Going Organic

Mobilizing Networks for Environmentally Responsible Food Production

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At the same time that organic food and agriculture has emerged as the most highly visible alternative to industrialized systems of food provision, it remains an industry based on numerous untested articles of faith. This book sets out to examine what is really going on in the organic sector – socially and politically. In the process, it debunks a number of apparently common-sense beliefs: that organic consumers are wealthy environmental and health extremists; that growth in the industry will inevitably undermine its environmental values; that the mainstream media are antagonistic to organics; and that the industry is driven by consumer demand. Nevertheless, the industry does face significant challenges in coming to terms with rapid growth, the entry of big business, and the standardization of farming and food quality regulations. This book seeks to make a practical contribution to the development of more sustainable food systems by exploring and revealing what it takes to get people involved in organics at each stage of the food chain.

CABI Head Office
Nosworthy Way, Wallingford, Oxfordshire, OX10 8DE, UK
CABI North American Office
875 Massachusetts Avenue, 7th Floor, Cambridge, MA 02139, USA

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Stewart Lockie, Kristen Lyons, Geoffrey Lawrence and Darren Halpin

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CABI Head Office
Nosworthy Way
Wallingford
Oxfordshire OX10 8DE
UK

Tel: +44 (0)1491 832111
Fax: +44 (0)1491 833508
E-mail: cabi@cabi.org
Website: www.cabi.org

CABI North American Office
875 Massachusetts Avenue
7th Floor
Cambridge, MA 02139
USA

Tel: +1 617 395 4056
Fax: +1 617 354 6875
E-mail: cabi-nao@cabi.org

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Acronyms

AQIS	Australian Quarantine and Inspection Service
BFA	Biological Farmers of Australia
BSE	Bovine Spongiform Encephalopathy ('Mad Cow Disease')
CAP	Common Agricultural Program (European Union)
CSA	Community supported agriculture
DAFF	Department of Agriculture, Fisheries and Forestry (Australia)
DPI	Department of Primary Industries (Queensland)
EPOPA	Export Promotion of Organic Products from Africa
EU	European Union
EurepGAP	Euro-Retailer Produce Working Group Good Agricultural Practices
FSANZ	Food Standards Australia New Zealand
GE	Genetic engineering
GMO	Genetically modified organism
ICS	Internal Control System
IFOAM	International Federation of Organic Agriculture Movements
IPM	Integrated Pest Management
ISO	International Standards Organization
JAS	Japan Agricultural Standard
LISA	Low Input Sustainable Agriculture
NASAA	National Association for Sustainable Agriculture Australia
NOGAMU	National Organic Agricultural Movement of Uganda
NOP	National Organic Program (USDA)
NSW	New South Wales
OBE	Organic Beef Exporters
OFA	Organic Federation of Australia
OGTR	Office of the Gene Technology Regulator (Australia)
PGS	Participatory Guarantee Systems
PMP	Property Management Planning
SA	Soil Association (UK)
UNF	United Natural Foods
UK	United Kingdom
US	United States of America
USDA	United States Department of Agriculture
WWF	Worldwide Fund for Nature

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1

Introduction

There is a familiar story about organic food and agriculture that anyone interested in the industry will have heard many times. Organic farming techniques were pioneered in the early twentieth century by small groups of farmers concerned about the effects of mechanization, fertilizer use and other forms of intensification on the biological health of the soil. The key to healthy plants, animals and people, they believed, was the diversity of lifeforms found in the soil. The key to successful farming, therefore, was to feed the soil, not the plant. The more widespread dissemination of agricultural chemicals in the years following World War II prompted more farmers to join this group, but organic farming remained marginal and largely invisible next to modern industrial agriculture. Much organic produce was sold on the conventional market simply because there were so few organic retail outlets. The countercultural movements of the 1960s and 70s—along with key publications such as Rachel Carson's *Silent Spring*—provided a boost for the nascent industry. The counterculture drew wider attention to the environmental and personal impacts of agricultural chemicals and fertilizers, expanded the consumer base for organic food, and experimented with new ways of accessing organic food such as wholefood stores and cooperatives. However, it was the confluence, in the 1990s, of opposition to new biotechnologies, food scares such as Mad Cow Disease (*Bovine Spongiform Encephalopathy*, BSE), an ongoing international farm crisis, and the rising affluence of now middle-aged 60s 'flower children', that set the stage for the dramatic, and in many ways unanticipated, growth in consumer demand for certified organic produce. In response to this demand, organic farmers increased production, new organic farmers, processors and retailers entered the industry, certification bodies began to define more systematically what practices were, and were not, acceptable in organic production and processing, some governments began to take organics seriously, and the size of the organic market rose, and continues to rise, exponentially.

All foundation stories are prone to oversimplifying and romanticizing the complex webs of motivations, strategies, coincidences, setbacks, unintended

consequences and sheer strokes of luck that lead to any large-scale social phenomenon. The foundation story described above says nothing, for example, of the involvement of many early British organic movement activists in a variety of far right political groups, or the connections they saw between science, soil health, human potential, rural reconstruction and, more dubiously, racial determinism, eugenics and feudalism (Reed 2001; Reed and Holt 2006). The point here is not to debunk organic food and agriculture by suggesting that beneath its wholesome image lies an underbelly of secret agendas and morally repugnant politics. At any rate, the influence of Ghandiism on key figures during the late 1960s saw this questionable mix of eugenics and nationalism replaced with an altogether different ideology based on the ethical treatment of environments, animals and people (Reed 2001). The point is, rather, that what is going on in the contemporary organic industry—and in agriculture more generally—is a good deal more interesting than the story outlined above of consumer panic in the face of food scares and new technologies might imply. Growing even more rapidly, for example, over the last few years than the market for organic foods has been the market for fairly traded foods and crafts (Raynolds 2003). Fair Trade emphasizes the payment of prices to Southern producers sufficient to ensure both a living wage and the use of desirable environmental practices. This emphasis speaks to notions of quality that extend beyond the physical characteristics of a product to include the social and ecological conditions under which it was produced. The Slow Food movement, similarly, has sought to re-establish authentic local food cultures, tradition, freshness and seasonality as primary dimensions of food quality. Originating in Italy in 1986, Slow Food now counts at least 80,000 members in 40 countries (Miele and Murdoch 2002). Given the successes of Fair Trade and Slow Food, it is not much of a stretch to wonder whether the growing popularity of organic foods might relate to more factors than the potential absence of 'scary' residues and genetically modified organisms (GMOs).

The need to tell a more complex story about organic food and agriculture stems not from pedantry, or purely academic interest, but from the need to use the experiences of the organic sector to transform more radically the ways in which we produce, distribute and consume food on a global scale. Despite the rapid growth experienced by the organic sector in recent years, it remains dwarfed by so-called conventional food and agriculture. Failure to examine critically the basis of organic sector growth leaves us exposed to a number of undesirable futures. First, it leaves the organic industry itself vulnerable to a future in which growth plateaus before the market for organic food expands beyond its existing niche status. Second, we risk, as a consequence of this, a future in which organic food is available only to a privileged minority. Meanwhile, the majority of consumers, farmers, and farm workers, will be forced to accept a future characterized by the presence of GMOs, agri-chemicals and hormones in their food and workplaces whether they like it or not. Third, we risk a future in which the opportunity is lost to disseminate the biological farming techniques practiced

by organic farmers more widely—that is, the opportunity to establish something very like organic agriculture as the norm for food production rather than as the exception. As a flip side to this, sharp lines of demarcation between organic and non-organic agriculture generate an associated risk that the organic farm sector will fail to capitalize on practices and marketing channels generated outside their own networks of innovation. Fourth, and perhaps most importantly, we risk a future in which choice over what foods farmers grow, where they grow them, how, and who gets to eat them, is controlled by a small group of profit-centred corporations. Democracy is not just an attractive political ideal. Access to resources and meaningful participation in decision-making are issues of social justice—ones fundamental to food security and community health and well-being. If the organic industry is to promote these values it must do more than offer an alternative approach to food production and consider how certification requirements, research, knowledge dissemination, market development, and so on, can each contribute to widening the production and livelihood options for everyone in the organic food chain.

Putting the organic sector under the microscope will not be sufficient, by itself, to usher in a new age of democratic and environmentally-friendly food production and distribution. In order to take some tentative steps in this direction, we take as our central problematic in this book the process of *mobilization*. We are concerned, in other words, with who is involved in organic food and agriculture, why, and how further involvement might be encouraged.

What is organic food and agriculture?

For most people, organics is understood as food or fibre grown without the use of artificial fertilizers, chemicals, growth hormones or GMOs. This provides a *minimalist* definition in which organic food and agriculture are defined only in terms of what they are not. Organic movement organizations and activists tend also, however, to suggest more *holistic* definitions of organic food and fibre as produce grown using practices that enhance soil health, biodiversity, and natural ecological processes of nutrient and energy recycling; that allow animals to act out natural patterns of behaviour; and which reduce the impacts of farming on the wider landscape. In practical terms, this means utilizing management practices and farm-derived renewable resources as much as possible in place of all off-farm inputs—natural and synthetic. Green manure crops, for example, reduce the need for fertilizer applications by capturing atmospheric nitrogen, drawing other nutrients from deep within the soil profile, and concentrating these near the soil surface where they become available to other plants. Similarly, inter-cropping, flowering plants, and wildlife refuges, attract insect predators to keep pest species in check, while grazing practices that mimic the natural movements of migrating herbivores reduce the incidence of weedy plant species. When nutrients are

brought onto the farm, they are brought in the form of natural materials such as composted manures and plant residues, worm castings, and so on.

According to some commentators, the differences between minimalist and holistic definitions of organic food and agriculture are philosophical as well as practical (Guthman 2004a, 2004b). There are a number of producers and other businesses that have been attracted to the organic industry in recent years, critics argue, for whom organics is little more than a lucrative market segment accessed through the avoidance of certain proscribed substances. On the other hand, adherents to a more holistic understanding of organics, it is argued, subscribe not only to the avoidance of proscribed practices but to a wider set of beliefs about the need to farm in harmony with nature, foster a sense of community through food, and otherwise challenge the supposition that food is little more than a commodity to be sold at a profit. While we will return to this theme throughout the book (see Chapters 2 and 5 in particular), we will say at this point that this simple demarcation between minimalist and holistic philosophies of organics should not be taken at face value. There is considerable variation of opinion within the organic movement over how best to implement a holistic understanding of organics and an abiding temptation, therefore, for movement members to dismiss alternative perspectives as superficial and/or misguided. In the absence of consensus over what a holistic approach to organics might entail, corporate participants and other relative newcomers to the organic sector are easy targets for suspicion and criticism. Yet, is there sufficient evidence to support a cynical attitude towards these groups?

Increasingly, the most critical factor in the definition of particular foods and fibres as organic is the official *certification* by an independent third party of the farm from which they have originated and of the processing and distribution nodes through which they have passed. A number of commentators have argued that the emphasis of certification processes on compliance with minimum standards necessarily promotes the minimalist notion of organics at the expense of a more holistic one (Guthman 2004b). However, there can be little doubt that third party certification has been critical to rapid expansion of the organic sector and that sale of non-certified produce as organic—especially on the international market—is increasingly difficult. Generating trust among consumers, it would seem, does require communicating the providence of food and the ecological values of production and processing sectors of the agri-food industry. For these reasons, we will devote the vast bulk of our analysis in this book to the analysis of certified organic foods. However, not wanting to take anything here for granted, the politics and implications of certification will be discussed in more detail in Chapter 4.

Box 1.1. Official definitions of organic agriculture

International definitions and standards

While there is no international regulation of the organic industry, the International Federation of Organic Agriculture Movements (IFOAM) maintains a set of 'basic standards' with which member organizations are expected to comply. IFOAM also has established a Code of Conduct for Organic Trade that stresses issues related to social justice and relationships with the Fair Trade movement. According to IFOAM (www.ifoam.org):

> Organic agriculture is an agricultural production system that promotes environmentally, socially and economically sound production of food and fibres, and excludes the use of synthetically compounded fertilizers, pesticides, growth regulators, livestock feed additives and genetically modified organisms.
>
> Utilizing both traditional and scientific knowledge, organic agricultural systems rely on practices that promote and enhance biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain or enhance ecological harmony.
>
> The purpose of organic agriculture is to optimize the health and productivity of interdependent communities of soil life, plants, animals and people. Organic agriculture adheres to globally accepted principles which are implemented in specific social, economic, geo-climatic and cultural contexts.
>
> The principle aims of organic production and processing are outlined in the IFOAM Basic Standards. These set out an international framework for organic production and processing.

United States of America

After some controversy over the proposed inclusion of GMOs, untreated sewage sludge and irradiation techniques, the United States Department of Agriculture (USDA) introduced a uniform national standard in 2001 that precluded these inputs and practices. Regulations cover production and handling, labelling, certification processes, accreditation of certification bodies and imported produce. According to the USDA (www.ams.usda.gov/nop):

> Organic food is produced by farmers who emphasize the use of renewable resources and the conservation of soil and water to enhance environmental quality for future generations. Organic meat, poultry, eggs, and dairy products come from animals that are given no antibiotics or growth hormones. Organic food is produced without using most conventional pesticides; fertilizers made with synthetic ingredients or sewage sludge; bioengineering; or ionizing

radiation. Before a product can be labelled 'organic', a Government-approved certifier inspects the farm where the food is grown to make sure the farmer is following all the rules necessary to meet USDA organic standards. Companies that handle or process organic food before it gets to your local supermarket or restaurant must be certified, too.

Europe

The European Union also legally defines use of the term 'organic' and establishes minimum standards for organic production that individual countries must translate into their own law. In the United Kingdom, the Department of Food and Rural Affairs licences certification bodies such as the Soil Association to develop these standards further and thence to audit and certify growers, distributors etc. The Soil Association stresses, however, that there is more to organics than certification and is active in lobbying and consumer awareness:

> organic systems recognize that our health is directly connected to the health of the food we eat and, ultimately, the health of the soil … Going organic isn't just about organic food—it's a way of life.

Australia

Unlike Europe and the US, Australia has no uniform national definition of organic food or standards for its production, processing and distribution with the exception of a standard for exports administered by the Australian Quarantine Inspection Service (AQIS). Independent certification bodies such as Biological Farmers of Australia (BFA) and the National Association for Sustainable Agriculture Australia (NASAA) maintain standards that are, in most cases, consistent with AQIS and IFOAM minimums. Thus, BFA states that (see www.bfa.com.au):

> Certified Organic products are grown and processed without the use of synthetic chemicals, fertilizers, or GMOs. It is an innovative method of farming and production— and is increasingly being recognized as being on the leading edge of food and fibre technology into the future.
>
> Organics is not just chemical free by testing. It is about the way your food is grown and handled. The whole system is linked— Soil. Plants. Animals. Food. People. Environment.
>
> Standards to achieve this are internationally recognized, and are assured through annual audits of all certified operators by an independent third party auditor.

Box 1.2. Variations on a theme: alternative approaches to 'organic' agriculture

It is not unusual for those unfamiliar with the organic sector—or with sustainable agriculture in general—to become confused at the plethora of terms that sometimes seem to be saying pretty much the same thing. To limit confusion, we define here some of the main variations on the organic theme.

Biodynamic Agriculture originates in a series of lectures given by the Austrian philosopher Rudolf Steiner in 1924. Biodynamics promotes an understanding of the farm as a living system and aims to renew the soil in order to produce nourishing and energizing foods. While, in doing so, biodynamic farmers use practices consistent with organic definitions and standards, a number of these practices, and the philosophies behind them, are unique. Biodynamics stresses the integration of science, spirituality and farming through observation of the multiple influences on soil, plant and animal life—influences that include the rhythms of the sun, moon, planets and stars. In practical terms, this means that in addition to those practices widely used by organic farmers, biodynamic farmers: first, consider the timing of major activities such as cultivation and planting in relation to the Luna calendar; and second, utilize a variety of preparations derived from natural sources (including animal manures, plants and minerals), and at very low concentrations, to stimulate soil and plant life. Farmers may be certified as biodynamic growers through specialist organizations such as Demeter or the Biodynamic Farmers and Gardeners Association, and/or as organic growers through organic certification organizations (Wildfeuer 1995).

Permaculture, a contraction of the phrase 'permanent agriculture', was a term coined in Australia in the mid 1970s by ecologist David Holmgren. Permacultural practices and its underlying philosophy were to be later promoted in Australia and worldwide by Holmgren's associate, Bill Mollison. Permaculture is an approach to the design of human environments that aims to promote environmental, social and economic sustainability. While this is consistent with organic and biodynamic agriculture, the focus is shifted from farming practices to the application of design ethics and principles that are relevant to any sphere of human activity such as transport, urban planning, forestry etc. Permaculture ethics are based on cooperation, caring for the earth, caring for people and distributing surplus. Design principles include: energy efficiency, biological diversity, treating pests and waste as resources, utilizing each system component to perform multiple functions, using biological processes to create favourable ecosystems, and so on. Permaculture has demonstrated wide appeal among those pursuing self-sufficiency lifestyles and has been applied most to small-scale systems. However, the design methods, ethics and principles are applicable at any scale and entirely compatible with many other planning systems developed for largeholder agriculture.

Agro-ecology refers variously to the full and complex variety of social-ecological processes implicated in agricultural production; an academic field concerned with research into those relationships; and an approach to agricultural sustainability based on conserving the natural resource base, reducing reliance on external inputs, and managing pests and diseases through natural ecological processes.

Low Input Sustainable Agriculture (LISA) was initiated by the United States Department of Agriculture in 1985 as a research program to support farmers who wished to use synthetic fertilizers and chemicals at rates below those generally recommended by advisory services. While not focused on the elimination of synthetic inputs, the program encouraged the development of lower input options for otherwise conventional farmers. In 1990, LISA was re-named the Sustainable Agriculture Research and Education Program.

How big? How fast?

It is not uncommon for growth rates in the market for certified organic food to be estimated at 20 to 40 per cent (Sahota 2004). However, calculating rates of growth, or decline, in the organic sector accurately at an international level is hampered by limited data availability and uniformity. Some statistics on sales and land area include produce and farms that are certified as 'in conversion' rather than as fully organic—others do not. More recent statistics on acreage tend to include farms that simply were missed in earlier rounds of data collection. Consequently, data on changes in the retail value of certified organic foods appear to be more reliable.

It is estimated that in 2003 more than 24 million hectares worldwide were managed for organic production and a further 10.7 million were used for wild harvesting of plants that were subsequently certified as organic (Yussefi 2004). Organic land area was dominated by Australia, which accounted for over 10 million hectares of certified organic land (see Table 1.1). Latin America accounted for 5.8 million hectares under certified organic management; Europe 5.5 million hectares; North America 1.5 million hectares; Asia 880,000 hectares; and Africa 320,000 hectares. Australia's leading position as the nation with the greatest area of organic production and large average farm sizes is explained by organic grazing activities. The semi-arid landscapes that dominate inland Australia offer few opportunities for cropping and horticulture but are well suited to organic livestock production with few fly and tick problems. This is also the case for Argentina and Uruguay. Indeed, less than half the land certified for organic production internationally was deemed suitable for cropping. In comparison, an estimated 68 million hectares were sown to genetically modified (GM) crops—primarily in North America where the land area under organic management was comparatively low. This represented a 40-fold increase over the area planted to GM crops internationally in 1996 and some 25 per cent of the total

cropped area (Pew Initiative on Food and Biotechnology 2004). While organic farming is practiced on a significant minority of the world's agricultural lands, it needs to be recognized that forms of agriculture fundamentally inconsistent with organic production standards are staking their own claim to the transformation of food and agriculture.

In 2002, it was estimated that the global retail market for organic food and drink was worth approximately US$23 billion (Sahota 2004). Of this, North America accounted for US$11.75 billion, Europe US$10.5 billion, Japan US$350 million and Oceania US$200 million. The Latin American share of the global organic retail market was a mere US$100 million. The rest of Asia and the whole of Africa accounted for less than US$200 million. Despite the presence of substantial organic production sectors (5.8 million hectares in Latin America, 320,000 hectares in Africa and 875,000 hectares in Asia excluding Japan), the vast bulk of produce from these regions is exported to wealthier consumers in the West (see Yussefi 2004).

Is organics the only path to sustainability?

Based on a 22 year comparison of organic cropping systems with conventional minimum tillage cropping systems (see Box 1.3) at the Roedale Institute in Pennsylvania, Pimentel *et al.* (2005) conclude that organic systems deliver consistent environmental benefits including reduced chemical and energy use, reduced soil erosion, water conservation and improved soil organic matter and biodiversity. The yield and profitability of organic systems relative to conventional systems are more variable—depending on the particular crops, regions and technologies that are employed. However, Pimental *et al.* found many instances in which organic systems either matched, or exceeded, the productive and economic performance of conventional systems. The length and rigour of this trial make a compelling case for continuing research and application of organic farming practices.

Nevertheless, the answer to the above question remains 'no'. Other approaches to farming that are not certified organic have legitimate claims to the delivery of environmental and social benefits. Furthermore, not all organic operations are necessarily sustainable. It is possible, for example, for organic producers to avoid the use of synthetic chemicals but do little to ensure that soil nutrients are replaced over the growing cycle. In other words, if nutrient cycles are not closely monitored organics can 'mine' the soil as might conventional farming practices. The Roedale trials analysed by Pimentel *et al.* were based on application of the best available management practice for each plot—organic and conventional—something that cannot always be assumed among the wider farming community.

Table 1.1. Estimated land area under organic certification—selected countries (adapted from Yussefi 2004)

Country	Organic land area (ha)	Percentage of total agricultural area (%)	Number of farms	Average farm size (ha)
Australia	10,000,000	2.2	1,380	7,246
Argentina	2,960,000	1.7	1,779	1,664
Italy	1,168,212	8.0	49,489	24
United States	950,000	0.2	6,949	137
Brazil	841,769	0.2	19,003	44
Uruguay	760,000	4.0	500	1,520
United Kingdom	724,523	4.2	4,057	179
Germany	696,978	4.1	15,628	45
Spain	665,055	2.3	17,751	37
France	509,000	1.7	11,177	46
Canada	478,700	1.3	3,510	136
Bolivia	364,100	1.0	6,500	56
China	301,295	0.1	2,910	104
Austria	297,000	11.6	18,576	16
Czech Republic	235,136	5.1	654	360
Mexico	215,843	0.2	53,577	4
Sweden	187,000	6.1	3,530	53
Denmark	178,360	6.7	3,714	48
Finland	156,692	7.0	5,071	31
Peru	130,246	0.4	23,057	6
Uganda	122,000	1.4	33,900	4
Switzerland	107,000	10.0	6,466	17
Hungary	103,672	1.7	1,116	93
Paraguay	91,414	0.4	2,827	32
Portugal	85,912	2.2	1,059	81
Ecuador	60,000	0.7	2,500	24
Turkey	57,001	0.1	18,385	3
Tanzania	55,867	0.1	26,986	2
Poland	53,515	0.4	1,977	27
Slovakia	49,999	2.2	84	595
Aotearoa/New Zealand	46,000	0.3	800	58
South Africa	45,000	0.1	250	180
Netherlands	42,610	2.2	1,560	27
Indonesia	40,000	0.1	45,000	<1
Romania	40,000	0.3	1,200	33
India	37,050	<0.1	5,147	7
Kazakhstan	36,882	na	1	36,882
Colombia	33,000	0.2	4,500	7

Norway	32,546	3.1	2,303	14
Estonia	30,552	3.0	583	52
Costa Rica	13,967	3.1	3,987	4
Japan	5,083	0.1	na	na
Liechtenstein	984	26.4	41	24

Things get even more complicated when we start looking beyond the field or farm scale to consider the ecological and social processes in which farms are enmeshed at regional, national and global scales. And they get more complicated still when we consider the multiple ways in which a concept like sustainability might be interpreted. While the definition of sustainability as meeting the needs of the present without compromizing the ability of future generations to meet their own needs is widely accepted (WCED 1987), much ink has been spilt trying to work out what, in practice, this might mean. Pretty (1998) suggests that the shorter term goal of sustainability is not to design a steady-state environmental utopia. Rather, it is to identify and enhance those components of agro-ecologies that help these systems to regenerate themselves in the face of disturbance. Such components range from natural resources such as soil biota through to social resources such as knowledge, vibrant local economies, and so forth. We do not wish to get bogged down here either in trying to define the concept of sustainability too tightly or reviewing alternative approaches to it too comprehensively. However, we do think it important to highlight the major approaches to agricultural sustainability and some of the issues these raise for the organic sector. It is possible to discern, we would argue, four broad models, or approaches to sustainability, into which the majority of sustainable agriculture programs and practices may be grouped. These may be described as the input-output model, the natural systems model, the bioregional model (or bioregionalism), and the eco-social model.

- *Input-output model:* this model conceives sustainability in terms of efficiency (Waltner-Toews and Lang 2000; see also Pretty 1998). Agricultural chemicals, fertilizers and biotechnologies ensure optimum conditions for plant and animal growth by controlling pests and ensuring nutrient needs are met. Environmental damage is minimized by controlling the loss of nutrients, chemicals and soil from the farm. Relatively unexamined, if at all, are the environmental and social costs of producing, transporting and using petrochemically derived fertilizers and chemicals. This is the most pervasive approach to sustainability within contemporary food networks.
- *Natural systems model:* this model construes sustainability in terms of the ability of farming systems to provide for their own needs and to recover from environmental perturbations such as pest infestations. Farming systems are designed in ways that mimic the productive processes and inherent checks and balances of nature. Farming in this manner is management intensive rather than input intensive.

- *Bioregionalism* seeks to integrate individual enterprises at a regional level in a manner that preserves the integrity of existing ecosystems and landscapes. Watersheds, or catchments, often serve as the unit for bioregional planning, management, and institutional reform, due to the role of water in linking physical and ecological processes throughout landscapes.
- *Eco-social model:* this focuses on the organization of social relationships to meet diverse human and ecological needs. Social and economic considerations extend beyond farm viability to include issues such as the vibrancy of rural economies, the needs of food consumers, and so on. Emphasis is placed, again, on the ability of systems to provide for their own needs and adapt to changes in the wider environment, but at a wider scale than the natural systems model and with an overt concern to integrate the social and the natural.

In practice, these models are not always mutually exclusive. Many individual farms that utilize the input-output model at the field level may use tools at a whole farm level that are more redolent of natural systems thinking. Input intensive practices, for example, such as conventional cropping regimes may be implemented with consideration of factors such as where they might be located so as to avoid environmentally sensitive or important landscape components (e.g., streambanks) and to capitalize on the ecosystem services generated by others (e.g., windbreaks). Planning at a bioregional level, similarly, may accommodate both input-output and natural systems approaches by encouraging active management of the off-site impacts of farming activities.

Box 1.3 summarizes a range of programs and practices that provide examples of these four models. Reviewing these supports several broad conclusions: (1) certifying farms as organic is not sufficient to ensure they adopt holistic understandings of organics or sustainability as reflected in the natural systems model; (2) neither is certifying individual farms as organic sufficient to guarantee sound environmental management at the community and landscape scales highlighted by the eco-social and bioregional models; (3) there are many attempts to develop more sustainable food systems outside the certified organic sector that have a great deal of merit; and (4) there is sufficient variability within both organic and conventional sectors to make treating questions of sustainability as a straightforward choice between organic and non-organic agriculture a nonsense.

Is organic food better for you?

Again, the answer is more complex than a simple 'yes' or 'no'. Debate about the non-environmental attributes of organic food usually focus on health; particularly on whether organic foods contain: first, less chemical residues; and second more vitamins and minerals, than do conventional foods. Unfortunately, these questions cannot be answered simply by walking into a store, selecting outwardly similar

organic and conventional products, sending them to the laboratory and waiting for the results. The problem here is one of sampling. Food quality is affected by numerous pre- and post-harvest factors—ranging from seasonal conditions to storage times and processing methods—that can lead to considerable variation among both organic and conventional foods. To put it crudely, a certified organic vegetable that has turned limp sitting too long on the supermarket shelf is unlikely to be more nutritious than a freshly picked alternative whether the latter is organic or not. Small studies based on limited samples are unlikely, therefore, to produce reliable results.

In a review published by the Soil Association of 400 scientific papers and reports, Heaton (2001) concludes that despite a great deal of contradictory evidence, on balance it appears that organic foods contain less harmful additives and more primary and secondary nutrients than conventional foods, and carry no additional risk of food poisoning. In fact, several studies of mycotoxin contamination in organic and conventional foods suggest that, contrary to popular wisdom, conventional foods are more likely to be contaminated with potentially dangerous fungi than are organic foods (Benbrook 2005). Focusing on particularly vulnerable groups, the US National Academy of Sciences concluded in 1993 that pregnant women, infants and children face potentially significant developmental and endocrine-system risks from even low-level pesticide exposures—such as those resulting from chemical residues in food—during important stages of development (Benbrook 2004). Occupational exposure to pesticides, meanwhile, has been associated with a significantly increased chance of developing prostrate cancer (Alavanja *et al.* 2003), suffering Parkinson's disease (Semchuk *et al.* 1992) and parenting children with birth defects (Garry *et al.* 1996). This is a brief and selective overview of available studies. Nevertheless, there is limited, if any, scientific evidence that eating certified organic foods is likely to cause harm, and rather more to suggest it may be beneficial.

Importantly, nutrition is not always a function of the vitamins, minerals and additives that may, or may not, be found in particular foods. It is a function also of access to foods and the resources either to grow or purchase them. Although it is often assumed that the retail price premiums Western consumers pay for certified organic foods limit their consumption to the comparatively well off (see Chapter 7 for a critical appraisal of this assumption), adopting organic production practices has helped many poorer communities escape the treadmill of indebtedness and food insecurity often associated with conventional cash crop production (Halweil 2004; Parrott and Marsden 2002). Again, the improvement of farm incomes and the revitalization of local economies is not an inevitable outcome of the adoption of organic production practices but, when allied with one or more of the eco-social initiatives outlined in Box 1.3, the potential for significant community-level benefits is enhanced.

Approach to the book

As stated above, we take as our central problematic in this book the process of mobilization. Who is involved in organic food and agriculture networks? Why? And what opportunities exist to encourage greater participation? As basic as these questions might seem, the answers to them do not always accord with widely held views either within or outside the industry. Their answers also are of wider relevance, we would argue, to the promotion of more sustainable food networks irrespective of whether these are certified organic or not. Indeed, rather than treating the expansion of certified organic food networks as an end in itself we regard the processes and symbolism of certification as just one of the many factors that must be considered in explaining the mobilization of people, plants, animals, technologies and so on around the idea of 'organics'.

The focus on mobilization has led us to organize this book loosely around the concept of a commodity chain. Not only does the notion of a commodity chain highlight the multitude of actors involved in the production, distribution and retailing of food, it highlights also the relationships between those actors and the role of food as a medium of power among them. However, the book is not organized entirely around this concept, for there remain a number of critical domains of social interaction at one or more steps removed from the production and exchange of organic foods that are drawn into their networks nevertheless. These include governance and the mass media. In seeking to treat the organic sector relatively comprehensively in this manner we highlight what is potentially the major limitation of this book; namely, that it is not more comprehensive. Not all links in the organic commodity chain, or network, are dealt with in the same detail. And while the book addresses issues of global importance, the data are predominantly Australian. We deal with these limits by including comparative international data wherever possible and by drawing out the lessons that have been learnt from our research about mobilization, how the mobilization of particular actors has shaped the organic sector, and how further mobilization might be encouraged. At face value, these lessons will appear much more relevant to those parts of the world that share a highly industrialized and capital intensive agricultural sector. However, exports of the major share of certified organic foods grown in poorer southern countries to wealthier markets in the north are suggestive of a wider relevance.

Taking up this theme, Chapter 2 considers the current position of organic food within international networks of food production, trade and consumption characterized by widescale concentration, industrialization and globalization. Through critical review of these processes the chapter both sets out the basic concepts that will guide analysis throughout the book and the research questions they suggest. Among these are the concepts of 'conventionalization' and 'bifurcation', which have been defined as processes through which the organic sector becomes increasingly polarized between large-scale industrial producers

who differ little from their conventional counterparts and a small residual of artisanal producers who, while remaining truer to the ideals of organics, become less and less significant as suppliers of organic food.

Chapter 3 deals with media politics and the ways in which organic food and agriculture have captured media agendas in relation to food safety and environmental care. The chapter deals also with strategies used by critics to debunk organic foods and shape media discourses in a manner that is more favourable to conventional agriculture and the new biotechnologies. But, despite this, the chapter finds that organic foods are overwhelmingly constructed through the mass media as *the* 'natural' alternative to 'risky' industrialized foods.

The manner in which organic food and agriculture is governed and regulated is dealt with in Chapter 4. This chapter examines the reliance of the organic sector on both private and public regulation and the criticism this has generated that regulation has promoted the industry's conventionalization, as well as undermined other ways of establishing trust, and so on. It also examines the role the organic industry has played as a pioneer in the development of independent quality certification processes that increasingly are represented in a host of alternative quality assurance programs. It also examines the increasing influence of large food retailers in the regulatory process and the increasing promotion, through organic agriculture, of a range of other social and environmental policy goals.

The movement of organic food along some sort of commodity chain becomes more evident in Chapter 5, which deals with the production of organic foods. It considers who is growing organic foods, why, and whether this is leading either to the conventionalization of the organic industry or a bifurcation between smaller and larger growers. The chapter addresses these questions through consideration of changes in both the economic scale and ideological basis for organic farming. With large numbers of farmers still entering the organic industry, the chapter looks also at the process of conversion and its risks and benefits.

Chapter 6 focuses on the spheres of distribution, trade and retailing. Challenging the popular belief that 'consumer demand' is driving growth in the organic sector, there can be little doubt that the positioning of major food processors and retail chains as responsible corporate citizens through the promotion of organic products has also played a significant role. This chapter will investigate where organic food is sold and what price premiums it attracts. It examines the ways in which retailers and others have attempted to use organic and other quality-certified products to represent themselves as champions of consumer demands and interests while limiting exposure to liability for food-borne risk. But the interest of major retail chains and processors is not the only dynamic in the organic market. The chapter thus looks also at direct marketing methods which also are growing in popularity.

Box 1.3. Multiple approaches to agricultural sustainability

Input-output models

Conservation Farming (also known as reduced tillage, minimum tillage and no-till farming) replaces mechanical cultivation with chemical-based weed control. This helps to minimize soil erosion while enhancing soil organic matter content, soil structure, and soil water and nutrient holding capacity.

Precision Farming (also known as prescription farming, site-specific management) uses GPS (global positioning systems), remote sensing, and other technologies to apply chemicals and fertilizers at variable rates across fields according to need. This reduces overall rates of input use and wastage by applying only what is needed where it is needed (Pretty 1998).

Controlled Traffic Farming restricts the use of machinery to specified tracks within a field, thus limiting soil compaction and promoting water infiltration and soil conservation.

Genetic Engineering uses recombinant-DNA technology to transfer specified pieces of DNA from one organism to another. Proponents argue this offers untold opportunity to develop crops and animals with enhanced productive, nutritional and environmental performance. To date, most applications have concentrated on herbicide tolerance (Norton 2001).

Natural systems models

Organic Farming is farming in a manner that eschews the use of synthetic inputs and which relies instead on practices that enhance natural ecological processes of nutrient and energy recycling and which promote animal welfare.

Integrated Pest Management (also known as Integrated Production) replaces sole reliance on chemical pest control with use of multiple methods directed through understanding of pest life cycles and population monitoring. Methods include encouragement of predator species, mechanical control, and chemical application. Compliance with IPM principles has become mandatory for farmers wishing to access farm support in a number of EU countries.

Whole Farm Planning, also termed Property Management Planning (PMP), is the integrated management of ecological, human and capital resources at a whole farm scale. Typically PMP involves a process of mapping out the physical resources, attributes and layout of the farm as a basis for re-assessing existing practices and managing them according to land use capability and production and financial goals.

Bioregional models

Integrated Catchment Management (also known as Integrated Watershed Management) integrates natural resource planning and management activities at a catchment/watershed scale. Components may include water resources, soil conservation, forestry, flood mitigation, urban planning, and so on.

Landcare (or the Australian Landcare Program) is a network of state-sponsored community groups comprised mostly of farmers and other landholders working to address land and water degradation through cooperative local planning, learning and action (Lockie 2001). Elements of Landcare have been emulated in a number of other countries including the Philippines and South Africa.

Eco-social models

Community Supported Agriculture is a means for farmers to market direct to consumers who subscribe to receive a share of farm produce over a pre-specified period (usually one growing season). This supports environmentally-sound production by increasing the share of consumer expenditure flowing directly to farmers, sharing the risks of production between producers and consumers, and educating consumers about the realities of food production. Other means of increasing direct interaction between farmers and consumers include Farmers' Markets and farm-gate sales (Lezberg and Kloppenburg 1996).

Multi-functional Agriculture is a concept increasingly embedded in European rural, agricultural and trade policy which stresses the variety of policy goals—other than maximizing production—to be pursued in relation to agriculture. Other goals include the preservation of viable rural communities, rural cultures, and environments (Hollander 2004).

Slow Food is an international movement originating in Italy that seeks to promote authentic local food cultures based on tradition, fresh seasonal foods, and resistance to the homogenizing pressures of globalization and industrialization (Miele and Murdoch 2002).

Fair Trade is focused primarily on promoting market linkages (through branding and supply chain development) that pay, at minimum, a living wage to largely Southern producers and workers. Many Fair Trade products stress also a range of environmental attributes—such as organic production methods and biodiversity conservation—that payment of fairer prices enables producers to sustain (Raynolds 2003).

Who eats organic food and why? Chapter 7 addresses this question both demographically and ideologically by looking at how personal characteristics, beliefs and motivations interact to influence food consumption. While this will provide evidence that organic food consumption is increasingly mainstream, it also will provide evidence that consumers are confused or ambivalent about many of the claims and counter-claims about organic food and that very specific factors make a substantial difference to the likelihood that people will invest in consuming a major proportion of their diet as organic.

Chapter 8 considers the future for organic food and agriculture in light of the many processes and strategies identified throughout the book. Organics has helped to force change in the way a whole range of non-organic commodities are produced and certified for their quality, safety and environmental attributes. But can the organic industry, as we know it, survive either the plethora of 'green' products and certification systems flooding the market or the large corporate farms, processors and retailers adding organics to their portfolios? The recent history of growth in organic production and consumption provides no guarantee of equally fertile conditions for the organic sector in the future.

The book will conclude by summarizing strategies to mobilize people in support of more sustainable food networks and ongoing challenges for the organic movement.