

16 August 2023

fyi-request-23xxxxxxxxxxxx@xxxxxxxx.xxx.xxx.nz

Dear J Bruning,

Official Information Request – Budgets for Biotech and GM Pasture Species

I refer to your official information request for information pertaining to AgResearch's budgets for biotech and GM pasture species work, on 20 June 2023.

Part A

Your Part A request was as follows:

(A) On 21 June, 2022, following an Official Information Act request, you sent a list of projects employing regulated gene bio technologies.

For each project on this list, please can you provide the:

- 1. Total budget for each project, including the breakdown and details of institutional funder/funding program.*
- 2. Years and expected length of project, including where extended.*
- 3. Initiator of each project – whether it was an AgResearch scientist or whether an institutional partner approached AgResearch.*
- 4. Estimated expected return on income for each project.*
- 5. Expected benefits other than financial for each project. This includes:*
 - a. Commercialisation pathways, as a result of non-government funding, including commercialisation and licensing/royalty arrangements between AgResearch and the institutional partner.*
 - b. Envisaged direct benefit to New Zealand farmers/growers.*
 - c. Envisaged direct benefit to export markets.*

As advised in our message of 18 July, responding to this has required a substantial amount of collation followed up with some consultation with some of AgResearch's stakeholder organisations which have been involved in or funded some of the projects. While we have been able to gather the information requested together, we have not yet been able to complete our consultations with all affected stakeholders. For the projects where we have been able to complete consultations, the information requested is set out in the table document attached.

We wish to point out a number of qualifications and clarifications of the information set out in the table:

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- After further checking with the staff involved, *PRJ0135065 Understanding conception failure in the first week post-AI* was included in the list of projects in our response last year by error. The project didn't utilise an approval under the Hazardous Substances and New Organisms Act within the biotechnology field. We have accordingly not provided responses to your further questions in relation to that project. We apologise for the error.
- In relation to *PRJ0096244 Genome edit goats for sex ratio distortion* and *PRJ0245128 Ballance PSAB project*, we have decided to withhold the further information you have requested, under section 9(2)(b)(ii) of the Official Information Act. These were both fee-for-service projects fully funded by the commercial partner involved, and we believe the disclosure of the information requested in connection with those projects would be likely unreasonably to prejudice the commercial position of the funders by disclosing areas of competitive commercial interest of those parties. We don't consider there are overriding public interest factors in the disclosure of this information.
- As advised last year, the list of projects provided included projects where biotechnologies, and therefore approvals under the Act, were used through the research process, as well as where a modified organism is the end goal of the research. We have included a column to clarify which of the listed projects are likely to fall into which category, in case this is of use to you. Each of the projects is commonly only part of a broader programme of research prior to any possible commercialisation or release of an organism, and any such release may be quite some time away, if it is to occur at all.
- A number of the projects are connected within the same programme of research, hence why there is some cross-referencing of answers in relation to questions 4 and 5.
- We have provided some general summary information to address questions 4 and 5, which we trust will address these questions satisfactorily for you. The end goal of each area of research varies significantly, and we have tried to provide general information about the eventual possible application of the research where possible in the context of the questions you raised. If this is not the type of information you were looking for, please contact me to discuss.
- In relation to question 4, in some cases we have indicated that no analysis has been completed for the corresponding project. For those particular projects in relation to this question, your request is refused under section 18(e) of the Official Information Act, on the basis the information requested doesn't exist.
- Where we have provided a response in relation to question 4, we have provided a high level indication of potential financial benefits arising from the project. This information has been extracted from, in most cases, contracts or proposals for the relevant project, and was by implication speculative and developed prior to the commencement of the project. The information may be substantially out of date, and may not reflect expectations if the analysis was reworked now. Most of the figures provided are also of a more general economy-wide or sector-wide nature, and are selected from a range of similar data within the relevant documents.
- The data especially pertaining to funding amounts and project dates is drawn from information recorded in our project management system, and may contain unintentional errors or omissions.

In relation to the projects which we have not yet been able to complete our consultation with stakeholders, we have not been able to make a final decision on release of the information

requested. We therefore require a further extension of the time to make our final decision, and notify you then that we have extended the time to provide that decision to you until 30 August 2023. We anticipate being able to communicate the information to you at that time, provided no grounds arise for the withholding of the information requested.

Part B

Your Part B request was as follows:

(B) Funding for GM pasture species 2002- June 2023

From 2002 onwards AgResearch has secured funding for GM pasture species. It is very difficult to understand how much has been funded, and the analysis of funding outcomes and benefits to New Zealand.

Please can you fill in the gaps and complete this list so that the total funding coming through AgResearch directed to GM pasture species research between 2002-June 2023, is publicly available.

- 1. Funding 2002-2011 Total all programmes GM pasture species (ryegrass & clover) \$26.97m*
- 2. Funding for GM pasture species between 2012-2017*
- 3. 2016 C10X1603 Forages with Elevated Photosynthesis and Growth \$11.5m*
 - a. Please can you provide the project summary and timeline.*
- 4. HME ryegrass \$25 million over 5 years.*
 - a. Please confirm funding by institution/funding programme and amount funded by that institution/funding programme.*
 - b. Please confirm dates of funding period.*
 - c. Please confirm whether C10X1603 was included in the \$25 million total.*
- 5. C10X0815 - 'Exploiting Opportunities from Forage Plant Genomics' valued at \$10,368,889.*
 - a. Please can you confirm the date this was approved.*
 - b. Please can you provide the project summary*
- 6. Please can you confirm total investment in: GM Forages High ME - Core 50210x01. (which should be compartmentalised above).*
- 7. Please confirm which projects have been completed. Please provide the review/analysis of the project which it is understood would be undertaken at the end of a project. Information might include whether the project achieved expected aims, and what they were if non-monetary, and financial summaries of income or expected income.*

We note your principal request appears to pertain to funding for AgResearch's own GM pasture species research. AgResearch has two main programmes of GM pasture species research, and we thought it may be useful to summarise those for you, along with the total funding that we believe has been provided to those programmes:

- High metabolizable energy (HME) ryegrass – this ryegrass has an increased lipid (oil) content, which is expected to result in improved animal nutrition. We also anticipate potential reductions to methane and nitrous oxide emissions from animals grazed on the ryegrass. We believe the total amount of funding for the HME ryegrass work from 2002 to 2022 was approximately \$44m (GST excl). Please note the HME technology

has applications in other plant species, and this total is only for the application in pasture species. A number of the tranches of funding you've highlighted in your request pertain to this programme.

- High condensed tannin white clover – condensed tannins occur in a number of species, but not in significant levels in white or red clover, or lucerne. AgResearch's work has identified a transcription factor (or master switch) that can 'turn on' the condensed tannin pathway present in white clover and lucerne. We believe the total amount of funding for the condensed tannin work (starting in 2008) was \$3.24m (GST excl).

Turning to the specific parts of your Part B request, we respond as follows:

1. *Funding 2002-2011 Total all programmes GM pasture species (ryegrass & clover) \$26.97m*

We assume you are not seeking a specific response on this part.

2. *Funding for GM pasture species between 2012-2017*

The total of funding for the above HME ryegrass and high condensed tannin white clover research between 2012 and 2017 was approximately \$14.18m (GST excl).

3. *2016 C10X1603 Forages with Elevated Photosynthesis and Growth \$11.5m*
 - a. *Please can you provide the project summary and timeline.*

This funding commenced in October 2016 and continued through to December 2021. We think likely the best summary for you will come from the relevant sections from the final MBIE report, a copy of which is attached. The amount set out above appears to be a GST inclusive amount of funding.

4. *HME ryegrass \$25 million over 5 years.*
 - a. *Please confirm funding by institution/funding programme and amount funded by that institution/funding programme.*
 - b. *Please confirm dates of funding period.*
 - c. *Please confirm whether C10X1603 was included in the \$25 million total.*

This funding includes the funding for C10X1603. Originally, it was for October 2016 through to September 2021, which was later extended to December 2021. \$24m of the total pertained to the HME ryegrass programme, and the balance was for other forage research. We have not been able to make a final decision on the release of the breakdown of funding, as we are consulting with our funding partners on this. We therefore require a further extension of the time to make our final decision, and notify you then that we have extended the time to provide that decision to you until 30 August 2023. We anticipate being able to communicate the information to you at that time, provided no grounds arise for the withholding of the information requested.

5. *C10X0815 - 'Exploiting Opportunities from Forage Plant Genomics' valued at \$10,368,889.*
 - a. *Please can you confirm the date this was approved.*
 - b. *Please can you provide the project summary*

We don't appear to have details of the exact date this was approved. Our original contract with the then Foundation for Research Science & Technology commenced 1 October 2008. We attach a copy of the relevant sections from the final report for this work, as it

pertains to the HME ryegrass programme (the funding as a whole covered other non-GM work too).

6. *Please can you confirm total investment in: GM Forages High ME - Core 50210x01. (which should be compartmentalised above).*

This project code has been used for AgResearch's Core and SSIF (Strategic Science Investment Fund) funding for the HME ryegrass programme. The total funding from these funds (included in the total for the HME programme) to 2022 was \$18.85m.

7. *Please confirm which projects have been completed. Please provide the review/analysis of the project which it is understood would be undertaken at the end of a project. Information might include whether the project achieved expected aims, and what they were if non-monetary, and financial summaries of income or expected income.*

Both the HME ryegrass programme and the high condensed tannin white clover programme are ongoing. Work on the HME ryegrass programme is ongoing with the view to likely conducting future field trials in Australia. In relation to the condensed tannin programme, contained field trials are underway in Australia, after which it is envisaged animal trials will be conducted.

We have provided some reports to you in relation to the HME ryegrass programme, and believe the report for C10X1603 will likely provide a good summary of the current state of the programme as at the end of the funding from MBIE.

In relation to the programme for high condensed tannin white clover, as the programme is ongoing, there isn't a single final report. However, we thought that we could provide you with some references to publications connected with the programme, which can give you an understanding of the science and findings to date:

- Elevation of condensed tannins in the leaves of Ta-MYB14-1 white clover (*Trifolium repens* L.) outcrossed with high anthocyanin lines. Marissa B. Roldan, Greig Cousins, Kerry R. Hancock, Vern Collette, Jerome Demmer, Derek Woodfield, John Caradus, Chris Jones and Christine Voisey. 2020. *Journal of Agriculture and Food Chemistry* 68: 2927-2939. DOI: 10.1021/acs.jafc.9b01185
- Elevation of condensed tannins in the leaves of Ta-MYB14-1 white clover (*Trifolium repens* L.) outcrossed with high anthocyanin lines. Marissa B. Roldan, Greig Cousins, Kerry R. Hancock, Vern Collette, Jerome Demmer, Derek Woodfield, John Caradus, Chris Jones and Christine Voisey. 2020. *Journal of Agriculture and Food Chemistry* 68: 2927-2939. DOI: 10.1021/acs.jafc.9b01185
- Condensed tannins in white clover (*Trifolium repens*) foliar tissues expressing the transcription factor TaMYB14-1 bind to protein and reduce ammonia, isovaleric acid and methane emissions in vitro. Marissa B. Roldan, Greig Cousins, Stefan Muetzel, Wayne E. Zeller, Karl Fraser, Juha-Pekka Salminen, Alexia Blanca, Rupinder Kaur, Kim Richardson, Dorothy Maher, Zulfi Jahufer, Derek R. Woodfield, John R. Caradus, and Christine R. Voisey. 2022. *Frontiers in Plant Science* 12:777354. doi: 10.3389/fpls.2021.777354
- The hunt for the "holy grail": condensed tannins in the perennial forage legume white clover (*Trifolium repens* L.). John R. Caradus*; Christine R. Voisey†; Grieg R. Cousin‡;

Rupinder Kaur‡, Derek R. Woodfield‡; Alexia Blanc§; Marissa B. Roldan. 2022. Grass and Forage Science 77, 111–123. <https://doi.org/10.1111/qfs.12567>

We wish to point out a number of qualifications and clarifications of the information set out in our Part B response:

- Where we have provided totals for the funding for both the HME ryegrass and high condensed tannin white clover programmes, these are our best efforts but may have been arrived at with unintended errors or omissions. The passage of time since 2002, along with various system changes and personnel, has meant that we cannot be 100% certain that these totals are correct.
- AgResearch has provided commercial R&D for customers over the years in research areas outside of those referred to above, which has included work in the GM space which is related to pasture. We have assumed from the framing of your request that this was outside of the scope of what you were interested in.
- AgResearch was funded for some foundational research in the GM field, which wasn't directly attributable to pasture, earlier on in the period you referred to. This may have contributed to knowledge which has been translated into either programme. We have not included this in our funding totals as again we assumed this was outside of the scope of what you were interested in.

You have the right to seek an investigation and review by the Ombudsman of this decision. Information about how to make a complaint is available at www.ombudsman.parliament.nz or freephone 0800 802 602. If you wish to discuss any aspect of your request with us, including this decision, please feel free to contact me.

Yours sincerely,

Nick Barraclough
Team Leader – Legal