Urban Agriculture

David Mason walking through his neighbour’s orchard in north-west Sydney

A report of an overseas study trip by DAVID MASON 2006 Churchill Fellow

To identify how sustainable urban agriculture can benefit the quality of life of Australian communities.

“Traditional economics will tell you that as a society develops into a service and knowledge economy, agriculture is the first thing to go. Not so. The most important thing is for traditional agriculture to regenerate as urban agriculture through its integration with the urban. When this happens, the logistics associated with producing food for health and fashion and plants for fashion, which is where the demand exists, also contributes to a knowledge industry.”

\[\text{Dr Peter Smeets, Senior Research Scientist, Rural Development, Alterra, Wageningen UR; Director, Vital Clusters Program, TransForum; The Netherlands - conversation October 2006}\]
INTRODUCTION

My 2006 Churchill Fellowship provided me with the opportunity to travel to Singapore, the Netherlands, England, the United States of America and Canada over eight weeks; meet almost 100 people face to face in formal meetings and site visits; and interact with many more in the two conferences I attended. I made a presentation on Hawkesbury Harvest at one conference in Toronto, Canada and also at a public meeting in Toledo, USA. It was a journey that took over a year to research and organise reflecting the fact urban agriculture is a complex and multifaceted discipline.

This complexity predisposes urban agriculture and the people involved in it to not being well understood. Both are therefore marginalised and very often significantly discounted in terms of their integration into urban and urbanising communities. As a result those people and the communities in which they live and relate to do not experience the sustainable social, economic and environmental benefits local agriculture is capable of contributing to the quality of all life.

In June 2006 I attended and contributed to the inaugural World Planners Congress in Vancouver where urban agriculture was included as a unique agenda category – a world first in a planning context of which I am aware. All credit to Karen Thomas, Jim LeMaistre and Barry Smith (retired) of the Ministry of Agriculture and Lands, British Columbia on that one.

On my return I resolved to put urban agriculture in its many forms (Appendix 1) in some sort of framework. I took a systemic approach as I believe that this is the only way that agriculture can be dealt with in the urban and urbanising situation (Appendix 2). My final Fellowship itinerary was built on that framework. An electronic version of Appendix 2 is available on my blog (see below) → Archives → August 2006 → What is Urban Agriculture? → click on the image.

I would like to thank and acknowledge:

- All the people I met during this journey who gave their time and shared their knowledge and experiences and in some instances their homes with me
- Current and former colleagues with whom I have co-written papers, reports etc. in the past decade or so that has helped to crystallise my thoughts – Tom Grosskopf, David Marsden, Peter Gillespie, Andrew Docking, Rebecca Lines-Kelly, Jane Moxon, Ian Sinclair, Ian Knowd and John Allen
- Professor Richard Bawden and the University of Western Sydney - Hawkesbury Campus, for providing me the means to recognise, and structure my natural systemic thinking/learning capability
- The selection committee and administrative staff of The Winston Churchill Memorial Trust for providing me with this unique opportunity and support
- My employer the NSW Department of Primary Industries in supporting me
- My wife Gail and family for living with my single-mindedness in preparing for and undertaking the journey. This was an opportunity where I was determined to maximise its potential and they recognised, encouraged and supported that. A special mention for my son Curtis who managed my blog www.urbanagricultureworldwide.blogspot.com through which I was able to diarise my experiences. This blog has been accessed 1505 times from many countries as at the date of submission of this report - 20 February 2007.
EXECUTIVE SUMMARY

Highlights

Every one of the scores of people I met across the world was a highlight by virtue of their passion and, in the majority of cases, active championship of urban agriculture, a critical factor to a sustainable future for the discipline and those involved in it.

The major lessons I learned were:

- Agriculture in the urban and urbanising situation is a political issue or is increasingly becoming a political issue in developed countries
- The demonstrated capacity of agriculture to adapt to changing circumstance brought about by urbanisation where the opportunity to do so is provided
- The creativity/entrepreneurialism of people in being able to grow and market local food to meet market demands
- The trend of a consumer-driven food system as distinct from a producer (historic) or a globalised supermarket (current) driven one. The increasing demand trend for local/regional food in urban communities and the role of direct marketing in that trend
- An increasing recognition of sustainable local/urban agriculture’s role and capacity to contribute to urban ecosystems including resource recycling
- An increasing perception there is a positive relationship between sustainable local/urban agriculture and the public health of associated communities.
- Sydney’s own Hawkesbury Harvest is a unique model for sustainable agricultural development in urban and urbanising situations

My conclusion resulting from this Fellowship is the degree to which local agriculture will become a sustainable and integral part of urban development is dependent upon:

- The extent to which it becomes a political issue within urban communities
- The integration of the principles of security of tenure, security of resource, equity, incentives and integrated local/regional management into any mechanisms, or process implemented
- The public good aspects of urban agriculture being identified and substantiated where necessary as a basis for public acceptance of publicly funded programs to optimise the benefits it is able to provide to urban communities
- The opportunities provided for the expression of the adaptability of agriculture and the creativity/entrepreneurialism of people who wish to engage at any point within the local food system
- Relevant education and awareness programs.

How I will disseminate and implement what I have learned:

- Contribute to government policy and strategic planning processes
- Provide advice and where appropriate work with any organisation, group or individual to ensure local/urban agriculture and those associated with it are accorded equity with other urban land uses and forms of human enterprise
- Identify research requirements and seek whatever resources are required to undertake that research and have the results published and disseminated
- Write papers, reports and any other appropriate forms of information
- Facilitate the strategic development and implementation of on-ground programs including awareness and education programs.
PROGRAMME

Following is the list of people and organisations I met with and field sites visited as part of the fellowship study program I undertook in Singapore, the Netherlands, England, USA and Canada from 14th October to 13th December 2006. Those people I met individually are listed as separate dot points. Those I met in a group are recorded within one dot point entry.

SINGAPORE: Saturday 14th – Friday 20th October
Investigating the development and integration of food technologies with urban design and building design; developments in agro-technology parks; rooftop hydroponics including aeroponics; bio-security, and local food production and distribution systems.

- **Dr Belinda Yuen**, Associate Professor, School of Design Environment, National University of Singapore; President, Singapore Institute of Planners
- **Professor Lee Sing Kong**, Dean, Graduate Programmes & Research Office; and **Dr He Jie**, Associate Professor, Natural Sciences & Science Education, National Institute of Education, Nanyang Technological University, Singapore
- **Mr Gregory Chow**, Lecturer, School of Life Sciences & Chemical Technology, Ngee Ann Polytechnic, Singapore
- **Dr Chua Sin-Bin**, CEO and Director General; **Mr Goh Shin Yong**, Assistant Director, Corporate Communications; and **Mr Chin Yew Neng**, Assistant Director, Food Supply & Agritech Infrastructure, of the Agri-food & Veterinary Authority of Singapore
- **Mr Wong Koh Fah**, Director, Koh Fah Technology Farm
- **Mr Teo Khai Seng**, Managing Director, KhaiSeng Trading & Fish Farm Pte Ltd
- **Mr Joe Oh Chee Gee**, Sales and Marketing Executive, Oh Chin Huat Hydroponic Farms Pte Ltd
- **Mr Joseph Phua**, Managing Director, Orchidville Pte Ltd
- **Mrs Ivy Singh-Lim** and **Mr Lim Ho Seng**, Principals, Bollywood Veggie Farm and Poison Ivy Restaurant

THE NETHERLANDS: Saturday 21st – Friday 27th October
Investigating the integration of the different forms of urban agriculture with eco-systems, natural resource management, water and organic resource recycling, natural and built environments/landscapes, and other complementary industries such as tourism.

- **Dr Leo van den Berg**, Assistant Professor, Socio-Spatial Analysis Unit, Landscape Centre, Wageningen UR
- **Mr Wiggers**, member of the Guild Allotment, Wageningen
- Community Supported Agriculture (CSA) site visit, Wageningen
- **Dr Peter Smeets**, Senior Research Scientist, Rural Development, Alterra, Wageningen UR; Director, Vital Clusters Program, TransForum
- **Mr Stef Huijmsan**, Director, Hydro Huijmsan, Huissen including a visit to the company’s greenhouses associated with the 300 hectare Bergerden Agripark
• Dr Pieter Vereijken, Senior Researcher, Multifunctional Land Use and Agriculture, Plant Research International B.V., Agrosystems Research, University of Wageningen
• Dr Ger Vos, Director, Innovation Network, Utrecht
• Dr Antoon van de Ven, Strategic Advisor and Ms Jose Kools, Planner, Westland Municipal Council, Naaldwijk
• Dr Kees Musters, Dr Paul Vos, and Dr Stephen Knogten, Institute of Environmental Sciences, Department of Environmental Biology, University of Leiden
• Mr René van Veenhuizen, Consultant Editor, Support & Liaison Office for demand driven research; and Mr Henk Kieft, Consultant, Urban Agriculture Programme, ETC Foundation, Leusden

ENGLAND: Saturday 28th October – Friday 4th November
Investigating the increasing community based approach to developing a sustainable food system built on relationships between those engaged in all stages of the food cycle including the Slow Food movement; investigating associated city living infrastructure developments.

• Ms Alice Elliot, Policy Food Officer, London Development Agency
• Ms Emma Hockridge, Ms Ida Fabrizio and Mr Matt Castle, Project Officers, Sustain-the alliance for better food and farming, London
• Ms Jenny Usher, organic farmer, Epping, Essex
• Ms Catherine Miller, Development Worker, Federation of City Farms & Community Gardens – met at the Kentish Town City Farm, London
• Clr Graeme Kidd, Mayor of Ludlow, Clr Graeme Perks, President of the Ludlow Chamber of Trade & Commerce and Vice-Chair of the Ludlow Food and Drink Festival Committee; and Mr John Fleming, Chair of Ludlow Slow Food, Ludlow, Shropshire
• Mr Ben Gill, BioRegional Development Group, Beddington Zero Energy Development, BedZED Centre, Wallington, Surrey

USA – North East: Saturday 5th – Saturday 18th November
Investigating Farmers Markets, urban agriculture and agricultural land preservation in New York City, Maryland, Pennsylvania and Delaware including attendance at the American Farmland Trust’s National Conference in Newark, Delaware with >300 delegates.

• Mr Bob Lewis, Chief Marketing Representative, Division of Agricultural Protection and Development Services, Department of Agriculture and Markets, New York State
• Borough Hall Greenmarket Farmers Markets, Brooklyn, New York
• Mr John Zawitoski, Director of Planning and Promotions, Department of Economic Development, Derwood, Maryland
• Ms Deb Bowers, Editor and Publisher, ‘Farmland Preservation Report’, Street, Maryland
• American Farmland Trust National Conference, Newark, Delaware (Saturday 11 November to Wednesday 15 November)
• Mr Jac Smit, MCP, Director, The Urban Agriculture Network, Washington DC
• Mrs Nancy Weissman, Director, Economic Development, Philadelphia Water Department, Pennsylvania
• Mr Alan Hunter, Founder/President, The Urban Earth Project, Philadelphia
• Professor Tom Daniels, School of Design, City and Regional Planning, University of Pennsylvania
• Mr Matt Knepper, Director, Lancaster County Agricultural Preserve Board

CANADA – Ontario: Sunday 19th - Saturday 25th November
Investigating the protection of agricultural lands through legislation, policy and strategy; food security programs; agribusiness research parks and local/regional food systems including alternative marketing systems.

• Mr John Turvey, Land Use Planning Specialist; Ms Donna Mundie, Land Use Policy Specialist; Ms Carol Neumann, Rural Planner; Mr Ken Slingerland, Tender Fruit & Grape Specialist; and Mr Andrew Jamieson, Farm Implements Coordinator, Ontario Ministry of Agriculture, Food and Rural Affairs, Guelph
• Mr Elbert van Donkersgoed, Executive Director, Greater Toronto Area Action Plan; Dr Brady Deaton, Assistant Professor, Agricultural Economics and Business, University of Guelph; Ms Melissa Watkins, Executive Director, Ontario Farmland Trust, University of Guelph
• Mr Art Janse, Drainage Superintendent/Commissioner, Holland Marsh Drainage Scheme, Bradford
• Dr Wayne Thomas, Project Co-ordinator; and Ms Leslie Toy, Assistant, Toronto Food Policy Council, Toronto
• Professor Alan Wildeman, Vice President (Research), University of Guelph
• Participated in the Farm Folk City Folk Annual Conference 2006, Toronto – ‘What Does Local Food Really Mean?’ Approximately 120 delegates. Gave a presentation on Hawkesbury Harvest. Had a particularly interesting conversation with Mr David Cohlmeyer, Principal, Cookstown Greens, Thornton. Mr Cohlmeyer direct markets his produce to restaurants

USA - Ohio and California: Sunday 26th November – Wednesday 6th December
Investigating multi-stakeholder cooperative production, processing and distributions systems for food and flora produce and products

• Professor Neil Reid, Director; Professor Thomas Barden, Director; Mr Joe Perlaky, Project Manager; and Ms Paula Ross, Research Associate, Urban Affairs Centre, University of Toledo, Ohio
• Mr Richard and Mrs Mary Bostdorff and family, Greenhouse Acres Ltd, Bowling Green, Wood County, Ohio – member of the Maumee Valley Growers Association
• Dr. Michael Carroll, Director, Centre for Regional Development, Bowling Green State University, Ohio
• Dr R.V. Sairam, Assistant Director, Plant Science Research Centre, University of Toledo
• Gave a public address on Hawkesbury Harvest at the McMaster Family Centre, Main Library, Toledo – approximately 40 people in attendance including Congresswoman Marcie Kaptur and Lucas County Commissioner Pete Gerken
• **Dr Beth Fausey**, Director, Agribusiness Enhancement Centre, Ohio State University, Bowling Green; **Mr Michael Szuberla**, Coordinator, Toledo GROW, Toledo Botanical Garden; **Ms Rebecca Singer**, Manager, Agricultural Business, Centre for Innovative Food Technology, Edison Industrial Systems Centre, Toledo; **Dr Lucy Long**, Anthropologist, Bowling Green State University; **Ms Kathy Keil**, Farmers Market Association of Toledo;

• Field visit to Bittersweet Farms, Whitehouse, Ohio – met with **Mr Charles Saunders**, Program Director; and **Mr Luke Ryan**, Farm Manager

• San Francisco quality of life observation exercise: - a subjective observation of the relationship between environment; landscape; a ready source of local, fresh food; and certain quality of life indicators.

**CANADA** – Vancouver: Thursday 7th December - Monday 11th December

In June 2006 when I attended the inaugural World Planners Congress in Vancouver I participated in a post-conference forum that included approximately 60 people from every Province of Canada associated with agriculture in urban and urbanising environments. An outcome of that Forum was the formation of an internet network. I met with some of those people (below) to brief them on what I had seen and experienced in my travels and catch up on the latest developments in urban agriculture in Vancouver.

• **Mr Richard Balfour**, Director, New Planning Initiatives, New City Institute, Vancouver, BC; **Mr Gary Hall**, Policy Planner, Agricultural Land Commission, BC; **Mr Roger Cheetham**, Planning Officer, Agricultural Land Commission, BC; **Mr Mark Robbins**, Regional Agrologist, Ministry of Agriculture and Lands, BC; **Mr Jim LeMaistre**, Land Use Planner, Strengthening Farming Program, Ministry of Agriculture and Lands, BC; **Ms Devorah Kahn**, Food Policy Council, City of Vancouver; **Ms Karen Thomas**, Land Use Agrologist, Resource Management Branch, Ministry of Agricultural and Lands, BC; **Ms Carole Christopher**, Food Policy Council, City of Vancouver; **Ms Janine de la Salle**, Food Policy Council, City of Vancouver; **Ms Tara MacDonald**, Executive Director, Farmers Markets Vancouver; **Mr Barry Smith**, Planning Consultant, Vancouver; and **Clr Harold Steves**, City of Richmond BC, and farmer.
MAJOR THEMES

I said in the Introduction that urban agriculture was a complex issue. Therefore the structure of this report is based on the major themes that emerged during the fellowship tour as a result of speaking and listening to the many people I met individually or in meetings, or listened to in the two conferences I attended. Discussions occurred in the context of the understanding that urban agriculture is any form of food and flora production that occurs anywhere in cities, towns and villages including that which occurs on their perimeter. The themes are:

- Local Food
- Direct Marketing
- Innovation and Adaptability of Urban Agriculture
- The Urban Agriculture/Public Health Relationship
- Agricultural Land Preservation

Some forms of urban agriculture – majority of photos courtesy NSW DPI
LOCAL FOOD

Canada: I was travelling on a bus on Vancouver Island at the end of my fellowship tour on my way to Vancouver International airport to fly home. During the trip I overheard a conversation between two middle aged women who were sitting directly behind me. Essentially what they were saying was that they had decided to buy food that they knew was local when they had the opportunity to do so. This was in respect to fresh fruit and vegetables as well as value-added product. The conversation indicated that these two women were the prime food purchasers and preparers in their respective families. They spoke of freshness, food miles and support for local farmers and food processors as the basis for their respective decisions to seek out local food. They indicated the major supermarket chains did not satisfy what they thought was important in the context of their conversation.

 Apart from being the last encounter I had with the issue of local/urban agriculture on my tour I found the unsolicited conversation supported what I had heard at the ‘Farm Folk City Folk’ Annual Local Food Conference in Toronto a few weeks earlier. The focus of the conference was local food. One speaker was Dr Glenys Babcock, Vice President of Ipsos Reid Public Affairs, a survey-based marketing research company with branches in Canada and the United States. The title of Dr Babcock’s presentation was ‘Consumer Trends for Local Food’.

Many of the pertinent points that Dr Babcock made in the Conference are included in an Ipsos Reid public release titled ‘Canadians See Many Benefits of Locally Grown Food’ dated 1st December 2006. This and other public reports can be accessed on www.ipsos-na.com/news/. Details of how the survey was conducted are also available in the report. What particularly interested me, as presented in the talk given by Dr Babcock and backed up in the report, was:

- Local food is a bottom-up social values based trend in food choice rather than one imposed from above such as is the case with bird flu or mad cow disease
• The Canadian trend to local food is on the lower, but upward end on the trend curve slope.
• Canadians believe locally grown food has many benefits over ‘regular’ food.
• Canadians are most likely to say the top benefit is that they help their local economy (27%) and that they support family farmers (22%) when given a list of possible benefits of locally grown fruits and vegetables.
• Others believe the top benefit of locally grown fruits and vegetables is that they taste better (10%), are healthier (6%), cheaper (5%), not genetically modified (5%), or have no chemicals or synthetic pesticides (5%).
• Only one in ten Canadians (11%) say there are no real benefits of locally grown fruits and vegetables.
• According to the majority of Canadians, the many benefits of buying locally grown fruits and vegetables—not just the top benefit—are that they help their local economy (71%), support family farmers (70%), taste better (53%), are cheaper (50%).
• One-quarter of all Canadians have either read, heard or seen "a lot" about locally grown food--the same proportion as those who have read, heard or seen "a lot" about organic food.
• In the six months prior to the survey, 42% of Canadians have been 'regular purchasers' of locally grown food, saying they "always" or "usually" purchased locally grown food when it was available. Another 38% say they "sometimes" chose locally grown food when it’s available, while 20% "rarely or never" did.
• Regular purchasers of locally grown food are disproportionately aged 55 and older (54%), and women (46%).
• Whether they buy locally grown food or not, the majority (56%) of Canadians always (18%) or usually (38%) check to see where their fresh fruit and vegetables have come from when shopping.
• As for the rest of Canadians, 3 in 10 (27%) sometimes check where their fresh produce is from, while one in ten (12%) rarely do, and 5% never check where their fresh produce is from.

Dr Babcock made the point in her talk that the locally grown food movement in Canada is beginning to reap the reward of a consistent and cohesive effort in getting the message out into the public arena. Consistent and cohesive labeling including branding is playing an important role in achieving this. This tends to support my view that too many labels for the same product simply muddies the water for the consumer therefore diminishing the capacity of local food to maximise its market potential.

USA: While I did not come across any similar report in the United States I became aware of a definite community interest in local food and beverage. I visited South Baltimore which is one of the oldest parts of the city. Originally many of those who worked in Baltimore’s many steel mills lived in this suburb. Today it is in a process of renewal as professionals and cashed up young people move in to take advantage of the unique and attractive architecture of the area and its close proximity to Federal Hill which overlooks the city. Federal Hill was the site of military activity when the British came up Chesapeake Bay in 1812.

I visited the local food market and two of the many pubs and restaurants in the area. The development of a strong sense of place and belonging is an essential component
of a sustainable community, and it soon became obvious that local food and beverage, particularly the product of local micro breweries, is playing an important part in achieving that in South Baltimore.

Local food and beverage is a catalyst for development of a ‘sense of place and belonging’ in Federal Hill, South Baltimore Peninsular

Photo – courtesy Federal Hill Main Street

**England:** Ludlow in Shropshire, England illustrated the role the Slow Food Movement has and continues to play in the economic regeneration of a community. Ludlow is a medieval town of 10,000 with thousands in the surrounding rural area.

Twelve years ago Ludlow was in the economic doldrums. Small business was struggling, shops were closing down and there was concern for the future. The Ludlow Chamber of Trade & Commerce took the initiative and decided to have a Food & Drink Festival. It was a great success and today it attracts more than 20,000 people from all over the UK and the world for three days each September. It has been a catalyst for the revival of a vibrant local and regional economy where food and beverage plays a significant part. One thing it has done is make a very strong contribution to the identity of the town and region as a centre of local and regional food. The constituents are very proud of that identity.

“Local” is used eight times in the shop front advertising by D.W. Wall & Sons - Ludlow
The evolvement of the benefits provided by the Food & Drink Festival continued with the setting up of a local Slow Food Convivium in 2002. This convivium covers the shires of Shropshire, Hereford and Worchester in England and Powys in Wales.

The Slow Food movement began in 1986 when Carlo Petrini, an Italian journalist visited Rome and saw a new branch of McDonalds at the foot of the Spanish Steps. He saw this as a global takeover of traditional regional Italian food by industrialised, standardised food. He established the Slow Food movement. The following words are from the Slow Food Manifesto 1989: "Our defence should start at the table with Slow Food. Let us rediscover the flavours and savours of regional cooking and banish the degrading effects of Fast Food." Local food is a vital ingredient.

**The Netherlands:** In Wageningen I visited two models of local food. Both provided excellent expression of the food security concept at the grass-roots level. The first was the 100 member The Guild allotment garden. In other parts of the world this type of garden is known as a community garden. I spoke to one of its members, Mr Wiggers. His allotment was 50 meters x 8.5 meters. The Guild owns approx 6 hectares which it purchased 35 years ago from a traditional farming family that grew potatoes and maize. Mr Wiggers harvests his crop at the end of October and stores it in his freezer at home. He has enough vegetable and herbs to feed his family until the next May.

![Mr Wiggers in his allotment garden](image)

The second was a community supported agriculture (CSA) farm. This three hectare farm has approximately 200 members who tend and harvest the crops which are planted by the person who leases the land. The members pay the lessee an amount of money each year to plant the crop and oversight its care and development. They in turn receive a guaranteed quantity and variety of fresh food. CSA is very family oriented which provides a sound basis for educating children on the benefits of the relationship between healthy soil, healthy food, a healthy environment and their own health – a strong basis for future sustainable communities.
DIRECT MARKETING

Local food and direct marketing go hand in hand. The greater majority of local food is produced by small growers on small areas associated with cities, towns and villages. Direct marketing is a local/regional response to globalism as well as the increasing evidence that small area agriculture is in the main incompatible with the purchasing mechanisms of major supermarkets. The exception to this is the intensive high-tech production with crops such as mushrooms.

A recent study by the South Australian Department of Primary Industries suggests the agriculture associated with urban areas accounts for up to 25% of Australia’s total agricultural production i.e. $7 billion of $28 billion. The United States Department of Agriculture estimates that agriculture associated with metropolitan areas accounts for as much as 40% of the county’s total production. While the exact figure is not known it is reasonable to say that there is a lot of local production not catered for by the supermarket system. This combined with the fact that consumers are becoming more discerning of how and where the food they eat is produced, and what constitutes “freshness” is creating its own direct marketing dynamic in which niche marketing is a significant factor.

Direct marketing mechanisms offer people the opportunity to utilise their urban fringe lands to produce food to meet an increasing demand. This has many social, environmental as well as economic benefits. However it really is a chicken and egg scenario – what comes first – the market mechanism or the production. People will not produce, or if they do so but cannot sell what they produce at a reasonable price, they will not continue to produce. People become tired of looking after areas of land that provide them with no rewardable purpose and when market forces are favourable the ultimate destiny of the land is subdivision. This is certainly the situation in Australia. Other countries have their own ways of preserving farm land which will be dealt with later in the report.

Many argue this traditional end point of subdivision is not in the best interest of communities, the environment and future generations in the world we live in today. The question then becomes whose responsibility is it to facilitate the development of marketing mechanisms to cater for small area food, flora, fibre and beverage production and value-adding, and to encourage people to utilise their land to meet the demand. Some argue there is insufficient demand. Others say there is insufficient supply to meet the demand which is the case in the organic industry in England.

England: My blog entry for Monday 30th October records I met with Ms Jenny Usher on her organic farm at Epping, just outside of London, which she has farmed for 25 years in which time she has direct marketed hers and other growers’ produce. Ms Usher is a member of the Board of the Soil Association UK and is also a member of the Horticulture Standards Committee of that organisation. Some details of the Association are as follows:

- The basic objective of the Association is to make food and farming more sustainable

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• It has two arms – one as a charity and the other generates income from the
  organic certification of farms
• It provides technical and marketing advice to its members
• It is responsible for 70% of the organic certification in the UK and it has the
  highest standards. Standards are set by the European Union as well as the Soil
  Association
• The Association receives funding from the Government for each certification. Those
  being certified also pay a fee to the Association. Profits from the
  business arm are channelled to the charity arm
• There are approximately 60 privately owned Association demonstration farms
  in the UK.

The organic movement in the UK gained momentum at the beginning of the 1990s. Since then it has grown exponentially. Ms Usher said that it is expected that the demand would allow it to grow by 30% during 2007. There will not be enough produce to meet that demand. One of the government programs, ‘Food for Life’, targeted at children in their schools has a requirement that the food provided through the school canteens is 30% organic, 50% local and 70% unprocessed. There are also programs in place to train the food handlers in the canteens.

There is more land in transition from conventional farming to organic farming in the UK at the moment than ever before. Ms Usher believes Government has a role to play in the organic movement particularly in getting the planning provisions right so that organic food can be grown. She said that organic food can attract a price differential of between 10% and 50% over conventionally grown food. Her established niche market is by selling her product through a small local retail chain.

USA: The positive role of government in direct marketing is exemplified by the Farmers Market system in New York City. The Farmers Market system began in the 1970s due to action by the agricultural community. The legislators realised there was no provision in the food retail system for small farmers to market their produce and get an equitable return. At the Federal level programs such as the Farmers Markets
Promotions Program were introduced and provided legislative support such as through the Farmers and Consumers Direct Marketing Act.

In the 1980s the connection between local food and direct marketing was taken one step forward by the recognition by national legislators of the connection between local food and direct marketing, nutrition and public health. This recognition resulted in Federal programs such as the Women, Infants and Children (WIC) Program. WIC is a special supplemental food program for women, infants and children up to the age of five that provides nutritious food and nutrition education. It operates through the Farmers Market System and is linked to other vital health care and social services. WIC is supported by the WIC Farmers Market Nutrition Act.

As recognition of the public good provided by farmers markets and other direct marketing mechanisms the New York State Government provides funding to the Department of Agriculture and Markets to implement and protect those mechanisms.

Borough Hall Green Market, Brooklyn, New York

In 2002 the ‘New York Direct Marketing Survey 2000’ was released. Some stand-out details from that report are as follows:

- 6667 New York State farmers, representing 18% of all of the State’s farmers, sold their agricultural products worth US$230 million directly to consumers
- Average sales per farm was $34,530
- 36% of sales occurred through farm buildings; 27% was from mail order, home delivery and community supported agriculture (CSA), and 25% was from farmers markets
- The leading method of direct marketing for 40% of fruit growers was pick-your-own
- Other methods include roadside markets, open (roadside) stands and direct wholesale
- 1866 producers sold products worth $138 million direct wholesale, i.e. to other growers, stores, restaurants, schools and institutions
• 5571 producers derived >50% of their gross value of sales from direct marketing of which 4393 producers derived 90% of their sales

• 39,507 people were employed in the direct marketing of agricultural produce. 30% were unpaid, mostly family members; 9% were all year full time paid employees; 13% were seasonal fulltime; 3% worked full time during certain times of the year and part time during the balance; 4% worked part time all year; and 3% only worked part time during certain periods.

Any market is a response to a demand and the capacity to supply that demand. The direct marketing system is no different. So what demand does the New York local food direct marketing system satisfy? One step to answer that is to show the increase in types of direct marketing methods and sales (US$) between 1987 and 2000. The figures include farmers who use more than one mechanism to direct market their produce.

<table>
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<th>Method</th>
<th>Farmers 1987</th>
<th>Farmers 2000</th>
<th>% Change</th>
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<td>Open stand</td>
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<td>2388</td>
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<td>Number of farmers</td>
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<td>Sales</td>
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**Canada:** Local Food Flavours Plus (LFFP) is a not-for-profit organisation in Toronto. Its charter is to foster local sustainable food systems by linking local farmers and processors with local purchasers particularly institutional purchasers. LFFP defines a local food system as one which meets the following criteria:

• Local
• Financially viable for all stakeholders
• Ecological integrity
• Socially responsible
• Respectful of people and other species.

Services offered by LFFP are:

• Certification standards and monitoring
• Product sourcing and supply chain management
• Building supply chain relationships
• Education, marketing and public relationships
• Public policy, consultation and advocacy.

To date it has certified 30 local farmers and 3 processors to supply food that meet established social, economic and environmental standards. One of the larger contracts it brokered in 2006 was with the canteen arm of the University of Toronto which has 70,000 students. LFFP works on achieving a minimum of a 10% price premium for the food it brokers because of guaranteed quality and sustainability. The percentage of LFFP certified food used by those with whom it has contracts to supply ranges from 10% to 60% of their total food purchases. Contracts are from 5 to 10 years. There is more demand than supply. More farmers and processors are needed.
INNOVATION AND ADAPTABILITY OF URBAN AGRICULTURE

The Netherlands: The famous cliché “God created the world, the Dutch created Holland” is alive and well. Innovation and the Dutch are synonymous, and never so much as how they are now approaching the issue of agriculture in their country which is urbanising at a rapid rate. They are innovative because they have to be to survive on all levels. Being comfortable does not make for innovation. Global warming has put paid to anyone on this earth being comfortable. Innovation has to come to the fore, and quickly.

Government has a new role which is to facilitate the release of the optimal creativity of its constituents. This will require a new relationship between government and the people who elect it. The Dutch appear to be leading the way in this regard. I got a sense that the Dutch as individuals, groups or organisations seem to be very aware of their rights and power, and the means to influence government quickly. This may very well be due also to the social, economic, environmental and political challenges that have always been part of Dutch history, and the related need to respond quickly. This can only happen with a higher level of cohesiveness between the government and the people.

A mechanism by which inroads are being made in agriculture is an organisation called Innovatie Netwerk. It was established in 2000 by the Dutch Government at the request of various parties in the community. Its purpose is to facilitate system based innovation to optimise the outcomes from developing sustainable relationships between rural areas, agriculture and the health status of the Dutch people through nutrition.

Innovatie Netwerk operates outside of, but in association with, academia, government, bureaucracy, and industry. It actively seeks and encourages champions within those sectors as well as at the community, environment, farmer, and political levels. It has a data base of approximately 5000 people of whom 200 could be working on one or more of its 32 projects at any one time. It is expected that a significant percentage of its projects will fail, and anything less is regarded as the organisation not doing its job.

One of the 32 projects it has initiated is the New Villages concept (a village can be greater that 16,000 people). This project includes various projects for identifying possibilities for combining some seemingly incompatible wishes in rural areas. It is not just a question of creating possibilities for living in the countryside, but also about improving rural quality, recognising regional differences, taking into account future needs for water storage and meeting future residents’ social and cultural needs.

Another it is the agripark concept. One example of the early development of this concept is occurring at Bergerden in the Arnhem-Nijmegen City Region where an area of 300 hectares is being developed as an integrated agribusiness complex. The idea is that the waste of one or more industries, such as from the poultry and pig industries, can be used as a resource for other industries such as vegetables and mushrooms. The processing and distribution industries will also be incorporated. The greenhouse industry will play a significant role in utilising the latest technologies to produce energy (a source rather a consumer of energy – an Innovatie Netwerk project) as well as use the roof areas of the greenhouses to capture rain for storage for common use. All stakeholders will be linked by an integrated ICT system.
Another organisation that is playing a part in the adaption of Dutch agriculture is ETC. ETC is a not for profit unit that, among other things, operates the Secretarial of the Netherlands Rural Innovation network of the European Union programme ‘Leader+’. The work of ETC embraces both developed and Third World countries – it is systemic in terms of disciplines as well as spatially on a local, regional, national and international scale. In a nutshell the work is associated with:

- Getting urban agriculture onto the world agenda
- Facilitating capacity building for farmers
- Tapping into and utilising farming knowledge in urban and urbanising environments
- Reforming the functions of agriculture and rural areas as an adaption to urbanisation
- Influencing agricultural policy through a participatory and multi-stakeholder approach.

The Netherlands and many parts of Europe are urbanising at a rapid rate. At the same time there is a transition of agriculture from the post World War II modernisation era to the new era of rural development in which agriculture is seen and dealt with as part of a mix of disciplines and stakeholders in the rural environment. The family farm where off-farm income brings urban capital into rural areas, agritourism, direct marketing activities such as farmers markets, natural resource and landscape management, regional identity through regional branding of regional specific produce and products, organic farming and ‘care’ farming that caters for intellectually handicapped people are just some of that mix. The Europeans refer to this transition as multi-functionality. Free trade and the cost/price squeeze of agricultural production contribute to this transition scenario as well.  

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Innovate Netwerk and ETC are a government and community response to the situation respectively where social, economic and environmental adaption and innovation plays a significant role. It is likely agriculture in the coastal areas of Australia, in the context of rapid urbanisation, has similarities to the European situation and is worthy of further consideration in that regard. The coastal areas of Australia, as distinct from the ‘inland’ are where most of the estimated $7 billion of urban agriculture occurs. One estimate in 2002 was that in the Sydney Region up to 12% of NSW’s total agricultural production occurred on less than 1% of the State’s agricultural land. This represents $1 billion dollars of produce, valued as it passes through the farm gate. This land is also the most productive agricultural land demonstrated by the average returns of more than $5000 per hectare in the Sydney Region as compared to NSW’s agricultural land average of $136 per hectare.iii

In Wageningen I had discussions with Dr Pieter Vereijken, Senior Researcher, Multifunctional Land Use and Agriculture, Plant Research International B.V., Agrosystems Research, University of Wageningen (WUR) about an innovative research project to use reeds to sanitise surface waters to meet European Union water framework directives. This project began in 2005 and will conclude in 2011.

There are three research questions this project is designed to answer:

- Can reedlands sanitise the brook (“chemical good status as a base for ecological good status”)?
- Can the green biomass be processed to biofuel (“climate control”)?
- Can constructed reedlands be more profitable than grass and maize (“alternative cash crop”)?

A graphic representation of the research project taken from a PowerPoint presentation by Dr Pieter Vereijken, Dr Adrie van der Werf, WUR and Dr Jan v. Bakel, Alterra

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iii Gillespie P.D. and Mason D., 2003: The Value of Agriculture in the Sydney Region (Draft). New South Wales Agriculture
**Singapore:** Singapore is 699 sq kilometres (267 sq miles) in which nearly 4.5 million people live. The population density is 6222 per sq kilometre. The annual population growth is 2.6%.

The land used for agricultural production has decreased from 15,000 hectares in the 1960s to the present approximately 1,500 hectares. This land produces about 5% of the total amount of vegetables consumed in the country. This equates to 17,000 tonnes of a total of about 380,000 tonnes.

Essentially the Singapore government is committed to the preservation of green space as well as its creation as part of development. It recognises its many benefits with an emerging appreciation of the role and benefits of urban agriculture in the forms most suited to the Singapore situation eg. rooftop, school plots, high-tech, and agritourism. The Government actively encourages and supports the development of agrotechnology.

Two people I met with who have developed innovative technologies to produce food, were Professor Lee Sing Kong of the National Institute of Education, Nanyang Technological University and Mr Gregory Chow, lecturer in the School of Life Sciences & Chemical Technology, Ngee Ann Polytechnic. Professor Lee has played a dominant role in the development of aeroponics. Aeroponics is a technological advancement on hydroponics – both being a soil-less technology.

The technology is based on creating the right conditions in the suspended root zone within a growth chamber to gain the optimal rate of growth in the shoot zone of the plant from the least amount of energy. The roots of the plants are saturated with a fine mist of oxygen enriched nutrient solution.

Droplet size of the nutrient solution is critical (50-200 microns) and, with temperate crops such as lettuce being grown in the tropics, the temperature of the root zone is also critical, the requirements of which can be met by lowering the temperature of the solution. There is a correlation between droplet size, the root zone temperature and the quality of the plant. Quality diminishes as the temperature and droplet size increases. However, the cost of production increases to achieve both. Root zone temperature is
not as important with tropical crops. This technology at this point in time has application for producing high value crops. I saw its commercial application in one of the agriparks I visited.

Professor Lee has also developed what he terms as the ‘Skyfarm’ concept which is based on constructing aerobridges between buildings.

Mr Chow has taken a somewhat pragmatic approach to the technology he is developing, based on the market conditions that prevail today. He has termed his technology Air Dynaponics. His is an adaption of aeroponics where he is experimenting with trading off the quality of the product to a not unacceptable level by increasing the size of the droplets with less emphasis on the need to cool the root zone – both factors reducing the cost of production. The nutrient solution is dispersed into the root zone by air pressure.

Gregory Chow and his Air Dynaponics technology and its application to aquaponics. The nutrient rich water from the fish tank is used to water the basil crop which strips the nutrients from the water for reuse in the tank.
The Agri-food & Veterinary Authority of Singapore (AVA) is the national authority responsible for (amongst other things) the development and management of the six Agrotechnology Parks on the perimeter of the urban area of Singapore. AVA aims to promote Singapore as a regional agrotechnology hub by pursuing leading edge technologies and strengthening its agribusiness capabilities. Intensive farming systems are used to optimise land use and increase productivity.

Within the parks, parcels of land, ranging from 2 to 42 hectares, are allocated on 20 year leases to farming families/companies and agribusiness organisations to produce agricultural produce such as vegetables, orchids, ornamental plants and fish, eggs and food fish. The Government owns the land and provides infrastructure including roads, water, electricity, drainage and telecommunication services. With a complementary mix of agricultural activities, the parks have been designed to blend into Singapore’s urban environment. One of the parks accommodates an Agri-Bio Park of 10 hectares, established to support agri-biotechnology development in Singapore.

The 233 farms, using 701 hectares, located within the six parks and a further 41 farms on 59 hectares outside the parks, generated S$221.8 million worth of produce in 2005. A new innovation located in the Lim Chu Kang Agrotechnology Park is agritourism where Mrs Ivy Singh-Lim and her husband Mr Lim Ho Seng have established two integrated businesses. One is Bollywood Veggie Farm and the other is the Poison Ivy Restaurant and through these enterprises they provide the opportunity for fellow Singaporeans and international visitors to have a rural experience on the edge of the city of Singapore. Theirs is an organic enterprise. Mrs Singh-Lim and Mr Ho have banded with other nine other farm families in the Park to form the Kranji Countryside Association. The nine farms are serviced hourly by the Kranji Express which departs the Kranji MTR (rail station) on the hour.

One of the benefits of concepts such as agriparks relates to biosecurity. Recognition of this is as apparent in the Netherlands as it is in Singapore. It is much easier for Government to monitor and control outbreaks of disease and other problems if agriculture is contained within physical boundaries.

Since my return I have become aware of a new innovation that has just occurred in the Lim Chu Kang Agrotechnology Park. The following is taken off the internet. The
project is so innovative and the report so comprehensive I have reproduced it in its entirety:

By next year, visitors can pop up to Kranji for a farmstay, to relax at a spa, stroll through rows of corn and learn how coffee is produced. The company that recently obtained a 5.1ha plot in the area in a government tender is building up to 20 chalets, a spa, a restaurant, a fishing pond and stores to sell produce.

A subsidiary of listed group PDC Corp bagged the 20-year lease site for $880,000. The farm plot in Neo Tiew Lane 2 was among the first to be released by the Government since it eased rules allowing farmers to incorporate commercial and recreational facilities on their land.

PDC's farmstay will be the second in the area. Landscape company Nyee Phoe Group is building four kampung-style chalets on its premises in Neo Tiew Crescent. They are expected to be ready by the end of this year.

PDC's farmstay will complement the agricultural research centre it plans to open to develop corn hybrids for its 40,000ha plantation in Sumatra. That plantation is more than half the size of Singapore.

Beverage company Super Coffeemix Manufacturing signed a deal with PDC yesterday to showcase coffee production methods at the research centre. PDC, in turn, will supply Super Coffeemix with coffee beans it cultivates in Sumatra.

Unveiling the plans yesterday, PDC said the research centre will conduct educational tours for local visitors as well as tourists. Glass-fronted research labs would enable visitors to get a close-up view of the laboratories, said chief operating officer Veronica Gan.

She added: 'Families can go fishing and, at the same time, enjoy the night breeze and have dinner there. The ladies can go to the spa. They can also do some shopping there.' She said other companies may be roped in to run the spa and restaurant.

PDC, which is also developing a light industrial and commercial building off MacPherson Road, estimates it will invest at least $5 million in the research centre.

USA: Innovation is not just limited to technology and multiplicity. It also applies to process. In 2004 the Urban Affairs Centre of the University of Toledo, and the Center for Regional Development at Bowling Green State University, Ohio initiated a project designed to optimise the sustainability of the floriculture industry in northwest Ohio. The core of the project is a systemic intervention process that engenders ownership and commitment to the vision, mission and objectives that were determined by the target audience.
The underlying leadership principle employed by the Universities is one of ‘leading from behind’, at the same time empowering those involved. The group that was formed is The Maumee Valley Growers. The role of the Universities is a facilitative one. The intervention effectiveness is significantly enhanced by a structure that provides for a grower elected champion to be the catalyst for change and a 13 member advisory board that includes representatives from eight greenhouses, Congress Representative Marcy Kaptur’s office, and Regional Growth Office.

Maumee Valley Growers is organized around the concept of an industrial cluster. Cluster-based economic development is based around the idea that a geographic region, and the businesses contained therein, can compete more effectively when everyone in the region works together to the common benefit of all the stakeholders. Clusters, by definition, include not only business entities such as companies, but also trade associations, financial institutions, vocational training providers, universities, economic development agencies, and any other entity that can be considered “important to competition.”

The Maumee Valley Growers aims to:

- Market only the highest quality plants possible under the Maumee Valley Growers logo – regional branding
- Increase demand through awareness and preference of quality grown products from regional growers - buy local campaign
- Improve grower efficiency and hence, profits through joint problem solving - a network channel for sharing best practice and resources
- Grow the local economy by attracting new supporting businesses that can supply the Northwest Ohio greenhouse/nursery network – stakeholder integration
THE URBAN AGRICULTURE/PUBLIC HEALTH RELATIONSHIP

The relationship between urban agriculture and human health is emerging as an issue in a number of countries. The Agenda 21 ‘Healthy Cities’ Program resulting from the United Nations Conference on Environment and Development in Rio de Janeiro in 1992 is a major catalyst for this. However programs were beginning to be developed in different parts of the world before the Rio Declaration. Three programs that are appropriate to mention in this section are:

**Australia:** In 1990 a proposal was developed by the University of Sydney’s Department of Public Health and Community Medicine, Nepean Health and Penrith City Council in Western Sydney for the establishment of the Penrith Food Project (PFP). The PFP was a first in Australia and has provided a model on which other food programs in Australia have been based such as the Hawkesbury Food Program. The key function of such programs is to create healthier food supply to encourage and support people to make healthier food choices.

Local food was recognised from the start as an important ingredient in the PFP. However as more organisations became involved, culminating in the formation of the Penrith Food Policy Committee in 1994, other concepts were introduced such as new public buildings in Penrith being required to include nursing rooms in their design to cater for the many young mothers in the local government area being able to breast feed their babies when they came to town. Essentially this was about addressing local infrastructure barriers that contributed to mothers weaning their babies early. As the representative of NSW Agriculture, I was Chair of that Committee in 1995 and 1996.

One of the local food events identified in the PFP was the open farm day whereby local farms would invite the public to come onto the farms to see how it operated, what was being grown, and to buy the produce and value added product. The Open Farm Day is an important part of Hawkesbury Harvest ([www.hawkesburyharvest.com.au](http://www.hawkesburyharvest.com.au) - an outcome of the Hawkesbury Food Program) which is currently expanding into the Penrith local government area.

**Canada:** In 1990 the Toronto City Council established the Toronto Food Policy Council (TFPC). This was as a result of the City Council signing onto the United Nation World Health Organisation’s Healthy Cities Charter. This charter was based on the belief that public health policy had the capacity to bring about the majority of the next generation of health improvements rather than from medical advancements. One way of this potential being achieved is through recognition that human health should be a co-driver of food policy rather than agricultural business being the lone driver.

The TFPC’s charter defines food not only in terms of choices, but also as a means of providing good health which is a basic human right. In that context consumers are provided the opportunity to play an important part in the food supply system to ensure that they have access to good food. At the same time producers are provided the right to a fair price for what they produce. Local food and direct marketing contribute to such a scenario. In the words of Dr Wayne Thomas, TFPC’s Project Coordinator, “Cheap food is a precursor of poverty”. That statement proposes that the ‘bottom line’, the call card of economic rationalism, is not a sustainable principle in the food supply system.
The greater percentage of literature linking local food to public health is associated with indirect effects such as air quality through reduced emissions from reduced food miles. Also the freshness of direct marketed local foods compared with those foods marketed through large supermarket chains. However, there is a small but increasing body of evidence that demonstrates a direct link between local food and public health. There is a need for further research in this area.

The Toronto Food Policy Council partners with business and community groups to develop policies and programs promoting food security. Its aim is to establish a food system that fosters equitable food access, nutrition, community development and environmental health.

England: Mayor Ken Livingston of the City of London has developed a ‘Healthy and Sustainable Food for London Strategy’. This is in response to the UK Government’s move for a more sustainable food and farming system which began when the Government established a Policy Commission on the Future of Policy and Food in 2001. This direction was in response to a number of factors including a series of food safety and biosecurity problems, the obesity epidemic affecting the British populace and the depreciation of a vibrant rural industry and associated communities. However, the London strategy has widened its brief to take a systemic approach to food. The strategy aims to:

- Improve Londoners’ health and reduce the health inadequacies via the food they eat
- Reduce the negative environmental impacts of London’s food system
- Support a vibrant food sector
- Celebrate and promote London’s food culture
- Develop London’s food security.

In Order to achieve this, the strategy identifies six areas of action:

- Ensuring commercial vibrancy
- Securing consumer engagement
- Levering the power of procurement
- Developing regional links
- Delivering healthy schools
- Reducing food-related waste and litter.

Mayor Livingston set up the London Food Board to develop his strategy. The strategy sits alongside a number of other key London policies and initiatives including the London Spatial Development Strategy (also know as the London Plan). Other London policies with links to food include the London Cultural Strategy, the Economic Development Strategy, the Transport Strategy and the Municipal Waste and Management Strategy.

At local and community levels, partnerships with the London Boroughs is essential and it is intended that the Mayor’s Food Strategy will feed into the actions of local councils and other public bodies such as Primary Care Trusts and Local Education Authorities. Mayor Livingston makes it quite clear that this strategy is intended to
entitle London to be considered a sustainable world city. The London Development Agency is working with him to achieve that status for the city.

Mayor Ken Livingston addressing the Soil Association 60th Anniversary Conference, London, January 2006 – Photo courtesy of Soil Association

Sustain-the Alliance for Better Food and Farming is an organisation that represents over 100 national public interest organisations working at international, national, regional and local levels. Its aim is to advocate food and agriculture policies and practices that enhance the health and welfare of people and animals, improve the working and living environment, promote equity, and enrich society and culture.

There are many projects that Sustain is involved with, too many to mention here. The project categories are: London Food Link; Grab 5; Hospital Food Project; Sustainable Food Chains; Food Poverty Network; Children’s Food Bill; and Food and Mental Health.

The Better Hospital Food project run over the past two years in partnership with the Soil Association aims to increase the promotion of sustainable food in four London hospitals to 10% of their routine catering. The hospitals ranged in size from 250 to 1100 beds. One hospital is now spending 15% of its budget on local and/or organic food. Another achieved the 10% target, one is making progress and one failed to make any changes. Funds have just been made available to build on what has been achieved so far.
AGRICULTURAL LAND PRESERVATION

Land preservation for agricultural purposes is a very political issue throughout the world. It is also very complex and cannot be dealt with in depth in this report. However, I will provide a basic appreciation of how agricultural land preservation is being dealt with in the different countries.

**Singapore:** The land used for agricultural production has decreased from 15,000 hectares in the 1960s to the present approximately 1,500 hectares. This production occurs on six agrotechnology parks which come under the responsibility of the Agri-Food & Veterinary Authority of Singapore. In 2005 these parks generated some S$221.8 million worth of produce comprising 344 million hen eggs, 5,916 tonnes of fish, 17,397 tonnes of food crops, 145 million aquarium fish, 12 million stalks of orchids and 36 million ornamental plants.
Within the parks, parcels of land, ranging from 2 to 42 hectares are allocated on 20 year leases to farming families/companies and agri-business organisations. The Singapore Government owns the land. As for the preservation of this land for agriculture I got the sense that the Government would want to preserve what remains, certainly for the short to medium term. Preservation for the long term is more likely to depend on factors such as food safety, food health, the adaptive nature of agriculture and external factors such as relationships with neighbors and global warming rather than a concern by the people about issues such as food security. Singapore is a food paradise. More than 90% of the food consumed in the country is imported.

**The Netherlands:** The role of government in agricultural land preservation in the Netherlands is a contentious one. There are those who argue strongly that market forces alone should determine the fate of agriculture. Others argue that the community demands that agriculture in its many forms remains as an integral part of Dutch human activity, and land use and the government has a responsibility to ensure this happens. I gained a sense that the fate of agriculture in the Netherlands will largely be determined by the social, economic and environmental values people assign to it within the context of the urbanisation of Europe.

This community capacity was exemplified in Wageningen where community action saw the halting of urban expansion in the 1960s. The agricultural land in the foreground of the photograph below was earmarked for urban development. Community action resulted in the land being zoned as ‘agriculture’. However, in the face of technological advancements, the community saw the threat of the agricultural lands being developed for intensive agricultural industry. Consequently in the 1980s and 1990s the original zoning was overlaid with landscape and environmental protection zoning.

The sharp demarcation between urban and rural in Wageningen
The major legislative mechanism determining the interrelationship between the urban and non-urban in the Netherlands is the Spatial Planning Act. This act was first introduced in 1960 and over time has been revised to suit the changing circumstance in terms of development and community values. In 2006 a new Spatial Planning Act was introduced which reflects the need for greater integration of stakeholders at all levels through processes that capture political and social trends.

Another regulatory mechanism that supports the sustainability of agriculture is the Relatienota Policy Document and Nature Policy Plan whereby the government compensates farmers through contract agreement. Farmers agree to carry out specified agricultural practices to meet determined nature conservation and landscape requirements. One example of a contractual requirement may be a specific increase in the number of meadow bird nests in the on-farm’s pastures. Well over 9000 farmers have entered into such contracts with the government.

**Canada - Ontario:** Each province is developing its own way of preserving agricultural land. In Ontario the Places to Grow Act (2005) enables the Government to designate growth plan areas and develop growth plans. The Growth Plan for the Greater Golden Horseshoe is the first growth plan to be approved under the Act.

The Greater Golden Horseshoe Growth Plan aims to meet the projected increase of population from 3.7 million to 11.5 million between 2001 and 2031. It also provides for the 1.8 million acre greenbelt that protects environmentally sensitive natural areas and agricultural lands. The Golden Horseshoe fits around the western end of Lake Ontario. The edges of the horseshoe are mostly moraine (a ridge of glacial deposits) however some is defined by the shore of the lake. Within the climatic shadow of the moraine is an environment that supports flora and fauna unique to the area.

The community was so concerned and became very active in seeking to have that uniqueness preserved. The issue became very political and was instrumental in the designation of the greenbelt. Agriculture is preserved within the Greenbelt by virtue of its relationship with the environment the community wished to preserve. In this context, the greater value of agriculture is as a buffer between urban development and the environment. However, it is also valued because of the other social, economic and environmental benefits it provides to the greater community.

**Canada - Vancouver:** In the 1970s the British Columbia Government responded to the increasing loss of agricultural land to development by the establishment of the Agricultural Land Reserve (ARL) administered by the Agricultural Land Commission. The Commission has the responsibility of protecting BC’s agricultural land. It is supported by the Agricultural Land Commission Act which takes precedence over, but does not replace local government regulations and policies.

In regard to the City of Vancouver the Reserve has become the cornerstone of a comprehensive planning approach as embodied in the Livable Region Strategic Plan of the Greater Vancouver Regional District. The Plan has helped guide the accommodation of an additional million people in the Region over the past 30 years while maintaining productive farmland, important greenspace and habitat. Over the past 15 years, the
Greater Vancouver Regional District realised a $400 million increase in its total gross farm receipts, and the area of the ARL has remained relatively constant.

The preservation of the ALR is carried out through the Agricultural Land Commission regulating process, agricultural area plans and advisory councils, and by Smart Growth strategies. Smart Growth is based on the premise that cities cannot be sustainable if development is allowed to sprawl. Studies in Canada and the USA demonstrate that the infrastructure and service costs associated with subdivision and development cost more than can be recouped through taxes.

These studies show that agricultural land uses generate about $1 for every $0.34 it costs to service it. Conservation and open space lands cost even less. This Cost of Community Service analysis illustrates that while farming is not a significant generator of tax revenue, its minimal servicing requirements result in a cost-benefit equation comparable to commercial and industrial developments.

Studies conducted by the American Farmland Trust in several states show that for every dollar generated in property tax revenues, farmland only requires 21 to 75 cents in public services. By contrast, residential development requires $1.05 to $1.67 in services for each property tax dollar collected.

USA: Agricultural land preservation is a big issue in the USA. In certain parts of the country a person seeking political office at local, state or federal level would have no chance of election unless they included agricultural land preservation as part of their political platform. I visited Montgomery County, Maryland; Lancaster County in Pennsylvania; and the State of Delaware with the specific purpose of seeing what is happening in regard to agricultural land preservation. I attended the American Farmland Trust’s National Conference in Newark, Delaware.

The American Farmland Trust was established in 1980 following the release of the National Agricultural Lands Study Report ‘Where have the Farm Lands Gone?’ in 1977. The Federal Farmland Protection Policy Act was passed in 1981 in the Farm Bill of that year. Farmland preservation has gained an increasing amount of momentum and public support since that time. This is essentially the result of awareness and education programs targeted at the general public, and the elevation of the issue into the political sphere.

By the end of 2005 over 50,000 acres of farmland had been preserved in Lancaster County along with the acquisition of 586 conservation easements. Tourism associated with agriculture in Lancaster County is big business. More than 7 million people visit the County each year and leave behind US$1 billion. The benefit of this is that the money stays in the community longer because it is in the pockets of the people who live in the County and it passes from one to another. The Amish community is a great attractor of visitors to the County. Agritourism is based on identifying the stand our attractors of an area/region and building on it.

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[3] Smith B.E. and Haird S; The Rural-Urban Connection; Plan Spring/Printemps 2004
In the USA there is an array of mechanisms to preserve agricultural lands. They are property tax breaks, right-to farm law, agricultural districts, purchase of development rights, tradable development rights, state planning and Governor’s executive orders. In what context do these mechanisms apply in the US? In the main it is to protect the rights of the individual landowner – the rights of the individual is fundamental to the American Constitution. The overriding factor is the right of the individual to optimise their financial advantage as long as they don’t break the law.

Can the US mechanisms, as they stand in the US, be implemented in Australia? I think not as the rights of the individual and the rights of the community are not as differentiated in Australia as they are in the US. Also money is the main means through which farmland preservation is addressed in the US. Geographically Australia is the same size as the US with 7% of its population. Australia therefore does not have the people to support such an injection of public funds required to emulate the American situation. Australia does not have the same degree of philanthropic support for farmland preservation as is the case in the US.

Farmland preservation as an issue in the public mind is far more advanced in the US than it is in Australia. That does not say that some of the US methods may not be able to be adapted, along with the other international examples, to the Australian condition. This is an area of potential investigation.

What we do have in Australia, in fact, is a community expectation that governments play a role in land use matters to achieve triple bottom line sustainability for the public good. This expectation has gathered force, focus and legal validity during the 20th Century. That focus has never been as relevant as it is now given the threat of global warming. Australia is traditionally an egalitarian society and that is worth preserving. That sets Australia apart. And in that context it is important that governments in Australia balance free market thinking, economic rationalism and the rights of the individual with the rights of the community in respect to quality of life for all Australians. That balance is fundamental to as many people as possible benefiting from what local agriculture has to offer in the urban and urbanising situation.

Over time and particularly from what I observed through my travels I have come to a conclusion that there is a tension between farmland preservation and the on-going viability of agriculture. The comfort of protection is not necessarily conducive to innovation. Innovation flows from a need to improve a situation. Farmland preservation is one thing, having products to meet markets to support on-going viable production from the land preserved is another, and yet both things are vitally interdependent. Innovation has a role to play at all levels of the food chain. Getting the balance right, so that agricultural land has a long term future in the face of urbanisation, is a real challenge.
CONCLUSIONS

The issue of agriculture in urban and urbanising environments is one of increasing recognition and importance around the world in both developed and developing countries. A great deal has been written about what urban agriculture has to offer to communities socially, environmentally and economically. The international data base is extensive and growing. The issue, related concepts and other knowledge now needs to be brought into the mainstream decision making processes associated with development within urban and urbanising communities in Australia. To do so is timely and responsible action.

I have arrived at the above conclusion as a result of:

- My work in the Sydney Region since the end of 1992 dealing with the issue of sustainable agriculture in the urban and urbanising situation
- My attendance at the Inaugural World Planner’s Congress, and the UN-HABITAT–World Urban Forum III in Vancouver, June 2006 where urban agriculture was strongly featured and represented from throughout the world
- The extensive national and international network I am now part of as a result of the above and the comprehensive study tour to Singapore, the Netherlands, England, Canada and the United States of America as a 2006 Churchill Fellow. I undertook this study between October and December 2006.

The technology, knowledge and management practices exist that will enable agriculture, and those engaged and potentially engaged in the food chain, to adapt to and be an integral part of the urban and urbanising situations. There are many committed people at all levels of the Australian community who are participating or wish to participate to achieve that adaption and integration. The issue is essentially one of inter- and intra-generational equity, one of the principles of Ecologically Sustainable Development (ESD). This in itself compels the need to act.

I have written this report to influence as many people from as many sectors of the Australian community as possible. Hopefully international communities will find it of benefit as well. My intent has been to provide enough information on which people can act in the areas of their expertise and capacity to bring about the required change. If people want things to change then each one has to put their hand up. Journalists have to write; lobbyists have to lobby; small farmers have to unite to produce consistent supply and quality of product using best management practices; industry organisations have to develop policies and strategies; educators have to educate; planners and legislators have to provide the opportunity for agriculture to adapt and integrate and ensure security of tenure and resources for those farmers; and the general public has to speak up and write to make their views known, and do things such as actively seek out local food. Farmers can not and will not produce in a sustainable way if there is no security, demand, associated markets and a fair return.

One thing I became aware of in my travels is that the power of passion and commitment by people as individuals or groups is a mighty force. I personally will be doing what I can to provide knowledge and information, and to facilitate change designed to ensure equity to agriculture in the urban and urbanising situation, and to those engaged in the associated food system.
RECOMMENDATIONS

There are two aspects to my recommendations to bring about improvements:

What I will do to bring about improvements:

- Contribute to local, state and federal government policy and strategic planning processes
- Provide advice and where appropriate work with any organisation, group or individual to ensure local/urban agriculture and those associated with it are accorded equity with other urban land uses and forms of human enterprise. One organisation I will continue to work with is Hawkesbury Harvest, a process that is unique in the world. Its sustainability foundations are very sound. See Appendix 3 for its agriculture and agribusiness development model
- Identify research requirements and seek whatever resources are required to undertake that research and have the results published and disseminated
- Write papers, reports and any other appropriate forms of information to be disseminated through public talks and lectures
- Facilitate the strategic development and implementation of on-ground programs including awareness and education programs

Other improvements to be made

In Australia the highest rate of urbanisation is occurring on the coastal belt. This is where the largest loss of agricultural land is occurring. Australian Bureau of Statistics indicates that there was a 10% loss of agricultural land to development in the years 1996 to 2001 in the Sydney Region.xiii

In the light of predicted global warming effects on inland NSW and inland Australia generally, it is important the three levels of government ensure sufficient appropriate coastal land is preserved to at least ensure food security, and public health needs of current and future generations are secured. The coastal belt of Australia represents a distinct climatic zone. To continue to allow the sterilisation of that zone as a sustainable source of agricultural produce, value added product, with their associated social, economic and environmental benefits would reflect badly on all levels of the Australian community. My recommendation is that this not be allowed to happen.

A case in point - in October 2003 Rod Sherriff, President of the Free Growers Horticulture Council representing a significant number of the market gardeners in the Sydney region said:

If it were not for (what was being grown in) the Hawkesbury there would be very little in the way of leafy vegetables on the Sydney market.xiv

This was due to the drought west of the Great Dividing Range in NSW and the failure of the Queensland crop due to unseasonable hot weather.

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xiv Rural Press - Hawkesbury Gazette - 1st October 2003
## Appendix 1 - Continuum of Urban Agriculture in the Sydney Region

<table>
<thead>
<tr>
<th>Forms of Urban Agriculture</th>
<th>Some Values/Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backyard</td>
<td>Recreation, human health on all dimensions, seed banks supplementary food supply</td>
</tr>
<tr>
<td>Community and Communal Gardens</td>
<td>Social cohesion through cooperative communal endeavour, education, food access and equity</td>
</tr>
<tr>
<td>Rooftop</td>
<td>Corporate involvement – worker well-being; biodiversity, local ecosystems, building insulation</td>
</tr>
<tr>
<td>School/Agriculture Plots</td>
<td>Education, connection with farming culture</td>
</tr>
<tr>
<td>Historical</td>
<td>Heritage, education, research, artefacts</td>
</tr>
<tr>
<td>Lifestyle/Hobby</td>
<td>Environmental management, recreation, diversity of lifestyle, rural open space</td>
</tr>
<tr>
<td>Boutique/Cottage/Niche</td>
<td>Diversity, small business, diversity, specialty</td>
</tr>
<tr>
<td>Farm Gate</td>
<td>$$$ remain locally; 80% profit from 20% of farm sales, reconnection with community, visitor experience and education, new markets</td>
</tr>
<tr>
<td>Agritourism</td>
<td>Income diversification; inter-industry leverage – hospitality, tourism, agriculture; home/farm based value added agribusiness; producer/consumer relationship benefits.</td>
</tr>
<tr>
<td>Equine</td>
<td>Recreation; landscape visual aesthetics; $$$ multiplier for support industries.</td>
</tr>
<tr>
<td>- Recreation</td>
<td></td>
</tr>
<tr>
<td>- Studs/Training</td>
<td></td>
</tr>
<tr>
<td>Flood Plain</td>
<td>Intergeneration equity; food security; greatest inherent sustainability – soils, water access, landform, biodiversity (riparian, wetlands); water effluent and green recyclables, hydrological system, micro- and macro-climate effects, sequestration of urban waste, green belts, aesthetic contribution to rural commons</td>
</tr>
<tr>
<td>- Market Gardens</td>
<td></td>
</tr>
<tr>
<td>- Dairy</td>
<td></td>
</tr>
<tr>
<td>- Turf</td>
<td></td>
</tr>
<tr>
<td>- Orchards</td>
<td></td>
</tr>
<tr>
<td>- Fodder Crops</td>
<td></td>
</tr>
<tr>
<td>Flood Free</td>
<td>Retention of a natural resource to meet future and perhaps yet unknown needs and considerations (eg. as a result of global warming) and technologies such as nanotechnology; sustainable urban agriculture as a NRM instrument particularly when land use is matched to agricultural suitability; community cultural diversity – people of culturally and linguistically diverse backgrounds (CLDB); carbon credits.</td>
</tr>
<tr>
<td>- Market Gardens</td>
<td></td>
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<tr>
<td>- Dairу</td>
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<tr>
<td>- Orchards</td>
<td></td>
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<tr>
<td>- Fodder Crops/Agro-Forestry</td>
<td></td>
</tr>
<tr>
<td>Controlled Environment/High-Tech</td>
<td>$$$ multiplier for support industries, eg mushrooms &gt;5; fresh perishable foods grown close to market; reduced emissions due to less transport distances, high productivity and efficiency, controlled waste, pesticide, water and energy systems.</td>
</tr>
<tr>
<td>- Greenhouse Horticulture</td>
<td></td>
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<tr>
<td>- Nurseries</td>
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<td>- Poultry</td>
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<tr>
<td>- Fixed Pad Dairies</td>
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<tr>
<td>- Mushrooms</td>
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<tr>
<td>- Protected Cropping</td>
<td></td>
</tr>
</tbody>
</table>

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Appendix 2 - A Systemic Representation of Urban Agriculture
Appendix 3 – The Hawkesbury Harvest Development Model

(www.hawkesburyharvest.com.au)

The Potential of Hawkesbury Harvest
Agriculture and Agribusiness Development Model

Business/Industry Development
- HiTech/BioTech industry cluster
- Controlled environment intensive horticulture
- Microclimate Agriculture
- Small area collective production and marketing
- Agribusiness, tourism and hospitality
- Quality of life
  - lifestyle
  - cottage industry
  - boutique industry

Standards
- research
- extension
- education/training

Marketing
- niche
- regional branding

Income $$
- business agreements
- brand licensing
- sponsorship
- project funding
- public good funding

Community Engagement
- Farm Gate Trail
- Farmers markets
- Open farm days
- Special events
- Produce outlets
- Provedore services
- Quality of life
  - lifestyle
  - cottage industry
  - boutique industry