

Who's Minding the Farm?



PATRICE
NEWELL

NOTES



INTRODUCTION

 For more information of why we need a world soil day on 5 December, see www.fao.org/world-soil-day.

 The word chemical is complex. Yes, we are all made of chemicals. The world can be reduced to chemical elements and molecules, but I am not a chemist and don't use the word organic (carbon containing) and inorganic (non-carbon containing) as they would.

 When using the term certified organic agricultural systems, this includes farming as a production practice, processing, transport and packaging. To become a certified organic or biodynamic supplier the regulations are many and constantly being updated to match overseas standards. To read in full the ACO Certification Ltd requirements per industry, see www.aco.net.au.

 Australian Organic Market reports are conducted each year by the industry and provide the best up-to-date statistics. See: https://austorganic.com/wp-content/uploads/2018/04/AustOrganicMarketReport2018_spreads_digital.pdf

 Carbon dioxide equivalent, CO₂-e, provides the basis for comparing the warming effect of different greenhouse gases. For updated information on Australia's greenhouse gas emissions, see www.environment.gov.au/climate-change.

CHAPTER I

 Around the world, the appearance of garlic – its phenotypic plasticity, as scientists call it – varies greatly. Garlic cultivars or classes grown under diverse conditions have highly elastic soil nutrient responses, particularly relating to skin colour and yield.

 Ried & Fakler's 2014 research reviewed how aged garlic can help lower blood pressure. It showed a reduction in blood pressure of about 10 mmHg systolic and 8 mmHg diastolic, similar to standard BP medication. Their report reviews many of the historical uses of medical garlic and the references are most useful. See www.ncbi.nlm.nih.gov/pmc/articles/PMC4266250

CHAPTER 4

 To keep up to date with biochar research and projects, see the International Biochar Institute (IBI): <https://biochar-international.org>.

 To find out more about the commercial slow pyrolysis plant at Tantanoola in South Australia, see the manufacturer's site: www.rainbowbeeeater.com.au.

 In 2018, a new research group was set up to analyse the truth about Australia's food waste problem. The Fight Food Waste Cooperative Research Centre's first report claims Australia wastes 40 per cent of the food it produces, and individual households throw away around \$4000 worth of unused food per year.

CHAPTER 5

 For more details on domestic violence, see the Australian Government's Australian Institute of Health and Welfare report 'Family, domestic and sexual violence in Australia, 2018': <https://www.aihw.gov.au/reports/domestic-violence/family-domestic-sexual-violence-in-australia-2018/contents/summary>.

CHAPTER 7

 The Australian Bureau of Statistics collects agricultural data every five years via the Agricultural Census. The last one was 2015–16. See 'Australian Bureau of Statistics. Labour Force, Australia, Detailed Quarterly May 2017.' Catalogue number 6291055003.

 Allan Savory's 2013 TED Talk (now with more than half a million views) places his work within our climate emergency: www.ted.com/speakers/allan_savory.

 Cattle in feedlots are fed a mixture of high-protein grains, roughage (such as nut shells and cottonseed meal because their diet is around 60 per cent fibre), vitamins and antibiotics. According to a Virginia Tech research team, manure from cattle administered antibiotics drastically changes the bacterial and fungal make-up of surrounding soil, leading to ecosystem dysfunction.
<https://phys.org/news/2017-03-cattle-antibiotics-disturb-soil-ecosystems.html>

 Extreme weather events have repeatedly negatively impacted on intensive animal production. In 2018, effluent from North Carolina's pig farms spread far and wide after flooding from a hurricane.
www.nytimes.com/2018/09/19/climate/florence-hog-farms.html

 Efforts to establish large-scale European style agriculture in the Amazon basin failed because of the nutrient poverty of the soil. Amazonian forests with their huge biomass have a unique ecosystems function.



For the latest details on our climate change emission reductions, see Australia's National Greenhouse Accounts. 'Quarterly Update of Australia's National Greenhouse Gas Inventory: June 2018 Incorporating emissions from the NEM up to September 2018': www.environment.gov.au/system/files/resources/e2b0a880-74b9-436b-9ddd-941a74d81fad/files/nggi-quarterly-update-june-2018.pdf.

For up-to-date information easily explained on all aspects of climate change, see the not for profit Climate Council: www.climatecouncil.org.au.



To see where your tax dollars are spent in the emissions reduction fund, visit their website: www.cleanenergyregulator.gov.au/ERF. The projects the government accepts to fund are updated after each auction round. The eighth Emissions Reduction Fund auction was held on Monday 10 and Tuesday 11 December 2018.



The Federal Government's Australian Institute of Health and Welfare tracks our eating habits. See www.aihw.gov.au/reports-data/behaviours-risk-factors/food-nutrition/overview. In 2017 CSIRO reported Australians don't eat enough fruit and vegetables for a healthy diet. See www.csiro.au/en/News/News-releases/2017/Diets-Lacking-in-Fruit-and-Vegetables.

CHAPTER 8



In 1997 the Minister for Health and Family Services and the Minister for Primary Industries and Energy established the Joint Expert Technical Advisory Committee on Antibiotic Resistance (JETACAR). The committee broadly assessed the use of antibiotics in food-producing animals, the occurrence of antibiotic resistance and its importance in human and veterinary medicine. In September 1999 it published a report entitled 'The use of antibiotics in food producing animals: antibiotic-resistant bacteria in animals and humans'. The report concerned:

- the emergence of resistant bacteria in humans and animals following antibiotic use;
- the spread of resistant animal bacteria to humans;
- the transfer of antibiotic-resistance genes from animal bacteria to human pathogens; and
- the possible emergence of resistant strains of animal bacteria which may cause human disease.

(See The Commonwealth Government response to the report of the Joint Expert Technical Advisory Committee on Antibiotic Resistance (JETACAR), August 2000).



There are many feed-mix brands on the market for all animals. Most are supplemented with vitamins and minerals, many include antibiotics. Because acidosis is a health problem in cattle when they are fed high-grain diets – as in feedlots – the feed is often mixed with antibiotics.



See <https://apvma.gov.au> for a full list of all the different pesticides and drugs approved for veterinary use.



Rumensin is an antibiotic used as an animal feed additive for cattle (beef and dairy), sheep, chickens and goats and is sold pre-mixed with the feed. Usually 100g is added to a 25kg bag of feed. It's promoted to improve feed efficiency thus help weight gains, control bloat (a problem when gases form in the rumen causing death), increase milk production and improve reproductive performance.



Salinomycin sodium is added to increase growth rates and help feed conversion.



Virginiamycin – a streptogramin class of antibiotics – is added to help an animal eat their high feedlot carbohydrate diet. APVMA publish their findings and the 2004 review of the antibiotic virginiamycin can be found at <https://apvma.gov.au/sites/default/files/publication/14231-virginiamycin-final-review-report.pdf>.



As another example of how Australian and overseas markets treat drugs and chemicals differently, virginiamycin is not used in animal feed in Europe. This is what the APVMA have to say:

1.3.1 Regulatory status in the European Union

'In the European Union, virginiamycin was originally authorised as a feed additive for growth promotant purposes in pigs and poultry. In 1998 the Council of the European Union withdrew the authorisation for the in-feed growth-promotant use of several antibiotics including virginiamycin. This regulation did not affect any prophylactic or therapeautic uses of antibiotics in food animals. However, virginiamycin is not authorised for such uses in food animal species in Europe and does not have an established maximum residue limit (MRL). The decision to withdraw the growth-promotant use of virginiamycin was made despite advice from the council's scientific advisory committee that there was insufficient evidence regarding the transfer of bacterial resistance from livestock to humans. Pfizer Animal Health SA, as the only producer of virginiamycin in the world, challenged the council's decision in the European courts. However in 2002 the Court of Justice upheld the decision, concluding that despite uncertainty as to whether there was a link between the use of antibiotic additives and increased resistance to those antibiotics in humans, the withdrawal of authorisation for the products was not a disproportionate measure given the need to protect public health.'



The World Health Organisation International Agency for Research on Cancer (IARC)'s 'IARC Monographs volume 112: valuation of five organophosphate insecticides and herbicides' (20 March 2015) says of glyphosate:

Glyphosate currently has the highest global production volume of all herbicides. The largest use worldwide is in agriculture. The agricultural use of glyphosate has increased sharply since the development of crops that have been genetically modified to make them resistant to glyphosate. Glyphosate is also used in forestry, urban, and home applications.

Glyphosate has been detected in the air during spraying, in water, and in food. The general population is exposed primarily through residence near sprayed areas, home use, and diet, and the level that has been observed is generally low.

For the full report see: <https://www.iarc.fr/wp-content/uploads/2018/07/MonographVolume112-1.pdf>.

CHAPTER IO



Henry Ford predicted in 1925, 'The fuel of the future is going to come from fruit like that sumac out by the road, or from apples, weeds, sawdust – almost anything. There is fuel in every bit of vegetable matter that can be fermented.'



More information on community supported agriculture farms can be found at: www.csanetworkausnz.org/.



How we spend money is changing all the time and the government analyses these changes. For interesting data, see: www.moneysmart.gov.au.



For the full report by Professor Alex McBratney see: <http://theconversation.com/in-100-years-time-maybe-our-food-wont-be-grown-in-soil-108049>. The International Union of Soil Scientists is also a rich resource for exciting soil news: www.iuss.org.



Pastures chewed down to bare earth slow down plant regrowth and after rain weeds usually proliferate. Local dust storms create poor air quality and sometimes they gather to sweep across the nation like in 2009 when Sydney turned red from so much dust. Estimates suggest 2.5 million tonnes of soil was removed in that storm alone and cost the New South Wales economy around \$300M. To help understand erosion and where it is happening, visit the DustWatch project. It was started in 2002 and by 2005, twenty DustWatch stations, now called the Rural Quality Air Network, were set up. They're managed by Office of Environment and Heritage with 40 volunteers maintaining the monitoring sites. Hundreds of citizen scientists also send in information when dust events occur: www.environment.nsw.gov.au/topics/land-and-soil/soil-degradation/wind-erosion/community-dustwatch.

FURTHER READING



- B. Pascoe (2014). *Dark Emu Black Seeds: Aboriginal Australia and the Birth of Agriculture*. Broome: Magabala Books.
- W. Gammage (2011). *The Biggest Estate on Earth: How Aborigines Made Australia*. Sydney: Allen & Unwin.
- T. Flannery (2010). *The Weather Makers: The History and Future Impact of Climate Change*. Melbourne: Text Publishing.
- C. Massy (2017). *Call of the reed warbler: A New Agriculture –A New Earth*. Brisbane: University of Queensland Press.
- P. Andrews & N. Hodda (2006). *Back From the Brink: How Australia's Landscape can be Saved*. Sydney: Australian Broadcasting Corporation.
- R. Owen (2015). The Australian Beekeeping Manual. Wollombi: Exisle Publishing.
- S. Steingraber (2010). *Living Downstream: An Ecologist's Personal Investigation of Cancer and the Environment*. Boston: Da Capo Press.