

MS&A Summer 2011-12 Newsletter

In this thought provoking article, MS&A directors Mike Stephens and Jim Shovelton, explore the broader philosophical questions and challenges being raised in a world where a declining number of farmers are being asked to produce more food using less resources to feed a rapidly growing global population. What is the answer?

In the next newsletter, we will take a look at some of the practical approaches already being developed and implemented by Australian farmers to reduce inputs and increase production.

Does Mankind have a future?

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Regular watchers of the ABC television program SeaChange will remember the real estate salesman, entrepreneur, man about town, and ever-so-slightly crooked Bob Jelly. Jelly believed that progress and development were the same thing. In Jelly's world development equalled progress. That notion is challenged head on in the latest *Quarterly Essay* (Issue No.44) in an article titled "Man made World," written by Andrew Charlton.

Charlton was on the then Prime Minister Rudd's team at the climate change summit in Copenhagen in 2009, where he was at the forefront of negotiations. In his essay, he suggests that we need to choose between progress and the planet.

We should flag that we each read the article through our own personal filters and the perspective of our own views on global warming, climate change and an increasing world population. That is not to say that we believe in climate change - it is not a matter of belief, you either accept the science or you don't.

We do accept the science and the IPCC conclusion that global warming is a reality and that human activity particularly the use of fossil fuels is contributing to the accelerating of that warming. We also accept that we need to reduce our dependence on fossil fuels and the resultant carbon dioxide output; and that we need to reduce the output of greenhouse gasses, including methane and nitrous oxide.

Missing the point

Charlton asserts that Copenhagen failed to set hard targets because the greater percentage of the world's population live in the third world. They need more energy at affordable rates to climb out

of poverty and the thrust of Copenhagen was to reduce the use of fossil fuels and therefore the amount of energy available.

The agenda, particularly from green groups, is to reduce energy consumption, raise the price of fossil fuels, reduce the impact of mining, scale back our land use, practice sustainability and cover fields with wind and solar power generators. Green groups also suggest a return to organic farming and the preserving of ancient forests.

Charlton goes on to say that "green groups miss the point that many of these solutions don't work for the poor. The developing countries want more economic growth, more food for their hungry people, more light in their dark villages and more vehicles shipping goods from farms to the markets...The lesson of Copenhagen is that rich countries can no longer impose solutions to global problems that ignore poor countries or assume their acquiescence to the rich countries' agenda."

Charlton asserts that we now need new solutions to climate change and other environmental challenges that work for rich and the poor alike. He also asks whether we can feed another 2 billion people and reminds us that it took nearly 10,000 years after the birth of civilisation for the world's population to reach 1 billion in 1804.

In 1900, every human being had 8 hectares to sustain them; today they have 1.63 and the number is falling. Each year another 130,000 square kilometres of tropical forest disappear - most of it is cleared for agriculture but at the same time agricultural land is lost to urban development.

This is not the first time we have seen dire predictions. In 1798, Thomas Malthus made the first doomsday prediction, believing that humans would face inescapable conflict because of lack of resources.

As is often the case historically, faced with those sort of predictions man became inventive, although it didn't stop the potato famine in Ireland which drove one million Irish to North America and a million more to their graves or China being plagued with famines between 1810 and 1849, killing countless millions.

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HUMAN POPULATION	YEAR REACHED	TIME TO REACH
1 st Billion	1804	10,000 years
2 nd Billion	1927	123 years
3 rd Billion	1960	33 years
4 th Billion	1974	14 years
5 th Billion	1987	13 years
6 th Billion	1999	12 years
7 th Billion	2011	12 years

In 1840, the ability of European farmers to produce food increased with the use of guano brought home from Peru. In 1843, entrepreneur and agricultural chemist John Bennet Lawes developed superphosphate on his Rothamsted estate near London. Later, in the 1880s, when supplies of guano were nearing exhaustion, disaster was averted when a German chemist used steam and methane to harvest the abundant nitrogen in the atmosphere and produce fertilizer.

Organic not the answer

In his essay Charlton points out that the Malthus lesson has implications because on one hand modern agriculture is seen as destroying the world, and on the other hand we need to feed an increasing number of people from a smaller amount of land with diminishing natural resources. For some people the answer is organic. However Charlton points to the Nobel prize winning agronomist, Norman Borlaug, who calculated that if all the world's food was produced using organic principles alone, and all human and animal waste was returned to the soil, at most the world could feed four billion people. Charlton also asserts that while there is certainly a place for organic agriculture, its perceived health benefits are illusory despite the clover marketing, and it is not going to save the world.

One of the answers to the apparent food shortage dilemma may well lie in genetically modified crops. Charlton points out that GM food has an extraordinary safety record. "In the past 15 years more than 2 billion hectares of GM crops have been planted and hundreds of millions of people have eaten GM produce and there is not a single case of harm to human health," he says. "The world health organisation reports that no effects on human health have been shown as a result of the consumption of such food by the general population." In spite of this, organisations such as Greenpeace continue to do whatever they can to discredit GM food, including destroying trials.

Finding another way

Turning to what he terms resource scarcity and addressing the question, "Are we running out of materials?" Charlton suggests that over many years, environmentalists and economists have suggested that we were going to run out of food. He quotes Paul Ehrlich from his book *The End of Affluence* in which Ehrlich predicts that before 1985 mankind will enter a genuine age of scarcity.

The reality is that faced with the prospect of real shortages human kind has used its inventiveness in order to work through problems to ensure a greater level of production. Theories of peak oil, peak phosphorus and other "peak" materials have abounded for the last hundred years. Pessimists predicted in 1914 that the world's oil stocks would run out in 10 years.

Charlton quotes Sheikh Yamani, a former head of OPEC. When asked whether the world would run out of oil, he famously replied "the Stone Age didn't end because the world ran out of stone." You could add to this that the Bronze Age didn't end because man ran out of bronze or the Iron Age because man ran out of iron. In each case, there was some innovation which showed the way for human progress and facilitated a transition to new materials. We would be particularly gloomy if we didn't believe that this inventiveness will continue.

Having argued that human kind will find a way of exploiting other resources and producing more food, Charlton turned to the problem of the climate challenge. He suggests that rather than being weak, Australia's climate targets are strong – a 5% reduction in greenhouse gas emissions from a 1990 base is actually a 30% reduction on the projected greenhouse gas emissions by 2020. Both in Australia and overseas, if we want to actually fix the problem we won't be thinking about changing to renewable energy but we will be looking at every combination of clean coal, nuclear, wind power, geo thermo power and solar.

Renewable energy not enough

Charlton quotes Saul Griffith, who has calculated the amount of renewables needed to supply the global requirement for clean energy. Griffith is a recent recipient of the MacArthur Genius Award, given by the John D. and Catherine T. MacArthur Foundation each year to 20 to 40 United States citizens or residents, of any age and working in any field, who "show exceptional merit and promise for continued and enhanced creative

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work. Grants totalling over \$350 million US dollars have been awarded.

Griffith asserts that we will need to generate 110,000 Terawatt hours (TWH) of clean energy every year to replace fossil fuels in 25 years. This would require the construction of 13 terawatts of electricity generating capacity. The scale of the task is highlighted in Table B.

TERAWATTS	TYPE	EQUIVALENT
2	Solar photovoltaic	30,000 sq miles of photovoltaic arrays
2	Solar thermal	15,000 sq miles of mirrors
2	Wind power	10,000 sq miles of wind turbines
2	Biofuels	500,000 sq miles of algal pools
2	Geothermal	27,000 turbines
3	Nuclear	11,250 power stations

Dividing by 25 either the area or the number of facilities required shows the annual level of construction required. To put this into perspective, in 2008-09 Australia produced 56 gigawatts of electricity, of which 54% was coal-fired, 26% gas or multi-fuel, 2.4% was produced using oil, 13% using hydro and 4.5% other renewables. (A gigawatt is 1000 megawatts and a terawatt is 1000 gigawatts.) However, Griffith believes it can be done if we recognise the enormity of the task and do something about it.

Learning to imagine the impossible

Charlton leaves his readers in no doubt that mankind has to act quickly to ensure more and cheaper energy for all people or we are doomed. While those of us in wealthy countries need to use less energy, this won't wash in poorer countries. World-wide we need to use less energy per capita but the underdeveloped world needs more.

Charlton's essay leaves the future open. On one view we could say it's all over and let's settle down to observe the slow disintegration of society. The proactive stance is to accept that mankind is facing the greatest moral challenge of our time and it isn't global warming - it is how we feed more people and produce sufficient food to sustain them with a reasonable standard of living, using less resources. This requires us to challenge the excesses of planned obsolescence and food wastage. It means that in developed countries progress should occur by using comparatively less resources.

Einstein taught us that before man can achieve anything he must first imagine that it is possible. We must imagine that it is possible to feed an increasing world population or we won't be able to achieve it.

We also should remember that we cannot predict the future and those who have tried have failed. But we can say with certainty that agriculture has to be able to produce more from less. In his essay, Charlton has thrown out the challenge. Are we up to it?

Introducing Paul Talay

Paul Talay joined MS&A in April 2011 to help manage our growing pasture trial program in western Victoria, where he works alongside Casterton-based consultant and research agronomist, Andrew Speirs.

Paul comes with a wealth of experience developed over the past 41 years, both within Australia and in some fascinating projects overseas.

He managed research stations for the Tasmanian Department of Primary Industries on the north-west coast (Elliot, Tewkesbury, and Forthside Stations) for five years, and spent another eight years conducting pasture research in northern central Victoria, where he explored rhizobium technology and the reasons for pasture failure in acid soil conditions in association with the CSIRO's Division of Plant Industries.

Paul also worked as a fertiliser agronomist for eleven years, firstly with Pivot and then Incitec Pivot. This job took him across Australia, advising farmers on everything from tropical crop nutrition in the Ord River region of WA and Far North Queensland, to growing temperate cereals, viticulture and potatoes in South Australia and Victoria.

Paul spent 14 years working as an agricultural consultant in the developing world, with two stints in India where he was an agronomist and irrigation specialist for the Indo Australian Dairy Cattle Breeding Centre at Hissar in the state of Haryana, in the late 1970's; and then project manager and nutrition advisor for Technico Agrisciences. The Australian firm specializes in producing controlled environment early generation potato seed tubules from tissue culture material. It is based in Chandigarh, with a very large facility in Himachel Pradesh, and additional operations in China and Canada.

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Paul has also lived and worked in:

- Pakistan, advising the government and a range of research organizations on dairy cow nutrition, and carpet wool sheep breeding and production techniques;
- Nepal, helping to implement a National Strategy for Carpetwool Production for the kingdom in association with world-renowned sheep breeding specialist Dr Helen Newton Turner, and the Australian consulting firm, Booth and Associates;
- The Solomon Islands, managing a 2000 hectare intensive rice farm which produced 2.8 crops of rice/year;
- Indonesia, managing an integrated seafood and land based cattle project on Seram Island for Pivot Limited; and
- Rwanda, in Africa, managing an intensive rice farming project for a division of the ICM group of companies.

Paul is now semi retired and works with MS&A part time. He also works alongside his eldest son Adrian, who has a rural contracting business in Western Victoria, and he has a small farm at Nareen which fills in any spare time left over.

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In addition to our website, MS&A is now posting articles and links to articles on our Facebook page. You can find us, and ‘like us’ at:



[facebook.com/MikeStephensandAssociates](https://www.facebook.com/MikeStephensandAssociates)

Articles from this newsletter will be posted soon

Christmas greetings

All directors and staff of Mike Stephens & Associates would like to wish you, your family and staff a happy Christmas season and productive start to the new year.

Our offices will close 23 December 2011 for the Christmas period and re-open Wednesday 4 January 2012.

If you have a need to speak to a consultant during this period, please call Andrew Daley 0427 417 653.

We look forward to working with you in 2012.

Livestock Summer Reminders

- Set condition score targets for all breeding stock. Manage nutrition to achieve and monitor progress.
- Do you still have lambs on hand? Any lambs that are 7 months old and weigh less than 45kg, have achieved growth rates of 200g/hd per day or less since birth. Do your sums on finishing these lambs before opting to feed them, as it will depend on your own situation as to what is the best decision. Regardless, do not compromise ewe nutrition prior to joining by retaining poor performing lambs.
- Set liveweight targets for remaining sale stock, and replacement animals. Manage nutrition to achieve. Monitor, monitor, monitor.
- Monitor sheep worm egg counts to determine if a second summer drench will be necessary.
- Take a break. Make time for yourself and your family to stop & relax. Recharge your batteries ready for another year ahead.
- Remember that there are large variations in withholding periods for all fly and lice treatments. Export Slaughter Intervals in particular are often longer than many producers realize. Think about the future of all stock before applying any chemical treatments.
- Don't be seduced by stubbles. They can provide a great source of feed, but it is often limited and can be short lived. Make sure that you monitor feed on offer as well as animal performance to optimize the use of your stubbles this year.

