Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Level 1 Science RAS 2023

91923 Demonstrate understanding of science-related claims in communicated information

EXEMPLAR

Achievement

TOTAL 04

Science 1.4 AS 91923 v3
Demonstrate understanding of science-related claims in communicated information

Science claim chosen:
Organic meat benefits

The science-related claim made by Dr. Amber Sciligo and Dr. Jessica Shade said that organic meat is better for the environment than non-organic meat, they named their report “The Benefits of Organic Meat”.This report actively talks about the benefits of organic meat and how the environment can benefit from it.

The Organic Center is a non-profit research and education organization that sourced the majority of the information in the report, including the first graph about what organic meat means, Both of the graphs are infographics that provide a visual representation of the data available so that people can compare the effects of non-organic meat can have on the environment compared to organic meat. The second graph is sourced from Our World in Data, Our World in Data has been cited in academic scientific journals, medicine, and global health journals, This site is also peer-reviewed though there's no evidence that back in 2017 this site was peer-reviewed. The information at the bottom of the report was sourced from four researchers who studied at English universities, the researchers studied 71 articles, a few sources being Tuomisto, H.L Hodge. I.D, Riodan, and Mcdonald these sources date back to 2012,2016, and 2017 which is outdated; These sources won't have the updated resources that we currently possess in 2023.

Throughout the claim, there are multiple scientific terms used words like organophosphates, neonicotinoids, pyrethroids, nitrates, nitrogen, and nitrous oxide, although the language is used within context so as to not confuse or mislead the reader it may be confusing to those reading who have no prior knowledge in the science space. It was helpful when the report gave a little bit of context to the words like “growth hormones (e.g.beta-antagonists)” although this did not stay consistent throughout the entire claim. These high-level literacy words are aimed at an audience who have a general understanding of sciences like chemistry ect beforehand.

There are two infographics in the report, the first graph is a list of what organic meat means. This small graph supports the claim and explains why organic meat is better. Along with the red heading, there is an added checklist of six different reasons why organic meat is great. This first serves to clearly emphasize the point of why organic meat is better for the environment than non-organic meat and is an added list for the readers to compare organic meat to non-organic meat.

The second infographic was sourced from two researchers named Micheal Clark and David Tilman, this graph is named “Environmental impacts of organic vs conventional agriculture”. There is a key underneath the graph title that states “ Each food in the graph has a vertical bar. The smaller the bar, the more confident the researchers are that their findings are correct”. Confidence is a strange thing to measure, The reader's

would expect the researchers to be 100% confident that their findings are correct to assure that everything they have researched is accurate, There is another key on the side of the graph to show the readers that each different color on the graph correlates to each different food used in the experiment this key is easy to follow. There are words on the side pointing up to organic worst methods and down for organic better methods, This is misleading since the graph is supposed to compare different food types grown organically and inorganically, but instead, it's comparing the “better organic method, and the worse organic method”, there are also titles at the top of the graph with a lot of big scientific terms which are hard to understand (Eutrophication Potential and Acidification Potential) which are tricky to follow, the Y-axis title causes a lot of confusion to those who don't have prior context on what an organic: Conventional Impact Ratio is, This second graph doesn't show the comparison of organic vs. conventional agriculture the graph is hard to comprehend without context.

There was not enough information to be satisfied with the claim that organic meat is better for the environment than non-organic meat, although the report does emphasize some important points as to why organic farming is better for the environment. In the last paragraphs it compares their claim to a different study done by four researchers, They agreed with the original claim saying “Yes organic farms usually have more good microbes in the soil and don't lose as many important nutrients” but then continued on explaining if you look more into organic farming that organic farms actually can cause more pollution depending on the food being grown and how organic farms actually have more nitrogen, nitrous oxide, and ammonia leaking into the environment. At the end of the report, the claim that organic meat is better for the environment was lost.

Achievement

Subject: Science

Standard: 91923

Total score: 04

Q	Grade score	Marker commentary
1	A4	The candidate has described the science-related claim regarding organic meat. They have described the individuals and the organisation who are the source of the claim. The purpose of the communicated information has been described. The candidate has identified science language and described the science conventions around currency of information and graphing. If the candidate had explained how the science language or conventions had supported / not supported the claim, they would have attained a merit.