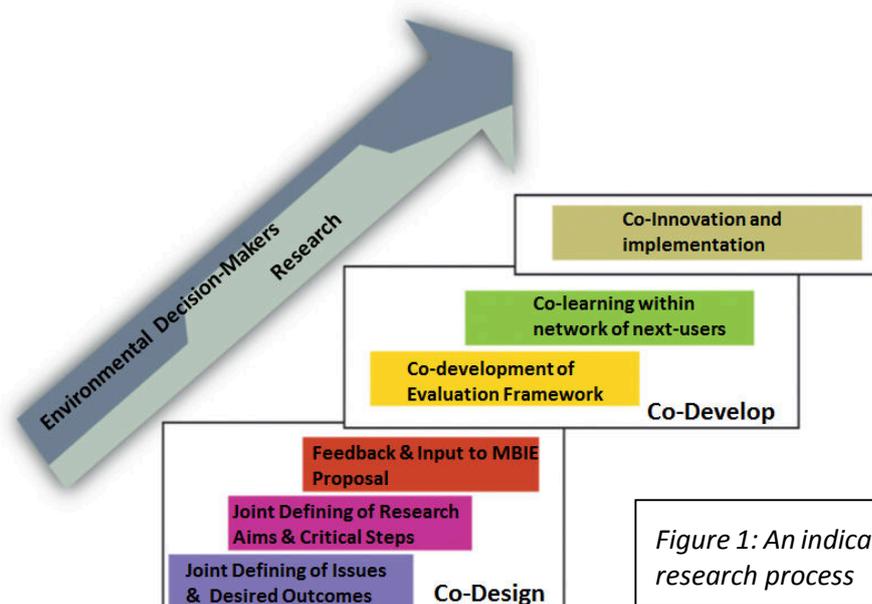
noun

1. something new or different introduced
2. the act of innovating; introduction of new things or methods.

Co-innovation as a research approach

One way to think about co-innovation is as a research approach which emphasises working with others at each stage of the research process (see Figure 1). The first stage includes design of the research issues and outcomes with partners and stakeholders, including, for example, environmental decision-makers.

Once the issues and outcomes of the research are designed, the next stage is to develop the details of the research process. This might include joint development of an evaluation framework and other ways for the research team to learn and adapt the research as the research proceeds.



An evaluation framework is one of the best ways to systematically build in a learning cycle to your research (see Principle 5, later in this guide).

Finally, once the research is completed, processes are designed to share the results and focus on how these findings could be implemented.

Figure 1: An indication of the steps in the co-innovation research process

When should a research proposal include co-innovation?

Every research proposal can benefit from applying some co-innovation principles to their proposal in big or small ways by picking a tool or two from this guide.

However, co-innovation is most suited to complex research problems. A complex research problem is one with hard-to-solve technical, social, cultural and economic/market challenges. There will be no obvious cause-effect relationship and there will be many different players with a stake in the research problem and solution. It may be helpful to place your research proposal on a continuum to understand if it is most suited to a co-innovation approach. Figure 2 shows the research problem continuum from 'simple' to complex. To evaluate where your research problem is placed on this 'co-innovation continuum', see the AgResearch Beyond Results website (www.beyondresults.co.nz).

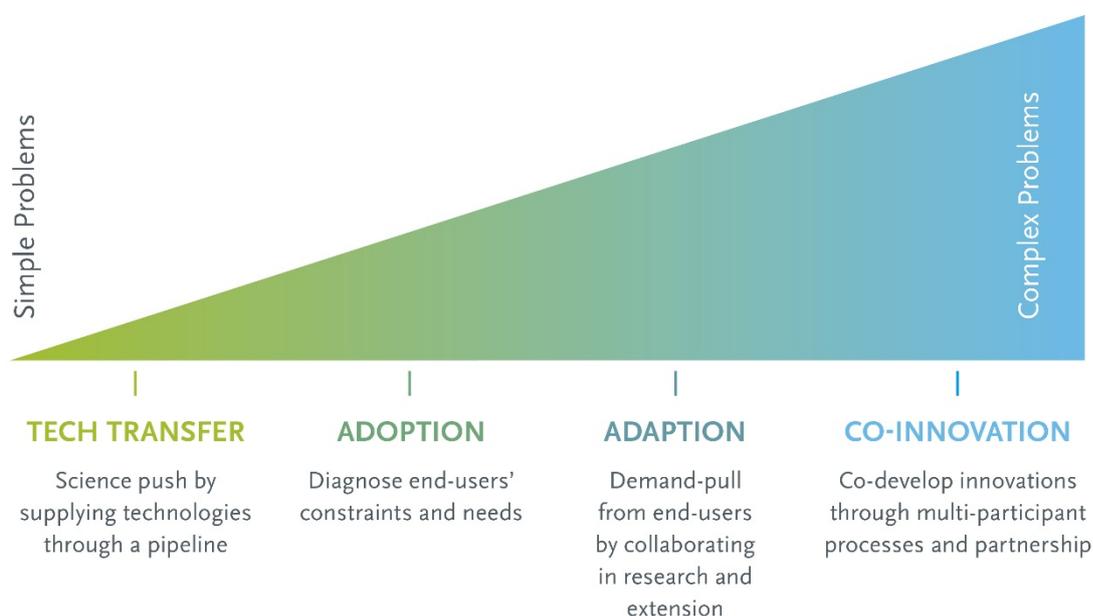


Figure 2: The co-innovation continuum, showing that complex research problems are most suited to co-innovation approaches

Another way to think about transitioning from a more classical research proposals, towards one that uses a co-innovation approach is shown in this table:

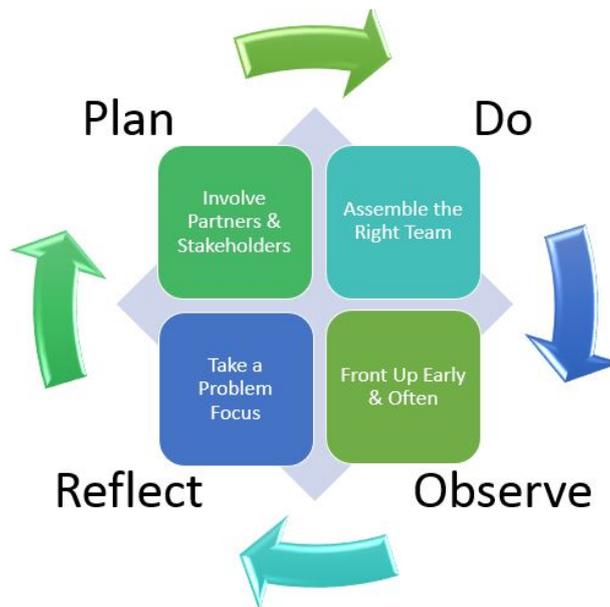
An example of the types of shifts from classical research proposals to co-innovation research proposals	
From	To
Scientist generates the knowledge	Knowledge from other sources (Māori, industry, farmers) also valued in research and built into research design.
Single discipline providing the solution (e.g. breeding).	Many disciplines, creating new knowledge and approaches.
Team picked for research expertise alone.	Team picked to include, for example, Māori cultural knowledge, facilitation and/or brokerage skills.
Stakeholders involved once results proven	Partnership with iwi and stakeholders involved from the beginning and throughout the project.

An example of the types of shifts from classical research proposals to co-innovation research proposals	
From	To
Advisory groups are often passive	Advisory group members play an active role in bringing about change. Māori perspectives integral.
Reflection and evaluation done once project completed. Focus on outputs	Reflection and evaluation built in from the beginning. Focus on outcomes and impact as well as outputs.

The following pages provide a guide to building co-innovation into your research proposal in big and small ways, using five core principles.

The five principles of co-innovation

There are five principles of co-innovation that can be applied to research proposals.



The five principles are:

1. Involve partners and stakeholders
2. Take a problem focus
3. Assemble the right team
4. Front up early and often
5. Use the action learning cycle: Plan-Do-Observe-Reflect.

Need assistance?

If you would like to discuss these principles and how to apply them to your research proposal talk to members of the People and Agriculture Team or the Adoption and Practice Change Science Impact Leader.

Principle 1: Involve Partners and Stakeholders

What does this mean?

This principle is about involving a range of different parties into your research proposal. This may include representatives of industry (off-farm/on-farm), government, iwi and community groups, as well as farmers and rural professionals. The aim here is to work with these groups to design the research and to sustain this involvement wherever possible.

Involvement of partners and stakeholders is most effective early and before the ink is set on a proposal. The goal is to broaden understanding of the research issues (Turner, 2016, p.6).

Questions to ask as you develop your research proposal

Here's some key questions to ask while preparing your proposal:

1. Does your proposal include people who can help to understand the nature of the problem (or opportunity) and its causes?
2. Does your proposal recognise the special relationship of māori as research partners?
3. Does the proposal include opportunities to work with people who could influence the implementation of your research, including those who take ideas to the market (entrepreneurs) or create the rules (policy makers, planners)?
4. Do the partners and stakeholders understand their role in the programme?

Tools to insert in your research proposal

Here are some specific tools to build into your research proposal:

- | | |
|------------------------------|--|
| 1. Impact planning tool | www.beyondresults |
| 2. A programme logic diagram | www.beyondresults |

Tips

Here are some ideas for how to include this principle in your proposal:

- Invite a member of the People and Agriculture Team, Science Impact Leader or Innovation Broker to assist
- Include forums for dialogue among stakeholders and partners such as workshops, hui, focus groups, interviews, one-on-one meetings, wānanga or phone calls.

Examples from AgResearch proposals

Here's an example from a successful proposal, showing that the proposal was designed with industry from early in the process:

“We have co-designed our research plan with a broad range of NZ meat industry partners who have given strong support (Alliance Group, FarmIQ, ANZCO Foods, Greenlea Premier Meats, Firstlight Foods, DINZ, MIA, BLNZ Genetics and RMPP).”

Similarly, this example shows how early involvement from Māori partners shaped the design:

“This research provides opportunity for Māori-led co-development through a two-way partnership, so that over time our science is their science. It aligns directly with rongoā Māori; the use of NZ native plants (kawakawa) to maintain and improve health.

Recognising the Treaty of Waitangi Flora and Fauna Claim (Wai 262), we will explore the synergistic health benefits of kawakawa with extracts from NZ forage plants. Growth and development of novel Māori agribusiness will occur through alternative land use.”

Principle 2: Take a Problem Focus

What does this mean?

“The focus of your research proposal should be on addressing a problem or realising an opportunity as the outcome of an interactive [process]rather than linear technology transfer of a solution from ‘experts’ to ‘end-users’ (Turner, 2016, p.4).”

Questions to ask as you develop your research proposal

Here’s some key questions to ask while preparing your proposal:

1. Does your proposal include activities to first identify the problem or opportunity? Are you able to repeat these activities at key points in your research process to maintain a problem focus?
2. Have you taken a broad view of the system by describing the technical, social, cultural, economic, market and political systems?
3. Does the proposal include milestones that enable it to change activities to reflect changes in understanding of the problem, e.g. go-no go milestones, explicit re-planning steps, or an explicit problem definition phase (Turner, 2016, p.5)?

Tools to insert in your research proposal

Here are some specific tools to build into your research proposal:

- | | |
|--------------------------------|--|
| 1. Impact planning tool | www.beyondresults |
| 2. Programme logic diagram | www.beyondresults |
| 3. The co-innovation continuum | www.beyondresults |

Other tools include visioning workshops, systems analysis, needs assessment and scoping studies. The People and Agriculture Team can also advise on appropriate activities and tools.

Tips

Here are some ideas for how to include this principle in your proposal:

- Having more people involved in your research will create unexpected challenges and opportunities. Build flexibility into your proposal milestones to enable you to respond to these opportunities and challenges.
- Build in activities that enable you to take a broad view of the research problem and involve a diverse range of people in the team when you can. This will help you to retain a focus on the research problem.

Examples from AgResearch proposals

The following extract from a recent research proposal shows how the problem focus is on the faecal contamination sources – not who is causing it, or the specific science needed to solve the problem.

This example also recognises that the problem is wider than a microbiological one, with Māori cultural perspectives also framing the research problem:

“The National Policy Statement - Freshwater Management (2014) requires Regional Councils to (a) account for sources and (b) to set water quality limits. For microbial water

quality there are a number of faecal contamination sources that we cannot account for, or accurately identify in water. These different faecal sources will also have different impacts on the cultural acceptability of the water.”

Similarly, this example places the focus on consumers and their health needs, with an explicit focus on how Mātauranga has been incorporated into the research proposal:

“Globally, consumers aged 40+ want foods that will help maintain health, performance and longevity. Their stressful, sedentary lifestyles expose them to chronic, low-grade gut inflammation and increased disease risks. Histone deacetylases are enzymes that are important for healthy gut function, but during stress their over-activity can induce inflammation. Compounds that inhibit these enzymes (HDACi) offer a unique opportunity to reduce this inflammation. We will identify novel dietary HDACi in proprietary NZ plants. We will interweave the use of these plants with rongoā, traditional Māori herbal practices using kawakawa, to explore their synergistic health benefits.”

Principle 3: Assemble and Nurture the Right Team

What does this mean?

In addition to the technical contributions to preparing a research proposal, a research team that has people with collaborative skills can strengthen the team's ability to co-innovate. These are people who can take a broader view of the system and act as translators between the science team and stakeholders. The aim here is to have multidisciplinary or transdisciplinary team. A transdisciplinary team is described below:

Transdisciplinary research

Transdisciplinary projects generally have a research team charged with the integration of a range of different scientific disciplines and the local knowledge and expertise of the lay or interested public to solve a pressing societal [or agricultural] problem¹.

Questions to ask as you develop your research proposal

Here's some key questions to ask while preparing your proposal:

1. Do you have people in the team (or access to people) with collaborative skills such as systems thinkers, translators and brokers?
2. Have you allowed enough time up front to fully understand the language and approach of the different disciplines and perspectives in your research team?
3. Has the proposal built-in activities to allow for regular dialogue between team members?

Tools to insert in your research proposal

Here are some specific tools to build into your research proposal:

- | | |
|---------------------------------|--|
| 1. Impact planning tool | www.beyondresults |
| 2. A participant feedback sheet | www.beyondresults |
| 3. Innovation Brokers | www.beyondresults |

Tips

Here are some ideas for how to include this principle in your proposal:

- The type of skills needed in your research can change over time
- Having a range of skills on a team helps counterbalance 'confirmation bias' – the tendency to search for evidence to confirm our own perspective on a research problem.

Examples from AgResearch proposals

These examples from previous research proposals demonstrate the principle of assembling the right team. They demonstrate the value of a having new combinations of people and skills who can work effectively alongside each other.

The following example specifically avoids some of the risks of multidisciplinary work by including independent international specialists:

“This project assembles a new team of researchers with multi-disciplinary and complementary expertise... The core of the NZ team ... has at least 5 years of experience together and will also work closely with the international collaborators mitigating the risk of multidisciplinary teams.”

Similarly, this example explicitly includes Māori cultural knowledge in the research team:

“Our partners will form an Advisory Group (AG) to ensure rongoā Māori and commercial drivers are embedded into the science plan and outputs. Their investment will springboard knowledge transfer of the health benefits and mechanisms of action of plant-derived HDACi into commercial opportunities.”

Principle 4: Front Up: Share Results Early and Often

What does this mean?

Supporting a team using a co-innovation approach involves researchers fronting-up to research programme participants early and often in order to share data and results as they emerge, rather than waiting until the end of the research (Röling, 2009; Reed, 2008; Leeuwis, 2000; Douthwaite et al., 2001; 2009; Thiele et al., 2007 in Turner, 2016, p.12). The mind-set here is to strive to learn from each other by fronting-up regularly and actively listening and understanding what is being said. Fronting-up early and often may identify new research questions or new opportunities for implementing the results. It can require flexibility into your research design to allow responses to feedback received.

Questions to ask as you develop your research proposal

Here's some key questions to ask while preparing your proposal:

1. Does your proposal include regular activities with stakeholders to hear, reflect on, learn from, and provide feedback on the research? For example, quarterly or six monthly trial visits and/or programme workshops?
2. Does your proposal include opportunities and resources for non-research partners to contribute data and knowledge, e.g. farm or grower measurement of trials (Turner, 2016, p. 12)?
3. Is it possible to build flexibility into the research proposal to allow the research team to make changes over time?

Tools to insert in your research proposal

Here are some specific tools to build into your research proposal:

- | | |
|---|--|
| 1. Use a structured conversation method | www.beyondresults |
| 2. Use the communications channel tool | www.beyondresults |
| 3. Use a feedback sheet | www.beyondresults |

Tips

Here are some ideas for how to include this principle in your proposal:

- Collect feedback systematically from meetings. This will provide excellent data for funding reports and evaluations.
- Work alongside someone with innovation brokering or farm systems skills.

Examples from AgResearch proposals

These examples from previous research proposals demonstrate the principle of fronting-up. The emphasis is on community and kaitiaki groups influencing the development and use of the modelling tools throughout the research:

“By two years into this programme three local community groups will have, based on their specific local issues, provided input to the selection of faecal contamination sources for the development of FST and modelling tools being developed in this programme. This

will include informing our understanding of the cultural implications of location and/or distance between the faecal source and the swimming location.”

In this proposal the impact to Māori of sharing results early and often is clearly articulated:

“Co-development with the Ngā Uri o te Ngahere Trust and Taha enables integration of science with mātauranga of rongoā Māori including cultivation and harvesting. Wai 262 will be acknowledged though considered evidence sharing, enabling wealth creation and employment for Māori via growth of iwi-owned agri-businesses, expansion via ‘farming’ of kawakawa and/or development of food-grade processing facilities.”

Principle 5: Plan – Do – Observe – Reflect: the Action Learning Cycle

What does this mean?

This principle is about building-in rapid action learning cycles of Plan–Do–Observe (Monitor)–Reflect into a research proposal. One good way to do this is to build in monitoring and evaluation activities from the beginning. This information can be used to adapt and focus the research programme, as well as be used for reporting. The Plan – Do – Observe (Monitor) –Reflect cycle emphasises the importance of acting on what is discovered in the Observe stage. The intention of this principle is to maintain: a focus on action, e.g. as a result of this workshop, what other action are you able to take? (Turner, 2016).

Placing this action learning cycle in your research proposal ensures explicit attention is placed on processes to help the research team adapt to changing circumstances or seize new opportunities as they emerge (Hueske et al., 2014; Smart et al., 2007; Klerkx et al., 2010; Beers et al., 2014; Musiolik et al., 2012; cited in Turner, 2016, p.10)

Questions to ask as you develop your research proposal

Here are some key questions to ask while preparing your proposal:

1. Has your proposal considered developing a programme logic chart to help you plan your research proposal? A programme logic is a structured way of planning inputs, activities, outputs and outcomes.
2. Does the proposal include resources and time for reflecting on programme progress with partners and stakeholders from time to time?

Tools to insert in your research proposal

Here are some specific tools to build into your research proposal:

1. Monitoring and evaluation tools www.beyondresults

Tips

Here are some ideas for how to include this principle in your proposal:

- AgResearch has Monitoring and Evaluation ‘Champions’ who can assist with program logic diagrams and other reflective tools to incorporate into your research proposal
- Build longer milestones into your proposal
- Respect commercial interests, e.g. by using one-on-one interviews.

Examples from AgResearch proposals

These examples from previous research proposals explicitly built in observation and reflection tools from the Beyond Results website, spelling out the advantages of doing so by linking them to the National Statement of Science Investment:

“The National Statement of Science Investment calls for high impact research along with science excellence to deliver economic, environmental and social outcomes. Key to delivering impact is monitoring and evaluation (M&E) of that impact throughout the [research] development and delivery cycle.”

This proposal emphasises sharing evidence with a national Māori collective via monthly reporting:

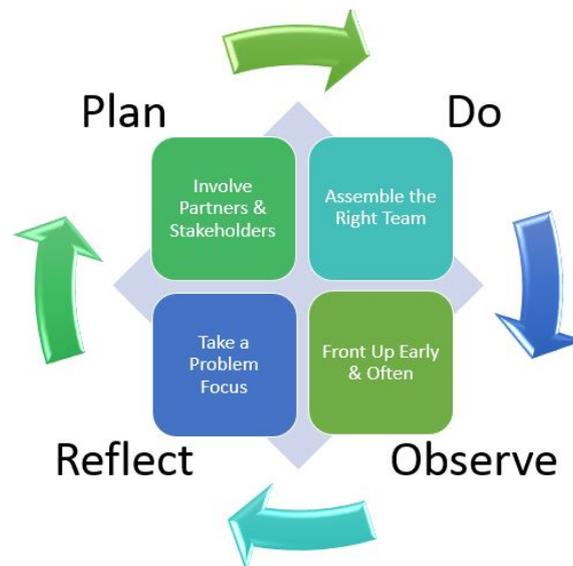
“This group will co-develop the science plan and commercial proposal of the outcomes via monthly project meetings, quarterly reports and annual project workshops. [The representative] will ensure respectful adherence to rongoā Māori and forest kaitiakitanga and share evidence with the national collective of Māori healers. New knowledge, scientific publications and project reports will be available to all industry co-developers. Outcomes will also be shared within the Suntory Group, Frucor’s parent company, which could springboard product development in other areas within their global business.”

Conclusion

This guide was about building co-innovation into research proposals by applying five principles. It includes tools, tips and examples from other AgResearch proposals.

The five principles of co-innovation

There are five principles that can be applied to funding proposals in order to include co-innovation in a research proposal.



These five principles are outlined in the remaining pages of this guide, together with tips and examples. The five principles of co-innovation are:

1. Involve partners and stakeholders
2. Take a problem focus
3. Assemble the right team
4. Front up early and often
5. Use the action learning cycle: Plan-Do-Observe-Reflect.

Need assistance?

If you would like to discuss these principles and how to apply them to your research proposal, these people are here to help:

- The People and Agriculture Team
- The Adoption and Practice Change Leader.

References and Endnotes

Turner, J. (2016). Recommendations for Inclusion of Co-innovation in DairyNZ Programmes. DairyNZ and MBIE: Hamilton, NZ.

ⁱ Small, B.; Payne, T.; and Montes de Oca Munguia, O. (2015) Developing Reliable and Valid Measures for Science Team Process Success Factors in Transdisciplinary Research. The International Journal of Interdisciplinary Organizational Studies.