

CONSUMER CONCERNS

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SUMMARY

This paper starts by examining some of the food scares that have occurred during the past forty years. It looks at why food scares have become increasingly common, and why some countries are particularly affected. It then considers food buyers' attitudes towards food safety, environmental issues, animal welfare, organic foods, and genetically modified foods, and the impact that those attitudes have had on food choice. It finishes with some thoughts on the antiglobalisation movement and food labelling, and on how World Trade Organisation (WTO) measures could have impacts in the future.

Keywords: food scares, food safety, environment, animal welfare, organic food, food labelling

FOOD SCARES

Food Scares have been quite common in countries such as Britain. Whereas in Australia, where there is a relatively high incidence of reported food borne diseases, Food Scares have been far less important. In the USA, food scares have also been relatively infrequent, and this may be because the public is continually reminded about food-associated risks through health warnings that are carried on labels. This helps to reduce over-reaction when a food scare threatens. In Britain there has sometimes been over-reaction during a food scare, perhaps because there has been limited authoritative information that could have lessened peoples' concerns about the imagined hazards.

In recent years, some nations have been losing trust in the authorities that are notionally responsible for food safety. For example, in 1965, 98% of the people in Pennsylvania thought that the government adequately regulated pesticides. By 1984, that number had fallen to 46% (Dittus and Hillers 1993). Since that time there has been greater emphasis on the food industry managing and monitoring food safety standards through Standard Operating Procedures or Risk Management Programs. With the move away from regulatory body enforcement, the image of Governments as controllers of risk situations has declined further. Public trust stems from the belief that the food authorities and the food industries put the safety of the consumer above other considerations. Food safety in the USA is regulated by the FDA, which acts as an independent body with no links to producers, whereas in the UK food safety has been monitored by MAFF, which historically has protected the interests of the farming and food industries. The FDA probably enjoys more public trust than MAFF because of its independence. That trust helps to reduce the public's perception of the size of a hazard. In Australia, the outlooks of the food regulators of the 1990s seemed to be more closely aligned to the processing industry than to farmers (Worsley and Murphy 1994), and this may partly explain why the regulatory authorities have had a high level of confidence and optimism in food safety standards.

In the past, microorganisms have featured strongly in food scares, but since the mid 1980s there has been a broader range of causes (Table 1). The food additives incident in the mid 1980s was one of the first major issues in Britain that did not involve a microorganism. The concern about food additives, and in particular food colourants, grew from increased awareness about their use and their side effects. For example, it was estimated that the average annual consumption of food additives was 5 kg per person. Heightened concern led to consumer pressure in the form of letters to supermarkets. At the same time the EEC was planning the introduction of E number identification for food additives. The supermarkets reacted by scaling down the number of own-brand products containing about 50 additives that were giving concern, and the food manufacturing industry responded by reverting to natural food colourants.

The Food Scare situation in Britain reached a climax in 1989. Food poisoning cases were at record levels with more than 2,500 people seeking medical treatment in one week during August. However, part of the concern was generated by the media; doctors recognised that there was often a sudden filling of their surgeries the morning after a television programme on health or food safety.

Table 1. Food Scares in the UK, 1960-1999. Scares given in bold type had a particular impact.

1960	Food poisoning from re-warming cooked meats	
1964	Typhoid Fever	Imported corned beef
1968	Algal toxin in mussels	
1970	Mercury in fish	
1976	Food poisoning from cockles	
1977	Hospital meals	Kitchen hygiene
1978	Botulism from tinned salmon	Imported
1979	Mercury in oranges	Consumer terrorism
	Food poisoning	Imported corned beef
1980	Hormone residues in veal and beef	Scare that spread from central Europe
1981	Salmonella in chicken and milk	
1984	Salmonella in chicken products	
1985	Food additives (e.g. tartrazine, amaranth)	
	Salmonella in dairy products	processing
1986	Radioactivity in lamb	Chernobyl
1989	Salmonella in eggs	
	Contaminants in a wide range of foods	Consumer terrorism
	Alar in apples	
	Botulinum in hazlenut yoghurt	Imported nuts + pasteurization under vacuum
	Listeria in soft cheeses, pâté and pre-cooked chilled chicken	
	Salmonella in poultry meat	
	Bovine brains (as vector of BSE)	
1990	Algal toxin in crab meat and mussels	
	BSE and beef	
	Carcinogens in cling film	
1991	BSE and beef	
	Contaminants in foods	Consumer terrorism
1992	Botulinum in pork	
1993	Carcinogen in apple juice	
1994	BSE and beef	
1995	BSE and beef	
	Listeria in soft cheeses	
1996	E. coli 0157	
	Encephalopathy from eating sheep meat	
1997	E. coli 0157 in meat	
	BSE in beef	
1998	E. coli 0157	
1999	Genetically Modified Foods	

In Australia there has been comparable media attention, but it has not always provoked a Food Scare. There has been issues such as rat droppings in peanut butter, poisons introduced into biscuits, carcinogens in soy sauce, mercury contamination of flake fish, food poisoning cases on the East Coast from shellfish, pesticide residues from cottonseed hulls in feedlot beef, hormone and antibiotic residues in meat, cryptosporidia in water, and E. coli O111 in salami.

Table 2 gives a breakdown of the primary concerns about food risks in the USA during the late 1980s. At that time, chemical residues were the foremost concern, but since then the leading position has probably been taken over by bacterial contamination (Hoban 1997). Concern about cholesterol exists mainly amongst the elderly, and concern about food irradiation has been a concern in the past mainly amongst people who have received less education. The only Food Scares that have been linked to Animal Welfare have been due to product sabotage by Animal Rights activists.

CONSUMER TERRORISM

Food Scares that were caused by consumer terrorism became fashionable in the 1980s. Typically, the activist or saboteur introduced a harmful substance into the product and then notified the media that the product was affected. The reasons for product sabotage have included political activism, extortion, employee dissatisfaction, copycat behaviour, and Animal Rights protest. The tamperers depended on publicity to fulfil their purpose, and the manufacturers and retailers depended on publicity to protect the public and their reputations. The guaranteed publicity helped to proliferate this type of food scare. Consumer terrorism developed late in the UK in comparison with the USA and Japan, and it reached a height in Britain in 1989. A particularly serious incident involved a babyfood product. 100 million jars worth £32 million were taken off shelves and another 60 million were repackaged, because

customers were finding glass, pins and caustic soda in the product. Meat and meat products have not been major targets for this type of sabotage, except for occasional incidents when turkey products and hamburgers have been laced with mercury. There have been three important outcomes from this period of product sabotage. Firstly, there was the introduction of extortion insurance, which has been taken out during periods of high risk. Secondly, it has emphasised the value of traceability through product labelling, and thirdly it accelerated the development of tamper-proof and tamper-evident packaging. Tamper-evident packaging has not been used much for fresh meats, and these products are now at a relatively higher level of risk.

Table 2. Primary concerns amongst consumers in California about food risk components (Jolly *et al.* 1989)

Food risk component	% of respondents saying they were concerned
Residues	62.3
Irradiation	60.0
Fat	51.9
Additives and preservatives	45.2
Salt	44.0
Cholesterol	42.5
Sugar	41.0
Fibre	35.5
Artificial colouring	33.7

ORGANIC FOODS

The food safety scares of the 1980s helped to direct consumers' attention towards Organic and Health foods. Demand for organic foods increased during the late 1990s. There will be a limit in the growth of this market, as not everyone will turn to organically grown goods. The decision to change is based on value orientation. Gunter and Furnham (1992) described people's value orientation as being of two types: "Internal" or "External". Internally oriented people consider that their own destiny is up to themselves. They regard events that happen to them as due to their own efforts and abilities, and they tend to want to control their own lives as much as possible. Whereas, Externals are more likely to attribute events to chance or to decisions made by other people who are in control, and they are prone to letting fate control their lives. Homer and Kahle (1988) found that internally oriented people were more concerned about nutrition and food additives, and were more likely to be natural food shoppers. People who rarely purchased natural foods were externally oriented. Value orientation was more strongly linked to attitude than to behaviour. However, attitude towards nutrition was linked to natural food shopping behaviour. This implies that attitude acts as a key intermediate between value orientation and behaviour.

The distinction between Internals and Externals is useful, because it helps us recognise whether information that is put forward about food safety and environmental issues is likely to be accepted. The Externals are more likely to take notice of conciliatory messages, whereas Internals are more likely to respond to information (including marketing slogans) that portrays some personal benefit. Clearly, a single message is not going to appeal to everyone.

Although people who buy organic foods regularly are more likely to be internally than externally oriented, they sometimes claim that they are less often occupied in their minds by health issues (Schifferstein and Oude Ophuis 1998). Health, however, seems to be more important amongst incidental buyers of organic foods in comparison with heavy buyers (Schifferstein and Oude Ophuis 1998).

Food safety is usually considered the single most important feature that governs the selection of organic foods (Table 3). A survey in Northern Ireland showed that of the 35% of the people who were regular buyers of organic foods, 73% said that their main reason for buying organic food was because they considered it healthier. Other reasons were no additives or sprays (50%), taste (35%), freshness (34%), and environmental reasons (33%) (Titherington *et al.* 1996). The main reasons that more people did not buy organic food were poor availability, higher price, and because they were perceived as being "no better than conventional products" (Jolly *et al.* 1989). The greenest age groups tend to be the late teens and the 35-44 year age group. Within the younger age group, disposable income was particularly important in determining who actually purchased green products (Titherington *et al.*

1996). Supermarket managers seem to be reluctant to admit that people buy organic produce because it is healthier. Instead, the managers say that it is because of concerns about the environment (Tregear *et al.* 1994).

Table 3. Important features attached to Organic Foods.

Order of importance amongst consumers of organic foods (Jolly *et al.* 1989). The feature at the top of the list is the one with the highest importance.

Feature
Safety
Freshness
General health benefits
Nutritional value
Effect on the environment
Flavour
General appearance of the product

In Australia, 92% of the public consider that it is important to buy foods that are environmentally friendly, and 60% claimed that they were willing to pay more for organically grown foods (Norton *et al.* 1998).

The most frequently purchased organic foods, in decreasing order, are fruits, vegetables, chicken, eggs, beef, and pork products. Organic fruits, vegetables and eggs yielded higher levels of satisfaction than organic chicken, beef and pork. The reason for the greater dissatisfaction with chicken and pork was the poorer appearance or presentation of the product, and, in the case of beef, its flavour. This may have been due to more grassy flavours in comparison with beef from conventional feedlots.

Three factors are causing some farmers to take up organic meat production:

- in some countries, farmers are being forced by law to move nearer to organic systems through regulations on pollution. This has enabled compliance with organic meat production standards
- the potential for higher financial returns makes organic production more attractive, especially in saturated conventional markets, and for small scale producers. During the BSE Food Scare in the UK, beef sales dropped dramatically, and sales of conservation grade meat sold by the Real Meat Company doubled in the first few weeks. Organically reared meat was regarded as a safe and healthy eating option in this situation
- a belief in the organic ethic.

HEALTH FOODS

An important consequence of the Food Scare era of the late 1980s, was the rapid increase in demand for health foods. The Horticulture industry enjoyed some major benefits. Meat, on the other hand, did not, and it still does not have the image of a health food. It is, however, often regarded as good for health. At present, fish has the strongest image as a good-for-health meat, but in the past veal and chicken held that position and were often provided for invalids or people in poor health, because they were easily digested. Clearly, perceptions about health foods change with time. Another example of such a change has occurred in the case of Kellogg's Cornflakes. When first introduced this product was promoted as a health food. Now it has been displaced from that position by higher fibre less digestible cereals. In the future people may focus on eating according to their genes or personal health risk.

ANIMAL WELFARE

Concerns about animal welfare and animal slaughter have been important contributors towards reduced meat eating (Gregory 1997). However, the link between those concerns or attitudes and behaviour are sometimes obscure. This is particularly true when there is a conflict between animal welfare and other perceived benefits, such as convenience, eating quality and price. Wandel and Bugge (1997) concluded that the majority of people are particularly reluctant to sacrifice taste, freshness and nutritional value for environmental or welfare benefits. There is bound to be a price threshold for animal welfare and environmentally sound products. That threshold will vary between socio-economic groups, and according to outlook and prospects. In the case of Norway, people claim that the threshold lies between 5 and 10% above the price for standard product. However, that claim has not been reflected in their behaviour. What they said was an exaggeration of their willingness to pay more.

Oude Ophuis (1994) conducted an important survey, which showed that people who favour an animal welfare friendly product also place strong emphasis on its eating quality. Regular eaters of free range pork considered that this type of pork was less fat, less dry, less bland, more tender and more pleasant than standard pork. However, when they ate free range pork, not knowing that it was free range, these features were less obvious. They only rated it as less fat. People who were not regular eaters of free range pork did not find any differences in eating quality between free range and standard pork when it was eaten without knowing its origin, but they thought that it was less fat when told that it was free range.

Table 4. Reasons for concern about eating GM dairy and meat products within Japan and New Zealand (after Macer 1992)

	JAPAN		NEW ZEALAND	
	Dairy	Meat	Dairy	Meat
Number of people who expressed concern	260	278	871	981
<i>Reason for concern:</i>	<i>% of those expressing concern</i>			
Unknown health effects or risks	18	18	22	21
Unnatural feeling (including taste)	14	16	26	27
Doubts about safety	12	11	12	9
Don't know what we are consuming	1	1	14	15
Information is being hidden	7	7	11	9
Side effects	4	4	7	5
Quality and purity cannot be guaranteed	3	2	3	4
Potential for new diseases	3	4	3	3
Environment or ecological effects	2	1	-	-
Economic, ethical or political concerns	2	2	-	-

ENVIRONMENT

The market for green or environmentally-friendly products started to grow in the late 1980s. The throw-away eighties gradually merged into the eco-sensitive nineties. Green consumers became less of a marginalised minority and international differences developed in attitudes towards the environment and behaviour in buying environmentally sound foods (Sutton and Al-Khatib 1994; Titherington *et al.* 1996). However, as the public became more educated and wiser in green matters, they became aware of the superficial nature of the environmental friendliness of some products. For example, about 10 years ago, Friends of the Earth initiated the "Green con of the year" award for the organisation that had done most to hoodwink the public.

Genuine attitudes towards the environment are deep-rooted within society, and a brief examination of some of the extremes in attitude can be helpful in understanding the fundamental outlooks. Some of the most extreme views about the environment are held by neopagans. They

- have a romantic attachment to nature, in place of a more traditional religion
- range from people who practice nature religion in organised groups, to those who place a personal spiritual slant on the Green Movement
- tend to believe that nature is in some way alive or sacred, and their values for nature are closely connected with archetypal images of ecology and the environment.

Their outlook, and those of less radical environmentalists, is being fuelled by the growing political power of environmentalism. Environmentalism is politicised in the Green Movement, and most countries have a Green Party. Its principles foster social responsibility towards the environment and global awareness. Animal Welfare is less politicised at present, although it has been embroiled in politics in the past (Gregory 1999). Modern environmentalism adopts the outlook that environmental degradation has stemmed from a society that has faith in science and technology, believes in progress and abundance, and adopts a laissez-faire economy.

It is often stated that concern about environmental quality is a luxury that largely concerns the wealthy nations. However, that claim has been challenged by the findings of the Health of the Planet (HOP) survey (Dunlap and Mertig 1995). That survey was conducted on 24 nations and it is one of the most comprehensive pieces of work in this area. It is true that people living in low Gross National Product per capita (GNP) countries rate other problems besides environmental issues as pressing. Those issues include hunger, homelessness, crime, violence, poor healthcare, high cost of living, and racial/ethnic/religious prejudice or discrimination. Environmental issues are taken more seriously by

people in wealthy nations when they are compared with socio-economic issues: vis. the perceived seriousness of environmental problems relative to other problems was positively correlated with GNP ($r = 0.70$, $p < 0.001$; Dunlap 1997). However, the concern for environmental quality in low GNP nations was quite broad-ranging. The HOP survey showed that poorer nations were more likely to see environmental problems as health threats ($r = -0.70$, $p < 0.01$), but they believed that environmental problems had not affected their health in the past ($r = -0.29$, *n.s.*). The old assumption that non-industrialized nations do not worry about environmental protection is incorrect.

Many people claim that they are environmentally aware and that they have concerns about the environment (that are consistent with recent media attention). However, those concerns do not always translate into buying habits. Marketers have found that consumers, despite their professed beliefs, are still extremely price-sensitive when it comes to buying green. In one study, 75% of the respondents claimed that they would pay more for green grocery products. Only 14% regularly bought those goods, and only 16% avoided products from companies they considered anti-environment. Mainieri *et al.* (1997) also showed that general environmental concern was not a major determinant in green-buying behaviour. Instead, people with strong pro-environment beliefs were focused. They bought particular items that fitted their particular beliefs. Pooley and O'Connor (2000) found that West Australians base their attitudes towards environmental issues on a balance between beliefs and emotions. Surprisingly, there was an element of independence within individuals between their beliefs and their emotions. Attitudes that had a strong emotional base were usually negative and were more likely to be formed through direct experience. Whereas, attitudes based on beliefs were more likely to be acquired through indirect experience and seemed to be cognitively based.

FOOD SAFETY

In a recent survey in Australia it was estimated that of the 20 billion meals eaten each year, about 0.02% resulted in food poisoning. This seemingly small incidence represents 11,500 cases of food poisoning a day and was estimated to cost Australia \$2.6 billion per year. Although food safety has been the main consumer concern that has contributed to the growth of the organic and health food industries (Table 3), it would be simplistic to think that organic farming is the answer to all food borne pathogens. For the future, we need to know more about how to safely manage bulky material containing pathogenic bacteria. This includes a better understanding of how to manage the application of effluent to pasture and soil, and of what happens to pathogenic microorganisms as they percolate through the soil. In addition, we need to know how to manage a herd which is identified as carrying a potential pathogen such as *E. coli* O157. With the advent of traceback systems from processing plants, it will be feasible in the future to identify individual properties that harbour particular pathogens and manage them accordingly. New pathogenic bacteria have been cropping up, and there is strong evidence that confirms the emergence of antibiotic resistant strains. These are serious threats for the future and they will probably increase the cost of managing food-related risks. New thinking is required on how to sanitise a herd (flock) or farm in order to get rid of a microorganism that is pathogenic to humans but less so to animals.

GENETICALLY MODIFIED FOOD

The new consumer concern that emerged during the late 1990s is food from Genetically Modified Organisms (GMOs). There are in fact a range of concerns, and they were identified sometime ago by Macer (1992) in surveys conducted in New Zealand and Japan. Firstly, he found that about half of New Zealanders (48%) and Japanese (55%) were concerned about the prospect of eating meat from genetically modified animals. There was slightly less concern about consuming GM medicines and vegetables than GM meat. The reason for concern about eating GM products from animals are shown in Table 4. The primary issues were "uncertainty about the health effects or risks", "unnaturalness", and uncertainty about the adequacy of testing for risks. In the case of "unnaturalness" there was the feeling that GM foods are against the law of nature, that the original taste of the food will disappear, and that everything will taste the same ("shimofuri"). Under quality and purity, some people said that "artificial meat is frightening". There was also a perception that potentially harmful foreign genes might be present. Reference was made to thalidomide and cancer as examples of unforeseen disorders. In general there was close similarity in the reasons for concern amongst Japanese and New Zealanders, and there were no distinctions between GM meats and GM dairy products. There was one difference between the nationalities. The New Zealanders were concerned about knowing what they might be consuming, whereas this was not a concern for the Japanese. This could either reflect

differences between the cultures in awareness about the origins of meat. Alternatively, it could be due to the greater tendency in Japanese culture to focus on benefits, rather than seeking hidden dangers.

Comments about economic, ethical and political concerns included: "I don't trust the safety standard which is decided by the government or industry", "misuse", "can't trust the results of research looking at the effects", "can we morally accept artificial animals?" Animal Welfare was not an important issue; only 1% of the Japanese and 5% of the New Zealanders who were worried about GM foods thought that it was relevant.

Not long after Macer's surveys, Lawrence *et al.* (1993) surveyed the opinions of leading representatives from the main farming associations in Australia. Producers for almost every agricultural commodity were represented in this study, and their perspectives about the prospects created by biotechnology were generally positive. The main anticipated benefits were in areas of disease control in plants and animals, together with improved productivity from superior genetic material. Examples included:

- nitrogen fixation in wheat and barley
- improved vaccines for livestock
- improved worm control

However, 50% of the organisations identified some concerns about aspects of biotechnology. There was no one concern that predominated, but the concerns often featured some aspect of control. For example, there was concern that:

- genetic manipulation will increase dependence on herbicides
- seed and plant material will be patented by large companies and be unavailable to the grower
- it would be too easy for scientists to pursue programs that served personal interest rather than being useful to agriculture.

Some other important points arising from this survey were:

- 92% of the organisations agreed with the statement that scientists and research administrators need to spend more time talking to farmers about the potential impacts of genetic engineering
- 70-80% disagreed that it was unethical for scientists to genetically engineer plants, animals and microbes
- 58% agreed that if Australia does not move quickly in developing genetically engineered products, it will become less competitive internationally
- 33% could not reach a view on whether the benefits of genetic engineering outweigh possible risks.

In a survey of the attitudes amongst the Australian public, Norton *et al.* (1998) found that genetic engineering of foods did not rank highly as a general concern in comparison with other topical issues such as the drug problem, crime and public safety, poverty in Australia, preserving the environment, and the cost of living. Nevertheless, 56% of the public were concerned about the health risks from eating genetically engineered foods, and 76% felt that the accidental release of genetically engineered organisms will cause environmental damage. There was almost complete agreement that there should be consultation with consumers before the release of genetically engineered foods ('biodemocracy'), and that there is a need for government control of genetically engineered foods. The government's image needs strengthening in this area, as only 31% of Australians think that the information provided by government departments to the public about the risks of technology were honest and reliable (Norton *et al.* 1998).

The way vanilla production on the islands of the Indian Ocean is heading is a poignant example of how biotechnology can adversely affect a farming industry. Most of the world's natural vanilla is produced in Madagascar, Reunion and Comoros Islands, and on the world market the beans sell at about \$1,200 per pound. Genetically engineered vanilla produced by Escagenetics sells for less than \$25 per pound. It has been predicted that more than 100,000 farmers in the three vanilla-producing countries will lose their livelihood over the next 15 years.

In the future, public reactions to GM foods are likely to be determined on a case by case basis. The hypothetical GM chicken is seen as a less natural product, and the public is not likely to buy it if the

product is labelled as such and there is a free choice (Frewer *et al.* 1996). The lack of acceptance for particular GM products seems to be closely linked to the perceived unnaturalness of the product. Whether focus will also be given to the social impacts of biotechnology is uncertain.

FOOD LABELLING

Various shades of green are used in labelling organic-style foods. **Organic** food is produced without the use of artificial pesticides, herbicides or fertilisers. **Organic meat** comes from animals raised in non-intensive farming conditions, that are free from unnecessary medication such as antibiotics and growth stimulants, and the animals had feed or pasture that was organically grown. **Conservation grade** food is grown on soil containing certain inorganic fertilisers or chemical weedkillers, but the soil is not sprayed with pesticides. **Sustainable** means that under the production system that was used, the land could produce food indefinitely. In some countries there is a distinction between **Alternatively grown** and reform foods. Alternatively grown relates closely to organic production methods, whereas **Reform foods** have had minimal processing subsequent to growing (e.g. unrefined sugar, muesli).

Three systems for labelling welfare-friendly and environmentally-friendly products have emerged. They are Production System Identifiers (e.g. free range), Brand labels (e.g. Freedom Food) and Concept oriented labels. Richard Guy of the Real Meat Company in the UK devised a sensible system that could fit into either the Brand label or the Concept oriented labelling systems. It is called the Star Cares System. In it, the product label carries boxes with stars, and an example is shown in Table 5. There are four categories; Animal Welfare, Product Purity, Environmental Issues, and Social Issues. Product Purity encompasses the use of growth promoters or additives, and Social Issues includes exploitation of under-paid labour. Each category is given a star rating on how good it is at achieving a set of required goals. No star rating would be low, and a three star rating high. If one of the categories was not assessed it would be given a cross. The advantage of this system is that it caters for most consumer concerns in a single simple format. This is an appealing way of over-coming the increasing complexity of labelling systems.

Table 5. Star Cares System of product labelling

Animal Welfare	***
Product Purity	*
Social Issues	X
Environment	**

Labelling is not likely to be a panacea for all the consumers' concerns. It does not necessarily increase the feeling of control or security amongst purchasers, which it may be designed to do. It can also have unpredictable consequences. For example, labelling GM foodstuffs could work two ways. It could either provide supermarkets with a means of excluding GM foods from their shelves. Or, it could increase familiarity and this could lead to public acceptance.

ANTIGLOBALISATION

Antiglobalisation encompasses a complex range of beliefs, attitudes and concerns. Part of the ideology of antiglobalisation is for reduced dependence on multinational companies (anticorporatism). Instead, one of the antiglobalisation goals is for the local community to provide itself with food and housing, and to use surplus resources in servicing demand for exports. The situation in Mexico is often quoted as an example where globalisation of trade has impacted adversely on local communities (Lehman and Krebs 1996). When the NAFTA agreements between Mexico and the USA were implemented, there was a decline in cooperative farms (ejidos) and maize production in Mexico. Previously, maize growers in Mexico had enjoyed government protection from cheap imports, and farmers were allowed to collaborate through cooperatives. Now, it is more cost effective to buy maize from the north, and many farmers have moved to the cities in search of jobs because they could no longer make a living in the provinces.

In general terms the antiglobalisation concerns centre on:

- world trade becoming dominated by negotiations taking place behind closed doors between unelected and largely unaccountable government agents who mainly represent business interests
- national democracy becoming subordinate to WTO-sanctioned controls
- dependency of agriculture on transnational companies for technology and inputs

- subsidised industrial infrastructure fostering centralised manufacture of goods at costs that are well below those existing in the provinces. Growing dependence on imported food in the provinces
- erosion of individual influence, control and self-esteem, leading to abdication of personal responsibility

An underlying theme is that decisions are made which have important social impacts, but there is no public representation or scrutiny in the decision making process. There is inadequate disclosure of process, and failure to consider wider interests and future implications. Decision making is perceived to be done by barter between influential arbiters, rather than through consensus.

A secondary theme is that agriculture is changing from an integral sector of a nation's economy, to a dependent labour arrangement in which fewer remaining farmers are merely providers of raw materials for a giant food manufacturing industry. The fact that the US Government is considering removing "farming" as a category from its census is an example of the impact of this socio-economic change. The large corporate food companies have valued farmers primarily for their land resource and their labour, but within their own businesses they have strived to substitute technology for labour. The food companies may feel that criticisms about farm environmental issues are not their problem, but they are being forced to recognise that the general public's concern is directed through their trade. For example, 80% of Australians feel that consumers should be prepared to boycott companies that do not protect the environment (Nolan *et al.* 1998).

A key event that could change things for the future is the Uruguay Round of GATT. Before the Uruguay Round, the GATT agreements had applied only to regulations or impositions on trading in goods. With the Uruguay Round, the aims of GATT were extended to service industries, such as banking, insurance, IT and communications, the media, and professional services such as law, medicine, tourism, accounting and advertising. This has allowed transnational corporations to penetrate the service industries throughout the world, and it has allowed a large number of multinational companies to adopt national treatment rights. The antiglobalisation belief is that this will add to the imbalance between trade interests and those of local communities.

WORLD TRADE ORGANISATION AND ANIMAL WELFARE

A major concern about the WTO is that it stands outside conventional democracy and that its focus is on promoting and securing trade without due concern for social and environmental needs. A potential repercussion is that there will be changes to the rules that govern trade. It may transpire that environmental and animal welfare issues could be used more forcibly as Technical Barriers to Trade between nations. Until recently, the usual interpretation of the WTO agreements has been that it would be unacceptable to base a barrier to international trade on animal welfare grounds (Gregory 1995). Instead, many governments take the approach that they prefer a non-restrictive approach to meeting animal welfare objectives. In recent time several developed countries have taken import restraint measures without any cover of legality. When these measures have not been conclusively pronounced as violating the disciplines of GATT 1994, they have been called "Grey Area Measures" (GAMs). At first, the 1999-2002 restraint on lamb importation into the USA from Australia and New Zealand was a GAM designed at defending an industry that is unable to face competition. Curbing imports was seen as an appropriate option rather than letting market forces take their course. At the WTO meeting in Seattle it became clear that there was aversion amongst some nations and protestors to over-stringent application of WTO principles on free trade and investment. This in turn might lead to more GAMs in the future. We will have to wait and see whether Animal Welfare ever becomes drawn into the justification for a GAM.

There have been cases of trade restraint that have been based on animal protection. This, however is not the same thing as Animal Welfare. In recent years there have been two Technical Barriers to Trade that have been based on animal protection. They were, restraint on tuna importation, because the methods for catching tuna also caught and endangered dolphins, and restraint on the importation of shrimps, because turtles were being caught in the shrimp nets. These two instances were considered acceptable barriers under Article XX of GATT 1994, which permits measures that are necessary to protect human, animal or plant life or health. The qualifying term "necessary" may be open to alternative views, in which case they could be GAMs.

CONCLUSIONS

1989 was one of the turning points in the history of the food industry in Europe, because of the effects it had on subsequent years. It was inundated with food scares and with concerns about food poisoning. It led to a gradual change in ownership of responsibility for looking after the health of the public through the food they ate, and it accelerated the growth of the health food industry. In comparison with other foods, meat has often been involved in Food Scares, but it has not been a common target for scares created by consumer terrorism. Now, the main drivers towards natural or organic foods relate to personal health, pesticides and environmental contamination.

In some countries there is a strong cultural involvement with the environment. There is a powerful respect for nature that is intertwined with a drive to protect it from human destruction. A growing outlook is that nature is best protected by minimising human involvement, as it is self-sustaining and would be almost eternal if human interference was absent. The alternative outlook is that the planet is becoming overstocked with people, and it is becoming difficult for society not to encroach on protected land. For every 2 hectares of snow/ice-free land on this planet there is one person, and if the population plateaus, as is predicted, at about 10 billion people this will rise to one person for every 1¼ hectares. In reality, undisturbed ecosystems are a dwindling resource and nature management is now an integral part of protecting those reserves (Budiansky 1995).

Environmental and waste management must become a stronger focus if we are to avoid Food Scares and increasing problems with pathogens in the future. However, the real challenge for the future is not in finding answers to the technical features of production and pollution. Instead, it is in encouraging an economic and social order that fosters environmentally correct production practices whilst fulfilling social needs and rights.

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