Holmgren Design Services
The source of permaculture vision and innovation

Garden Agriculture: A revolution in efficient water use

David Holmgren

www.holmgren.com.au

First published as an (edited) opinion piece in Water Volume 32 No 8 December 2005 the journal of the Australian Water Association. This is the original version with footnotes

Garden Agriculture: A revolution in efficient water use

Nearly three decades of permaculture vision[1], teaching and activism have been closely associated, but not synonymous with "garden agriculture."[2]

Despite the global spread of permaculture and its popularity in Australia, producing food at home has remained marginal to public debates and policy discussions about sustainable agriculture, water and other resource use. In fact, permaculture and related networks have barely succeeded in stemming the loss of garden agriculture that was once an integral aspect of our household and community economies and our urban landscapes.

Cheap fresh food, subsidised by cheap fossil fuel, has been a major economic driver of the decline of garden agriculture in Australia and most affluent countries. The loss of food growing skills combined with urban infill policies that have destroyed some of the productive potential of our cities are factors inhibiting the redevelopment of garden agriculture. Public policy blindness to the health and food security benefits of home food production are matched by ignorance of the potential gains in resource use efficiency and sustainability of garden and urban agriculture.[3] This peculiar situation reflects a general public policy blindness towards household and community economies that might bypass corporate profits and government taxation.

The eminent peak and decline of high quality fossil fuel energy will force radical changes in every aspect of the economy and society and turn on their heads many of the assumptions of the mainstream sustainability debate. The universality of cheap energy as the most fundamental driver of human (and natural) systems might see water management decline as a high profile issue even though all the currently acknowledged issues and problems in water use in agriculture will be compounded by global energy peak.

An example of how global energy peak will shift the water debate concerns the linkage between urban and agricultural water use. It has been pointed out by some commentators that the debate about household water use efficiency misses the point that 70%[4] of our per capita water use is in agriculture. Even when we allow for the

1 For the original statement of the concept see Mollison, B & Holmgren, D. Permaculture One 1978
2 Food production at home see "Gardening As Agriculture" 1991 in David Holmgren Collected Writings 1978-2000 http://www.holmgren.com.au/html/Publications/collectedwritings.html
3 commercial production within urban areas
4 About 70% is used in irrigated agriculture (ABS 2001)

proportion of agricultural produce exported to help generate income to buy our DVD players etc, the water required to produce our food dwarfs the 8% used in our households and gardens. The conclusion generally drawn is the need for more focus on agricultural water use efficiency. For example the Food Forest[5], a permaculture designed farm on the fringe of Adelaide uses one fifth to one tenth the irrigation water of comparable conventional systems[6], and pays urban water rates to produce a diverse range of horticultural and small livestock products (including value added ones).

However an equally valid conclusion of the "water for food" issue would be to look at the potential to convert the irrigated amenity landscapes of the suburbs (some of our largest irrigation districts) to garden and urban agriculture. By redesigning the food production and supply chain around garden agriculture and urban agriculture it may be possible to achieve huge gains in resource use efficiency.

On tours to "Melliodora[7] I generally point out that our permaculture system provides the bulk of fruit and vegetables, processed and preserved food, dairy products, eggs and small livestock products for about 4-8 persons from less than a hectare. This same area of land is a living and working space for the residents and serves research and demonstration functions as well providing a high level of ecosystem services including storm water harvesting and treatment. Annual water consumption is less than 1Meglitre/annum, a fraction of water use typically used in broad acre and market garden agriculture which supply the conventional food supply chain. Most of that water is urban storm water. Of course the conventional food supply chain also involves substantial additional use of water while at Melliodora the figures include everything used in processing, preparation and cooking.

Suburban development and living has been roundly criticised over recent decades as unsustainable and alienating. Planning policies have favoured higher density and infill development to get better use of public infrastructure and protect agricultural land. Battling to voice another side to the debate, permaculture activists have promoted an alternative set of strategies and techniques for retrofitting the suburbs for more self-reliant and sustainable living.[8]

Australian suburbs are no more densely populated than the world's most densely populated agricultural regions. In many coastal areas of Australia (where the greatest proportion of us live), the rain that falls on the roof can, if stored and used efficiently, be sufficient for at least the majority of home uses, including gardening. Rainwater harvesting can be supplemented by treatment of greywater (from the bathroom, laundry, and kitchen) through gravel reed beds for subsequent use in the garden. Even blackwater (from the toilet) can be treated and re-used on site in some circumstances, or waterless composting toilets can be installed to ensure water goes to more productive uses. Closing the nutrient cycle from human waste to fertile food

5 See website http://www.foodforest.com.au/
6 See Brookman G. Measuring Sustainability: Practical Techniques For Organic Enterprises in Proceeding IFOAM Congress Adelaide 2005
7 See Holmgren Melliodora eBook 2005 http://www.holmgren.com.au/html/Publications/eBook.html
8 See Retrofitting the Suburbs For Sustainability
http://www.holmgren.com.au/html/Writings/Writings.html

producing soil, is in the longer term one of the most critical factors in the sustainability of urban settlements.

Of course to expect such fundamental redesign of our food system just because climate change is threatening to amplify our current problems with water resources may still be politically and socially unrealistic but it is frustrating that current propaganda from governments, water authorities and even environmental organizations advocates minimal water use gardens of hardy natives instead of maximising the opportunities to efficiently use reticulated and storm water for urban food production.

It is very difficult to get serious discussion about sustainable resource use and settlement design at present, not just because most participants unconsciously accept cheap energy and stable climate regimes as given. The lack of whole system modelling and appropriate statistics combined with blindness to the potential power and efficiency of the household and community (non-monetary) economies all restrict the debate to refinement rather than fundamental redesign for a future of energy descent and erratic climate.

Over the next two decades, the costs of the current energy-intensive and long distance food supply systems will probably force this reorganisation anyway. Whether this happens by ad hoc on-farm and household response to rising costs and/or by proactive land use planning, economic and social polices such as those implemented in Cuba[9] in the 1990's, remains to be seen.

Permaculture continues to evolve as both a conceptual framework[10] and practical strategies for creative personal, household and community response to the energy descent future. Garden agriculture is just one application of permaculture principles, but one that has the potential to reshape how we think about agricultural and urban water use.

Holmgren Design Services
The source of permaculture vision and innovation

16 Fourteenth Street
Hepburn
Victoria 3461
Australia
Tel: +61 (0)3 53483636
Email – info@holmgren.com.au

www.holmgren.com.au

9 following the sudden energy crisis brought on by the collapse of the Soviet Union
10 For a full explanation of permaculture design principles see Holmgren, D. Permaculture: Principles and Pathways Beyond Sustainability 2002