



## Research report

## The significance of sensory appeal for reduced meat consumption

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## ABSTRACT

Reducing meat (over-)consumption as a way to help address environmental deterioration will require a range of strategies, and any such strategies will benefit from understanding how individuals might respond to various meat consumption practices. To investigate how New Zealanders perceive such a range of practices, in this instance *in vitro* meat, eating nose-to-tail, entomophagy and reducing meat consumption, focus groups involving a total of 69 participants were held around the country. While it is the damaging environmental implications of intensive farming practices and the projected continuation of increasing global consumer demand for meat products that has propelled this research, when asked to consider variations on the conventional meat-centric diet common to many New Zealanders, it was the sensory appeal of the areas considered that was deemed most problematic. While an ecological rationale for considering these ‘meat’ alternatives was recognised and considered important by most, transforming this value into action looks far less promising given the recurrent sensory objections to consuming different protein-based foods or of reducing meat consumption. This article considers the responses of focus group participants in relation to each of the dietary practices outlined, and offers suggestions on ways to encourage a more environmentally viable diet.

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## Introduction

Animal-derived proteins are the most resource intensive and hence environmentally damaging of all food types to produce (Buttriss, 2011; Carlsson-Kanyama & González, 2009; Delgado, 2003; Horrigan, Lawrence, & Walker, 2002; Vinnari & Tapio, 2012). As noted by Stockkiewicz (as cited in Chemnitz & Becheva, 2014, p. 7), “nothing epitomizes what is wrong with our food and farming more than the livestock sector and the quest for cheap and plentiful meat”; and in the words of Vinnari and Tapio (2012, p. 46), “meat consumption is often identified as the most environmentally harmful foodstuff to produce. . . .” Moreover, those in wealthy developed countries such as New Zealand consume far more meat than is necessary, and while demand for meat has peaked or is peaking in many developed countries, it is continuing to grow globally due to the growing middle-classes in rapidly developing countries, notably India, China and Brazil (Chemnitz & Becheva, 2014; Delgado, 2003; Fiala, 2008; Gerbens-Leenes, Nonhebel, & Krol, 2010; Kanaly, Manzanero, Foley, Panneerselvam, & Macer, 2010; Myers & Kent, 2003; OECD, 2011; Vinnari & Tapio, 2009). In short, the food consumption practices of the wealthy and rapidly developing nations are a considerable factor in the overuse or misuse of non-renewable resources (de Boer, Boersema, & Aiking, 2009; Marlow et al., 2009). Exploring individuals’ responses to unconventional or novel food pro-

teins and eating practices to understand more acutely what factors may hinder or alternately encourage a more environmentally beneficial diet where meat consumption is reduced, is therefore a worthy pursuit (Schösler, de Boer, & Boersema, 2012). In particular, the socio-cultural context of New Zealand in shaping participant responses to a range of consumption practices that can be related to reducing meat consumption is explored.

*Farming, the environment, and meat demand*

Animal derived food goods are the most resource intensive foods available and as such are environmentally problematic (Chemnitz & Becheva, 2014; Connor & Mínguez, 2012; Horrigan et al., 2002; Marlow et al., 2009; Science News, 2010). In turn, agricultural production is one of the most critical environmental issues facing the planet, given the widespread nature of the detrimental implications (Chemnitz & Becheva, 2014; Laskawy, 2010; Leckie, 1997; Marlow et al., 2009). A report by the *UN Environment Programme* from 2010 described agriculture and food consumption as among the most important issues when it comes to environmental pressures, and that these pressures “are expected to increase substantially due to population growth increasing consumption of animal products” (Science News, 2010, p. 1).

A range of New Zealand’s environmental issues emanate from agriculture: around 48% of the total amount of greenhouse gas (GHG) emissions, and water and land based pollution from increased fertiliser use along with urine and manure from stock running off into

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water are prime examples (Ministry for the Environment [MfE], 2007, 2009; New Zealand Agricultural Greenhouse Gas Research Centre [NZAGGRC], 2010; Ramos-Elorduy, 1997). Given pasture land for agriculture occupies around 40% of New Zealand land, it is not surprising that the environmental implications are large, with fresh water quality in particular being a recurrent area of concern (especially with intensive dairy production) (McDowell et al., 2011). The increasing intensification and extension of agriculture has essentially been made possible by neglecting environmental health and concentrating instead on economy and efficiency in the bid to produce more food at cheaper costs (Rivera-Ferre, 2009).

Animal protein foods are at the top of the food chain in relation to the resources required to produce them, and also in relation to cost (Benning, 2014, as cited in Chemnitz & Becheva, 2014; Goodland, 1997; Rivera-Ferre, 2009). As such, meat (and dairy) consumption has tended to be the preserve of wealthier people in developed countries, although the growth in meat demand is easing somewhat in the world's industrialised nations (Buttriss, 2011; Delgado, Rosegrant, Steinfeld, Ehui, & Courbis, 1999; White, 2000). But, with increasing wealth in many developing nations (and subsequent increasing meat consumption), it is expected that global meat consumption will continue to climb (Buttriss, 2011; Connor & Mínguez, 2012; Delgado, 2003; Fiala, 2006; Gerbens-Leenes et al., 2010; Horrigan et al., 2002; McAlpine, Etter, Fearnside, Seabrook, & Laurance, 2009; Myers & Kent, 2003). Fiala (2008) has suggested that if meat consumption patterns continue along the same path as they have been, then consumption rates will be 72% higher than 2000 levels by the year 2030. The forecast from the Food and Agriculture Organization of the United Nations FAO (2002) however suggested that growth in the world demand for meat would be slower in the years to 2030 (1.5% per year) than it had been in the years 1970 to 2000 (at 2.2%). Nonetheless, meat production and consumption will both continue to grow (FAO, 2002). This will likely mean a continuation of agricultural intensification with the aid of new technologies alongside continuing environmental degradation issues (Vinnari & Tapio, 2012; Yates-Doerr, 2012).

Many researchers agree on the need for some change in how agricultural production is performed (Beddington, 2010; Delgado, 2003; Food and Agriculture Organization of the United Nations [FAO], 2009; Fiala, 2006; Goodland, 1997; Halweil, 2008; Marlow et al., 2009; Matson, Parton, Power, & Swift, 1997; McAlpine et al., 2009; Pluhar, 2010; Reijnders & Soret, 2003; White, 2000; Yen, 2009). On the other hand, the question of meat demand from a consumer perspective requires addressing, which is the focus of this article.

I take the view shared by a number of others that a reduction in global meat consumption – or generally less reliance on animal based proteins – can provide an important part of the solution to reducing the environmental harms associated with intensive agricultural production (Chemnitz & Becheva, 2014; Girod & de Haan, 2009; Goodland, 1997; Schösler et al., 2012; Tobler, Visschers, & Siegrist, 2011; Vinnari & Tapio, 2012). It is important to note also, that it is meat reduction rather than vegetarianism (or veganism) that is argued for here; to move too far in the direction of meat reduction to elimination, would likely raise a whole further raft of issues (Gussow, 1994). While reducing meat consumption is important, so too is the consideration of various alternate 'meat' products or diet types. In this instance, it is eating nose-to-tail, entomophagy (or insect consumption, which is common practice in a number of countries in Africa, Asia and South America in particular) and in vitro meat (laboratory or cultured meat that is grown using tissue-engineering technology), along with reducing meat consumption, that are discussed. These various consumption practices and possibilities may help shape a reduction in animal protein reliance in the future, which is the reason why participants in this research were asked to provide their views on them. What did however emerge in this research, was that it is the sensory appeal

of these various dietary elements that is the main determinant for most participants regarding how willing they are to change their dietary protein preferences.

### *Sensory appeal and the New Zealand cultural palate*

New Zealanders are some of the biggest meat consumers in the world (Pereltsvaig, 2013; *The Economist*, 2012). As of 2009, the meat most favoured by New Zealanders was poultry (35%), followed by beef and veal (31%), pig meat (22%), lamb (8%), then mutton (4%) (Beef and Lamb NZ, 2013).<sup>1</sup> Moreover, the average per capita consumption of meat products (excluding fish and seafood) for New Zealanders according to the OECD's (2013) provisional data for 2013 is 80.6 kg – or 220.82 grams per day. New Zealand's strong export market in meat (worth NZD5, 304.5 million in 2012), combined with the nation's high meat consumption, means that the country has quite a significant stake in the future of meat consumption.

Food consumption choices are made based upon a diverse and complex array of factors including for example food neophobia, personal values, familiarity, disgust and nutritional factors, which can vary according to context (Bäckstrom, Pirttilä-Backman, & Tuorila, 2003; Korzen & Lassen, 2010; Lea & Worsley, 2001; Martins & Pliner, 2006; Prescott, Young, O'Neill, Yau, & Stevens, 2002; Rozin, 1996; Ruby & Heine, 2012; Tivadar & Luthar, 2005). Ramos-Elorduy (1997, p. 249) describes how what we eat and the ways we eat and make decisions about what is desirable or not, are "closely bound to a people's history and their geographic origin and evolve in relation to lifestyle, tradition, and education". Also, if we consider Bourdieu's (1984, p. 487) work, food can be viewed as symbolic and as marking a means by which different groups in society can distinguish themselves:

One only has to bear in mind that goods are converted into distinctive signs, which may be signs of distinction but also of vulgarity, as soon as they are perceived relationally, to see that the representation which individuals and groups inevitably project through their practices and properties is an integral part of social reality.

In simple terms, our socialisation in a given time and place are crucial to the habits formed around food tastes, and are also used as identifiers of ourselves within society (DeFoliart, 1999; Miele, 1999). Meat (or meat-like products) is one of those areas whereby preferences and dislikes appear exacerbated compared with other food types, with a range of factors influencing why certain items might be eaten or avoided (Holm & Møhl, 2000).

Hoek et al. (2011) undertook research that looked at how to encourage consumers to eat more meat substitutes (for example, soy based products like tofu and tempeh), and found that the barriers to this included the unfamiliarity with the products, their lower sensory appeal, and for those that didn't currently consume substitutes, there was a higher likelihood to avoid new foods. Hoek et al. (2011) as such argued that to encourage the consumption of meat substitutes, emphasis should be placed on improving products' sensory appeal, which includes making the products look more like meat.

The sensory appeal (or alternately the element of 'disgust') of meat has been ranked as one of the most important determinants of meat desirability and of avoidance, in research undertaken in a range of developed nations, including in research that has looked at New Zealand consumers (Korzen & Lassen, 2010; Lea & Worsley, 2001; Prescott et al., 2002; Richardson, MacFie, & Shepherd, 1994; Richardson, Shepherd, & Elliman, 1993; Ruby & Heine, 2012). In fact,

<sup>1</sup> Fish is not included in these particular statistics.

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