Organics Olympiad 2007 - Perspectives on the Global State of Organic Agriculture

John Paull[1]

Abstract

Organic food has been described as the world's fastest growing food sector, and many countries have now set targets for conversion to Organic Agriculture. The stated goal of the organic movement is the adoption worldwide of Organic Agriculture. That task has a long path to travel, with Organic Agriculture currently accounting for 1.8% of worldwide agricultural land. One strategy for success in any endeavour, is: find out who "the winners" are, identify what they are doing, and do that; and there is a corollary to this maxim. Which countries are leaders in the adoption of Organic Agriculture? In the absence of a single comprehensive index of organic-ness, this paper identifies 12 indices of organic-ness, and presents the leadership by country, for each of these indices. A portmanteau-index of overall organics leadership is examined. Based on longitudinal data, projections are presented for future Organic Agriculture scenarios, and they indicate that under the historic worldwide rates of organic uptake, then all agricultural land would be converted to organic within 27 years under the scenario of compound increase, and in 584 years under the scenario of arithmetic increase.

Introduction

The term "organic farming" was first introduced in 1940 by Lord Northbourne (Paull, 2006). Three decades later, looking back over three decades, Northbourne (1970, p. 100) reported that: "A few people have tried and are still trying to produce food without the help of chemical fertilizers and sprays, and a few people - perhaps a growing number - prefer to buy food thus produced. Who dares to say they are wrong? A large number of people are not interested and much prefer to swim with the stream", and even dead fish will "swim" with the stream.

Agriculture started independently in a least five separate locations, the Middle East, China, New Guinea, South and Central America, and North America (Bellwood, 2005). It was *de facto*, *ancien regime* organic agriculture. With the rapid increase in the use of synthetic fertilisers and then pesticides during the twentieth century, Northbourne (1940, p. 81) introduced the idea that the agricultural space was a contested space: "organic versus chemical farming". The "organic" meme has since diffused across the planet and established itself in more than 120 countries (Willer & Yussefi, 2007).

Many countries have now set targets for conversion to Organic Agriculture. The stated goal of the organic movement is the adoption worldwide of Organic Agriculture (IFOAM, 2006). That task has a long path to travel, with Organic Agriculture currently accounting for 1.8% of agricultural land worldwide.

France has set the goal to be 20% organic by 2020 (Lichfield, 2007). Brazil has set the goal of 20% organic by 2012 (IFOAM, 2005). The Indian state of Kerala has set the bar even higher with the aim of 100% by 2012 (Annandana, 2007).

In any endeavour, one strategy for success is imitation: find out what the winners are doing and do that; and the corollary: find out what the losers are doing, and don't do that. In the book, "Global Development of Organic Agriculture - Challenges and Prospects" the authors state that "The major

[1] The Fenner School of Environment & Society, Australian National University, Canberra, ACT 0200, Australia.
email: john.paull@anu.edu.au

part of the [world's] certified organic land is located in Australia" (Halberg et al., 2006, p. 26). Australia is thereafter barely mentioned - Bhutan achieves three mentions in the index, Uganda scores eight mentions, while Australia rates no mention.

There is no single index of organic-ness. While it is true that Australia is the world leader in certified organic hectares, accounting for more than one third of the world's certified organic hectares, otherwise Australia is more lagger than leaders. This conundrum is quickly resolved when it is realized that most of Australia's organic hectares are low output hectares carrying beef cattle, with much of it in sparsely vegetated outback Queensland.

The measure of who are the world leaders in organics is challenging. It is frustrated by there being no unequivocal answer to the question: what is an appropriate measure of organic leadership? and it is further frustrated by the fact that most countries do not collect data specifically on organic agriculture, food and/or products.

This paper sets out to identify organic leaders, by country. It uses existing data sets, identifies 12 indices of organic-ness, and from there creates a portmanteau index of overall organic leadership, and ranks organic leader countries using that parameter.

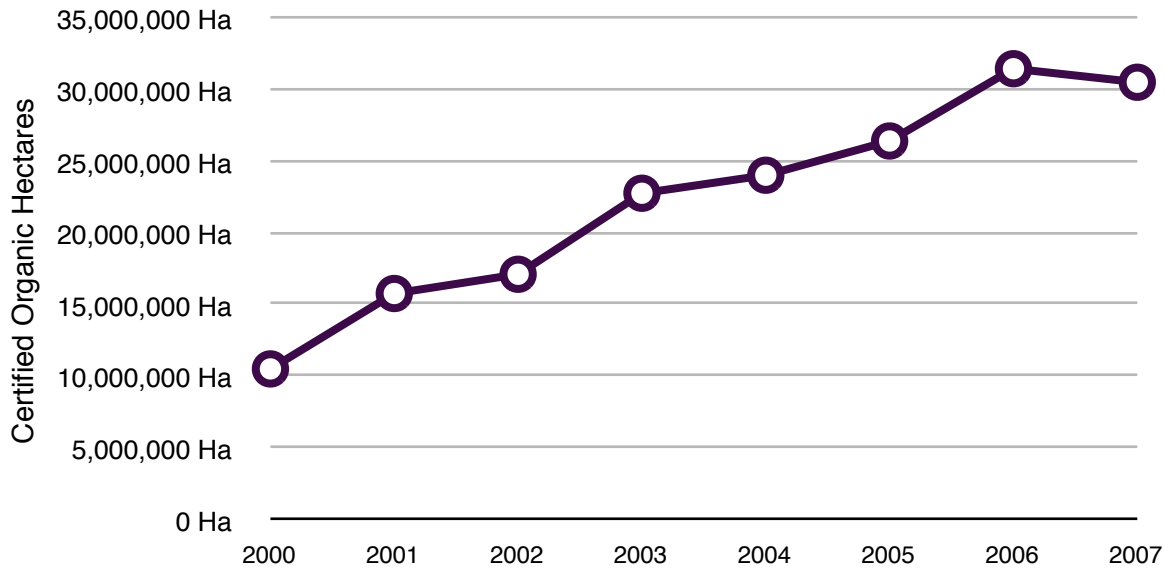

Figure 1: Certified organic hectares, worldwide totals, (Data sources: Willer & Yussefi, 2000, 2001, 2004, 2005,2006, 2007; Yussefi & Willer, 2002, 2003).

Methods

It is agreed from the outset that organics is not a competition, yet to grow the organic project, or any project, it is valuable to model leaders (Waitley, 1992), and the first step in such a process is to identify those leaders. In the organics enterprise there are multiple potential measures of leadership. Twelve such metrics have been selected here, and in each case the top three countries, based on that metric, have been "awarded" medals, gold, silver and bronze respectively.

Data are presented ranked on the basis of country. Existing data sets have been mined to genertae the indices of organic-ness. Twelve indicators are presented. The unit of analysis is in all cases by country (rather than for example by region). For the first six indicators (Tables 1 through 6) raw data indicators are presented. For the second six indicators (Tables 7 through 12) derivative indica-

tors, including ratio data and ratio difference data, are presented. For each indicator the top three countries based on that indicator are presented - and "awarded" Gold, Silver or Bronze medals for ranking first, second and third respectively.

This process generates twelve organic-ness indices, and three leaders within in each index. To generate a portmanteau-index of organic-ness from these 12 indices, a weighted total score was generated for each country, with medals weighted as follows: Gold = 3, Silver = 2, Bronze =1. This process generated a total of 36 medals and thence 72 points to be distributed.

Organic leaders are ranked on the basis of the weighted totals, and within a score category, (i.e. where countries achieve the same weighted total score), they are ranked on the basis of medal distribution, with gold preferenced over silver, and silver preferenced over bronze; where scores are equal and the medal distribution is identical, countries are presented alphabetically.

Longitudinal data of organic hectares is examined to generate two historical measures of annual growth. These past rates are projected into the future to reveal two future scenario for organic agriculture.

Results

Twenty four countries are identified as organic leaders, based on the twelve indicators of leadership (Tables 1 - 12). Based on weighted scores, China is the global organic leader with Liechtenstein in second place. Denmark, Germany, Latvia and Mexico follow in equal third place (Table 13). Only two countries, China and Switzerland, scored three medals. Eight countries, scored two medals. Fourteen countries scored one medal.

All regions are represented in the tally of 24 organic leaders. Europe is the lead region with nine countries represented. Africa is well represented with six countries scoring. The Americas have five representatives, Asia and Oceania-Pacific each have two representatives among the 24 organic leaders (Table 13).

MEDAL	Country	Statistic
Gold	Australia	11,800,000 hectares
Silver	Argentina	3,099,427 hectares
Bronze	China	2,300,000 hectares

Table 1: Certified organic hectares (Data source: Willer & Yussefi, 2007).

MEDAL	Country	Statistic
Gold	Mexico	83,174 farms
Silver	Italy	44,733 farms
Bronze	Uganda	40,000 farms

Table 2: Organic farms (Data source: Willer & Yussefi, 2007).

MEDAL	Country	Statistic
Gold	Romania	15,927,862 hectares
Silver	Kenya	15,080,028 hectares
Bronze	Zambia	9,067,500 hectares

Table 3: Certified wild organic hectares (Data source: Willer & Yussefi, 2007).

MEDAL	Country	Statistic
Gold	China	135,885 tonnes
Silver	Fiji	20,200 tonnes
Bronze	Bolivia	12,572 tonnes

Table 4: Certified wild organic harvest, tonnes (Data source: Willer & Yussefi, 2007).

MEDAL	Country	Statistic
Gold	Denmark	1805 entries
Silver	Germany	1790 entries
Bronze	Switzerland	1009 entries

Table 5: Total organic research papers (Data source: Organic eprints, 2007)

MEDAL	Country	Statistic
Gold	Germany	69 members
Silver	USA	48 members
Bronze	India	47 members

Table 6: IFOAM members (Data source: IFOAM, 2007).

MEDAL	Country	Statistic
Gold	China	1,998,705 hectares
Silver	USA	670,351 Hectares
Bronze	Brazil	566,424 Hectares

Table 7: Organic hectares gross 4-year increase (Data sources: Willer & Yussefi, 2007, Willer & Yussefi, 2003).

MEDAL	Country	Statistic
Gold	Liechtenstein	27.90%
Silver	Austria	14.16%
Bronze	Switzerland	10.94%

Table 8: Organic share of agricultural land (Data source: Willer & Yussefi, 2007).

MEDAL	Country	Statistic
Gold	Mali	8488% increase
Silver	Madagascar	1621% increase
Bronze	Niger	225% increase

Table 9: Annual percentage increase of organic hectares (Data source: Willer & Yussefi, 2007; Willer & Yussefi, 2006).

MEDAL	Country	Statistic
Gold	Latvia	+3.01% (1.77% to 4.78%)
Silver	Mexico	+2.60% (0.27% to 2.87%)
Bronze	Italy	+2.18% (6.22% to 8.40%)

Table 10: Annual percentage increment of organic share of agriculture (Data source: Willer & Yussefi, 2007; Willer & Yussefi, 2006).

MEDAL	Country	Statistic
Gold	Liechtenstein	+ 10.9%
Silver	Slovenia	+ 4.17%
Bronze	Latvia	+ 3.99%

Table 11: Four-yearly percentage increment of organic share of agriculture (Data source: Willer & Yussefi, 2007; Yussefi & Willer, 2003).

MEDAL	Country	Statistic
Gold	Switzerland	103 EU
Silver	Denmark	57 EU
Bronze	Austria	56 EU

Table 12: Amount spent per capita on organic food (Data source: Willer & Yussefi, 2007).

The aggregated data, from Tables 1 to 12, is presented as a medal tally in Table 13. Twenty four countries are identified as organic leaders, scoring at least a single medal. Of the twelve indices, no country achieves more than three medals. A country "scooping the pool" would score a weighted total of 36 (i.e. 12 gold medals, each weighted at 3; 12 x 3 = 36).

COUNTRY	Gold	Silver	Bronze	Total	Weighted Total
China	2	0	1	3	7
Liechtenstein	2	0	0	2	6
Denmark	1	1	0	2	5
Germany	1	1	0	2	5
Mexico	1	1	0	2	5
Switzerland	1	0	2	3	5
Latvia	1	0	1	2	4
USA	0	2	0	2	4
Australia	1	0	0	1	3
Mali	1	0	0	1	3
Romania	1	0	0	1	3
Austria	0	1	1	2	3
Italy	0	1	1	2	3
Argentina	0	1	0	1	2
Fiji	0	1	0	1	2
Kenya	0	1	0	1	2
Madagascar	0	1	0	1	2
Slovenia	0	1	0	1	2
Brazil	0	0	1	1	1
Bolivia	0	0	1	1	1
India	0	0	1	1	1
Niger	0	0	1	1	1
Uganda	0	0	1	1	1
Zambia	0	0	1	1	1
TOTALS	12	12	12	36	72

Table 13: Medal Tally. Listing of organic lead countries, ranked by weighted total score (Based on 12 indicators [Tables 1 -12] and with medals weighted as follows: Gold = 3, Silver = 2, Bronze =1).

The growth of organic sector has often been described in terms similar to: "The certified organic food sector is the world's fastest growing food sector. In the past decade, the sector has grown by up to 30 per cent each year" (Brumby, 2007, p .3). The growth of certified organic hectares has been presented in Figure 1, for the years from 2000 through 2007. In this seven year period the total certified organic hectares has grown from a total of 10, 550, 862 hectares to 30, 558, 183 hectares. This

equals a compounding increase of 16.4% per annum, or alternatively an arithmetic (simple) increase of 27.1% per annum (relative to the 2000 starting point).

If a compounding model is used, and the historical rate of increase, namely 16.4%, continues for the future, then the certified organic hectares will double every 4.4 years. A five year projection is presented in Figure 2, and indicates that the 2012 total area would be 65,296,880 hectares (on the assumption that the seven-year past rate of compounding continues for the next five years).

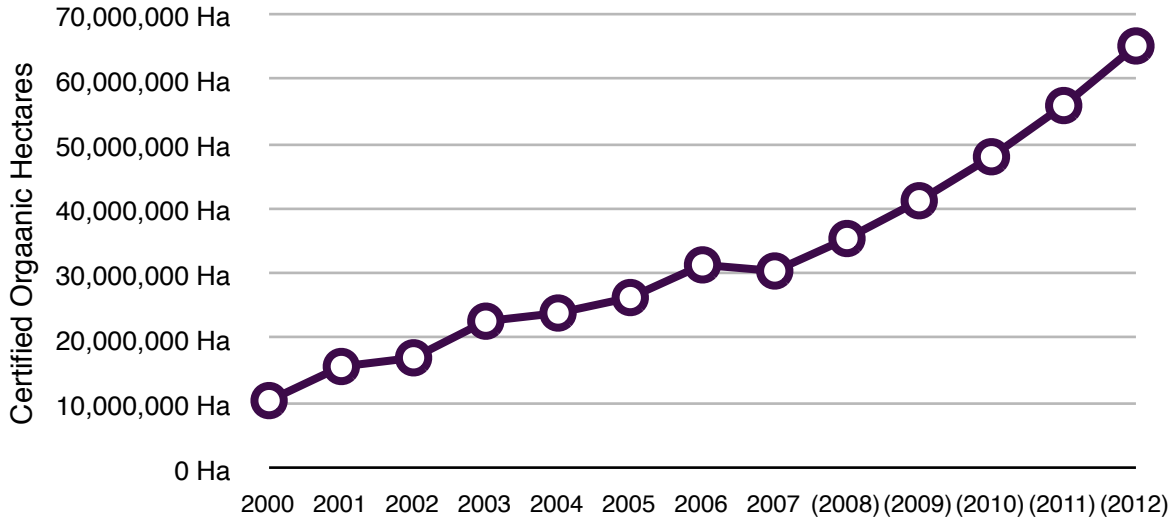

Figure 2: Certified organic hectares, 2000 through 2007, with projections for 2008 through 2012, on the assumption that the compound rate of increase exhibited in the years 2000 through 2007, i.e. 16.4% pa, continues for the next five years**.**

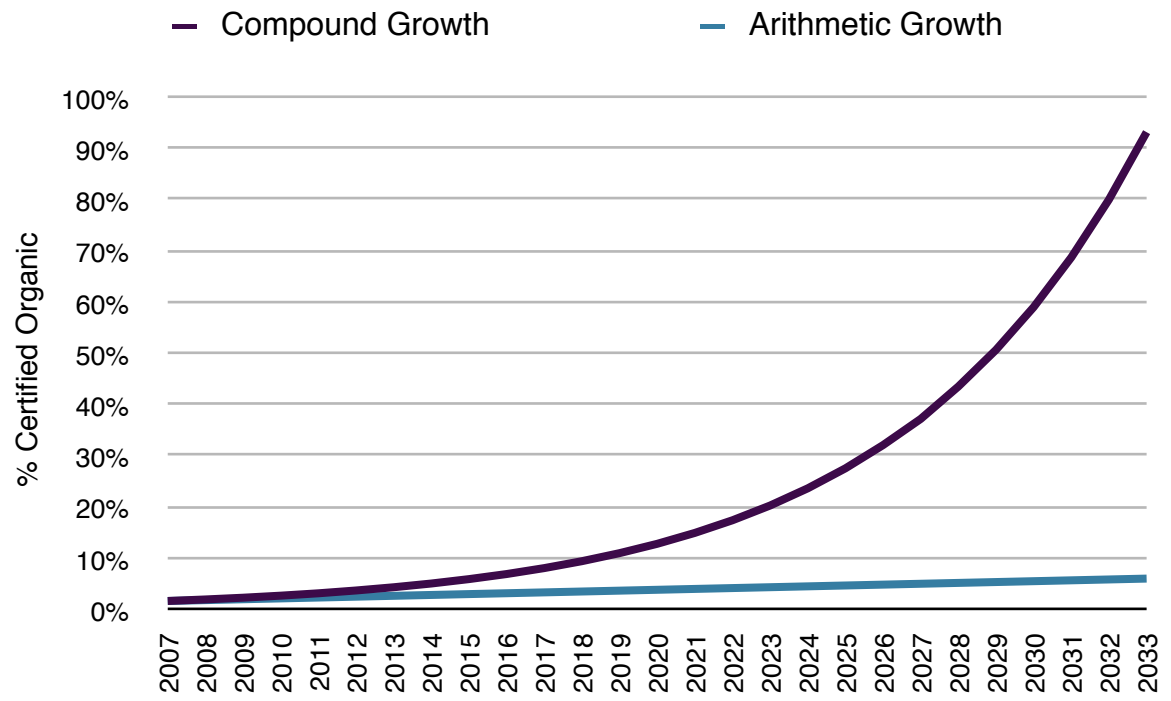

Figure 3: Certified organic hectares as a percentage of all agricultural land, projected from 2007, on the assumptions (a) that the compound rate of increase exhibited in the years 2000 through 2007, i.e. 16.4% pa, continues and alternatively (b) that the arithmetic rate of increase exhibited in the years 2000 through 2007, i.e. 27.1% pa from the 2000 level, continues.

The current area of organic hectares is 30,558,183 hectares (Willer & Yussefi, 2007) compared to a world total of 1,700,000,000 agricultural hectares (IPCC, 1996); thus the organic sector accounts for 1.8% of agricultural land worldwide. If the present rates of growth (27.1% simple on 2000 level, 16.4% compound) are continued indefinitely, and this growth is achieved at the expense of non-organic agricultural land, i.e. by conversion to organic rather than creating new agricultural land, then the projections for the two growth rates (simple and compound) are presented in Figure 3.

These two growth scenarios perform very differently. Under the scenario of compounding growth, at the 16.4% per annum rate exhibited over the past seven years, 10% organic will be achieved by 2019, 20% by 2023, 50% by 2029, and all agricultural land would be converted by 2034.

The alternative scenario is 27.1% per annum simple growth relative to 2000 level of organic agriculture, that is an increase of 2,859,000 hectares per annum, this amounts to an increment of total agricultural land of 0.168% converted per year. Under this arithmetic-increase scenario, then 4% of agricultural land will be organic by 2021, and 6.34% by 2034. Under this scenario 100% organic will be achieved in about 584 years, about the year 2591.

Discussion

The present study identifies 24 organic leaders, based on 12 organic indices. The results indicate that leadership is broadly spread across countries and regions. Twenty four countries are represented in the Organic Olympiad medal tally and all regions are represented. This suggests that the opportunities for learning from the leaders are broad and diverse, and the experience of leadership is geographically well diffused.

With China as the overall global leader, based on these twelve indicators, it is clear that there are lessons to learn from that country's recent adoption of organic agriculture, especially in terms of the rapid increase in the scale of organic agriculture (Table 7) and in the results of wild harvesting (Table 4).

Liechtenstein has the largest percentage of its agricultural land under organic agriculture (Table 8) and has also made the greatest strides in increasing this percentage (Table 11). Worldwide 1.8% of agricultural land is certified organic (Organic land area is 30,558,183 hectares, Willer & Yussefi, 2007; total agricultural and worldwide is 1,700 Mha, IPCC, 2007). For countries with organic agriculture expansion goals there will be lessons to draw from those who have achieved significant percentages (Table 8) and those making rapid progress (Tables 7, 10 & 11).

IFOAM and FiBL, together with the authors Helga Willer & Minou Yussefi, are to be congratulated for the continuity and expansion of the production of "The World of Organic Agriculture", published annually starting in 2000. This is an invaluable resource of organic statistics, especially so, given that government agriculture departments typically fail to differentiate in their data collection between organic and non-organic production.

Organic eprints is an initiative of the Danish Research Centre for Organic Farming (DARCOF) starting in 2002, and partnered by FiBL since 2003. As an Open Access archive, orgprints.com is an excellent medium for freely sharing the fruits of organic research worldwide. This resource is well patronised by European researchers and institutions depositing research papers (Table 5) and there is clearly the opportunity for greater support from other regions, including Africa, Asia, the Americas and Oceania/Pacific, each of which are under-represented. A future Organic Olympiad might measure the annual contribution of research papers (rather than, as in Table 5, the total aggregated contribution).

The data in Table 12, the per capita spend on organic food, are derived from a small (non-comprehensive) data set. Nevertheless the author's enquiries suggest that countries outside the data

set are unlikely to yield figures to reach the values reported, and hence this index is included. This raises the issue that organic data is, by and large, collected and shared cooperatively rather than, for example, collected coercively and reported by government agents.

For a comparative data exercise such as the present study there is the reliance on global data collection. In general comprehensive organic food and farming statistics are not collected by governments, for example the Australian government collects data on organic exports from Australia - denominated by weight, but not value. This paucity of comprehensive government-collected data may change, not merely because the sector steadily grows more economically significant, but also as the ecological significance of the organic sector becomes more appreciated - including the awareness of the importance of soil as a carbon sink.

The flip side to the sporting and business maxim of: find out what the leaders do and do that, is: find out what the losers are doing and don't do that. The results presented here have focussed on organic leaders, and have ignored the laggards and recidivists, and yet there are lessons in that area as well. While the growth of the organic sector presents a picture of steady growth in the aggregate (eg Fig. 1), this masks the reality that in the process of going forward, many countries report periods of stalled progress, and even back-sliding.

Between coining the term "organic farming" in 1940 (Paull, 2006) and reviewing the position three decades later (Northbourne, 1970), Northbourne translated Perennial philosopher René Guénon's *"The Reign of Quantity and the Signs of the Times"* (1945) from French into English, with that English edition appearing in 1953. That book presents a case against the methodology of the present paper. The core of Guénon's book is a critique of "the tendency to bring everything down to an exclusively quantitative point of view" (1945, p. 9). He makes the point in a chapter entitled *"The Illusion of Statistics"* that "anything that cannot be so treated is not taken into account, and is regarded as more or less non-existent … this outlook involves losing touch with everything that is truly essential, in the strictest interpretation of the word; also that the residue that comes within the grasp of such a science is in reality quite incapable of explaining anything whatever" (Guénon, 1945, p. 85).

In response to the Guénonian critique suggested by *"The Reign of Quantity"*, any and all statistics presented here are presented for their relative contextual interest, and not their absolute value - and as such, their value lies in being signposts to the stories underlying the numbers. Scratch the China statistic of rapid expansion - and the story of China's Green Food is revealed (Paull, 2007). Australia's lead in organic hectares leads an inquisitive researcher to the OBE Beef story (Brook, 2004). The value in this paper is in pointing to stories that warrant being told; and they include: Mexican organic farms, Romanian organic wild areas, Danish organic research, German NGOs, Liechtenstein's conversion to organic, organic agriculture take-up in Mali (8488% increase, from 170 ha to 14,600 ha), Latvia's increase in its percentage of agricultural land certified organic, and organic consumption in Switzerland.

Guénon (1945, p. 306) extends his criticism of quantitative methods, with the assertions that: "predictions almost always present everything in a distressing or even in a terrifying light … If one prediction agrees with another their effect will be reinforced, and if they contradict one another, as often happens, they will only produce all the more disorder".

Figures 2 and 3 are presented as scenarios, and not predictions. These scenarios diverge increasingly as time elapses. The scenarios are based on two mutually exclusive interpretations (simple or compound growth) of the same set of past performances. One lesson to draw for the organic sector is that the goal of 20% organic by 2020 will not be achieved under either scenario, if future aggregate performance mirrors past aggregate performance. Thus the scenarios (Fig. 3) both identify that for such a goal to be achieved then future local performances need to exceed past global performances - and it is here proposed that one strategy to achieve this is to learn from Organic Olympiad leaders.

As with any Olympiad, while not everyone can be a medal winner, everyone who shows up is a winner - as Woody Allen commented: "80 per cent of life is showing up" (quoted by Spiegelman, 2002). There are now 121 countries reporting certified organic agriculture, each has lessons to learn and lessons to share.

As additional or expanded data sets become available, the set of twelve indicators exhibited herein, can expand for future Organic Olympiads. In particular, data on the monetary value of organic production, of organic exports, and of organic retail sales, per country, would be welcome. Measures of organic floristry, fibre production, and forestry would also enrich the picture. The author welcomes suggestions of other metrics for future Organic Olympiads.

References

Annadana, S., 2006, *Organic farming drive in Kerala from November*, AgricultureInformation.com, Bangalore, India, May.

Bellwood, P., 2005, *First Farmers - The Origins of Agricultural Societies,* Blackwell Publishing, Oxford, UK.

Brook, D., Going organic in the outback - an emerging region for organic beef production, *15th Organic World Congress, Shaping Sustainable Systems,* Adelaide, Australia, 20 -23 September.

Brumby, J., 2007, Minister's Forward in *Victorian Organic Food Products Directory 2007,* Regional Development Victoria, Victorian Government, Melbourne, Australia.

Guénon, R., 1945, *The Reign of Quantity and the Signs of the Times,* Munshiram Manoharlal Publishers, New Delhi, India, (1953 translation by L. Northbourne, 2000 reprint).

Halberg, N., Alroe, H. F., Knudsen, M.T. & Kristensen, E. S., 2006, *Global Development of Organic Agriculture - Challenges and Prospects,* CABI Publishing, Wallingford, UK.

IFOAM, 2005, Brazil Government Sets Sights High for Organic Agriculture, *IFOAM Press Release,* International Federation of Organic Agriculture Movements, Bonn, 15 December.

IFOAM, 2006, *Uniting the organic world*, International Federation of Organic Agriculture Movements, Bonn, <www.ifoam.org>.

IFOAM, 2007, *Organic Directory Online,* International Federation of Organic Agriculture Movements (IFOAM), Bonn, <www.ifoam.org/organic_world/directory>.

IPCC, 1996, *Technical Paper 1: Agriculture Sector,* Intergovernmental Panel on Climate Change, Geneva, Switzerland, <http://www.gcrio.org/ipcc/techrepl/agriculture.html>.

Lichfield, J., 2007, France goes green with organic farming pledge, *The Independent,* London, 26 October.

Northbourne, L., 1940, *Look to the Land,* Dent, London.

Northbourne, L., 1970, *Looking Back on Progress,* Sophia Perennis, Ghent, USA (1995 reprint).

Organic eprints, *Research Affiliation: Country/Organization/Project,* Danish Research Centre for Organic Farming (DARCOF), Tjele, Denmark, <http://orgprints.org/view/projects/projects.html>.

Paull, J., 2006, The Farm as Organism: The Foundational Idea of Organic Agriculture, *Journal of Bio-dynamics Tasmania*, 80, 14 -18, <http://orgprints.org/10138>.

Paull, J., 2007, China's Organic Revolution, *Journal of Organic Systems,* 2(1), 1 -11, <http://orgprints.org/10949>.

Spielgelman, A, 2002, Talking to Woody, A season of firsts for filmmaker, *CBS News,* 19 Nov.

Waitley, D., 1992, The Psychology of Winning, Berkley Publishing Group, New York.
Willer, H. & Yussefi, M., 2000, *Organic agriculture worldwide: statistics and future prospects*, Stiftung Oekologie & Landbau (SOEL), Bad Durkheim, Germany, August.

Willer, H. & Yussefi, M., 2001, *Organic agriculture worldwide: statistics and future prospects*, Stiftung Oekologie & Landbau (SOEL), Bad Durkheim. Germany,

Willer, H. & Yussefi, M., 2004, *The world of organic agriculture: Statistics and emerging trends*, International Federation of Organic Agriculture Movements (IFOAM), Bonn.

Willer, H. & Yussefi, M., 2005, *The world of organic agriculture: statistics and emerging trends*, International Federation of Organic Agriculture Movements (IFOAM), Bonn.

Willer, H. & Yussefi, M., 2006, *The world of organic agriculture: statistics and emerging trends*, International Federation of Organic Agriculture Movements (IFOAM), Bonn.

Willer, H. & Yussefi, M., 2007, *The World of Organic Agriculture, Statistics and Emerging Trends*, International Federation of Organic Agriculture Movements (IFOAM), Bonn, Germany & Research Institute of Organic Agriculture (FiBL), Frick, Switzerland;

Yussefi, M. & Willer, H., 2002, *Organic agriculture worldwide: statistics and future prospects*, Stiftung Oekologie & Landbau (SOEL), Bad Durkheim, Germany.

Yussefi, M. & Willer, H., 2003, *The world of organic agriculture: statistics and future prospects*, International Federation of Organic Agriculture Movements (IFOAM), Tholey-Theley, Germany.