

Student 4: High Achieved

NZQA Intended for teacher use only

Cricket Protein Inquiry

With the need for an increased intensification in the agricultural sector, the idea of the use of insects for a future source of protein has been brought up more and more frequently. I investigated the question: "Will the use of insects for protein meet New Zealand's future needs?" Environmental impacts from the farming industry are becoming a bigger issue as the challenge to produce more food off increasingly shrinking agricultural land increases. Insects could potentially be the answer to the growing effects and challenges of intensive farming. The need for humans to consume protein will always be there however, there may be more cost efficient, environmentally friendly and sustainable approaches to produce this protein, such as insects. To help answer my inquiry, my two key focusing questions were: "Is there a generational difference of opinion about eating insects?" and "What would be the effect of using insects for protein on New Zealand businesses and society?"

Is there a generational difference of opinion about eating insects?

The idea of this question came about as we asked ourselves which generation would need to be targeted in order to start converting more people to eat insects more frequently in the place of other proteins like beef and chicken. We conducted a survey on three different age groups of people: adults, high school students and primary school students (Refer to Appendix 1). When we asked the question: "Would you eat insects?" to a group of 35 adult school teachers, their response was surprising. 63% of the adults said that they would eat insects as a future source of protein, leaving only 37% who would not. This was surprising as when we asked the same question to a class of 33 primary school kids, 58% of them said that they would not eat insects while 42% of them said they would. To gather more data, we conducted a survey on a group of 31 high school students, 55% of them said they would eat insects and 45% said they would not. This information suggests that there is a slight generational difference of opinions about eating insects. This may mean that it is up to our parents and our generation as future parents to change the opinion of our children by making insects a more substantial and common part of our diets. If eating insects is seen by children as the normal thing from a young age, then there will undoubtedly be increases in consumption. Changing young people's attitude towards eating insects may mean a more sustainable future for New Zealand. This is why it is up to the adults of our society and our generation of teenagers to pass the right values onto our children as it is possibly the way in which children these days have been brought up that makes them opposed to eating insects. A response from a teacher at North Street School was that he would eat them "If I had to" (1). Many children at the school also made comments like "yuck" and "Have you actually eaten insects before?" (2). This shows that the idea of eating insects does not seem very normal to the children of today's day and age. As adults and young adults we may have to change our attitude towards eating insects in order to lead by example and set Zealand up for a sustainable future.

What would be the effect that this will have on New Zealand businesses and society?

Insects are far more efficient feed converters than cows, there is far more waste created by cows than any insect. Crickets produce 80x less methane than cows, they also need 6x less food than cattle 4x less than sheep and 2x less than pigs to produce an equal amount of protein (1). With the world so focused now on environmental sustainability, a new supplement made from insect protein could be a popular option. If this was to be successful, there would be a

large economic benefit available to small businesses and food suppliers who are willing to grow, source and market the insects successfully. There is potential to be able to harvest a new crop of insects up to four times a year (2). Research has shown that it costs significantly less to produce the same amount of edible product from insects as it does from beef, based on a percentage of protein per 100g, beef sirloin had 29% and crickets had a surprising 69% protein. This shows us that an insect such as a cricket could be the answer to the increased needs of protein in peoples' diets. A person would not have to consume many crickets in order to fulfil their daily protein needs. If a person were to get the same amount of protein from beef, they would have to consume over double the amount of crickets to do so. If insects were able to be grown cost efficiently and successfully in New Zealand, this may present a significant business opportunity for new and existing food suppliers, as well as health care stores. **People may be attracted to the clean green and sustainable image that could be portrayed by growing the insects right here in New Zealand with minimal environmental impacts.** Health stores selling protein products and various supplements could potentially create a product with the use of ground insect flour as the protein element instead of the traditional whey extracted from cow's milk.

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This new market would also benefit people in the community as there would be a lot of jobs created in both the production and sales of the insects. However, from a farmer's point of view there may be significant negative impacts on the agricultural industry if insects were to become a larger substitute of proteins like beef. If so much food is able to be produced from so little resources it could mean that farming the way, it has always been done will be a thing of the past. This may also cause a severe economic downturn for New Zealanders individually and as a whole, as agriculture is one of our largest industries. "Less demand for beef would affect farmers' profits, they would have to destock and either be forced to diversify or be unable to continue farming" (3).

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It seems that the use of insects for protein could in fact meet New Zealand's future needs and could potentially do so very successfully. Although there may be limitations to the production and consumption of insects in New Zealand as this inquiry has shown. If insects are ever going to become a popular source of protein, it will take a lot more research and development and a change in attitude towards eating them. **Insects may well have to be consumed as a source of protein in years to come and future generations will have to adapt to this change.**

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