

THE RISE AND RISE OF EUREPGAP: EUROPEAN (RE)INVENTION OF COLONIAL FOOD RELATIONS?¹

Hugh Campbell
Centre for the Study of Agriculture, Food and Environment,
University of Otago, New Zealand.

Introduction: The Significance of EurepGAP

The regulation and governance of a wide ranging ‘European agricultural project’ is the subject of active academic debate in rural sociology. A selected range of research themes includes agri-environmental policy, support for organic agriculture, the EU LEADER initiative, the policy of multifunctionality of rural space, agricultural trade politics, rural policy and, most recently, slow foods and *terroir*. Observing from outside Europe, this work traces a particular regulatory path to a specific European mode of rural development. The structural consequences of such developments, however, extend well beyond the targeted locale. For all the claimed uniqueness of the European agricultural project in recent times, Europe was also previously at the centre of wide-ranging colonial relations at a global scale. Even in the post-colonial age, this prior epoch is inscribed across the power relations of the global food system. Positioned from the periphery, this article investigates the unintended effects of one of the latest and most vigorous European experiments in agriculture and food governance. All but invisible to European consumers, EurepGAP² is a new audit of food safety and agricultural sustainability whose authority spans continental divides. This article written ‘through New Zealand eyes’, uncovers both its intended effects and its unintended, Antipodean significance.³

EurepGAP can be argued to be a new form of social authority.⁴ Its constituent partners are not publicly controlled but privately owned and it is not a form of state or supra-state regulation. Rather, it is an alliance of food retailers, NGOs, producer organisations, consumer groups, agri-industry and the science community – ordered at the European level. Consequently, while the parts of EurepGAP are constituted at a (private) level below the nation state, they are collectively organised at a level beyond it. As such EurepGAP is an important exemplar of virtual governance organised outside the traditional sphere of mass democratic authority. The contours of this complexity are inscribed in its name: EU=Euro (being European not EU); RE=Retailer (and implicitly the associated consumer); P=Produce (implying an agricultural producer); and GAP=Good Agricultural Practice (implying a moral or elite ordering of agri-culture). All these levels operate outside the realm of state and supra-state governance.

¹ Key ideas in this paper were presented at a plenary panel on multifunctional agriculture at the IRSA World Congress in July 2004. I would like to thank Mark Shucksmith for the invitation to participate in that panel and to Harriet Friedmann and Philip McMichael for their very useful comments on that paper. I would also like to thank Stephen Horton, Anne Murcott, Carmen McLeod and Chris Rosin for their comments and help in preparing this article.

² EUro-REtailers working group: Produce - protocols for Good Agricultural Practice.

³ Just as Paul Cloke conducted his influential analysis of agricultural restructuring in New Zealand gazing ‘through European eyes’ (Cloke 1996).

⁴ Due to its comparative novelty, rural sociologists have yet to fully analyse EurepGAP. The first sociological analyses of EurepGAP are provided by Campbell et al. (2005; Forthcoming) and Busch and Bain (2005).

In the last decade, social researchers have become interested in a new form of governance structure emerging in post-industrial societies: which they term ‘audit culture’.⁵ This article seeks to understand the transformative effect and consequences of audit culture in the context of global food regulation and trade politics. The following account is situated within the agri-food approach and strongly influenced by regulationist analyses of the changing structure of both Antipodean primary production sectors and external agri-food linkages that situate endogenous effects in the Antipodes within wider structural shifts in the regulation and politics of global food systems.⁶ The attempt to examine new forms of agri-food governance in the specific context of New Zealand is not unique. In a key article on agri-food governance in New Zealand, Le Heron (2003) strongly suggests that broad dynamics in the ‘re-regulation’ of agriculture post de-regulation are influential across all New Zealand’s food export chains. Le Heron (2003; 2005), Larner and Le Heron (2004) and Busch and Bain (2005) all argue that private audit forms of governance are a consequence of neo-liberal reform with a shift in governance from state organisations to the globalising private sphere. Campbell et al. (Forthcoming) and Burch and Lawrence (2004) also suggest that the rise of private regulation and audit culture, and the increasing power of retailers, is linked to a reduction in state regulation of agriculture. Apart from these preliminary suggestions of a potentially important relationship between neoliberalism and audit culture, the agri-food dynamics of such a relationship remain, to date, under-researched.⁷

Having establishing the wider significance of neo-liberalism as a context for examining audit culture, EurepGAP is, nonetheless, more than just an exemplar of this contextual relationship. It also demonstrates a highly ambitious internal agenda that combines auditing of *food safety* standards with protocols for *sustainable food production*. EurepGAP is, thus, not only an exemplar of new audit culture, it is also directly implicated in changing definitions of agricultural sustainability. While the first generation of ‘green’ products to enter European supermarkets was audited as ‘certified organic’, EurepGAP strongly endorses Integrated systems as an alternative to the organic approach. Growing out of Integrated Pest Management⁸, ‘Integrated systems’ conceives of sustainability in terms of processes and outputs. It licences a wide range of agricultural practice *if* it can be sustained over time. Thus the audit logic of the two systems is strikingly different. Certified organic audits the disqualification of certain inputs into production, while Integrated systems seek to organise (and measure) processes and beneficial effects/outcomes. While they share many broad cultural and political intentions (sustainable agriculture, safe food), how they set about achieving and auditing these intentions are very different.⁹

⁵ The benchmark collection edited by Strathern in 2000 provides the best exemplar of this wider interest in audit. See Campbell et al. (Forthcoming) for a fuller discussion of the rise of audit culture.

⁶ For a comprehensive review of Antipodean work situated in this theoretical tradition, see Campbell and Lawrence, (2003).

⁷ A point that is strongly reinforced in the work of Le Heron and Larner which clearly establishes a strong research agenda around new governance systems in neo-liberalising economies like New Zealand (see Le Heron 2003; 2005; Larner and Le Heron 2004).

⁸ Commencing with Integrated Pest Management, the Integrated approach was an international science initiative to reduce pesticide usage in horticulture. Integrated approaches initially relied on targeted (usually ‘soft’) pesticides, only applying pesticides when need was proven, encouraging biological predation of pests, and close monitoring of orchard activities. For a discussion of its European uptake by industries see Morris and Winter (1999).

⁹ See Campbell et al. (2005) for a fuller discussion of the tensions between organic and Integrated systems in New Zealand.

For EurepGAP the debate over how to achieve sustainability is not just influenced by the suitability of different styles of audit. The following narrative will show how key strategic decisions within the EurepGAP alliance had important implications for how sustainable agriculture would emerge in Europe and many of its wider trading partners. The context of the alliance's choice is set by the strategic interests of its senior partners, namely large food retailers. Strategic choices by EurepGAP, therefore, arise in the general context of the commercial development of supermarkets. It is not argued that retail interests determine in a linear fashion the strategic choices of the broad alliance. It is, however, suggested that they do define a field within which EurepGAP protocols must be negotiated.¹⁰

To uncover the key relations posited in this introduction – the relationship between neoliberal governance and audit culture, audit in the context of retailer strategy, and audit as part of the wider European move towards narrowing the gateway of entry to the domestic food market – a case study is presented to adduce these structural effects. A single EurepGAP accredited producer – kiwifruit giant Zespri International Ltd (Zespri) in New Zealand – is examined to both expose the requirements of the audit regime and, by extension, to specify the nature of that obstruction which EurepGAP potentially constitutes for global agriculture. As one of the first foreign producers to accede to EurepGAP status, Zespri both sets the benchmark for entry and is reflective of the very ideal of the initiative. As the very model of a EurepGAP producer, Zespri International Ltd has much to reveal about the *ideal* of food safety and sustainable agriculture embodied in the alliance, and the nature of the obstruction it may constitute for international producers (especially in the Third World). In particular, this case demonstrates how the key structural relationships around EurepGAP become amplified and entrenched as they resonate at two wider levels: the idealised world of the European rural imaginary, and the real consequences of colonial economic and ecological imperialism.

Inventing EurepGAP: Risk, Regulation and Retail

The social and political context from which EurepGAP emerged in Europe has been dramatically evolving over the last two decades. Campbell et al. (forthcoming) review the broad background of rising consumer risk perception, food scares and retailer responses that led major supermarket chains in Europe to commence the development of 'safe' and 'sustainable' labelling of food during the 1990s. These retailer strategies emerged in a wider context of EU regulatory evolution of food safety legislation as well as higher level political responses to the liberalisation of international trade – particularly at the conclusion of the Uruguay Round of GATT (see Campbell and Coombes 1999). Subsequently, the interaction of all these regulatory, social and economic dynamics became the base on which large food retailers constructed an alliance for the retail and production of safe, sustainable food.

Before 1997, European retailers responded to emerging food anxiety with an array of firm-specific protocols around 'safe' production systems (McKenna et al. 1998). Part of this engagement involved organic agriculture. Supermarket chains and cooperatives negotiated supply arrangements with producers, working also with private and commercial organic certification organizations who were mostly operating

¹⁰ This is not the only key influence. EurepGAP has emerged in the context of wider European regulatory politics and initiatives like the 'green protectionism' strategy by EU governments in the post-GATT era (as discussed in Campbell and Coombes 1999). Campbell et al. (forthcoming) provide a fuller discussion of this contextual relationship.

under the aegis of the International Federation of Organic Agriculture Movements. As part of a wider pattern of product differentiation, a growing niche for organic products opened on the market floor.¹¹ In the contemporary supermarket, traditional mass product lines are being replaced by a mosaic of differentiated products. Brands produced for particular supermarket chains, and sometimes differentiated mostly at the level of packaging, are at the centre of this development (see Burch and Lawrence 2004).

Despite the strong consumer appeal of organic product, and numerous EU states subsidising conversion to organic production, as a production sector organic remains small and marginal. In the face of such local supply constriction, the main organic sourcing strategy for many supermarkets has been to import organic product from countries like New Zealand. In the struggle for ‘green’ product, and in light of the relative niche size of organic supply, large retailers discovered and developed a new source of supply that had the potential to provide much greater volumes into the green market (McKenna et al. 1998; McKenna and Campbell 2003). In essence, large retailers worked with non-family, corporate agriculture to develop a system of production that, if not purely organic in origin, was at least, via audit, claiming the two key desirable consumer attributes of organics: food safety and environmental sustainability. This new production was organised as an ‘Integrated system(s)’. It followed in the footsteps of Integrated Pest Management (IPM), the pioneer of ‘residue-free’ produce. Through the mid-90s, many suppliers around the world established Integrated production systems to provide fruit and vegetables free of pesticide residues.¹² The exact level of chemical sanction, permitted inputs and tolerance levels were negotiated between suppliers and the purchasing agents of individual supermarket chains and cooperatives. All of these systems operated within audit systems that were developed by individual retailer chains. Each chain established its own protocols to either supply product under ‘own brand’ labels or as the minimum requirement for independent wholesale brands.

The success of the Integrated initiative brought problems. By the mid-90s, a very high volume of product from Integrated systems was entering the supply chains, and there was a bewildering proliferation of Integrated production profiles. The safer greener food brand was becoming an administrative liability. A group of large European retailers, strongly encouraged by at least one agri-chemical company, began discussion on what was initially called Integrated Crop Management (Howley 1997). The task was to consolidate ‘Integrated’ protocol into a single regulatory definition that would licence, with suitable modification, mainstream farming.¹³ The twin goal was to create an ‘environmentally virtuous’ audit system, but to make such virtue achievable by mainstream farmers, thus increasing the supply of suitable product. In 1997 the EUro-REtailer working group: Produce, operating under the acronym EUREP, was established (Campbell et al. 2005). This exercise in harmonisation between multiple Integrated systems was a major achievement in itself; however, it became only the starting point for an even more ambitious agenda for EUREP. While producing ‘safe’ food, Integrated systems did not resonate as strongly as organic with

¹¹ A similar process was happening in other first world markets like California (Guthman 2004).

¹² ‘Residue Free’ is a legally contested term because *all* living tissue is now contaminated with trace levels of pesticide residues making a truly ‘residue free’ item of fruit and vegetable produce a legal impossibility. One regulatory strategy to try and overcome this problem was to define ‘residue free’ as being <5% of the legally established Maximum Residue Level permissible under national regulations.

¹³ Implicitly meaning European farming in its new ‘greener’ form, drawing strong comparison to, in particular, mainstream US farm practice.

wider anxieties about the environment. The brand lacked the environmental credentials and brand recognition of organic production and was almost invisible to consumers. Integrated systems had, however, pioneered the use of broader audit systems like Hazard Analysis and Critical Control Points (HACCP). This provided the opportunity to create a ‘super-audit’ which synthesised both established HACCP-based food safety protocols and a rigorous evaluation of measurable practices that would contribute to ‘on-farm’ sustainable practice. On this basis EUREP conceived of protocols of Good Agricultural Practice (GAP) for the ‘green’ production of fruit and vegetables. EurepGAP could provide ‘assurance’ that would stretch from farm field to supermarket and was translatable, via HACCP, into almost all existing mainstream food and agricultural audit systems.¹⁴ While this agenda was ambitious, the possible pay-off was significant. Beyond fundamental (retail) returns-to-brand, GAP had the potential to harmonise the multiple supply chains of members; to increase certainty for suppliers; to increase the supply of ‘safe’ food; and to reduce the costs of purchasing agents by devolving the management of a standardised supply chain audit to an external, non-profit organisation. While organic had the brand recognition, the strategy of EUREP was to capture and monopolise the behind-the-scenes architecture of ‘safe’ and ‘sustainable’ food auditing.

Forms of EurepGAP Regulation

EurepGAP regulation took shape in a series of negotiations between 1997 and 1999. The key GAP protocols are designed by Technical Standards Committees (TSCs), which include representatives of a wide range of food system stakeholders. These representatives are drawn from retailers, consumer groups, agro-science, agro-industry, environmental groups, other related NGOs, government agencies and producer organizations. EurepGAP membership fees are rebated and some travel support is provided for NGOs to ensure balanced representation at ‘standard setting’ meetings. The TSCs operate through consensus to design GAP protocols that are both acceptable to financial stakeholders and legitimate in the eyes of the wider stakeholder community (<http://www.eurep.org/Languages/English/about.html>). TSC consensus building is framed in a HACCP-based audit of food supply from farm production to supermarket point of sale. The HACCP process allows for flexibility in the definition of critical points. Some controls are deemed less necessary than others. Thus, for example, the HACCP analysis of fruit and vegetable production identifies three levels of compliance, which are listed below.

Critical Control Point – importance of compliance	Number of Control Points	Strength of compliance
Major Must	47	100%
Minor Must	98	95%
Recommended	65	Not compulsory, but desirable. Must produce evidence of movement towards compliance.

Source: EurepGAP 2004(a)

¹⁴ A similar effect can be created by software programmers in deciding to use Microsoft Windows as an operating platform – instant integration with the mainstream industry. The idiosyncratic development of organic audit processes, within this analogy, parallels the idealistic and marginalised aspirations of Linux programmers.

Virtually every European ‘Integrated’ producer of fruit and vegetables extant in 1999 - when EUREP launched its first Good Agricultural Practice protocol - easily met enough ‘Major Must’ and ‘Minor Must’ compliance control points to enter EurepGAP without any significant alteration of existing practice. For existing Integrated production, entry to the EurepGAP alliance required no more than paying the modest licence fee and re-aligning the technical specifications of an existing audit into the language and form of the new EurepGAP system.¹⁵ The protocols also enabled almost all the existing professional agri-food audit organisations to register and offer auditing services (<http://www.eurep.org/Languages/English/about.html>). To oversee the audit services, an independent (super) audit bureau named FoodPLUS GmbH was created. A not-for-profit organisation FoodPLUS, based in Cologne, not only watches the watchers but also has executive responsibility for the operation of the EurepGAP Secretariat (which emerged out of the earlier EUREP negotiations) and the Technical Standards Committees. Around 11 full time staff, and an ‘independent Chairman’ are funded through audit levies and the membership fees of the constituent organisations of EurepGAP. This discussion of the rationalisation, harmonisation and streamlining of audit under EurepGAP falls short, however, of appraising the most striking feature of the alliance: its ethos and sense of cultural mission.

Ideals of EurepGAP

The EurepGAP Mission

A desire to reassure consumers. Following food safety scares such as BSE (Mad Cow Disease), pesticide concerns and the rapid introduction of GM foods, consumers throughout the world are asking how food is produced: and they need reassuring that it is both safe and sustainable. (Source: <http://www.eurep.org>).

EurepGAP conceives the chief beneficiary of its initiative to be the consumer, but not in the traditional mode of supermarket retailing strategy. Rather, EurepGAP proposes to add value in the mind of the consumer. At the heart of its mission is the production of a virtual image; an imagined countryside. Beyond the technique of audit it proposes to conjure a vision of the growing and eating of food that will operate as ‘safe’ well beyond the technical requirements of a HACCP system.

EUREPGAP Terms of Reference

Respond to Consumer Concerns on Food Safety, Animal Welfare, Environmental Protection and Worker Welfare by:

- Encouraging adoption of commercially viable Farm Assurance Schemes, which promote the minimisation of agrochemical inputs, within Europe and world wide.
- Developing a Good Agricultural Practice (GAP) Framework for benchmarking existing Assurance Schemes and Standards including traceability.
- Providing guidance for continuous improvement and the development and understanding of best practice.
- Establishing a single, recognised framework for independent verification.

¹⁵ An added incentive, as discussed in Campbell et al. (2005), is that companies could retain their own ‘in-house brands’ even after aligning to EurepGAP audit. There was no desire to create a new brand, rather to underwrite the range of existing eco-brands in supermarkets. There is no evidence to date as to whether this has significantly improved, retained or reduced the level of adherence to environmental requirements.

- Communicating and consulting openly with consumers and key partners, including producers, exporters and importers.

Source: <http://www.eurep.org>

EurepGAP identifies four key themes that lie behind a brand image for 'safe' farming. They are food safety, environmental protection, occupational health, safety and welfare, and animal welfare. Only the first is concerned with food-as-such. Here the alliance proposes 'commercially viable' production with the 'minimisation of agro-chemical inputs'. Between the broad lines of these references is space for commercial 'Integrated systems' production: EurepGAP's new system of systems, 'Integrated Farm Assurance'. The remaining thematic areas EurepGAP proposes, in order of presumed importance, are protocols for environmental, worker and animal welfare. These policies affect not so much the physical nature of food, as its production and distribution context. In short, these policies are concerned with the production of a reassuring mental construct. Their virtual objective is to evoke an agriculture suffused with welfare.

In contrast to many other exercises in harmonisation between audits, from the very beginning EurepGAP¹⁶ positioned itself as more than a technical watchdog of safe-food supply. Instead, it sought to clearly embed this new audit system with a wider values system. In comparison, many international forums and strategic action groups have simply sought to harmonise audits and processes, ranging from standardisation of IT formats and media (VHS videos, CD manufacture, HTML programming), to international border control protocols. None of these has strayed into the 'values' terrain as EurepGAP has done. Although a European alliance of private interests, it conceives its mission in global and historic terms. In its vision of itself, as written in its logo, EurepGAP is part of a progressive future.

EurepGAP: 'The Global Partnership for Safe and Sustainable Agriculture'

EurepGAP's sense of moral mission is not only designed for consumers. It has been internalised by its constituent members. The strength of the idea of EurepGAP as the true pathway to agricultural sustainability has been such that, since its inception five years ago, no dispute over protocols has become so intractable as to cause a group to withdraw from EurepGAP. This is in stark contrast to the bitter wrangling that sometimes characterises parallel organizations like the International Federation of Organic Agriculture Movements.

In order to substantiate the claim that EurepGAP is operating as 'more than just an audit system', the next section will investigate details of EurepGAP protocols more closely. At face value these appear to be merely procedural audit protocols. Closer inspection demonstrates how they operate as audit culture and how this culture strongly privileges some suppliers while excluding others. Operating at the level of whole agri-cultures, such exclusion can start to resemble the broader terrain of exclusion between First and Third World agriculture.

EurepGAP Protocols

In its mission statement the alliance defines its Triple Bottom Line as "people, planet and profit" and commits to a social, environmental and economic audit of

¹⁶ See the EurepGAP Newsletters (June 2003; November 2003; May 2004).

sustainability. In so doing, it defines an extensive field in which the model of audit is data-intensive and premised on the need to make farming practices measurable.¹⁷

Extracts from the general protocols for vegetable and fruit production (EurepGAP, 2001. See also 2004b, 2004c, nd.) suggest the level of complexity of planning, testing and audit required of EurepGAP producers.¹⁸

3.b Seed Quality	#1 Seed quality should be known before use and a record of the variety name, variety purity, batch number and seed vendor should be kept in a crop diary. Where available, seed certification should be retained.
3.e Nursery Stock	#1 Purchased nursery stock must be accompanied by officially recognised plant health certification, such as Plant Passports which exist under the EU Plant Health Directive or similar for countries outside the European Union, where available. #2 Plants should be free of visible signs of pest and disease. #3 Quality guarantees or certified production guarantees must be kept in the crop diary. #4 Plant health quality control systems must be operational for private or in-house nursery propagation.

(Source: EurepGAP 2001).

These requirements of seed certification immediately presuppose a commercial market for seed with a high level of accessible certification and standards. Further, crop diaries must be kept. Of the four requirements, only #2 relating to visible signs of pest and disease would be readily achievable for many Third World producers.¹⁹

4.a. Site History:	#1 A recording system must be established for each field, orchard or greenhouse to provide a permanent record of the crops and agronomic activities undertaken at those locations. #2 A visual identification or reference system for each field, orchard or greenhouse must be established. #3 For all new agricultural sites, a risk assessment must be undertaken, taking into account the prior use of the land and all potential impacts of the production on adjacent crops and other areas. #4. The results of the risk assessment analysis must be recorded and used to justify that the site in question is suitable for agricultural production. #5 A corrective action plan must be developed setting out strategies to minimise all identified risks in new agricultural sites, such as spray drift or water table contamination.
--------------------	---

Source: EurepGAP 2001.

¹⁷ What Larner and Le Heron (2004) describe as: 'calculative practice'.

¹⁸ To see all the protocols, go to www.eurep.org

¹⁹ Leaving aside the question of where newly entered EU agricultural producers in former communist countries might fit into these requirements.

The above site history requirements necessitate a level of audit and recording that would be onerous even among First World producers. The protocols intrinsically operate around a very dense level of audit, traceability and proof of compliance.

5.a. Soil Type Mapping:	#1 Soil maps should be prepared for the farm, which can then be used to plan rotations, planting programmes and growing programmes.
6.a. Nutrient Requirement	#1 A cropping or soil care plan should be developed to ensure that nutrient loss is minimised. #2 The application of fertilisers should be based on nutrient requirements of the crop and on appropriate routine analysis of nutrient levels in the soil, the crop or the nutrient solution.
6.g: Organic Manure	#2 The use of raw untreated human sewage sludge is prohibited. Any use of treated human sewage sludge on land destined for agricultural production must be supported by data and/or recognised codes of practice which demonstrate that any carry-over of pathogenic organisms and other components which may have an adverse effect on human health, the quality of the soil, the groundwater or the wildlife are controlled to maintain risks at the lowest possible level.
7.c Quality of Irrigation Water	#1 Untreated sewage water must never be used for irrigation. #2 Based upon risk assessments, irrigation water sources should be analysed at least once a year for microbial, chemical and mineral pollutants by a suitable laboratory. The analysis results should be compared against accepted standards and adverse results acted upon.

Source: EurepGAP 2001.

The EurepGAP restriction on the use of manures is contentious. Practices that are routine elsewhere in the world – such as the use of human manures – are forbidden or heavily restricted on the grounds of food safety. Open field manuring requires complex nutrient budgeting plans, with laboratory testing at key stages of the process.

This audit depends upon and assumes a mode of agriculture that is structured, technically sophisticated and closely monitored. The information intensive requirements of EUREP make computer capacity an implicit necessity. Without computers the registration, update and storage of detailed farm plans, soil maps, spray diaries and other audit records is virtually impossible. EurepGAP protocols are built on the record-keeping legacy of Europe's Common Agricultural Policy: a legacy that passes smoothly into the wider realm of emergent audit culture. As such EurepGAP is founded on, and perpetuates, a particular Euro-centric model of farming. This cultural specificity is clearly reflected in farm labour standards.

8.f: Protective Clothing	#1 Workers must be equipped with suitable protective clothing in accordance with label instructions and appropriate to the posed health and safety risks.
9.a: Hygiene	#2 Workers must have access to clean toilet and washing facilities in the vicinity of their work.
12.b: Training	#1 Formal training must be given to all appropriate workers

	<p>operating dangerous or complex equipment.</p> <p>#2 Records of training for each employee should be kept in the interests of operator safety.</p> <p>#3 Workers trained in First Aid should be present in both field and pack-house.</p> <p>#4 Accident and emergency procedures must exist and instructions must be clearly understood by all workers.</p> <p>#5 Accident procedures should be visually displayed and in the appropriate language of the workforce.</p>
12.c. Facilities and Equipment:	<p>#1 First Aid boxes must be present at all permanent sites and in the vicinity of field work.</p> <p>#2 Hazards should be clearly identified by warning signs where appropriate.</p>

Source: EurepGAP 2001

In the many peasant-based agricultural settings of the world such requirements are likely to be prohibitively expensive if not impossible. The EurepGAP labour standards, moreover, ignore the social context of much global agriculture production. Third World labour is often intertwined with kinship obligation, rendering the concept of (bureaucratically defined) labour ‘rights’ as contentious as, for example, children’s rights in Europe. The ethnocentricity of EUREP is particularly apparent in its failure to address the issue of gender in agricultural labour. The impact of commercialised export supply chains on the gendered division of labour in some Third World societies requires the urgent attention of any audit of sustainable agriculture (see Barrientos et al. 2001; Cavalcanti 2004).

All this would be of reduced importance were EurepGAP merely one amongst many competing food audit systems. The recent spectacular growth in the alliance suggests the opposite. Since the launch of EUREP Good Agricultural Practice protocols in 1999, the alliance has grown rapidly to include nearly all leading European supermarket, cooperative and food retail chains (30 retail chains are members of the Fruit and Vegetable audit system in 2005). In addition, a significant number of commercial auditing organisations have registered with EurepGAP, as have a number of NGOs, agro-input companies and science organisations. At the production pole, over 12,000 growers had, by 2003, adopted EurepGAP protocols (EurepGAP Newsletter, November 2003). In short, EurepGAP has – in only four years – become the gold standard of European food audits.

Table 1: European Supermarket Membership of EUREP-GAP in 2003

ASDA/Walmart	Kesco	Safeway
Albert Heijm	KF	Spar Austria
COOP Italia	Laurus	Superunie
COOP Norge	Marks and Spencer	Superquinn
COOP Switzerland	McDonalds Europe	Somerfield
DelHaize	Metro	Tesco
Eroski	Migros	TSN
Fedis/D.R.C.	Pick ‘n’ Pay	Waitrose
ICA Hanlarna	Sainsbury	

Source: Campbell et al. Forthcoming – 2006.

The above analysis traces the impacts of EUREP audit on the suppliers of food.²⁰ It suggests a (niche) market induced shift in the strict definition of environmentally virtuous farming to facilitate the supply of Integrated systems produce. Examination of the protocols shows that the required social, environmental and commercial accounting is barely conceivable outside a technologically sophisticated mode of agriculture embedded in a modern social formation. The key conclusion is that the structural or unintended effect of EurepGAP, in securing the commercial supply of safe food, is the reproduction of a European farmscape.²¹ Such discussion of the technical components of the EurepGAP audit system bring us to the key analytical insight of this article. To fully understand the success of EurepGAP in forming powerful supply relations at a global level (and the utter impediment that EurepGAP poses to suppliers in some countries), we need to understand EurepGAP as an audit culture with global-scale historical resonance.

EurepGAP: The Narrow Gate to Market.

Having argued that EurepGAP is more than just another audit, and is driven by “a desire to reassure consumers”, the consequences of the operation of EurepGAP as audit culture need to be addressed. The following sections outline the way in which EurepGAP has become a narrow gate to the European food market. While the Euro-centric character of this audit system has important consequences for how EurepGAP operates for European consumers, it has very uneven consequences for those who supply food to Europe.

This unevenness is clearly evident in the case of the New Zealand kiwifruit industry. Organised under the brand name ‘Zespri’, the New Zealand kiwifruit industry was among the first non-European producers received into EurepGAP and was the first global supplier to be granted the right to establish a Technical Working Group outside Europe. Zespri brought with it an unspoken and, even, previously unthought of image of its agricultural and sociological context. By induction, it is suggested this image, being among the first freely adopted and trusted by the alliance, is paradigmatic of EurepGAP’s concept of safe, sustainable agriculture. Behind this success lies both the adeptness of Zespri in promoting itself as a model pupil of the EurepGAP way, but also the much deeper ecological structuring of this advantage through New Zealand’s ‘fortunate’ position as the colonial recipient of a European farmscape.

Colonial Context: The Eco-Agricultural Imprinting of New Zealand

Colonial New Zealand found its identity in the latter half of the 19th Century. As Britain’s ‘farm in the South Pacific’ its landscape is stamped with ‘ecological imperialism’ (Crosby 1993). The ramifications of ecological imperialism, and its relationship to the formation of New Zealand as an agricultural export society, have been discussed in depth elsewhere (particularly Brooking and Pawson 2003). In brief, the indigenous grasslands of the Canterbury Plains and South Island tussock country were brought into sheep production. Native grasses were progressively replaced with perennial English pastures of clover and ryegrass (complete with British honeybees

²⁰ Commencing with Fruit and Vegetable protocols in 1999, and now incorporating cut flowers, coffee and, soon, livestock production.

²¹ The term ‘farmscape’ incorporates the combined social and environmental assemblage that constitutes a farmed landscape in its broadest sense.

for pollination). Subsequently, large bushland areas of the North Island were felled to create patchworks of family farms producing the traditional European staples of butter, sheepmeat, wheat and wool. Around the margins of pastoral production, other features of agrarian Europe were introduced: apples, pears, gooseberries, stonefruit, beef cattle and arable mainstays such as barley and oats. The mode of farming was singularly British, with limited field rotations of stock and crops organised around family-sized farms. The climate of New Zealand resembled – in parts – the expectations of the settlers from Britain and once the pasture had been recolonised by familiar grasses and other plants (including silverweed and ragwort) all that remained was to furnish the surrounding countryside with British trees, hedges (in particular, blackberry and gorse), game (rabbits, trout, salmon, deer, gamebirds) and other associated species (ferrets, stoats).

At the distance of narrative the Antipodean land appears as an ideal landscape – much of the historical analysis of colonial New Zealand dwells on these themes of the Antipodean Arcadia (Fairburn 1989). Central to the Arcadian vision was the freely owned family farm, enclosed fields of crops, grazing flocks, small rural villages and a patchwork landscape of fields and streams, bordered in the distance by impressive vistas of untamed nature (see also Brooking 1996; Brooking and Pawson 2003). The notion of New Zealand as Britain's farm in the South Pacific was clearly cultural as well as ecological.

Through the 20th Century, the special economic and cultural ties between the New Zealand farmscape and Europe were reinscribed at various historical moments. The Ottawa Agreement of 1932 formally enshrined New Zealand's place in the global division of labour in agriculture. De-colonising sentiment post-WWII led to a period of open debate over the future of New Zealand farming. This was firmly rebuffed by government, industry and agricultural science in favour of an ongoing commitment to feeding Britain (and by extension Europe) in the challenging post-war years (Stuart and Campbell 2005).

Privileged access to the British market survived the initial British engagement with the EEC. It was only in 1973 with the full entry of British agriculture into the EEC that the special economic relationship between colony and 'mother country' was broken. New Zealand's position as Britain's 'farm in the South Pacific' was, apparently, at an end.

New Zealand remained, however, an exotic curiosity. The legacy of imported European flora and fauna, of transformed agro-ecological systems and of adopted British social and political structures endured. While change did not cease in the New Zealand countryside, the possibilities of innovation were strongly circumscribed by a predominately temperate climate and a history of British colonialism.²² The absence of European-style heavy industry (at least, in the culturally imagined New Zealand) left a potent cultural legacy – the European-style farmscape of pre-industrial nostalgia.²³ It is in this context that the kiwifruit was introduced into New Zealand, where it flourished, faltered and, finally, found its way to EurepGAP.

²² The neighbouring colony of Australia also had its influences – particularly in the introduction of the possum and the widespread presence of Australian eucalypts among the British exotic trees.

²³ There has been a considerable discussion of the cultural project of rurality in Europe. Interestingly, leading commentators like Paul Cloke recognise many scales in the circulation of ideas of idyllic rurality and broader rural culture, while falling short of seeing the international dimension to cultural economies of rurality operating between Europe and its colonies (for a review of the European debate see Cloke and Milbourne 1992).

From Kiwifruit to Zespri: the economics of sustainability

The Chinese Gooseberry was brought to New Zealand at the turn of the 20th Century. For decades it grew, with blackberry and others, in the kitchen gardens of family homes. Commercial export production of the renamed 'kiwifruit' commenced in the late 1950s (NZ Kiwifruit Journal, 2004). European-style vine management, pest control and orchard production were successfully introduced and developed with distinctive local innovations. These innovations included the pergola and T-bar vine support structures, vine pruning systems, and the breeding of the key commercial kiwifruit varieties (Campbell et al. 1997).

In the 1970s the New Zealand system of mass kiwifruit production was (re)exported back to Europe, where it was readily adopted by vine-based producers. The model then found its way to the vineyards of California and Chile. In 1989, Italy overtook New Zealand as the largest kiwifruit producer in the world. In the face of intensive price competition, the New Zealand (export) industry became financially insolvent in 1991 (Campbell et al. 1997). After forty years of relying on mass production for a global market, the New Zealand kiwifruit industry had to develop a new approach or cease to exist.

Industry leaders concluded that if the total market was approaching its limits, opportunity yet remained in the development of a quality market. The development of a 'higher value' kiwifruit market started with standards for size and freshness, progressed to safety (eg. residue free) and culminated in 'moral value'. Along with the supermarkets of Europe, the New Zealand kiwifruit industry saw commercial opportunity in niche marketing based around, and charging for, both material and ideal quality (Campbell et al. 1997). The first step in the construction of idea-logical value was to rebrand the product. New Zealand growers renamed the fruit and their organisation *Zespri*. In so doing they abandoned the national icon of 'kiwi' in favour of a neologism with mythic connotations.²⁴ A parallel and related development was the breeding of new varieties of kiwifruit. The production of a golden (coloured) Zespri soon followed as, in a reversal of traditional causality, ideal quality determined material form. The highly popular 'gold' fruit has a sweeter taste, with overtones of pineapples and other tropical fruit: sensorial qualities that have been key in opening up important new markets in Asia.

A key part of this 'quality shift' was to improve the environmental image of kiwifruit. Between 1994 and 1998, kiwifruit production was transformed from bulk commodity production, under intensive vine management, to 'environmentally friendly' Zespri horticulture using organic and Integrated management systems. This shift coincided with moves towards 'green protectionism' (state regulation) and 'green food' (retailer requirement) in the two most important kiwifruit markets in the world – Europe and Japan (Campbell and Coombes 1999). Thus, Zespri innovation was in step with the emergence of an elite niche in the mass market, and readily compliant with new international trade requirements. The industry implemented significant levels of audit around organic production, Integrated systems production, taste, appearance, size and storageability. The new audits were phased in through a range of both voluntary and compulsory mechanisms (Campbell et al. 1997). In a near-revolution of kiwifruit production, a once highly intensive production sector

²⁴ This new brand was directly targeted at Europe. The logic of the neologism Zespri was to resonate with the distinctive New Zealand 'Z', the English word 'zesty' and the French word 'esprit'.

(circa 1992-4) became, by 1998, fully organic or Integrated (McKenna and Campbell 2003).

Zespri and EurepGAP: The Importance of Audit Culture

When EurepGAP launched in 1999, Zespri found its key European retailers to be part of the new alliance. Zespri saw this as its opportunity to consolidate all the production audits and environmental quality standards demanded by European retailers (Campbell et al. 2005). By 2003, Zespri had converted its entire audit and production to comply with EurepGAP. In addition it produced its own specialised version of the EurepGAP standards as the compulsory minimum standard for any growers wishing to supply the European market. On this basis Zespri positioned itself to chair EurepGAP's first extra-European Technical Working Group, forming an alliance across horticultural exporters in New Zealand (EurepGAP 2004d).

Zespri's success as one of the first non-European members of EurepGAP also reflects, amongst other things, the importance of size in the commercial production of safe and sustainable food. Zespri is a monopoly, the only conduit for organic and Integrated kiwifruit out of New Zealand and onto the international market. From its position of privilege Zespri is able to channel a large volume of fully compliant product to European retail chains. In short, it is part of the structural preference of EurepGAP for large producers, consolidated audits, mass buyers and large supermarket chains. If, on the one hand, the alliance has embraced the close inspection of the process of production and the end product, it has also turned away from traditional small scale organic farming to the economies of scale of Integrated systems production, and mass wholesale and retail.

It is also significant that, prior to EurepGAP, the kiwifruit industry in New Zealand had already instituted rigorous systems of environmental audit around organic and Integrated systems. To meet EurepGAP's requirements, Zespri converted its existing environmental audit into the language of the new protocols. It did not, however, have to make any substantial change to its systems of production. This harmony between the New Zealand kiwifruit industry and EurepGAP was no coincidence. The same commercial factors that triggered the formation of EUREP were influential in the prior development of environmental systems in kiwifruit production (see Campbell and Coombes 1999; Campbell et al. 1997).

While EurepGAP protocols required little additional environmental initiative from New Zealand kiwifruit growers, the density of the new audit system proved challenging. Complex worker welfare requirements and the detailed monitoring of all procedures are central to EurepGAP audits. Management plans for many parts of farm operation, including the protection and conservation of any resident wildlife, are also desirable. All of these programmes and audits are designed to be implemented by a farm operator/manager operating in a highly literate social environment, using skilled and literate labour, and able to interpret the intent behind some of the more obscure aspects of the regulations. The kiwifruit industry in New Zealand is part of a modern eco-agricultural environment that in technique and social context resembles the long term structure of European agriculture. This legacy of colonial history is highly advantageous. It has enabled New Zealand growers to understand, comply and even excel at the EurepGAP audit (NZ Kiwifruit Journal, 2004).²⁵ In the ten years after launching the newly branded, environmentally auditable kiwifruit, Zespri doubled the

²⁵ For a discussion of some of the grower-level responses to EurepGAP see Campbell et al. (2005; forthcoming).

export value of the New Zealand kiwifruit crop and ushered in a new era of prosperity for the industry.

EurepGAP proved to be a portal for the New Zealand kiwifruit industry (and in its wake, the wider horticultural export sector) into the kind of privileged supply relationship previously enjoyed by colonial New Zealand. The old colonial food relationship has found new life. The socio-ecological arc of modernity found in the 19th Century colony has facilitated Zespri's ready compliance with the organizational requirements of the European model of agriculture embedded in EurepGAP. Less obvious (but as important) beyond the realm of audit, the alliance's desire to reassure consumers finds its ideal in the virtual familiarity of the farmscape of New Zealand. In the cultural imaginary of agriculture, the Zespri kiwifruit comes from a clean and green simulacrum of rural England as it was (imagined) before the ravages of industrialisation. The green or golden fruit is both safe to eat and part of a virtuous landscape of sustainable production. Thus, if colonial New Zealand agriculture was originally structured to mass produce food for the mother country, it now serves as a virtual inscription of the moral qualities of a particular European view of sustainable agriculture. Britain's farm has become Europe's farm in the South Pacific.

Conclusion

The longer term synergies that enabled such a strong relationship between Zespri and EurepGAP are embedded in a long history of cultural and politico-ecological interaction between Europe and its Antipodean colonies. As a governance structure, however, EurepGAP signals a bold new experimental form indicating the vigour of audit culture under neoliberal forms of governance. In a fragmenting market, large retailers perceived an opportunity in 'green and healthy' food. Consolidating the organizational heights and the moral middle ground, EurepGAP assembled a broad alliance to develop an audit of the production and supply of environmentally virtuous food. The EurepGAP audit, based on 'Integrated systems', readily included extant safe food production and, in the expanded market of the alliance, opened greater opportunity for growers in general and large production units in particular.

Beyond its foreseeable commercial impacts, EurepGAP had important unintended consequences. From the beginning the ambition of the alliance was to move beyond narrowly defined 'safe', or residue-free, food. Its system was premised on meeting the moral/cultural concerns of shoppers. Adding Triple Bottom Line accounting and HACCP food safety procedures to 'Integrated systems' production, the alliance defined a suite of practices and measures delineating sustainable agriculture. Analysis shows the logic and possibility of such a regime of sustainability are founded in the social context and practices of European farming. Large farms in private ownership, a high level of technological sophistication, a history of information, and literate wage labour are among the contextual assumptions. A Euro-centric ideal, in short, defines the narrow gate leading into EurepGAP and its European customers.

Analysis that delves into the idealised landscape of colonial New Zealand suggests an imagined landscape of European provenance: Britain's 'farm in the South Pacific'. The biophysical lineaments of this landscape endure to this day, providing the physical and social context for kiwifruit production. The Zespri example - as a high profile early foreign entrant in EurepGAP - casts a clearer light on the uneven development consequent upon EurepGAP. The highly successful relationship between Zespri and EurepGAP is premised on a set of cultural and ecological

resonances that are highly specific to a particular style of temperate agriculture. But, by answering the question as to why Zespri became such a successful early entrant into EurepGAP, an even more challenging question arises. For most of the Third World, it will be extremely difficult to realise such easy resonance, even if it were only a question of meeting the technical standards of work process and product. The very factors that lead to the success of Zespri suggest the opposite result for less culturally resonant supply zones.

These resonances are elements of the friction of history: part cultural legacy, part structural inequity, and part the ecological legacy of colonial relations. For most Third World producers, a completely different and more challenging political dynamic is created by the narrow gate of EurepGAP. Europe will need its tropical supply zones to negotiate entry into the alliance, but the easy achievements of temperate New Zealand can in no way suggest similar ease of entry for Third World producers. Inside the gate, residue-free food is grown in an evermore sustainable process that culturally resonates with Europe and is technically valorised through audit. Isolated on the outside, inhabiting the wrong kind of cultural and ecological farmscape, a far more complex and uncertain future awaits other supply zones. The result is the further uneven development of the global landscape of production - into spaces of environmental virtue and ecological vice.

EurepGAP may thus be seen as part of a re-invention, or perhaps better a re-inscription, of part of the old European colonial food order. A re-inscribing that, in so far as it cites the text of the past, not only widens traditional distances but fixes them in ever deeper cleavages. The private sector is central to the new order. EurepGAP represents a new mode of authority outside the conventional democratic nation state. The decisive influence constituted in and advanced by the alliance is large retail capital. The other major economic beneficiaries are, as the Zespri example suggests, monopoly suppliers and large producers – all of whom stand to gain from a monopolising tendency within audit systems. Freed within neo-liberal polities from the operation of government influences in the food chain, the ethos embedded in this audit alliance's protocols are founded in the European middle class consumer's ideal of safe food and sustainable agriculture. EurepGAP, in sum, is an extra-democratic authority that marries the economic interests of large capital with the ideological persuasions of the middle class consumer. Such a socio-economic impulse, this article suggests, is a central dynamic in reinscribing parts of the old colonial food order.

References

- Barrientos, S., Dolan, C. and Tallontire, A. (2001) *Gender and Ethical Trade: A Mapping of the Issues in African Horticulture*, NRI Working Paper, Chatham: NRI <http://www.nri.org/NRET/gendered.pdf>
- Brooking, T. (1996) *Lands for the People? The Highland Clearances and the Colonisation of New Zealand. A Biography of John McKenzie*, University of Otago Press, Dunedin.
- Brooking, T. and Pawson, E (eds) (2003) *Environmental Histories of New Zealand*, Oxford University Press: Melbourne.
- Burch, D. and Lawrence, G. (2004). 'Supermarket own brands, supply chains and the changing agri-food system: the UK experience.' Paper presented to *Agri-Food*

XI: the Annual Conference of the Agri-Food Research Network, Canberra, Australia, June 2004.

- Busch, L. and Bain, C. (2004) 'New! Improved? The Transformation of the Global Agrifood System.' *Rural Sociology* 69 (3): 321-346.
- Campbell, H., Fairweather, J. and Steven, D. (1997) Recent developments in organic food production in New Zealand: part 2, Kiwifruit in the Bay of Plenty. *Studies in Rural Sustainability No. 2*, Department of Anthropology, University of Otago.
- Campbell, H. and Coombes, B. (1999) 'Green Protectionism' and Organic Food Exporting from New Zealand: Crisis Experiments in the Breakdown of Fordist Trade and Agricultural Policies' *Rural Sociology* 64(2): 302-319
- Campbell, H. and Lawrence, G. (2003). 'Assessing the Neo-liberal Experiment in Antipodean Agriculture', Pp. 89-102 in R. Almas and G. Lawrence (eds) *Globalization, Localization and Sustainable Livelihoods*, Ashgate, Aldershot, UK.
- Campbell, H., C. McLeod and C. Rosin. (2005) Auditing Sustainability: The Impact of EurepGAP in New Zealand. Pp 157-175 in G. Holt. And M. Reed. (eds) *Organic Agriculture: A Sociological Perspective*. Wallingford: CABI Publishing.
- Campbell, H., Lawrence, G. and Smith, K. (Forthcoming 2006). Audit Cultures and the Antipodes: the Implications of EurepGAP for New Zealand and Australian Agri-Food Industries. In Murdoch, J. and Marsden, T. (eds) *Between the local and the global: An institutional perspective on food*, Elsevier.
- Cavalcanti, J. S. B. (2004) New Challenges for the Players in Global Agriculture and Food. *International Journal of Sociology of Agriculture and Food* 12(1).
- Cloke, P. (1996) Looking through European eyes? a re-evaluation of agricultural deregulation in New Zealand. *Sociologia Ruralis* 36:305-330.
- Cloke, P. and Milbourne, P. (1992) Deprivation and Lifestyles in Rural Wales. – II Rurality and the Cultural Dimension. *Journal of Rural Studies* 8(4): 359-371.
- Crosby, A. (1993) *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*. Cambridge University Press: Cambridge.
- EurepGAP (2001) *EurepGAP Protocol: Fresh Fruit and Vegetables. Version September, 2001*. FoodPLUS: Cologne.
- EurepGAP (2003) Press Statement, *FoodPlus*, 28/10/03.
<http://www.eurep.org/fruit/publications.html>
- EurepGAP (2004a) *EurepGAP Control Points and Compliance Criteria* (Version, Jan 04): FoodPLUS: Cologne.

- EurepGAP (2004b) *Checklist: Fruit and Vegetables. Version 2 (Jan 04)*. FoodPLUS: Cologne.
- EurepGAP (2004c) *General Regulations: Fruit and Vegetables. Version 2 (Jan 04)*. FoodPLUS: Cologne.
- EurepGAP (2004d) News: New National Working Group on Fruit and Vegetables in New Zealand: Zespri Group Ltd. <http://www.eurep.org/fruit/news/99.html>
- EurepGAP (nd.) *Brochure: The Global Pre-Farm Gate Standard – Fruit and Vegetables*. EurepGAP, The Global Partnership for Safe and Sustainable Agriculture. FoodPLUS: Cologne.
- EurepGAP Newsletter (June 2003). FoodPlus: Cologne.
- EurepGAP Newsletter (November 2003). FoodPlus: Cologne.
- EurepGAP Newsletter (May 2004). FoodPlus: Cologne.
- Fairburn, M. (1989) *The Ideal Society and Its Enemies: The Foundations of Modern New Zealand Society, 1850 -1900*. Auckland University Press: Auckland.
- Guthman, J. (2004) *Agrarian Dreams: The Paradox of Organic Farming in California*. University of California Press: Berkeley.
- Howley, V. (1997) The Peak of Practices. *Fresh* September 1997.
- Larner, W. and Le Heron, R. (2004) Global Benchmarking: Participating ‘at a Distance’ in the Globalising Economy. Pp. 212 – 232 in Larner, W. and Walters, W. (eds.) *Global Governmentality: Governing International Spaces*. Routledge: London.
- Le Heron, R. (2003). Creating food futures: reflections on food governance issues in New Zealand’s agri-food sector. *Journal of Rural Studies* 19:111-125.
- Le Heron, R. (2005) Reconstituting New Zealand’s Agri-Food Chains for International Competitiveness. Pp. 52-65 in Fold, N. and Pritchard, W. (eds.) *Cross Continental Food Chains*. Routledge: London.
- McKenna, M., Roche, M. M. and Le Heron, R. (1998). “Sustaining the Fruits of Labour: a Comparative Localities Analysis of the Integrated Fruit Production Programme in New Zealand’s Apple Industry.” *Journal of Rural Studies* 14(4):393-409.
- McKenna, M. M. and Campbell, H. (2003) It’s Not Easy Being Green: The Development of ‘Food Safety’ Practices in New Zealand’s Apple Industry, *International Journal of Sociology of Agriculture and Food* 10(2) <http://www.ryerson.ca/~isarc40/IJSAF/index.htm>

Morris, C. and Winter, M. (1999) Integrated farming systems: the 'third way' for European agriculture? *Land Use Policy*, 16:193-205.

New Zealand Kiwifruit Journal (2004) Celebrating 100 Years: The New Zealand Kiwifruit Industry, 1904-2004. *NZ Kiwifruit Journal Centennial Edition*. February 2004.

Strathern, M. (ed.) (2000) *Audit Cultures. Anthropological studies in accountability, ethics and the academy*, (EASA Series) London: Routledge.

Stuart, A. M. and Campbell, H. (2005) *Technology Conflicts in New Zealand Agriculture: Comparing Contemporary and Historical Crises between Publics, Government, Business, and Science*. CSAFE Research Report No. 2. CSAFE: Dunedin.