Sustainable Agriculture Versus Corporate Greed

Small farmers, food security & big business

Alan Broughton
& Elena Garcia

Alan Broughton: 'Ecological agriculture & food justice'

I came from a small wool producing farm at Strathbogie in the North-East of Victoria, spending my holidays helping on the farm and milking the cow after school each day. I wanted to be a farmer but did well at school and was told not to be so stupid. Apart from 12 years in Melbourne I have lived most of my life in rural areas.

I went on a two-week food sovereignty tour of Venezuela in 2010, which included urban agriculture, cooperative farms and traditional polyculture. I have also been to organic farms in Cuba, Thailand, Tanzania, Uganda, Italy and South Korea. My interest in travelling and learning languages coincides with my commitment to investigating and publicising ecological agriculture and food justice.

Now retired, I live on five hectares near Bairnsdale in East Gippsland. I have been involved with the Organic Agriculture Association since 1985 in various roles including editor and education officer, and currently vice-president.

I wrote Australia's first organic farming diploma course and taught it for 15 years. I worked for nine years until retirement for Australian Landscape Trust at an organic beef farm doing research into grazing management and soil carbon sequestration. Other jobs have included nursery work, gardening rounds and bouts at fruit picking, shop assistant work and unloading goods trains.

I have written and contributed to several books and have produced over 100 articles on biological agriculture and rural issues.

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Introduction

There is money to be made in farming, but not by the farmers. This book examines the reasons why farmers around the world are poor and there are a billion hungry people. The terms of trade for farmers continually declines and farmers are forced off the land. Governments and international bodies advocate further deregulation and trade liberalisation and greater use of technology, yet these policies have undoubtedly failed in their stated aims of increasing food security and rural prosperity. The beneficiaries have only been the agribusiness corporations which have been instrumental in the design of the new order of agricultural production.

The book looks at the effect of trade liberalisation and other neoliberal policies on farm income and food security. Corporate control of agriculture has greatly increased as commodity trading, land ownership, seed and other input provision, processing and marketing has become more concentrated in fewer hands. Farming land loses productivity and resilience as it becomes more degraded through the use of agrochemicals. Food producing land is diverted to more profitable activity such as biofuels and livestock feed. Smallholders are thrown off the land by corporate land acquisitions, yet evidence shows that family farms are many times more productive and better cared for than large holdings. Agricultural research is concentrated in technological solutions to problems that technology has largely produced, yet agroecology has sound answers to food production issues. Trade negotiators from the US and Europe insist on other countries eliminating protection for their farmers but refuse to eliminate theirs. Corporations have the ear of governments, small farmers do not; indeed their demise is regarded as inevitable and desirable.

Free trade and deregulation are not the primary cause of rural decline. The loss of people from farms in Australia commenced early in the 20th century, due largely to declining soil fertility and an over-optimistic appreciation of productivity in the drought-prone environments.[1] Back in 1967 Australian small farmers were suffering from falling farmgate prices and rising input costs, well before deregulation, but neoliberalism has accentuated the process.[2] The official solution in the 1960s was for the bottom

third to drop out[3] and small farmers have been dropping out ever since with no end in sight. The problem of low income continues as the terms of trade further deteriorate. A similar process is happening around the world.

But farmers around the world are resisting. Over 200 million are affiliated with the largest network of organisations opposed to corporate control, La Vía Campesina. Several governments have instituted right-to-food legislation. Land has been successfully redistributed by direct action in South America. Many attempts to alienate land from local communities have been successfully fought. Seed-saving networks have sprung up around the world to protect the work of centuries of variety selection from predatory multinational seed companies and the laws that they have induced governments to implement. Farmers are organising into cooperatives to bypass extortionist traders and relocated processing works. The ideas and experiences of the various branches of biological agriculture — permaculture, agroecology, organic, regenerative, conservation — are gaining greater support. There are multitudes of alternative agriculture promoting organisations in all parts of the world. Consumers are demanding local production. However individual and local solutions are not sufficient; a world wide political campaign is also necessary to address the fundamental causes.

Organic dairy cattle, Murray Valley.

Setting the Scene

Farm numbers

The number of farms in Australia fell by 22% between 1986 and 2001, then a further 15% from 2001 to 2011.[1] The number of broadacre farms fell by an average of 1.7% per year between 1990 and 2007; the figure for dairy farms in the same period showed a 2% drop per year.[2] Between 2005 and 2011 11% of farmers left; from 1980 the fall has been 40%, an average of 294 per month.[3] There has been some farm amalgamation, but also a large drop in the amount of area farmed, from 435 million hectares in 2005-6 to 397 in 2012/13.[4] Agricultural paid employment fell by 20% in the decade from 2002.[5]

Western Europe lost 76% of its farmers since 1970; Poland lost 1 million between 2005 and 2010.[6] In Finland numbers went from 225,000 in 1980 to 90,200 in 1998 and in Denmark 130,000 to 60,000 in the same period.[7] Three million farms were lost in the European Union in the eight years from 2003 to 2011.[8] Rural sectors are in decline in the protectionist countries of the European Union and United States as well as free market countries like Australia.[9]

Between 1950 and 1990 the share of the world's labour force in agriculture fell by 33% in the world, and 40% in the Third World, fostered by production for export policies and increase in inputs, and competition from subsidised imports leading to megacities and separation of people from self-sustenance. Between 1950 and 1990 the population of urban centres in the Third World increased by 300 million people, many living in shanty towns.[10]

Another factor in the decline in rural employment is the transfer of agriculture associated labour away from rural areas. Productivity per farmer has greatly increased, but this does not take into account the labour in the provision of inputs — fertiliser, pesticides and machinery manufacture — and food processing which is usually done in urban areas. Overall employment in food production may not have changed much, but the location of that employment has.

Interestingly there has been a rise in the number of sub-commercial farmers in

Australia and other industrialised countries,[11] sometimes referred to as lifestyle farmers, hobby farmers or tree-changers, which is helping reverse the loss of rural population, particularly in coastal areas or around major towns.

Farmgate share

Around the world the proportion of the food dollar going to farmers is ever decreasing, reflecting a gross transfer of income away from food producers. In Australia the following decreases in the percentage of the retail price that farmers received occurred between 1970 and 2000: milk 55% to 22.9%, bread 14.5% to 3.5%, apples 56% to 16.6% and beef 41.6% to 20.9%.[12] One factor cited by Dilley was the concentration of food retailers: sales by major chains rose from 40% of food retail spending in 1975 to 76% in 2002, while sales by independent retailers went fell from 60% to 24%. In the US, reduced retail competition led to an increase in the retail margins from 22.4% of sales to 27% in the two decades up to 1998.[13]

Using United States Department of Agriculture (USDA) data from 2016, the US National Farmers Union (2016) showed the difference between the price farmers receive for a range of products and the retail price. Figures range from a high of 43% for fresh carrots to 1% for breakfast cereal. They include: bacon 18%, steak 20%, bread 4%, tomatoes 16%, eggs 20%, boneless ham 19%, lettuce 18%, skim milk 29%, fresh potatoes 18%, and potato chips 7%. Earlier figures, from 2008-10 showed the following: sugar 28.1%, fresh pork 27%, lettuce 24.7%, broccoli 23.8%, wheat flour 23.5%, fresh apples 23.4%, fresh potatoes 18.7%, lemons 16%, oranges 12.9% and grapefruit 11.8%.[14] The overall farm share of the price of food products in the United States fell from 41% in 1950 to 15.5% in 2011.[15] For fresh milk the farmer share declined from 52% in 1980 to 33% in 1998.[16] One factor is increased processing of food, but this is irrelevant for fresh product.

Similar declines in farmer share are evident in many parts of the world. In Canada, for example, it went from an average of 19% in 1997 to 17% in 2010.[17] Between 1988 and 2002 Canadian farmgate prices for pigs fell by 5% while the retail price of pork rose 39%; in 2005 wheat farmers got 5 cents out of each loaf of bread, the same as 30 years earlier, while the share going to millers, bakers and grocers went from 38 cents to $1.35.[18]

Farm profitability

Since 1982 farm costs in Australia have risen at three times the rate of farm prices, resulting in an average 3% decline in the terms of trade per year.[19] There was a 25% fall in the terms of trade between 1981 and 2008.[20] Productivity gains have recouped some of that decline, averaging 1.5% per year from 1977 to 2007[21] but productivity increase

has since reduced to close to zero.[22] Lockie is of the opinion that: "Despite consistent productivity gains and a constant stream of farmers leaving the sector many remain vulnerable."[23]

Australian vegetable growers are experiencing rapidly rising costs that cannot be funded by increased productivity and are being met by increasing debt and farmers leaving the industry; some bean growers received 28 cents per kilo for beans that consumers paid $4.50 per kilo for.[24]

Wheat yields in the Western Australian wheatbelt doubled in the 1980s and 1990s and productivity rose by an average of 3.5% per year. However farmer poverty increased during that time due to a combination of climate change (causing increased drought and late frost), decreased farm terms of trade and decreased government support.[25] WA wheat farm numbers fell from 9439 to 6879. Since then productivity gains have stalled and in some cases reversed. Farm sizes increased and became more capital intensive leading to higher debt and greater vulnerability. Deregulation and free trade also increased vulnerability to market volatility and increasing costs of inputs. However governments continue to promote enhanced efficiency in order to be competitive in international markets. Ellis concludes that when efficiency limits have been reached, which may already have happened, WA wheat growing will become unviable as climate change effects worsen.[26] Since the deregulation of the Australian Wheat Board in 2008 Australian agriculture received the second lowest (after New Zealand) support in the world.

Between 2005-6 and 2007-8 42% of broadacre farmers in Australia made losses of greater than $50,000 per year, while only 31% made a profit; 42% of dairy farmers made a profit in those years.[27] The difference was largely made up by off-farm income, including wages and salaries, investment income and government support payments; this figure amounted to 50% of farm family income in 1989-90 to 1992-3, rising to 58% in 2003-4 to 2007-8.[28] Farmers with sales of less than $100,000 per year obtain 80-90% of their family income from off the farm; for those selling more than $100,000 per year the figure is 50%; most of this is done by women.[29] The average weekly disposable income of Australian farmers in 2009-10 was $568, compared to the national average of $921.

There has been no real price increase for dairy farmers since the 1960s. Dairy farmer return on equity averages 1.3%, with negative returns for a fifth of farmers. Average dairy farm debt is $700,000.[30] Return on investment for a third of Australian farmers is -3%; for another third it is less than 1%, and for the remainder less than 3%. Three quarters of farm businesses do not make enough to meet personal needs and business growth.[31]

In Canada real return on investment for farmers was zero in 1991; by 2006 it was

negative $15,000. Small and medium-sized farms in Ontario get 90% of their income from off the farm.[32]

The economic theory promoting increased competition, efficiency and productivity and free trade has not improved farm incomes and has led to greater poverty, more farmer suicides, declining rural services and loss of population.[33]

Farm debt

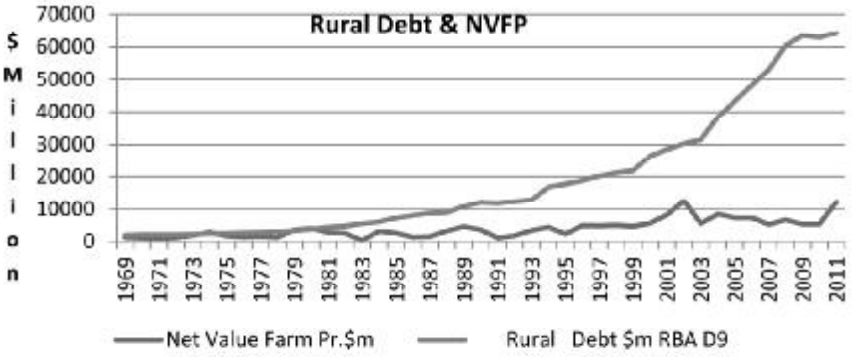
Overall rural debt in Australia in 2011 stood at $68 billion.[34] The debt to output ratio rose from a low point in 1979 of less than 40% to 132% in 2011; it has been above 100% since 2003.[35] Much of the leap is recent: farm debt rose from 66% of farm production in 1999 to 135% in 2009.[36] Interest payments increased to 15.9% of farm costs by 2011.[37]

The average farm debt in the Victorian Mallee region amounted to $800,000 per farm, following just two years of positive cash flows in the 12 years from 1994.[38]

Interest rates can be extraordinary high: Bankwest raised the interest rate for heavily indebted WA wheat grower Peter Repacholi from 8.5% to 13.62% because he was assessed as a credit risk, which of course meant inevitable foreclosure.[39]

Farmer health

The health statistics for male farmers and farm managers is significantly worse than the general male population; the death rate is 33% higher for men between the ages of 25 and 74. Prostate cancer rates are 137% higher, skin cancer 59%, cardiovascular 41% and for cancers of the colon and rectum 39%. Suicide rates are 20% higher. People in rural areas have a 4 year lower life expectancy.[40]



Rural farm debt, Australia.[41]

Corporate Concentration & Power Over Agriculture

Corporate concentration

A major cause of loss of farm income is the increasing concentration of agribusiness corporations over all aspects of agriculture — processing, exporting, retailing and even production. This has greatly weakened the ability of farmers to influence the prices they receive. Free trade and deregulation have increased this imbalance, by reducing competition between buyers and increasing it between farmers, not just within nations but also with producers in other countries.

The corporations are usually involved in many aspects of the agriculture chain. ConAgra, for example, is one of the largest distributors of agricultural chemicals and fertilisers in North America, has a joint venture with DuPont for seeds, owns grain elevators, rail cars and barges, produces poultry and other livestock food, operates chicken hatcheries and processes poultry; it is the second largest food firm in the United States, the largest turkey producer and the second largest broiler producer.[1]

In the US in the early 1980s 15 companies provided 60% of all farm inputs, 49 controlled 68% of food processing and 44 received 77% of all wholesale and retail sales.[2] The four largest processing companies in 1987 controlled 55% of broiler production, 87% of beef slaughter, 60% of pork slaughter, 73% of sheep slaughter, 62% of flour milling, and 76% of soybean crushing.[3] By 2000 the world's top ten agrochemical corporations had 81% of the global agrichemical market; ten firms controlled 43% of the veterinary pharmaceutical market.[4] By 2015 the top ten seed corporations had 75.3% of the market, top ten pesticide corporations 94.5%, top ten veterinary medicine corporations 81%, top ten fertiliser corporations 41%; the top three machinery corporations had 77% of machinery sales.[5] Up-to-date information quickly loses currency as amalgamations and takeovers occur very frequently.

Four corporations control 90% of world traded grain: Archer Daniels Midland (ADM), Bunge, Cargill and Louis Dreyfus. The four are sometimes referred to as

ABCD.[6] The companies also provide seed, fertiliser and agricultural chemicals and are landowners, cattle and poultry producers, transport providers, food processors, biofuel producers and financiers. Cargill is the biggest. Cargill bought the commodity business of the privatised Australian Wheat Board in 2011. The corporations have an enormous ability to set commodity prices and exert considerable control and influence over government regulation of food by lobbying, employing former government officials to lobby for them, and through the "revolving door" between government regulators and corporate heads. Neoliberalism, the privatisation of government assets, free trade, financial deregulation, lower tariffs, abolition of import quotas, the selling off of grain reserves around the world, and relaxed foreign investment rules have all helped the ABCD corporations. At the same time it has increased import dependency in most countries.[7]

The seed market is also highly concentrated. Over just two decades small seed companies around the world became consumed by several huge agro-chemical corporations. Now, ten corporations control the majority of the global market for seeds. The biggest, Monsanto, has 35%; DuPont controls 22% and Syngenta 23%; Monsanto has 90% of the US soy seed market.[8] These corporations are also the leading GM seed producers. Public plant breeding programs were either privatised or entered into partnerships with the corporations. Now all major seed companies are controlled by chemical companies[9] — the top six pesticide corporations are also the top six seed companies.[10]

Extending worldwide

Africa is the new frontier for corporate penetration, where few farmers use agrichemicals and most save their own seeds for replanting. In 2012 the governments of the G8 group plus 10 African governments and corporate partners set up the New Alliance for Food Security and Nutrition in Africa to lift 50 million people out of poverty by 2022 through "unleashing the power of the private sector". The biggest agribusiness corporations in the world are involved, including Cargill, Syngenta, Unilever, United Phosphorus, Yara, DuPont, Louis Dreyfus, Monsanto, Nestlé and Bunge.[11] These corporations have pledged to invest $7.2 billion; one such investment is a $1.5 billion fertiliser plant by the Norwegian fertiliser giant Yara.

The role of the African governments is to improve investment opportunities including lowering taxes, allowing full market access for fertilisers, seeds and pesticides, and reforming land titles. Critics say this will increase land grabbing, encourage monocultural cropping that will exacerbate soil degradation, focus on export crops in place of local food production, increase contract farming and labour under severe

conditions, increase the power of input providers, lose seed biodiversity and reduce government responsibility for food and nutrition.[12] The agribusiness corporations have not solved the food security problem or improved farm incomes in the rest of the world and are unlikely to in Africa either. It will certainly increase the market for their input products.

Determining agricultural policies

Between 2008 and 2016 agribusiness corporations donated US$356 million to political campaign expenses of the two major parties in the United States, and in 2015 alone spent $132.6 million in lobbying politicians and bureaucrats.[13] The purpose was to get governments to expand trade deals and protect pesticides and GMOs from more regulation.

Here are some examples of crossover between corporations and public policy. Cargill's former senior vice-president (also former officer of USDA) drafted the original US proposal to the World Trade Organisation Uruguay Round negotiations.[14] The former head of the National Institute of Food and Agriculture, an arm of the United States Department of Agriculture, Roger Beachy, formerly worked with Monsanto developing a GM tomato and became the founding president of Monsanto's Donald Danforth Plant Science Center.[15] Michael Taylor was a lawyer for Monsanto before becoming Deputy Commissioner for Policy for the US Food and Drug Administration in 1991, then returned to Monsanto as vice-president, then went back to FDA regulating food safety.[16] The chairman of Monsanto, Robert Shapiro, became chair of the US President's Advisory Committee for Trade Policy and Negotiations, and Mickey Kantor, the US trade representative during the Uruguay Round of GATT was on the Monsanto board.[17]

According to the *New York Times*, "What Monsanto wished for from Washington, Monsanto and, by extension, the biotechnology industry got … When the company abruptly decided that it needed to throw off the regulations and speed its foods to market, the White House quickly ushered through an unusually generous policy of self-policing".[18] Monsanto has a terrible record for falsifying data to prove that its products are safe.[19]

In Australia too: "The (pesticide) industry has done much to shape Australian agriculture, influences the direction of pest control research and exerts considerable power within government departments."[20]

Corporations are also highly active in defending chemical fertilisers from attack by greenhouse gas abatement policies. Nitrate fertilisers are a major cause of greenhouse gases, as up to 5% of applied nitrate escapes into the atmosphere as nitrous oxide, 300

times more powerful than carbon dioxide as a greenhouse gas. Nitrate production is the main user of natural gas which in itself accounts for 1-2% of the world's GHG. Nitrate fertilisers also destroy soil carbon. The fertiliser industry is highly involved in the Global Alliance for Climate Smart Agriculture, set up in 2014 to block meaningful action on climate change. One example of their program is to increase nitrate fertiliser use in Africa, which they argue will increase agricultural production and therefore reduce the need for deforestation, resulting in a decrease in greenhouse gases![21]

A good example of the influence of vested interests was revealed on an *Insight* television program into the connection between farmers' organisations (Victorian Farmers Federation and National Farmers Federation) and the agrichemical industry in the promotion of Genetic Engineering. This program revealed that: The Canadian farmer invited to the VFF Grains Group conference early in 2003 to tell of the Canadian experience in GE canola growing was paid by Monsanto to come; Agrifood Awareness, a NFF group set up to provide information on Gene Technology for farmers, is funded by the chemical companies through Avcare (the agricultural and veterinary chemical lobby group); the Gene Technology Grains Committee is also funded by Avcare; research conducted by the Cooperative Research Centre in Adelaide on pollen transfer in canola crops was funded by Monsanto — the research found pollen transfer was negligible.[22]

Contract farming

Contracts are often made between a farmer and a corporation for the supply of a particular commodity at a certain time, of certain quality and a certain price. In the United States even in 1970 90% of broilers, 85% of processing vegetables, 95% of fresh milk, 98% of sugar beet, 75% of cotton and 50% each of sugar cane, citrus, potatoes and turkeys was produced under contract.[23]

Poultry in Australia too is dominated by contract farming; in the mid-1980s it was mainly managed by one corporation, Allied Mills, which ran the hatcheries from which the farmers bought the chicks, provided feeds from its own mills, and received the birds at its own processing works.[24] The majority (at least 80%) of processing vegetables in Australia is under contract to processors, supermarkets and fast food chains.[25]

In Tasmania 95% of potatoes are grown under contract to either McCain's (Canadian) or Simplot (United States) for frozen chips. Both these companies have contract farmers in other countries and can use the threat of imports to discipline growers. The contracts specify the potato variety (Russet Burbank), amount and quality. The companies reserve the right to inspect the contract farms and demand particular

pesticide or fertiliser use. Growers are ranked according to yield, quality, farm size, loyalty and cooperativeness; the top third are offered further contracts, the middle third get notice to improve their performance, and the bottom third eventually get dropped. Growers face all the risk, and overplant in order to reduce that risk.[26]

Here are some figures for contract farming in other countries:[27] poultry in Brazil 75%, dairy in Vietnam 90%, rice in Vietnam 40%, pork in the entire world 50%, and world poultry and eggs 66%. Nestlé has 600,000 farmers under contract around the world.[28]

There are great advantages for the corporations. Farmer are their own supervisors, forcing themselves to work harder to increase productivity, deliver a cheaper product, pay for the investment and take all the risk, with none of the benefits an employee has of sick pay, holiday pay and set hours. Farmers can be treated as employees without being paid as employees.[29]

While there are corporate farms in growing number, overwhelmingly agriculture around the world is carried out by small producers, including in the industrialised countries. Corporations are less interested in food production itself because it is easier for them to make profits from farmers than from farming. Farmers produce cheaply by self-exploiting.[30]

Speculation

The corporations also trade on commodity futures markets and are involved in price speculation. Deregulation in the 1980s allowed banks and investment houses to trade in derivatives of agricultural commodities, which the grain traders had been doing for a century, and further deregulation in 2000 in the US further stimulated speculation. By 2010 investment in agricultural hedge funds amounted to $196 billion,[31] though there are estimates that are considerably higher. Their profits depend on their ability to predict price changes, which they can also influence.[32] Their profits rose dramatically between 2002 and 2011, four fold in the case of Cargill. Müller estimates a rise in commodity futures trading from $13 billion in 2003 to $317 billion in 2008 on just two of the biggest exchanges, and suggests when all other avenues for agricultural commodity price speculation are included it could be as high a $3 trillion. Speculation has increased price volatility and decoupled supply and demand as determinants of prices.[33]

Farm worker exploitation

There have been many reports of temporary farm worker exploitation in Australia.[34] The temporary jobs of picking and packing fruit and vegetables are often done by

people on working holiday visas from Europe and East Asia, Pacific Islanders on seasonal worker visas, and South-East Asian immigrants. Most are organised by labour contractors. Conditions are often poor, piece rates are low and deductions for board and transport high. Fraud by labour contractors sometimes occurs, including non-payment of wages. Immigration officials stage farm raids looking for visa violations.

In the US seasonal work is often done by undocumented immigrants who are especially vulnerable to maltreatment because of deportation threats. There is plenty of surplus labour which allows contractors and farmers to keep wages very low and conditions poor and unsafe, with excess deductions for transport, housing and food.[35]

Similar conditions exist in Canada.[36] Farm workers are controlled by the Farm Labour Contractor system; the contractors allocate the jobs and determine how much the workers will earn and the conditions of work, which often means 12-16 hour days without overtime, holiday pay or weekends off. Under the Seasonal Worker Programs workers are on temporary visas and have no rights and no enforced standards of employment or safety. Indeed, the British Columbia government excluded farm workers from the Employment Standards Act in 2004.[37]

Farmers also exploit themselves: in Australia 50% of farmers worked 49 hours per week or more, much higher than other sections of the workforce.[38]

Intensive vegetable production, East Gippsland, Victoria.

Research & Technology

The promise of technology

Technology is said to be the key to solving the world's hunger problem. The Green Revolution of the 1960s and 1970s that greatly increased yields in Asia and Latin America is looked at as a good example. However it did not solve hunger. Indeed, on the Indian subcontinent where its adaption was highest, both the number of hungry people in the region and the percentage of the world's hungry on the subcontinent both increased.[1] The Green Revolution crop varieties only did well with high levels of chemical fertilisers and pesticides and required irrigation, and the costs of these inputs rose much faster than food prices, creating unsustainable indebtedness and loss of land. In Luzon in the Philippines the farm share of the value of the rice market fell from 80% to 50% in just nine years, the beneficiaries being the input and credit suppliers.[2] Despite the failure of technology to solve the hunger problem, it is still being touted as the answer. There are one billion hungry people, a number growing faster than population growth, yet there is plenty of food produced in the world.[3]

Effects of technology

Agricultural technology includes chemical fertilisers, pesticides, hybrid seeds, genetic modification and mechanisation. Technology can have positive or negative effects on productivity, farm incomes, rural welfare and the environment, but it usually does not. It has broken the link between agriculture and ecology since World War II.[4]

Agricultural technology and biotechnology has greater increased the extraction of profit from farmers. The development of pesticides and cheap fertilisers after World War II created a boom for input supplying corporations, and the hybridisation of plant varieties added to that. When these technologies started to reach their limit — the restricted range of plants that could be hybridised, the failure to develop new pesticide options, and an upper limit on fertiliser application — biotechnology came to the rescue, coupled with Plant Variety Rights to prevent farmers from saving their own seeds. Lewantin maintains that the main intention of biotechnology is to "extend

the control of capital over agricultural production".[5]

But biotechnology needs policing, by way of non-propagation contracts that farmers have to sign when they purchase the seeds. Terminator technology was then developed to make policing redundant by stopping the next generation of seeds from germinating. Unfortunately for the corporations, this has been disallowed by world agreement. The option for input corporations then is to extend the market to places in the world where farmers do not use inputs. Africa is the last frontier, and US Aid for International Development, the Alliance for a Green Revolution in Africa and many other organisations are assisting in this mission, in the guise of "feeding Africa".

Once farmers adopt chemical fertilisers the pesticide-fertiliser treadmill begins. More and more nitrates are needed to obtain the same result as soil structure and soil carbon levels are damaged. Average world nitrate use has greatly increased from 8.6 kg/ha in 1991 to 62.5 kg/ha in 2006. In that time the yield of maize declined from 226 kg per kilogram of nitrate used to 76 kg. Rice fell from 217 kg per kilo of nitrate to 66; soy from 131 to 36, and wheat from 126 to 45.[6]

Professor Francis Chaboussou has made a study of the effects of pesticides on plants' ability to resist pests and diseases. Many scientists had noted that since the large-scale use of pesticides commenced in the 1950s, pest and disease problems have proliferated, but were unable to explain why, apart from the destruction of predators that the pesticides caused. Chaboussou found that the pesticides created physiological changes in the plant that weakened their immune system, just as organo-chlorine insecticides do in humans. The effect is to increase the amount of amino acids (soluble nitrates) in the plants. All pesticides that Chaboussou tested produced an increase in nitrogen content in the plant and corresponding deficiencies of boron. Nitrate fertilisers also increase pest and disease susceptibility.[7]

According to the US Environmental Protection Agency, "American farmers 30 years ago used 2265 tons of pesticides and lost 17% of their crops before harvest. Today [1978], farmers use 12 times more pesticides — yet the percentage of the crops lost before harvest has almost doubled."[8]

In 1986 the Indonesian government banned 56 rice pesticides and eliminated all pesticide subsidies. Integrated Pest Management techniques were introduced. Rice yields rose by 500 kg/ha and there were no further outbreaks of the brown plant hopper, the chief target of the pesticides.[9] In Bangladesh, using IPM, a 90% reduction in pesticides on rice increased yields by 10% and a 75% reduction on eggplants increased yields by 12%.[10]

Dairy herd fertility in Australia is declining by about 1% per year in the 10 years up to 2015;[11] a possible reason is the increase in nitrate use on pastures or the increase in

grain feeding as a result of dairy deregulation.

The environmental costs of pesticides in US were in 1990 estimated to be $8 billion per year, for impacts on wildlife, pollinators, natural enemies, fisheries, water, and resistance costs, and the social costs of poisonings and illnesses, double the expenditure on the pesticides themselves.[12] The cost of land and water degradation in Australia is estimated at $2 billion per year.[13] The prices of food do not include these externalised costs; if they were then modern industrial agriculture would lose any pretence of efficiency.

Reductionism & holism

Much agricultural research has contributed to the unsustainability of farming from a community and environment point of view. It has over the past 100 years achieved increased productivity and yields, but with little concern for the side effects on the resource base and the farming population. There are two important reasons: one, the issue of reductionism versus holism, and two, the myth of objectivity in science.[14]

Reductionism is the breaking down into individual parts; holism is how everything fits together to create a system. A reductionist scientist will often be highly trained and an expert in his/her field, but know very little about other fields. For example, a plant pathologist could have a fantastic knowledge about every important plant disease but will know little about plant pests or weeds or ecology or soils or the effect of fungicides on human health. This scientist could miss connections between plant pathology and other fields such as soil structure which might affect soil borne disease, pesticides that might create conditions for disease to develop, the plant's immune system, harmful effects of fungicides, and so on. The scientist's focus would be on ways of suppressing that disease. It is like a chest of drawers, with each drawer labelled with a particular discipline, with no contact between the drawers.

It is not possible to understand an ecosystem by breaking it into sections and examining each section. There is too much interaction between sections. The relationships between the sections are important — no one section exists in isolation.

Reductionist science depends on measurable results — statistics. In complex ecosystems obtaining figures may be irrelevant and unreliable, as many aspects of biology are unmeasurable. It also means that scientists are often not interested is working on complex interactions because the scientific method and the scientific community demands measurability. Therefore issues of sustainable agriculture are less likely to be investigated.[15]

One definition of holism is "using tools outside your profession".[16] The reductionist approach would be to attack the problem, the holistic approach would be to look for

all the possible causes and contributing factors and address those without causing other problems.

The ideas of Holistic Resource Management were developed by Allan Savory, a grazier from Zimbabwe now living in the US. Savory identified thought process as being of utmost importance — each decision that a land manager makes has some effect other than what was intended, so holistic resource management tries to provide the skills to consider all aspects and possible effects. The entire system has to be included: the human, the biological and the economic resources. Genetic engineering is a good example of where only the economic resources are considered. The ecosystem is not in consideration at all.[17]

Nothing exists in isolation. It is not the individual parts of a system that are important, but the relations between them. Ecology is the relation between parts of the natural world — plants, animals, microorganisms, humans, the sun, the soil, water, air, etc. Savory says that to understand the parts of a system first you had to understand the whole, which is the opposite to more conventional ways of thinking. Wholes are more than the sum of their parts.[18]

The development of hydridisation is a good example of an outcome from conventional agricultural research that does not advance sustainability.[19] Corn was hybridised for the stated purpose of increasing yields. However the following questions should have been asked:

- Are there other ways of increasing corn yields? Only one factor in corn yield was considered (genetics) while soil fertility, water, cultivation techniques, weed management, machinery, local conditions, etc. were not.
- Are there any negative side effects? Side effects were ignored. These included reduced food value, increased fertiliser, pesticide and other inputs and increased dependence for farmers who could no longer save their own seed. The stated outcome of increasing yield may have been achievable through a combination of selective breeding and improved farming techniques, without producing the negative side effects.
- Under what conditions does hybrid corn increase yields? Trials were done in controlled conditions that cannot replicate agricultural ecosystems and the range of variables within them, so that yield would only increase if certain conditions were met.
- Are there other, unstated motivations for developing hybrid corn? The main motivating factor in hybrid corn development has been profit for the seed company. Thus the needs of farmers are secondary.
- Who benefits from the increased yields? Is the viability of farmers increased by the

development of hybrid corn? The effects of increased yields are assumed to flow to the producer. However this rarely happens. The benefits are more likely to accrue to the processors and resellers who can improve their profit margins as the corn can be produced more cheaply.

Society should be able to determine agricultural needs then see if technology can address these needs. All people are affected by science and technology so deserve a say in its use.

The objectivity of agricultural research

There is a myth that science is always rational and objective. It is often neither. Science is commonly used to sustain vested interests, whether political or economic. Scientific research is often funded by private organisations who expect a profit from the research. These days much government funded research is also required to bring in a profit in order to keep the research organisation going in the face of cutbacks. This means that research into areas that will not produce a profitable commodity or input is often ignored. There are profits to be made in genetic engineering to control weeds but not in management systems that prevent weeds from becoming a problem.

The following characterises most agricultural research.[20] Efficiency is elevated above environmental and other negative impacts. Scientists have a negative view of labour and a highly positive view of mechanisation. The production of marketable goods is regarded as more important than managing an ecosystem. Emotion, philosophy and ethics are divorced from scientific research. Science wants to control nature, fearing that nature will take control if they don't. There is tremendous pressure on scientists to conform to this technological paradigm if they want to maintain or advance their careers and not suffer ridicule. Solutions to problems often have to be made marketable.[21]

Thus ecology is external to agriculture, and agroecology a foreign concept. Technology, and especially biotechnology, does not address the root causes of a problem. Funding for agricultural research is tied to usefulness, efficiency and productivity, not sustainability (though now that "sustainable development" has to apply to all Australian policy, it is easy to redefine sustainability in order to continue as before!).

Australia's CSIRO is called on more and more to integrate with business to produce goods and services of benefit to business, and bring in much of its own financing from the sale of technologies.[22] There seems to be little place in the organisation for research into sustainability issues in agriculture, and scientists with that interest find they can only work effectively outside the CSIRO. A quick look through *GroundCover*, the

publication of the Grains Research and Development Corporation, will show that overwhelmingly the research articles are about using genetics to try to keep ahead of new diseases, extending the life of herbicides, and better targeting of chemical fertiliser use, instead of looking at why there are new plant diseases, ways to avoid herbicide use, and how to manage soil fertility biologically without inputs. Martin details cases of scientists prevented from following ecological lines of inquiry in research organisations and academia.[23]

I have several times attended soil biology conferences put on by the agricultural science community, the theme of which has been to encourage farmers to capture the benefits of soil biology to increase sustainability and reduce costs. Various methods are discussed but the one that is possibly the most influential in suppressing soil biology, agrochemicals,[24] is not in the picture. The unstated paradigm is that these are so essential that they are untouchable.

A quarter of agricultural research funding for universities in the US comes from corporations. Corporate funding of agricultural research totalled $7.4 billion in 2006, considerably more than public funding, and this influences both the topics researched and the research findings.[25]

A British survey of scientists working for government agencies and newly privatised laboratories in 2000 found that a third of the scientists had been asked to adjust their conclusions to suit the sponsor. Seventeen per cent said they were asked to change the conclusions for the benefit of the customer who has requested the research, 10% said they had been asked to do so in order to get further contracts, and 3% were asked to make changes to affect publication of the results.[26]

In a survey of US scientists published in *Nature* 15.5% said they had changed the design, methodology or results of a study due to pressure from funders, and 12.5% said they had overlooked the use of flawed data by their peers.[27] A check on ten papers discussing the alleged blood clotting risk of the third generation of contraceptive pills showed that all those papers funded by the pharmaceutical industry reported no risk, while all those with other funding did.[28] Similarly, papers finding no health risk of passive smoking were linked to the tobacco industry.[29]

Cuba was able to make rapid advances into organic farming research because there were no economic interests impeding the research.

Making research more responsible

MacRae et al make several recommendations that would enable science to become more holistic:[30]

- Set public goals for agriculture. This requires political decisions and leadership

from governments. The unspoken goal for decades has been productivity and efficiency. Sustainability also needs to be a goal. Targets can be developed, such as a 20% decrease in pesticide usage over the next five years. Priority in research funding distribution could be geared towards meeting these particular goals of greater sustainability.

- Reward sustainable agriculture scientists adequately. Ensure that their chances of promotion are not hampered by breaking the accepted paradigms. Advancement should be based on new criteria, such as team work, interdisciplinary research, compliance with stated national agricultural goals, service to the community, etc., rather than on ability to get articles published.
- Introduce into agricultural education topics on agricultural history, ethics, ecology, sociology, social justice, health, etc., to broaden the outlook of scientists in training.
- Foster closer relations between scientists in different fields and between scientists and farmers.
- Change funding policy. Governments should not be providing funding for projects that are of benefit to agribusiness but not to farmers or the community. Government funding can be directed to sustainable agriculture projects.
- Change the scientific method, so that holistic methodologies, observation and description are regarded as legitimate research methods.
- Give credence to the research conducted by people who are not professional scientists (lay scientists, who are often practicing farmers).
- Carry out participatory research — a pooling of the talents of scientists and farmers.
- Possible negative effects on the environment and on people and communities must be considered in agricultural research.

Organic rice production, Sisaket, Thailand.

Farmer discussion, Leitchville, Victoria.

Free Trade & Deregulation

The theory and the promises

Australian governments developed agricultural support policies in the 1920s to boost rural development and stem the flow of people to the cities. These policies included improving transport, communications, education and health infrastructure in rural areas, closer settlement schemes, bounties for farm production and state marketing boards. However they policies did not solve the problems as the rural exodus continued and farmer prosperity did not increase markedly.[1] The next stage of government policy was "get big or get out".[2]

The economic theory behind the structural adjustment reforms that commenced in Australia in 1983 believed that open market competition would improve efficiency and raise farm productivity, leading to increased real farm returns. Because larger farms have a higher rate of return on capital investment, small farms need to disappear, the argument goes. The exit of small farmers was seen as imperative for agriculture to become internationally competitive. Farming was urged to become a business, not a lifestyle, responding to market signals; government actions would distort these signals. The aim of deregulation then was to promote a more competitive, sustainable and profitable rural sector.[3] The Australian government's Agricultural Competitiveness White Paper of 2014 said that the aim of government policy was to increase farmgate returns, and one of the impediments to that was identified as government regulations.[4]

National Competition Policy was established in 1994 to complete the dismantling of agricultural support — protection had to provide proof of "social benefits". However these social benefits criteria were restricted to economic efficiency, with no regard to the effect on individual farmers and farm communities, the environment, or food security, which were regarded as purely emotional issues. Rural wealth was expected to arise from a global accord on free trade which would strengthen the development of industrial agriculture; while the demise of family farming was necessary for this to happen, that was not a concern of the economists. When the promised benefits of an economic windfall from increased exports did not occur, the promise was extended

into the future when the rest of the world would come to its senses.[5]

Farmgate returns did not improve. One of the reasons is the unequal power balance between input suppliers and output purchasers on the one hand, and farmers on the other. Many farmers compete with each other on a world wide basis while suppliers and purchasers become more oligopolistic and compete less.[6] The stated reason for its failure by the proponents of deregulation is that deregulation has not gone far enough, that governments have lost their nerve,[7] or that the results will come in time.

Australian economists became strongly influenced by the free market theories of the Chicago School in the 1960s and 1970s which emphasised the benefits of free trade.[8] Up till then agriculture had been regulated to stabilise prices and production levels, but this was regarded by the economists as impeding efficiency. The Cairns Group of agricultural trading nations was set up in 1986 at Australian instigation to lobby for free trade in the Uruguay Round of the GATT (General Agreement on Tariffs and Trade, later to become the World Trade Organisation). Since then Australia has been a prime advocate of free trade, and abolished support policies in the belief that other countries would follow this bold example.

The structures supporting free trade

The theory behind free trade is that countries should concentrate on exporting what they can produce cheaply and import what they can't — the theory of comparative advantage. This would increase growth and employment and reduce poverty by the trickle down effect. It has not worked: the US Center for Economic and Policy Research found the opposite — sharply reduced rates of economic growth and social progress (measured by poverty levels, infant mortality, life expectancy, education, equality) in most countries.[9]

The World Trade Organisation was established in order to promote and enforce free markets. Countries become members and agree to its rules. Rarely though are these rules discussed or voted on in national parliaments. Negotiations are carried out by trade negotiators, including representatives of individual governments and business. No referendum on WTO membership has occurred anywhere in the world, and in Australia there was no vote in parliament on membership. WTO policies are made by a small group of powerful countries; many countries cannot afford to maintain permanent delegations and therefore their participation is restricted. Yet WTO decisions can over-ride domestic laws, if the WTO decides that a particular law limits trade. Labour standards, quarantine, environmental regulations, local content media rules and local procurement provisions can all be challenged as barriers to trade.

Dispute settlement proceedings are secret — documents, hearings and briefs are all confidential. Decision making powers are removed from parliaments to unelected WTO panels accountable to no-one and acting on behalf of foreign commercial interests ahead of public interest.[10]

The Doha Round of WTO talks finally broke down in 2008 because of opposition from developing countries led by Brazil, India and China to the demands from the richer countries, including Australia. The suicide of the leader of the Korean Federation of Advanced Farmers Association, Lee Kyung Hae, at the Cancun WTO meeting in September 2003 at the end of a march by 15,000 farmers protesting WTO policies focused attention on the inequities of WTO rules.[11] Since failure of the talks looked likely in 2005 countries have turned their attention to developing bilateral and regional trade agreements.[12] Australia has vigorously pursued these agreements and has concluded several.

Trade agreements & effects on trade

Free trade does not necessarily increase trade. The Australia-US Free Trade Agreement (AUSFTA) of 2005 did the opposite, as well as suppressing trade between each of those countries and the rest of the world.[13] The Singapore-Australia Free Trade Agreement (SAFTA) had a similar effect, while the Thailand-Australia FTA did boost trade between Australia and Thailand.[14] The US-Korea, EU-Korea and NZ-China free trade agreements had no impacts in the first 4 years (2008-12) but were expected to as tariffs were gradually reduced.[15]

Despite the evidence so far, modelling still indicates that free trade agreements that Australia is part of will increase Australian exports, increase production and increase GDP.[16] "The removal of trade barriers is of fundamental importance to Australian agricultural industries."[17] Australian agricultural exports have risen by an average of 5% per year between 1980-81 and 2010-11; the chief markets are China 14%, Japan 13%, Indonesia 8%, the Middle East 10%, European Union 8% and the US 7% ,[18] all of which except the US had no free trade agreements with Australia. During the first four years of the US Australia Free Trade Agreement trade with the US increased much less than trade with China, South Korea and Japan.[19]

While farmer groups like the National Farmers Federation (NFF) and Dairy Australia keenly support free trade agreements, the reality is that agricultural produce subsidising countries want agriculture excluded from FTAs,[20] as reducing their subsidies is politically very difficult. Thus Dr Jeffrey Wilson of the Asia Research Centre at Murdoch University is quoted[21] as saying: "Studies have found that these free trade agreements are fairly ineffectual" in increasing exports from Australia and their prices.

Exports have been increasing but to countries with which Australia does not have free trade agreements.[22] The benefits of increased exports however are usually captured by agribusiness before they get to farmers.[23]

The effects of trade liberalisation in Australia

During the trade liberalisation period rural employment in Australia has halved from 6.5% of the workforce in 1979-80 to 3.3% in 2009-10; at the same time employment in manufacturing also halved in percentage terms.[24] The benefits of trade liberalisation have been over-stated, and the continuing farmer hardship is said to be a personal failure rather than a possible policy failure.[25] One of the original purposes of agricultural trade regulation was fairness, to protect the many sellers from the power of the few buyers — deregulation has demolished that goal.[26]

Deregulation has continued the decline in farming terms or trade. Farmers that were deemed viable a decade ago are no longer, as the threshold for viability rises. There is further loss of people, services and employment in rural areas as farms get bigger. Dependence on the treadmill of higher inputs increases debt, financial risk and environmental damage.[27]

The Australia-US Free Trade Agreement was signed in 2005. In the vain hope that the US would cut its agricultural protection Australia abolished import restrictions. The agreement gradually reduces trade barriers in the US for dairy, beef, lamb and wine, but none for sugar, to be phased in over 12-17 years. The outcome was that imports into Australia from the US grew more than exports from Australia to the US, worsening an already imbalanced trade gap that grew from $6.4 billion in 2005 to $11.6 billion in 2009, increasing every year. The overall benefits were negative for Australia, despite the predictions of more than $4 billion in benefits to Australia.

Free trade has decimated food processing in Australia. Companies that have closed their works down have put the blame on cheap often dumped imports. These include the Heinz factory at Girgarre in 2012, the Rosella factory in Seven Hills in 2013 and the SPC Mooroopna factory in 2012.[28] These closures have had a severe effect on workers who have lost their jobs, the supplier farmers and the community, particularly in the Goulburn Valley.

In NSW, following a reduction in import duties for canned fruit (1992) and vegetables (1985), the Pacific Dunlop Cowra vegetable processing closed in 1992 (subsequently reopened as a cooperative, then taken over as Windsor Foods, then closed in 2013), Leeton closed in 1994 and Mountain Maid at Batlow in 2002. Heinz transferred its beetroot canning from Brisbane to New Zealand for lower wages. Simplot in Bathurst was rescued from threatened closure by government. Home branded canned fruits

and vegetables are now mostly imported because they are cheaper.[29]

Simplot Australia cited lack of profitability when it announced possible closure in of its works in Devonport and Bathurst in 2013. The cause: inability to compete with cheap imported product. Liberal Senator Richard Colbeck blamed high wages in Australia.[30] Free market advocates promise free trade and deregulation will boost the standard of living, yet this spokesman called for a reduction in standards of living. Labour must be "flexible" to be globally competitive, according to government, that is, cheaper.[31] The same happened in the US — governments call for reduced wages so industry can remain competitive.[32]

Free trade effects on other countries

In the 10 years since the signing of the Canada-US Free Trade Agreement in 1988, agricultural exports from Canada nearly tripled, but at the same time farm income (adjusted for inflation) fell by 24%, farm debt doubled, and 16% of Canadian farmers left the land. The Canadian National Farmers Union concluded that free trade agreements "may increase trade, but they dramatically alter the relative size and market power of the players in the agri-food production chain. Free trade helps Cargill and Monsanto, not farmers".[33]

Even the World Bank reported that the North America Free Trade Agreement had the following effects on Mexico: stagnation of growth, lack of competitiveness in the international market and an increase in poverty in rural areas.[34] The effect on the Mexican countryside was devastating because of cheap US corn imports, and the huge price rises after 2004 brought about by biofuel policies and speculation did not improve farm incomes in any of the countries because input prices for fuel, fertiliser and agrichemicals also rose strongly.[35] For Mexico, agricultural imports increased enormously. Grains and oilseed imports rose from 8.8 million tonnes in 1993 to 20 million tonnes in 2002, with similar figures for meat and tropical fruits, replacing domestically produced products and causing a drastic transformation on Mexican agriculture.[36] Mexican farmer organisations called for a suspension of NAFTA. Yet at that stage the reduction in tariffs and quotas was only beginning.

Most of the promises of NAFTA — higher living standards, reduced poverty, reduced inequality, increased employment - did not eventuate though trade greatly increased between the three countries. President Bill Clinton promised one million new jobs in the US within five years of the signing of the NAFTA agreement and a lowering of trade deficits because of increased US exports; instead, after 20 years, there has been a loss of almost one million jobs, lower wages, and a 450% increase in the US trade deficit.[37] The export of US subsidised corn did increase, decimating one

million Mexican farmers and 1.4 million agricultural workers, and a doubling of Mexican migration to the US.[38]

Haiti in the 1980s produced 80% of its own rice needs but was forced by the International Monetary Fund as a loan condition to eliminate tariffs; by 2010 it imported 80%.[39] Romania was forced to allow imports of pork; as a consequence the number of pig farmers fell from 480,000 in 2003 to 50,000 just four years later.[40]

When trade liberalisation was forced on Ghana, meaning removal of price support for farmers, fertiliser subsidy, state marketing boards, subsidised credit and reduced tariffs, local rice producers could not compete with imports from the US. These imports were heavily subsidised so that rice was sold in Ghana for 34% below its cost of production. Ghana had been self sufficient in rice in the 1970s; by 2002 imports made up 64% of the nation's supply. The same happened with tomato paste and poultry from the EU, both also heavily subsidised.[41]

The countries most adamant in calling for free trade — USA, European Union and Japan — all developed their economies through protectionist policies, and still do in relation to agriculture. Australia also developed through protectionism. Yet that is not permitted for less industrialised countries under trade rules.[42]

The US and EU between them spend $380 billion per year on agricultural subsidies, which mainly go to the big producers. In the EU more than half of the subsidies goes to 1% of the farms; in the US 70% of the subsidies go to 10% of farmers, the larger ones.[43]

From 1990 to 2003 wheat, rice, corn, soybeans and cotton were exported from the US at prices well below the cost of production; in the case of cotton it was more than 50% below.[44] Cheap cotton imports in West Africa destroyed the incomes of tens of thousands of cotton producers.

For Australian farmers to increase their export markets there has to be a decrease in either the farm production in the target market or in other exporting countries that have been supplying their needs. Increased beef exports to Japan and South Korea, for example, are opposed by Japanese and South Korean beef producers, quite legitimately, as legitimate it is for Australian vegetable growers to oppose cheap imports of vegetables from China or Italy. Since joining the World Trade Organisation in 1995, South Korean agriculture has been decimated; farmer debt quadrupled and national self-sufficiency in food fell from 56% to 25% in 20 years.[45] One year after the signing of the Australia-Thailand Free Trade Agreement, under which Thailand had to greatly reduce its dairy tariffs, one third of Thai dairy farms collapsed.[46] In some cases markets grow with increasing imports, but more often imports become just substitutes for local production.

China has succeeded with trade because it has ensured that the food production for internal needs is met and people have adequate income to purchase this food.[47]

Free trade and globalisation reduce the competition between corporations and increase the competition, on a worldwide basis, of farmers: "… competitiveness … only works when it undermines the livelihoods of farmers elsewhere".[48]

Environmental & labour effects of free trade deals

Trade deals are done principally for the benefits of agribusiness and transnational retailers, and undermine food security and destroy diversified and sustainable livelihoods in the developing world because they do not include measures to protect workers or the environment.[49]

Agricultural policy in the European Union puts value on maintaining small farmers and preserving the rural environment, arguing for "public good", so subsidises farmers to stay in production.[50] However Australian government and farmer organisations regard this as protectionist and trade distorting. Australian competition and trade policy does not take these issues into consideration, seeing nothing wrong with small farmers being forced off the land and increased pressure put on the environment, conveniently maintaining the myth that Australian agriculture is "clean and green" despite the evidence.

Every US trade deal over 20 years promised high and enforceable labour standards and rights for workers in the US and the trading partner countries as part of each trade agreement, but this has rarely happened.[51] Even the worst abuses have not been addressed, for example the murder of 105 union activists in Colombia in the first four years of the trade agreement.[52] Similar promises were made for the environment.

The World Trade Organisation, and free trade agreements, has negative environmental effects.[53] The theory is that trade liberalisation will increase incomes and standards of living and lead to greater demand from people for better environmental protection. However in every dispute involving the WTO over a national environmental regulation, citing the regulation as being an unfair barrier to trade, an anti-environmental decision has been the result.[54] Dispute resolution hearings are closed and secret, and judged by trade lawyers and economists with no environmental knowledge or understanding. Thus the environmental costs of free trade are externalised, not paid by these responsible. It is illegal under WTO rules for a country to restrict the import of a product on environmental concerns about how it is harvested or processed.[55] Only on one occasion has an environmental or public health law that was challenged under WTO rules been unsuccessful for the challenger.[56]

Australian dairy industry deregulation

When the Australian dairy industry was deregulated from 2000 there were multiple effects, some of which were expected.[57] It is hard to say which ones were positive. The plan was for farmers to develop more productive and efficient systems to become internationally competitive. The government believed that deregulation was inevitable, forced by the international market, so decided to do it in a planned way. Victoria was the least affected state as farmers were used to low prices because most of the milk was processed and exported, but still the number of dairy farms in the state fell from 7800 in 2000 to 6200 in 2004. There was greater exodus outside Victoria. In NSW dairy farm numbers declined from 1725 in 1999 to 710 in 2015.[58]

Deregulation brought increased dependence of inputs in order to increase production – greater use of fertilisers, irrigation water and grain. Victoria expected to benefit by capturing some of the interstate market, and deregulation was strongly supported by the United Dairy Farmers of Victoria and the cooperatives they supplied, but the coops found it hard to compete because of higher competition. The power of retailers and processors rose at the expense of producers. The milk price wars drove down prices not just for suppliers of supermarket branded milk but all brands as coops had to compete with the $1 a litre supermarket product. It was already evident from British deregulation that there would be a redistribution of wealth from dairy farmers to supermarkets and processors, but the Australian deregulation went much further than in the UK, so this should not have been unexpected. Collective bargaining, which had been illegal, did become allowed by the Australian Competition and Consumer Commission for farmers to counter the power of retailers and processors, but it was very limited in order to prevent "colluding" between farmers and "depressing competition", and farmers' bargaining groups had to be authorised by the ACCC.[59]

The Australian dairy industry is dominated by two supermarket chains and a few mostly foreign-owned processing companies, placing farmers in a competitive disadvantage, concluded the Australian Senate investigation.[60] It was easier for farmers to negotiate with cooperatives than the corporations, because cooperatives were only interested in covering their costs instead of making profits, but few cooperatives remain. In southern Tasmania National Foods, which became Lion Dairy and Drinks, has a complete monopoly.

The farmgate price for milk and the retail price continued to diverge between 1992 and 2009 before the milk price wars. Supermarkets were able to demand reduced wholesale prices from the processors for their home branded milk, and this subsequently reduced the farmgate price and disadvantaged other retailers and processor branded product. Supermarkets sold their generic milk at a loss in order to

entice customers into their stores, called "loss leader"; the losses could be made up by increased prices and sales of other items in the supermarket. The milk wars accentuated this strategy. The Senate report recommended the breaking up of supermarkets or other methods to reduce the power of the two major retailers.[61]

Since deregulation in 2000 milk production in Australia has declined from 11.2 billion litres to 9 billion, and cheese imports have increased by 70%.[62] Deregulation was meant to provide greater price certainty, but this has not happened, and even commitments by dairy processors are often dishonoured. Production efficiency gains have gone to others in the supply chain but not to farmers. Since most processing companies are no longer cooperatives, the profit incentive over-rides fairness to farmers.

In order to better compete internationally, Murray Goulburn, the largest of the dairy cooperatives, decided on a partial float in 2015 and listing on the stock exchange in order to obtain funds for expansion. This resulted in a conflict of interest between farmers and shareholders with the winner being shareholders. In 2016 the company declared a profit of $41 million dollars and paid a dividend to shareholders, while at the same time cutting the milk price paid to farmers retrospectively to below the cost of production, leaving angry farmers with huge bills. Other dairy companies followed in cutting prices.[63]

Abolition of the single desk for wheat exporting in Australia in 2008 has not been of benefit to the growers, according to Grain Producers Australia.[64] It has not given confidence, satisfaction or better returns to producers who were meant to be the main beneficiaries.

Conclusions on deregulation & globalisation

A report issued by the Canadian National Farmers Union in late 2003[65] concluded that modern agricultural policies promoting greater efficiency, competition, free trade and larger holdings were based on myths and false assumptions. The main points made were:

- Farmers are efficient. There have been no price rises (in real terms) for produce in the last 25 years despite huge increases in input costs. No other industry would be able to remain in business under those conditions.
- Family farms are more efficient than corporate farms. The larger the farm the more inefficient it becomes.
- Farmers have not been rewarded for efficiency. In the last 25 years output per farm has doubled but net farm incomes have declined.
- If competition promotes efficiency then logically there would be more farms

operating, not less.

- Technology has not increased farm incomes. The opposite is the case: for every dollar that technology increases farm output the cost to the farmer is $1.44. Technology could increase farm income, but it has not — the increased value of production has all gone to elsewhere, not to the farmer. Neither has it gone to the consumer.
- Globalisation and free trade has increased competition between farmers (on a global scale) but reduced competition among agribusiness corporations (through mergers and takeovers). Government policies such as deregulation of marketing have increased the vulnerability of farmers to the power of big business.
- Technology and efficiency have caused overproduction, resulting in lower returns to farmers. Yet governments keep telling farmers to use more technology and become more efficient in order to increase returns. This is a contradiction.
- Efficiency is not the right word for increasing production per farmer. The system is not efficient if it depends on more and more inputs, more capital, more water use, more environmental degradation, and more transport. Real efficiency would use minimum resources to produce optimum food and nutrition to the maximum number of people while causing least damage to the environment.

As former Canadian Deputy Prime Minister Paul Hellyer said: "Globalisation … is about power and control. It is the reshaping of the world into one without borders ruled by a dictatorship of the world's most powerful central banks, commercial banks and multinational companies. It is an attempt to undo a century of social progress and to alter the distribution of income from inequitable to inhuman".[66]

Prince Charles wrote: "Despite the best intentions of many, we have to face up to the fact that often the consequence of globalisation is greater unsustainability … Left to its own devices, I fear that globalisation will — ironically — sow seeds of ever-greater poverty, disease, and hunger in the cities and lead to the loss of viable, self-sufficient rural populations."[67]

Stephen Byers, former British Trade and Industry Secretary said: "I was wrong about free trade. I was wrong. Free market policies hurt the poor. The IMF and World Bank orthodoxy is increasing global poverty".[68]

The Secondary Agenda of Free Trade Agreements

Free trade plus

Noam Chomsky has pointed out,[1] free trade agreements have only a limited relation to free trade; intellectual property is a primary goal for the US, a protectionist measure, for software, seeds and pharmaceutical patents, enabling US corporations to gain an estimated $61 billion per year. Freedom to invest and protection for those investments is another important goal.

In the negotiations for the AUSFTA the US did not gain all it wanted, which included abolition of the Pharmaceutical Benefits Scheme, an end to local content rules in broadcasting, no GM food labelling, easing of quarantine, an end to government procurement policies that favour local firms, and an investor-state enforcement process (whereby overseas companies could sue governments for anything that reduced their profits, for examples changes in environmental regulations or food quality standards), all of which the US sees as "barriers to trade".[2]

This wish list is up for renegotiation in the proposed Trans-Pacific Partnership Free Trade Agreement which includes Australia, New Zealand, the USA, Chile, Peru, Singapore, Brunei and Vietnam, and all would be part of any trade-off that increased Australian agricultural access to US markets. In general, all US trade agreements have increased the legal rights of corporations and reduced the rights of government to regulate corporate activity.[3] Most countries involved in the Trans-Pacific Partnership Agreement negotiations already have free trade deals with others in the group, indicating that trade is not the primary goal of the agreement.[4]

The focus of the corporations and trade negotiators is "non-tariff trade barriers", which means regulations. Regulations are developed in individual countries depending on specific needs and political pressures, to protect the environment, workers, consumers and the economy. The corporations call for "harmonisation", but not to raise standards to the highest existing level but lower them to the minimum. They

want restitution for loss of potential future profits caused by regulations, for example, Phillip Morris suing Uruguay for anti-smoking legislation.[5]

Harmonising in the Trans-Atlantic Free Trade Agreement, also called "regulatory convergence", includes eliminating EU restrictions on genetically modified crops and food additives that are allowed in the US, and food labelling laws, and the "precautionary principle" in setting food safety regulations. This means for Europeans a reduction in food standards down to US levels.[6]

TRIPS & ISDS

Trade agreements also include TRIPS — Trade-Related Aspects of Intellectual Property Rights. One aspect is the protection of plant, animal and microbiological patents under UPOV 1991, the International Union for the Protection of New Plant Varieties. Signing UPOV 1991 is included in agreements like the Trans-Pacific Partnership. This prevents farmers from saving seeds from patented varieties and replanting them, so that they have to buy new seed every year, on pain of seed and crop seizures and injunctions. It is being pushed by Australia, the US, EU and Japan.[7] Rather than "free trade" this is a protectionist policy.

Free trade agreements also include Investor-State Dispute Settlement provisions. These allow companies to sue governments for enacting regulations that might affect future profits of the company. It prioritises corporate rights over the ability of governments to regulate. Hearings are held in special courts presided over by three private lawyers; hearings are usually closed and there is no appeal. Some of these provisions have been in place since the 1960s, but there were only 50 cases in the first three decades; now there are 50 per year. They are frequently used to defeat restrictions on company operations on environmental grounds. Following are some cases that were successfully won by the companies.[8]

- A US chemical company, Ethyl, brought a case against Canada for banning a toxic petrol additive, MMT, which was banned in the US itself. Canada settled for $13 million in damages and revoked the ban, publically announcing that it was safe.
- A Swedish energy firm, Vattenfall, sued Germany for environmental conditions placed on pending approval of a coal fired power station in Hamburg; Germany relented and waived the conditions and approved the construction; the settlement amount was not disclosed. Vattenfall also tried to sue Germany for a decision to phase out nuclear power, demanding 4.7 billion euros.
- Occidental Petroleum, which had breached its contract in Ecuador and had its oil concession terminated, successfully sued the Ecuadorian government for $2.3 billion.
- A Spanish technology company Abengoa sued Mexico because a local authority

denied approval for a waste management facility on environmental grounds. Mexico was ordered to pay $40 million plus interest.

- A Dutch financial company Suluka successfully sued the Czech government for not baling out a Czech bank that Suluka was part owner of when other Czech banks that were partly or fully owned by the government were baled out; Suluka was awarded $236 million.

An attempt was made by the Philip Morris corporation to sue Australia for cigarette plain packaging laws, demanding either withdrawal of the legislation or damages of US$4.2 billion plus interest. Australia won, but it cost $50 million to fight the case.[9] Several tobacco growing countries are also attempting to sue Australia. Under WTO rules Canada challenged Australian quarantine laws in 1999 which prohibited the import of Canadian salmon, and won, forcing a change in regulations.[10]

It is difficult for the poorer countries to take advantage of the disputes settlement mechanism. Because of US subsidies to cotton producers, the world price fell by 10%, severely affecting the Cotton Four — Burkina Faso, Chad, Mali and Benin — which depend very heavily on cotton exports. The Cotton Four appealed to the WTO as this was against WTO rules but no action was taken, the verdict being that the Four had to themselves challenge the US directly, an impossible task.[11]

Local market, Thailand.

Top: National policy, Venezuela: “Our goal is to guarantee the food sovereignty of our people.” *Bottom:* Anti-GM mural, Venezuela: “Against the harvest of death. We are and we will be maize.”

World Food Insecurity

Myths of insufficient production & excess population

The world already produces enough calories to feed 12-14 billion people, nearly double the current population.[1] Yet the official answer to hunger is greater production using technology. Hunger is a result of lack of purchasing power or lack of sufficient land to grow food,[2] not lack of production. Many countries with severe hunger are food exporters, for example Botswana and Kenya, major beef producers for Europe.[3] Most countries that experience hunger are net food exporters; in the 1980s Brazil became the second largest food exporter in the world, with 86 million hungry people.[4]

There is food abundance in the US and huge food wastage estimated at 25% of production yet millions of Americans go hungry, requiring a multitude of government and non-government schemes to feed them ("… hunger in America shows with great clarity the absurdity of our distribution system, of capitalism's approach to meeting basic human needs."[5])

It is a myth that hunger is caused by over population, and that population growth must be slowed before hunger can be tackled. China has half the cropland per person that India has but China has no hunger problem while India's is massive. Similarly Taiwan and South Korea with half the cropping land per person as Bangladesh does not have the hunger problem of Bangladesh. The Netherlands, one of the most densely populated countries in the world is a net food exporter with no hunger problem. Around the world there is no correlation between hunger and population density.[6]

However hunger and rapid population growth are connected. One is not the cause of the other, both are caused by the same factors. These factors are the infant mortality rate, the status of women, lack of security in old age, the opportunities for women to take paid employment, and the need for labour on farms. Where there is security and opportunity the birth rate always falls. Family planning programs do not significantly affect the birth rate — far more significant is life expectancy, education and infant mortality rates.[7]

The failure of trade to solve food insecurity

A principal stated aim of trade liberalisation is to increase food security; it has failed to do that.[8] It strengthened to hold of large agribusiness corporations over control of markets and decreased that of farmers and national governments that wanted to address food security issues. It also stimulated speculation in agricultural commodities that led to huge price rises from 2004 and the subsequent crash in prices in 2008.[9]

In the first decade of trade liberalisation in India, 1991 to 2001, grain consumption per person fell from 177 kg to 151 after a steady rise over the previous 40 years. At the same time grain exports reached record levels.[10] Similarly in sub-Saharan Africa grain consumption fell from 158 kg per person in 1980 to 136 kg by the mid 1990s.[11] This strongly counteracts the promise that free trade and deregulation will solve the world's hunger problem.

In Latin America trade liberalisation has led to an export boom of soy, fruits and vegetables, but a worsening of conditions for rural people. Many small farmers have been displaced or become dependent on off-farm labour income. This employment is precarious and often temporary, managed by labour hire companies that are able to pay less than legislated minimum wages. The land reforms carried out in the 1960s and 1970s have been reversed as large corporations have managed to obtain control over large amounts of land.[12]

Export booms do not reduce hunger for several reasons. Land is taken out of local production for local consumption in order to produce exportable commodities. Farmers who have lost their land become employees on low wages which they spend on the cheapest foods that fill them up — carbohydrates — unable to afford the fruits and vegetables and meat they used to grow themselves. Export earnings do not cover the costs of imported replacement foods but pay for luxuries for the wealthy, and debt repayment .[13] Only about 15% of export earnings stay in the country of production — the rest goes overseas as profits to foreign banks, traders, processors and distributors.[14]

Free trade and deregulation since 1990 has greatly increased the amount of land taken up by the five main commodity crops — maize, soy, sugar cane, canola and palm oil — at the expense of food crops like wheat and rice whose acreage fell.[15] These five commodity crops are used mainly for livestock feed and biofuels.

In the 2008 food crisis when grain prices soured, countries that had previously produced much of their own but had been encouraged to focus on export crops could not afford the high costs of imported foods. Many exporting countries closed their borders against rice and wheat exports in order to preserve their own stocks. One hundred million more people joined the world hungry population in that year.[16]

Real factors in hunger

Indebtedness and its alleged solutions are devastating for the development of food security. Because of the burden of paying back debts, more and more the economy has to become dependent on exports, so less food is available. It is often said that unpayable debt in poor countries is the result of poor decision making, corruption or unfavourable climates; however there is evidence that loans are sometimes deliberately given with the intention of keeping the recipient countries poor and malleable so that they are less able to resist the imposition of military bases or access to raw materials, and will vote the "right way" in international forums.[17]

A further reason for hunger and underdevelopment, especially in Africa, is the net transfer of wealth out of the continent. Despite the common perception that the rest of the world is supporting Africa, the opposite is the reality. From 1980 to 2009 there has been a net outflow from Africa of between US$600 billion and $1.4 trillion. Inflows come from aid, remittances from the Africans living outside Africa, loans, investment, and export earnings. Outflows include profits, debt repayments, corruption, tax evasion, transfer pricing and import payments.[18] The transfers are not even across Africa — some countries have been net beneficiaries. The greatest losses are from the resource rich countries.

Another side of trade and investment liberalisation is the taking over of farming land in Africa, Asia and South America by foreign corporations. This commenced on a large scale in 2008. Motives vary: food security for the investing country (Saudi Arabia, South Korea, China, India, Gulf States), biofuel plantations, reforestation for carbon credits, and just plain speculation ("I'm convinced that farmland is going to be one of the best investments of our time" — George Soros).[19] While many earlier land deals fell through, partly because of public opposition by those about to lose their land but also because of company failure, by mid 2016 a total of 44,161,781 hectares had been alienated to foreign concerns.[20] This included 2 million hectares in Ethiopia, one of the world's most food insecure countries. Australia is not immune: the amount of land owned fully or partly by foreign concerns in Australia is 11.3%, up from 5.9% in 1984.[21]

A new phenomenon arose in the first decade of the 21st century — massive institutional food price speculation. In 2003 investments in food derivatives, that is, futures trading whereby food is bought and sold on paper without physically moving, stood at $3 billion. By 2011 it had reached $126 billion. For example the volume of corn traded on commodity exchanges in 2008 was three times the global production for that year. It is a form of gambling that prices will rise, which actually causes prices to rise and sends millions more people into hunger (a 200 million increase in the number

of people suffering malnutrition between 2007 and 2009).[22]

Food security is not just an issue for poor countries. In Australia the OECD estimates 10% of the Australian population is food insecure (defined as not always able to buy the food they need and having to depend sometimes on charity). The figure for the United States is 21%; the lowest in the world is Switzerland with 4%.[23]

As economies become more integrated and more dependent on trade between and within countries there is greater risk of failure of food supplies due to war or other disruption to trade or sudden increases in transport costs, as Britain realised during World Wa II and Cuba after the collapse of the Soviet Union in 1990. Currently Britain has enough food reserves for no more than five days, making it very vulnerable to even minor disruptions to imports.[24]

Urban agriculture, Caracas, Venezuela.

The Value of Small Farms

The myth of size & efficiency

Small farms have been labelled as backward, unproductive and inefficient, and governments have advocated their passing, producing policies to enable that to happen ("Get big or get out!"). But the opposite is true. In non-industrial countries small farms produce between 200 and 1000% more than large, and in the US farms of less than 27 acres produce ten times in dollar value per acre what larger farms do.[1] The production on farms of 2 hectares average $15,000 per hectare with a profit of $2900 per hectare, while the largest farms average $249 per hectare in production netting $52.[2] Large farms may produce more corn per hectare than small farms, but commonly small farms are also producing beans, squash, potatoes and fodder together with their corn.[3]

A study of 15 Asian and African countries found small farms produced 4-5 times more per hectare, yet the larger farmers usually had the better land and could negotiate lower input prices (finance, fertiliser, irrigation, chemicals, marketing services), and generally received more government assistance.[4]

Small farms make up a little less than a quarter of the world's farmland and 85% of the world's farmers and produce the majority of the world's food.[5] In Botswana for example, small farmers have only 8% of farmland but produce 99% of the country's maize, 90% of millet and 73% of beans.[6] In Latin America small farmers with 34.5% of agricultural land produce 51% of the maize, 77% of beans and 61% of potatoes for domestic consumption.[7]

American studies too have found that the larger the farm the lower the productivity per hectare. Increasing mechanisation of farms has reduced yields per acre. Small farmers are better able to care for the land too, and small farmers are more contented people than farm employees.

In Cuba state owned farms produce less per hectare than small privately owned farms. Where land reforms have been put into operation, redistributing large estates to small farmers (Japan, Korea, China, Nicaragua, Zimbabwe and Taiwan are good

examples) there has been a large increase in production. It is estimated that land reform in north east Brazil would increase farm production by 80%, as long as the reforms included access to credit, irrigation and technical assistance. The previous owners sometimes have the power to sabotage the land reforms. If small farmers are at the mercy of money lenders, input suppliers, previous owners and merchants their chance of success is lowered.[8]

If all the world's farms were small, food production would double. Yet large farms consume most of the resources, receive most of the irrigation water, and get most of the financial credit and technical assistance. Small farms are more diverse, manage land better, provide work, contribute to local communities, and promote social cohesion.[9]

Small farms and rural economies

Small farm communities have better community facilities for health, education, recreation and culture. Local business is stimulated. Small farmers better manage soil and the natural environment because they are not farming for quick profit and moving on.[10] Small farms are more diversified which gives them greater resilience to weather and climate change, fewer pests and diseases, lower inputs and less risk; they also sequester carbon while large farms are greenhouse gas producers — methane from manure, nitrous oxide from fertilisers and carbon dioxide from fossil fuel energy.[11]

Money produced from the big farms leaves the farming community for the cities where it is spent, resulting in declining rural economic infrastructure. A study in California found that in small family farm areas the community infrastructure was much better — money went to local businesses, there were better services such as schools, clubs and parks, higher employment, and more participation in public activities.[12]

The number of small farms and the total area run as small farms is actually increasing, in Australia and the USA, reversing a trend that has been in progress for decades. These small farms are often part time, but they are providing many benefits to rural areas. They are termed "sub-commercial", defined by the Australian Bureau of Statistics as those establishments producing between $500 and $22,500 per year, and commonly referred to as hobby farms or lifestyle farms. In 2000 there were 33,674 such farms in Australia, compared with a little over 100,000 commercial farms (with production above $22,500). The number of commercial farms has halved in the last 40 years.

Sub-commercial farms contributed less than 5% of total farm production and covered 16.6 million hectares, mostly in the high rainfall areas close to towns and cities.

The benefits include diversity of production, in some cases greater intensity of agriculture, environmental benefits through greater biodiversity and better soil management practices, providing employment either on farm or to service their demand for goods and services, increased population so that community groups can be sustained and revitalised, a better environment for children than urban life, tourism ventures, and green spaces around cities where land prices are too high for commercial farms.[13]

Later figures[14] show the area of smallholdings producing $5000 to $22,500 per year in produce value reached 19 million hectares in Australia, larger than the area under wheat. There are no figures available for those producing less than $5000 per year but are expected to be substantial. Small holdings are concentrated in higher rainfall areas within commuting distance of major urban centres, away from the flat, dry inland (such as the Victorian Wimmera). The main produce is beef, but other uses include vineyards, cut flowers, berries, tourism, farmer market produce and recreational horses. Further benefits other than outlined by Barr[15] above include new cultural experiences, participation in voluntary organisations such as fire brigades and Landcare, greater environmental consciousness including tree planting, increased rate revenue for local government, lower synthetic inputs, and the bringing of new knowledge and skills to rural communities. Income levels are generally significantly higher than for commercial farmers as most income is derived from off the farm.

Despite the onslaught of agribusiness small farmers have not died out. Only 30% of the world's food is produced by the industrial food chain; 50% is produced by small farmers, 8% by urban farmers, and 13% by hunters and gatherers.[16]

Over-grazing near Geraldton, Western Australia.

Cooperative farm, Cuba: "Wherever mankind is assertive, the sun shines."

Resistance & Alternatives

Farmer discontent

Since the start of the 21st century there has been a growth in rural protest movements in the industrial countries. Some names include Family Farm Defenders in the US, Conféderation Paysanne in France, Rural Rebels in Scotland, and Farmer Power in Australia. Generally these groups are critical of established farmer organisations, but have little interest in lobbying government, and rely on direct action. Some are left-wing, some conservative and some far right. They sometimes form alliances with environmental, consumer, anti-globalisation or labour union organisations. They have no uniting ideology, no program and no coordination.[1] They are a symbol of the discontent in rural areas with government agricultural policies.

There are also large-scale mass organisations that act as political lobby groups against free trade and corporate concentration policies. The National Farmers Union in the United States is one example, with 300,000 members.[2] A similar organisation exists in Canada with the same name.[3] The MST (Movimento dos Trabalhadores Rurais Sem Terra, Landless Labourers Movement) has been very successful in fighting for land reform in Brazil.[4] The Zapatistas in southern Mexico have widespread rural support and control sections of Chiapas State.[5]

La Vía Campesina is a network of 200 million small farmers from around the world, members of 164 local and national organisations in 73 countries (but none in Australia). The network was set up in Mons, Belgium, in 1993, with the goal to: "bring about a change in the countryside — change that improves livelihoods, enhances local food production for local consumption, and opens up democratic spaces change that empowers the people of the land with a great role, position, and stake in decision-making on issues that have an impact on their lives".[6]

The range of solutions

In looking for solutions to the problems of farming there are three levels: individual, group and structural. Individual solutions include direct selling via farmers' markets,

roadside stalls or regular boxed deliveries to customers, and adoption of low input production systems (organic, agroecolological, biodynamic, etc.), which eliminate the ability of traders and input suppliers to profit from farm work. Individual marketing solutions are just that, they are limited in their scope and cannot become mainstream enough to challenge the power of agribusiness. Value-adding by processing on farm, engaging in farm tourism, and craft production are other alternatives, but all have a limited market.

Group solutions include cooperatives for processing, marketing, input supply and land management. Community Supported Agriculture and consumer food cooperatives are further examples.

However withdrawal from the dominant food system (via farmers markets, CSA, cooperatives, Fair Trade) is likely to be "only a minor irritant to corporate dominance of the food system"[7] and does not address the structural problems of food production and distribution. Far deeper change is needed on a world-wide basis to destroy the ability of agribusiness to profit from farmers' work.

Agroecology

Agroecology is "the application of ecological science to the study, design and management of sustainable agroecosystems".[8] Studies have found that agroecology has increased productivity by close to an average of 80% on 12 million farms in 57 developing countries; it also reduces input costs, creates less greenhouse gas, requires less debt, and slows migration from rural to urban areas.[9]

There is now a huge body of literature on agroecological farming methods produced and promoted by hundreds of non-government organisations around the world in many languages. Australia too has a multitude of local organic and permaculture groups and biological and regenerative farming networks. There is no shortage of information and support. Some governments are at least nominally supportive, though Australian governments have been notable exceptions, clinging to the "Clean and Green" myth. Some governments have endorsed agroecology as state policy (Cuba, Venezuela, Bolivia, Bhutan and several Indian states as examples). European governments all provide assistance for organic farmers.

Much of organic farming, but not all, can be counted as agroecological. Using a natural pesticide in place of a synthetic pesticide is not agroecology. Natural pyrethrum is allowed under organic standards for pest control; agroecology would have avoided the pests in the first place by planned management of soil fertility and biodiversity.

A review of 50 comparisons between organic and non-organic farms in the industrialised world found organic farms to be more profitable despite unequal

availability of research and extension, and without the external costs of chemical farming being included. These external costs, of drinking water contamination by fertilisers and pesticides, damage to wildlife, soil degradation, human health, greenhouse gas production and soil carbon loss, were estimated to amount to $324 per hectare in the United Kingdom and between $29 and $96 per hectare in the United States.[10]

A study by Badgely[11] found that using conservative estimates, organic agriculture could provide close to the current world food production, 2641 kilocalories per person per day compared to the current 2786 kilocalories, pointing out that 2200 to 2500 is sufficient for an adult person. Using what the authors regard as a more realistic figure of potential organic production, 4381 kilocalories per person is possible without the need for extra land to be put in production.

Cuba showed that agroecology, land reform to create small farms, local production including urban agriculture, and fair prices could provide the food needs of a country.[12]

There are huge numbers of certified organic farmers in the world. India has the highest number, 550,000, followed by Uganda with 190,000 and Mexico with 170,000. In Austria 20% of farmland is certified organic; Sweden and Estonia both have 15%. Australia has the largest area of certified organic farmland, 12 million hectare but only 2130 farmers.[13] Organic production and marketing is the consistently fastest growing sector in agriculture around the world.[14]

However being organic does not in itself address all of the problems of agriculture. Consider the following quote about the increasing involvement of big business in the organic sector:[15] "The growth of organic food has come at an awful price, compromising standards, undercutting small firms, diluting healthy food, ignoring social justice … polluting the very ideals embodied in the word organic … the path that agrarian idealists had taken in the 1970s … to farm in concert with nature and sell organic food outside the dominant food system … became compromised by its success. Organic food had become too popular to remain in a backwoods niche, morphing into yet another food industry profit centre".

Cooperative farming & collective bargaining

Group action by farmers can bring results. A good example in Australia was the May 2001 blockade of the McCain's factory in Tasmania by potato farmers demanding an increase in price. This was successful, one of the few examples of collective action in Australia by farmers. McCain's raised the price by $30 per tonne.[16]

Cooperatives and other forms of farmer collaboration can raise the power of farmers to influence the prices they receive.[17] Much of Australia's agriculture, and much in Europe, has been dominated by cooperatives, especially in dairying. Many of

these cooperatives have now been corporatised and at least partly privatised and are no longer controlled by farmers or act primarily in the interest of the farmer.

This does not mean though that cooperatives have no place. An excellent example of a functioning farmer controlled cooperative is the Organic Dairy Farmers of Australia. The farmer members of this organisation set the price they receive and the coop organises the processing and marketing under the True Organic brand. It has been very successful in providing farmers with a fair and adequate reward for their work.[18] Written into the constitution is a clause preventing privatisation. The Goulburn Valley Food Cooperative was set up in response to the closure of the Heinz factory at Girgarre in 2012, with the aim of providing reliable processing and marketing for fruit and tomatoes produced in the region.[19]

Radical restructure ideas

There have been various proposals put forward for changing agriculture policy to support farmers and food security. "Only by changing the export-led, free-trade-based, industrial agriculture model of large farms can the downward spiral of poverty, low wages, rural-urban migration, hunger and environmental degradation be halted".[20]

As a minimum, trade policy needs to change to enable developing countries to protect and support food security and rural livelihoods, and to re-establish food reserves to mitigate price and supply instability. It also needs to prevent speculation in commodity markets and eliminate dumping. Agroecological farming needs to be fostered.[21]

Colin Tudge, British biologist and science writer, initiated the Trust for Enlightened Agriculture. The aim of agriculture, he says, should be to feed people in a biologically efficient way, in contrast to the current aim of maximising wealth. In more depth, Enlightened Agriculture means:

- Everybody is fed, and to the highest nutritional standards.
- Rural communities are agreeable.
- Wildlife is provided for and livestock are treated without cruelty.
- Soil becomes more fertile over time, the wild environment becomes more diverse, waterways are less polluted and global warming is minimised.
- Sustainability over thousands of years is developed.
- Farms are small and labour intensive.
- All countries are self reliant in food.

Tudge is confident such a movement can successfully transform agriculture, taking power away from agribusiness corporations which he says are responsible for the failure of agriculture. He sees the basis existing already and expects it to grow via the

above pathways until it becomes dominant.[22] This however seems a rather naïve belief that defies the reality of corporate control and its ability to adjust to new situations.

The following changes to trade rules are advocated in *Manifestos on the Future of Food and Seeds*.[23] Protective barriers should be used to enable countries to become self-sufficient in food, so that trade is restricted to produce that cannot be grown in the country. Countries have the right to impose restrictions on importing and exporting produce. Fair treatment of farmers, workers and the environment should be part of trade policy. The implementation of domestic investment laws should not be restricted by trade rules. Patenting rights should not over-ride the rights of local communities to maintain their genetic resources. The precautionary principle should be used if there is doubt about potential impacts of certain technologies. Trade should foster sustainable development.

ALBA, the Bolivarian Alliance for the Peoples of Our America, a grouping of several South American and Caribbean nations including Cuba, Venezuela, Ecuador, Bolivia, Nicaragua and several small island countries, has developed a trade model very different to WTO.[24] Trade must be for mutual benefit, for just and sustainable development with the state as regulator and coordinator. All countries and people in the bloc must share the benefits. Competition between countries and between products is supplanted by cooperation and solidarity, especially to eliminate illiteracy and poverty and promote free health care. Cultural and indigenous rights are defended and traditional knowledge and plant varieties are protected from corporate piracy. Joint planning for communications, transport and energy is carried out.

The guiding philosophy of agriculture in Venezuela is ecosocialism, which is "a complex process of transition and transformation, socially, economically, scientifically, technologically and politically … carried out collectively and daily, taking into account the ecological basis of air, water, soil, biodiversity and energy … and constructing an ecological ethic sustained in the complex relationships between society and nature".[25] The government opinion is that there is no agroecology without socialism, because allocating resources according to the market cannot protect the environment. *Pachamama*, the concept of Mother Earth protection, has been adopted in Venezuela, as well as Ecuador and Bolivia, as the basis of sustainability.

The US Greens Party platform campaigns for policies to assist farmers to transit to organic systems, break up agribusiness corporations, and create new family farms and farm worker cooperatives through land reform and a homesteading program.[26]

The Canadian Farmers Union proposes a range of measures to improve incomes of farmers. They include some control over production to balance supply and demand internationally, price supports to guarantee that farmers receive their cost of

production, breaking the monopoly of corporate suppliers of seed, fertiliser, and other farm inputs by funding the creation of farmer-owned cooperatives; banning corporate farming as well as corporate contracts that dictate where farmers buy inputs and sell their product; providing young people who want to farm with access to the land through community land trusts and land banks; and easing the mountain of debt that now prevents sons and daughters from taking over the family farm. None of this necessitates an increase the cost of food to consumers, the NFU points out: farmers receive so little of the food dollar that the cost of increasing their share can be absorbed by corporate processors and retailers without price increases.[27]

The Land Workers' Alliance put forward the following policy framework for British agriculture in 2016 following the vote to exit the EU: increase domestic production to replace imports while protecting British producers from cheap imports; target support for small farmers; establish a robust agricultural wages board to ensure fair pay and conditions for farm employees; improve environmental and animal welfare standards of farming, placing a moratorium on the planting of GM crops, the use of neonicotinoid pesticides and glyphosate, and factory farming, and labelling produce with its pesticide content; invest in farmer-led research; start a land access scheme for new entrants; limit the power of retailers; and institute democratic agricultural policy formation systems.[28]

The policies which La Via Campesina advocates to the public and governments are the most radical. They call for the complete dismantling of agribusiness companies; the replacement of industrial agriculture with small scale sustainable agriculture; genuine land reform; banning of all patents on plant and animal genetics; opposition to genetic manipulation; abolition of the World Trade Organisation, the World Bank and the International Monetary Fund; no free trade agreements; no use of cereals for biofuel production; the right of every country to food security and food policy control (food sovereignty); respect for nature and natural resources and protection of biodiversity; full human rights for rural people, including rights to food, water, employment, housing, education, health care, rest and culture, and protection from violence, racism, sexism, war and inequality; control of middleman profit margins and the forbidding of speculation on agricultural and food prices; and agroecology instead of agrochemicals.

Conclusion

The platform of La Vía Campesina comes closest to delivering the changes that are needed. It will take a coalition of strongly committed farmers, farm workers, environmentalists and consumers to bring about these changes. There is no need for any of these groupings to see the others as adversaries — the opponent in common is agribusiness corporations. It will have to be part of a world wide struggle for economic and social justice.

Free trade and deregulation have spectacularly failed in the stated goals of increasing farm prosperity, environmental sustainability and food security in the world. The effect has been greater control by agrifood corporations on agriculture and the consequent greater ability to extract wealth from farmers. This may have been partly due to flawed policies of the neoliberal economists, and partly by design, as these policies have had strong participation and support by agribusiness. The excuses for the failure, that governments have not gone far enough in deregulation, or that benefits will flow in the future, are bankrupt.

These policies did not initiate the decline in farmer living standards, which predates neoliberalism, but they have accelerated the process. The constant drop in the percentage of the retail price of fresh produce going to farmers is an incontrovertible indication of increasing exploitation.

While there are ways some individual farmers can reduce their involvement with agribusiness corporations, by direct selling and agroecological production systems, this is mere tinkering with the problem. Only a massive reorganisation of the agricultural economy to permanently dismantle the corporations will give farmers the income and dignity they deserve.

The Bibliography and Notes are at the end of this book.

Rural desolation, Chinkapook, Victorian Mallee.

Appendix 1

Sustainable Australian Agriculture Under Corporate Attack

By Elena Garcia

In the past few years, private investors backed by corporate interests such as global banks, financial firms, hedge funds and food giants have bought a huge amount of farmland across the global South.

Oxfam's 2012 Our Land, Our Lives report on land grabbing said foreign investors had bought enough land in the past decade to feed 1 billion people. Oxfam singled out the World Bank, which has boosted its finance of intensive, large-scale agriculture in the global South from $2.5 billion a year in 2008 to $9.5 billion in November 2012.

The World Bank refused Oxfam's call to put a freeze on its loans to land grabbers, saying its investments were not adding to the food crisis, but providing "major new investment in agriculture to improve the productivity of large and small farmers while protecting the environment".

However these investments are being used by corporations to buy up prime food-producing land, just as free trade treaties come into play that will allow them to sue governments that affect their profits by attempting to regulate their use of that land.

As at least two-thirds of the land grabbers intend to "export everything they produce", Oxfam said these business plans "will come into direct conflict with the need for more land to feed a growing global population". Most firms that take the World Bank's money use the land to produce biofuels to feed cars, or commodities to sell on overseas markets.

Researchers Shepard Daniel and Anuradha Mittall said in a 2009 study: "Not only

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does land grabbing mean that farmers will lose their land, but these lands will be transformed from smallholdings or communal lands into large industrial estates connected to far-off markets."

The new wave of land grabbing is also turning the farmland into industrial monocultures, which rely heavily on chemical inputs and produce huge greenhouse gas emissions.

Australian family farms sold

In Australia this process of expropriating family farmers for corporate agribusiness takeovers is being carried out as a multi-pronged corporate attack by banks, corporate raiders, mining companies and by the supermarket duopoly of Coles/Woolworths, which keeps prices cheap for consumers by contracting producers to prices too low to make a profit or even barely cover costs.

The $1/litre milk war is a classic example. This was the death blow to a dairy industry that has had no producer price rise for 40 years, since the abolition of the Milk Marketing Board by Whitlam. It has caused a wave of family farmers to exit the industry and brought the dairy industries in WA and regional Queensland to their knees, to the advantage of Gina Reinhart and other corporate raiders who have bought dairy farms at bargain prices.

Reinhart is now switching to intensively farming dairy cows and has the funds to build processing plants that can process and export the dairy products to the expanding middle classes of Asia and take advantage of a demand for a clean product that has seen prices rise to up to $6/litre.

Australian fruit and vegetable crop growers have also been squeezed out as cheap imports drive down prices. Companies such as MasterFoods, Golden Circle and SPC have been bought by US corporations Heinz and CocaCola-Amatil. The Australian food processing plants that provided farmers with an alternative market to Coles/Woolworths-controlled fresh fruit and vegetable sales have been closed down and relocated overseas to lower wages and conditions.

SPC is now the only major processor left. Its owner CocaCola-Amatil has severely cut suppliers and quantities, forcing the mass bulldozing of orchards as farmers cannot afford the maintenance costs to keep them pest-free. Many jobs in rural and regional areas have been destroyed and food-miles greatly increased as cheap, poor-quality imports replace previously Australian-grown and processed product.

As family farmers are pushed out, large-scale industrial farming is stepped up. Crop rotation and farming for long-term sustainability and to support local communities is abandoned for short-term contractual obligations for an annual crop

for export, minimal costs and maximum repatriated profits.

Australian farming has an international reputation as clean and green, but the big agriculture corporations from the US and China have a track record of toxic large-scale industrial farming that poisons the soil, air and water, the local communities and the food produced, which is why their middle classes are prepared to pay high prices for clean Australian products.

Scapegoating

Farmers have been targeted as convenient scapegoats for the environmental devastation wreaked by mining and coastal property development.

A recently released Queensland government report found the rate of land clearing had doubled in two years. As well as increasing carbon emissions, the report says clearing trees and vegetation in such quantities risks causing land degradation, sedimentation of waterways and damage to the Great Barrier Reef.

Agricultural clearing must be applied for and monitored, but clearing for coal

Elena Garcia: Recycler, cattle farmer & firefighter

I am a communicator and recycler who breeds and grazes free-range beef cattle and manages native forest on 1280 acres of marginal country west of the Great Divide in Queensland, with my partner of 34 years.

We live on stand-alone solar power and were cut off for six weeks without drama in the 2010-11 Queensland floods.

I am a rural firefighter and crewleader and organised my local rural fire brigade for the last seven years. I was the spokeswoman and organiser of the Captain Creek 7 whistleblowers on workplace health and safety problems and fraud within their brigade, who dragged the Queensland Rural Fire Service into the 21st century in a seven-year campaign ten years ago.

I grew up in Sydney, have lived in three countries, been an electrical fitter/mechanic, freelance journalist, and set up and co-edited a Landcare newspaper. I have lived in remote rural Queensland areas since 1991.

I have contributed numerous articles on environmental and farming issues to *Green Left Weekly*.

seam gas (CSG) extraction and other mining is either totally unregulated or never refused. Pipelines have been cleared through creeks and waterways and other erosion-prone areas. Mining companies are allowed to put in quarries, dams, roads and other support infrastructure anywhere they choose.

Goondicum Resources, a multinational mining company, faces legal action after illegally bulldozing a swathe of bushland regarded as habitat of state significance in central Queensland in November 2014. It was building an access road to reduce the distance from its Monto ilmenite mine to Gladstone Port by about 100 kilometres.

The Queensland Department of Environment found that about 800 metres of road, estimated to be at least 50 metres wide in places, had been built outside the allowed area. Goondicum admitted it did not have the required state approval but said it hoped to gain approval retrospectively.

Rob and Nadia Campbell, owners of the illegally-cleared property, raise high quality EU-accredited cattle for export. They said that under the law they had no power to refuse the mining lease, only to negotiate for compensation.

Three days after the Environment Department wrote to the Campbells confirming their allegations that the road had been illegally cleared, they received another letter — from the mining company's lawyers. The letter warned the Campbells: "Unless you immediately desist from your conduct in harassing our client's employees and contractors, it will without further notice commence proceedings against you for a restraining order."

A WWF Briefing on Queensland land clearing released on September 16 showed that about 125,000 hectares of remnant vegetation including about 12,000 hectares of endangered ecosystems has been remapped as exempt on regulatory maps since 2012.

Cowspiracy

For at least 40,000 years Australia was actively managed by Aboriginal people, using cool burns in the appropriate seasons to create grasslands and open woodlands for grazing animals that were hunted and to manage food-producing plants. Now these marginal lands are managed by graziers in a similar fashion to produce organic free-range cattle.

In contrast to US farming, which is dominated by industrial farming run by corporate agribusiness, most Australian farmers are graziers and environmental stewards, with farmers and agricultural businesses owning, managing and caring for 52% of Australia's land mass.

Recently emphasis has been given to the methane produced by cattle with the

release of the film *Cowspiracy*. These methane emissions have been blamed for all agricultural emissions. The film ignores the nitrates released by petroleum-sourced nitrogen fertiliser used on large-scale monocultural cropping and the huge waste concentrations of factory-farmed poultry and pigs, which run off into waterways and cause huge dead spots in US lakes and estuarine waters.

Cowspiracy does not examine Australian production systems, which are quite different from those in the US. Australian farmers do not buy grain from the Amazon and have no connection to Amazon deforestation.

While historically deforestation was a major part of the industry's emission contributions, since 2006 there has been a dramatic reduction in emissions from deforestation. Emissions related to deforestation have fallen from 140MT CO2 to 40MT CO2 between 1990 and 2014.

In Australia, most cattle graze on grass. Even "grain fed" cattle spend most of their lives grazing grass. At any one time, only about 2% of Australia's cattle population is in feedlots, and Australian cattle are not consuming grains that humans can eat.

Cowspiracy bases its arguments on the UN's Food and Agriculture Organisation (FAO) report Livestock's Long Shadow, which claimed the sector contributes more greenhouse gas than the entire transport sector. This statement has been retracted by the paper's authors, who have since accepted that the paper used two different methodologies to calculate greenhouse gas emissions, resulting in an unfair comparison for the beef industry

In Australia, energy generation represents 37% of Australia's emissions, compared to 10% for livestock. Most of this is methane produced by the natural digestion process of cattle and sheep.

Considerable work has been done in Australia on reducing methane emissions from livestock rumens by diet variations. A recent three-year study by the National Livestock Methane Program found methane reductions of up to 90% can be achieved in cattle and sheep by methods such as breeding; adjustments to rumen microbes; and supplementing pasture with native grasses and shrubs, leucaena, grape marc (a wine-making byproduct), and red macro-algae that grows off the Australian coast.

These methane reductions can also increase productivity, as less energy from food intake is wasted as methane. Australian production efficiencies have delivered a 5.3% reduction in emissions per tonne of beef produced since 1990. Life cycle assessment on Australian beef and lamb production systems showed that Australia has one of the lowest carbon emission profiles of any major meat-producing country.

Land management practices are key. Grasslands need animals to stay healthy. Grasslands, when they are well managed with rotational grazing and adequate recovery

time — as they are by wild herds and by shepherds, cowherds and goatherds and a rising number of graziers — pump carbon into the soil. Poorly managed, set stocked and overgrazed pastures lose carbon. It is not the animals that do the damage, it is the way they are managed. Methane emissions from wild ruminants was never a problem because nature does not permit waste — the methane was used as food for methanotrophic bacteria in the soil and neutralised. It was never a problem until industrial farming agricultural practices started destroying these methanotrophic bacteria, which are very sensitive to chemical fertilisers and herbicides.

Other very important microbiota very vulnerable to chemical use are mycorrhizal fungi, which invade the plant roots and through their mycelium networks effectively enlarge the root foraging area of the grasses tenfold, enabling the grassland to survive droughts. A by-product of this process is the formation of humus, the stable form of soil carbon. Mycorrhizae are decimated by nitrate and phosphate fertilisers, herbicides and fungicides and become inactive in non-biologically managed soil. All these bacteria reactivate in biologically managed soil. (For further detail refer to https://soilalliance.blogspot.com.au/2016/04/ruminant-livestock-and-greenhouse-gases.html)

Agribusiness

Agribusiness companies such as Monsanto have campaigned in the UN to phase out peasant subsistence and indigenous farming in Third World countries and replace them with factory farming. By manipulating the statistics and limiting the factors considered, these corporate agribusinesses have claimed that traditional farming methods produce more carbon emissions than factory-farmed livestock. What is not factored in is the huge toxic burden on air, soil and water of factory farming and its by-products, and from the herbicides, chemical fertilisers and pesticides used to replace farm labourers and be profit-making inputs for corporations to sell to farmers.

And this Big Ag lobbying in the UN has paid off. Big Ag's manipulated statistics have become the basis for the "accepted wisdom" among animal liberation activists, vegans and a growing body of environmentalists, that rangeland livestock grazing and factory farming are the same, both in the toxic wastes they produce as by-products and in the toxins and carcinogens in the food they produce. This could not be further from the truth, and plays right into the hands of corporate agribusiness companies.

Cowspiracy applies to grain-fed livestock in American factory and industrial farming. The Big Ag farming methods of these multinational corporations raise huge health and environmental concerns, including the spread of infectious diseases, including antibiotic-resistant bacteria, to nearby communities; groundwater and surface water pollution and associated ecological impacts; and air pollution, odours, and associated

health and social impacts. This is a major problem in both the US and China, and a major reason, in China in particular, that the middle classes are prepared to pay very high prices for clean Australian food imports, particularly for dairy products.

In contrast, environmental pressure from agricultural nutrients and pesticides are very low in Australia, and we have earned a clean, green reputation for our food, and particularly our beef.

Of the approximately 134,000 farm businesses in Australia, 99% are family owned and operated, and in 2010–11 they employed 307,000 people to manage 417.3 million hectares of land. The most recent research by Bond University sustainability professor Tor Hundloe showed Australia had the most organically farmed land in the world: more than five times that of second-placed Argentina.

Emissions from bushfires

Almost half of Australia is marginal land unsuitable for cropping. Much is seasonal grasslands with native grasses on poor soil with little water. Left unmanaged the vegetation grows vigorously when it rains, then dies and feeds huge bushfires, particularly as increasing heatwaves dry out the soil and vegetation. Rangeland rotational and holistic grazing is the best way to manage this marginal country and produce food from it with minimal water use and minimal use of fire.

A great deal of emphasis has been placed on contribution of cows and sheep to Australia's methane emissions. Yet the role that grazing livestock plays in reducing bushfires is never factored into these emissions, and the huge fugitive methane emissions of the mining industry are unmentioned and unmeasured.

Barry Cohen commented in the *New Spectator* in 2011: "Among the millions of words spoken and written about carbon emissions, the fact that a third of Australia's emissions come from bushfires is never mentioned … Professor Mark Adams of the Bushfire Co-operative Research Centre estimates that the 2003 and 2006-7 bushfires could have put 20 to 30 million tonnes of carbon (70 to 105 million tonnes of carbon dioxide) into the atmosphere; that the 2009 bushfires (Black Saturday) created 165 million tonnes of CO2 emissions, and that Australia's total annual emissions are approximately 330 million tonnes, of which 110 million are from bushfires."

Carbon emissions from bushfires are not factored into the Kyoto protocols as they have been labelled as an "act of god", like volcanoes, although emissions from prescribed burning are included. Kyoto argues that carbon released by grass and woodland fires would have been released by natural decay and is replaced by regrowth within one or two growing seasons, which is how cool winter burns work.

However Kyoto accounting fails to take into account the large, long-term —

sometimes permanent — loss associated with high-intensity summer bushfires, which are hot enough to burn logs and kill large trees undamaged by cool winter burns.

The total amount of fuel consumed by a bushfire depends on the amount of moisture in the fuel. Dry fuels burn more intensely. With global warming producing increased summer temperatures and heatwaves leading to drier soil conditions, interspersed with more intense rainfall events that produce rapid vegetation growth that then dries out into highly flammable fuel, bushfires can get so hot they sterilise the ground, and kill otherwise fire-tolerant seeds and mature trees.

Under Australian conditions, such devastating wildfires can be prevented by low-intensity cool burns in mild weather and appropriate soil moisture conditions. The amount of fuel available to burn can also be managed with livestock.

In *Bushfires, Prescribed Burning and Global Warming*, Australian scientists Roger Underwood, David Packham and Phil Cheney said:

> Scientific research and long experience in Australian eucalypt forests has demonstrated that forest management incorporating prescribed burning under mild conditions always reduces wildfire size and intensity. Where prescribed burning is regularly carried out, the risk of a high-intensity bushfire at a later date is greatly reduced.
>
> The distinction between intense wildfires and mild prescribed burns is almost never made in the climate literature. Fires of vastly different size and intensity are lumped together simply as "fire", and it is assumed that the impacts and consequences are equal. They are not …
>
> Fire intensity is far more significantly affected by fuel quantity, fuel dryness and wind strength, than it is by temperature. Some climate change computer models also suggest a significant reduction in rainfall, leading to increased fuel drying and increased fuel availability at lower temperatures. This is the same effect as that of drought, a phenomenon which is common in Australia.
>
> The factor which "doomsday" commentators ignore is the opportunity for land managers to get in first, and reduce fuels before a potential megafire starts.

Carefully-managed rotational grazing is a crucial tool in reducing the fuel available for wildfires, but this is not factored into calculations of greenhouse emissions from free range cattle and sheep.

Water use

Much has been written about unsustainable water use by Australian agriculture, but ABS statistics show that of the 399 million hectares of agricultural land in Australia in 2008-09, less than 1% was irrigated.

Farmers are increasingly tightly regulated in their water use. The Murray Darling

Plan allocates strict volumes of water to irrigators. However it does not regulate or even calculate water usage by mining companies, particularly not the water-intensive CSG industry. The legal rights given to mining companies by Queensland governments are in stark contrast to the water regulations enforced on farmers and everybody else, not only in how much they are allowed to use, but in how much they are allowed to pollute it. What makes this even more alarming is that the ways artesian basins operate and interconnect is not yet understood, which makes any damage almost impossible to repair.

In Queensland, petroleum and gas companies have been given a statutory right to use whatever water they need. They must do a baseline assessment and report on underground water impacts, and have "make-good" obligations, but these are not specified.

The coal industry must have a water licence in two-thirds of Queensland, but in practice these are never withheld. There are no requirements for reports on their impact on groundwater and no statutory "make good" provisions.

The Queensland Labor government in 2016 tightened "make good" requirements and reinstated every person's general objection rights along with protections for key farming infrastructure removed by the previous LNP government, by allowing landholders to forbid mining within 50 metres of bores, artesian wells and dams, which for the first time will apply across the whole resource sector. For the first time they looked at assessing, licensing and requiring "make good" requirements for associated water impacts, or how much water is taken or interfered with by the mining process. It then exempted the greatest threat to the Great Artesian Basin, the Adani mine, (which will have to pump out an aquifer to be able to mine) from complying with the new requirements. Adani will be loading an aquifer with toxins by extracting it through a coal seam, and then releasing it above ground into our catchments.

The greatest risk to Australia's emission reductions, as well as to our ability to produce food for domestic use and export, is the mining industry who are pumping our artesian basins and water catchments full of poisons, and releasing huge and unmonitored fugitive methane emissions from every stage of unconventional gas mining and coal mining.

Clean water is our greatest natural resource, and artesian water is our only reliable supply. Mining is both wasting and poisoning it. The CSG industry pumps huge volumes of water into the coal seam to release the gas. But it also releases massive quantities of salt and carcinogens such as benzene and toluene into the water, which is then pumped up to the surface and stored in plastic-lined evaporation ponds, where the toxins can overflow and be washed down the catchment when flooded. Toxins left after the

water evaporates from the pond are then stored in plastic in landfill to leach back into the groundwater and soil when the plastic breaks down.

The Ensham mine wall holding back wastewater full of these poisons, supposedly the "best designed levy bank", gave way recently upstream of the Fitzroy river — the water supply for Rockhampton and many other communities. Fortunately the toxic water was caught in small dams downstream and did not poison Rockhampton's water supply. However, the abandoned mine at Mt Morgan continues to release toxic waste into the Fitzroy River and its rehabilitation is estimated to cost $200 million.

Mt Morgan is only one of 50,000 abandoned mines nationally which are poisoning our drinking and farming water. Since the January 2011 floods, the mining industry has been quietly permitted by the Queensland government to pump out toxic water from flooded operational mines into our rivers and drinking water catchments.

Coal-fired power stations are another heavy water user that contaminates groundwater. None of this pollution receives media coverage except by the ABC. But the ABC has suffered massive funding cuts. Its rural coverage has been particularly targeted, with the cutting of the Monday to Friday Bush Telegraph rural issues current affairs program. Now regional ABC stations and news are under attack and the communication of rural issues to the 89% of Australians who live in urban areas will be even more restricted.

Dirty tricks by banks

At the same time as ABC rural media coverage is slashed, confidentiality agreements have become major weapons of the mining industry and the banks in their ruthless attacks on family farmers, which is what allowed ministers like Ian Macfarlane to get away with his mendacious assertions that Queensland farmers are happy with their relationship with CSG companies. Confidentiality agreements are standard for the CSG industry, so farmers cannot find out what price per well others receive, and so they can't speak out about the bullying and serious side effects they are afflicted with as part of the CSG extraction process.

The family farm is under attack from all sides. Short-term mining profits are destroying long-term food production in Australia, while the banks collude with big agribusinesses to buy viable farmland as farmers can no longer profitably sell their produce.

As the demand for Australian farm products skyrockets in Asia, corporate Australia is buying up drought-crippled but viable rural properties at bargain prices. Queensland Federal MP Bob Katter moved legislation on November 23, 2015 that would have forced banks to allow farmers two years to sell foreclosed properties instead of forcing six-week fire sales. Katter pointed out that with only two months to sell a farmer

would be lucky to get 40% of market value for their property, but with two years to sell a farmer could expect to obtain 80% of market value. The legislation would also have stopped banks forcing confidentiality agreements that presently allow them to bully their victims with a range of dirty tricks reported to Queensland's 2016 Rural Debt and Drought Taskforce. Taskforce chairman Queensland MP Rob Katter's report said a royal commission is needed to investigate financial conduct within the finance sector, to force the major banks to answer questions on issues like the current level of rural debt in Queensland. "Quite frankly, some people just treated the taskforce with contempt at the banking level" he said.

The dissenting ALP and Green reports to the November 2016 Federal Review of the Four Major Banks First Report similarly called for a Royal Commission to properly investigate the concerns raised. Action is also being mounted in the Federal Court alleging that the ANZ Bank forced farmers into "engineered defaults" and had entrapped them into signing changed loan contracts when it bought out the loan book of the Landmark group in 2009.

Banks used the recent four-year drought in Western Queensland to foreclose on viable properties, many of which had not fallen behind in their payments, and use the confidentiality agreements to prevent debtors from speaking up. "Financial institutions have historically exercised untrammelled and unrestrained powers by their superior bargaining position when dealing with people in default of their loans," Federal MP Bob Katter said while moving his bill on November 23, 2015.

"And there would be few people in Australia, let alone in this Parliament, who would not be aware of what is taking place in rural Australia. When I say 'rural Australia', there are 4500 empty houses in Mackay, and between Dysart, Moranbah and Charters Towers there are another thousand empty houses."

Father Matt Moloney, the priest in charge at St Brigid's Catholic Parish at Longreach, spoke out in *Queensland Country Life* in 2014 about what he described as "unfair" action by banking representatives. His claim that 46 properties around Longreach, Muttaburra and Torrens Creek/Prairie were being repossessed by banks generated an overwhelming response. "People have rung from north of Longreach down to Roma. It's happening not just here — it's happening on the Granite Belt. I was talking to a parishioner at Gogango (near Rockhampton) who told me people on eight places around him were being forced off. There are people on properties out there living on Weet-Bix and noodles."

This corporate bullying has a terrible social cost. Lifeline figures show that when a severe drought hits and persists in a rural community and financial and emotional stress levels climb, suicide rates increase sixfold.

Queensland Lifeline director Derek Tuffield was quoted in the February 1, 2014 *Australian*:

> This has been a very rapid-moving drought and its ferocity has caught a lot of people off-guard and in real financial stress, needing money to pay for food for the table, fuel for car, electricity for their properties, and feed and water for their stock.
>
> Just last week the cattle price fell again and we experienced a very bad suicide where a farmer was told his 400 cattle that were ready to go to market were too emaciated to be put on a truck and sold; so he shot them all and then himself.

Bob Katter's vast Kennedy electorate covers much of northern Queensland and the Gulf country to Mt Isa. He wants the federal government to buy bank debt from struggling farmers and the Queensland government to allow drought-stricken graziers to access underground artesian water. "There might be 10,000 head of cattle dying the most cruel death of starvation as we talk now, but the greatest tragedy in this story, is that we estimate that one farmer every four weeks is taking their life," Katter said (*Australian*, February 1, 2014).

In December 2015 a record proportion of Queensland was affected by drought, with more than 86% of Queensland drought-declared, following three failed wet seasons and only random intense, erratic storms. Many farmers were without the funds to re-stock their properties when the drought broke in 2016. It is in this context that the banks are forcing foreclosures of properties that have not defaulted on mortgage payments and selling them at only 40% of market value.

A new Rural Bank

There is a dire need for a government with vision to re-establish a Rural Bank to offer long-term loans at 2% interest and cheap farm insurance to viable, sustainable rural businesses, so that farmers and their communities can continue to produce clean affordable food, manage the Australian landscape to minimise bushfires and keep our water catchments clean.

A Federal Land Trust is also needed to buy land off retiring farmers — the average age of Australian farmers is 55 — at a fair price and sell or lease it to young farmers or cooperatives at an affordable price to allow them to enter the industry and set up sustainable, low-carbon infrastructure and businesses.

Instead, corporations are buying viable farms at foreclosure prices and both major parties are making it easier for them to do so. Recently, the federal government moved to establish a foreign ownership register of agricultural land and to lower the screening threshold on foreign purchases of Australian agricultural land from $252 million to $15 million from March 1 to "improve scrutiny".

But these changes mask the fact that Australia's laws are directed more at ensuring government is seen as overseeing foreign investment than restricting it.

Recent much-publicised changes by the federal government to establish a foreign ownership register of agricultural land and to lower the screening threshold on foreign purchases of Australian agricultural land from $252 million to $15 million from March 1 to "improve scrutiny", mask the fact that Australia's laws are directed mostly at ensuring government is seen to be overseeing foreign investment rather than actually restricting it. In a joint press release on February 11, 2015, Abbott, Barnaby Joyce and Hockey said better scrutiny and reporting of foreign purchases of agricultural land were part of the Coalition's commitment to the Australian people at the September 2013 election."The government will continue to welcome foreign investment, but the community must have confidence that this is coming in on our terms and for our nation's benefit," they said. "We need to develop the architecture for successful and sustained agricultural investment."

GrainCorp

The blocking of the $3.4 billion sale of the GrainCorp grain handling infrastructure network to major US multinational food corporation ADM in December 2013 is an example of this political game of playing to public perceptions rather than actually aiding the development of the Australian agricultural industry.

Farming creates 1.6 million jobs in the complete farming supply chain and earns $155 billion GDP annually, and creates a GDP that is redistributed within Australia, as opposed to the mining profits which are mostly exported by multinationals and pay little if any tax.

GrainCorp is the only publicly traded grain merchant in Australia. GrainCorp had been pushing for co-investment by the government to modernise its grain silos and ports network, but the government refused to fund necessary infrastructure improvements. The company handles 75% of annual grain production and 90% of exports from eastern Australia, with 280 wheat storage sites, and control of seven of the ten ports that ship grain from the east coast of the country. ADM, an Illinois-based S&P 500 listed company with revenues of $89 billion last year, already had a 20% stake in GrainCorp but wanted to increase it to 100% ownership, and was believed to be targeting the Australian market as a way of boosting its presence in Asian markets, especially China, which is a major purchaser of Australian wheat exports. ADM's bid was made before the Coalition came to power but was not ruled on by the previous government. It was one of 131 foreign investment proposals considered by the current government, and the only one rejected by Treasurer Joe Hockey.

The sale would have sold Australia's east coast grain handling network to its major

international competitor. Its blocking was not a decision made because Hockey had a problem with the sale as such, but rather with the *timing* of the sale. "I've made decisions on a number of foreign investment proposals, and those decisions have facilitated a significant amount of new and welcome foreign investment in Australia," he said in February 2015. "In fact, of the more than 131 significant foreign investment applications we have dealt with, this is the only application that we have prohibited."

Announcing the decision, Hockey said he had to take into account the national interest. "I consider that now is *not the right time* for a 100% foreign acquisition of this key Australian business," he said, adding that the industry was "going through transition and now is not the right time to have all the major players foreign owned".

"A further significant consideration was that this proposal has attracted a high level of concern from stakeholders and the broader community," he said. "I therefore judge that *allowing it to proceed could risk undermining public support for the foreign investment regime and ongoing foreign investment more generally*. This would not be in our national interest."

Shadow treasurer Chris Bowen declared that Hockey was too "weak" to oppose those within the coalition government opposed to the sale, and showed he was unable to "make the tough decisions." "If you want to ensure Australia's food security, then you ensure investment in Australia's food and agricultural industry," he said. "Whether that investment be foreign investment or domestic investment, you ensure investment."

However Chandler Goule from the US National Farmers Union told the ABC that he had watched the negative impact of foreign takeovers in his own country. "Any time a group of companies, or one or two companies, corner a market and infiltrate it by 40-60%, economists will tell you you've lost competition … as you lose competition, then what happens to your producers is they're limited on who they can sell to, therefore they get a lower price and your end users are limited on who they can purchase from."

By creating a public perception of government oversight and response to community concerns, Australian governments from both sides of mainstream politics have secured broad community acceptance of foreign corporate investment rather than respond to demands it be limited or stopped. Whenever that acceptance has been at risk, governments have responded with laws that seem to address those concerns yet maintain foreign investment flows.

The debate over new Treasurer Scott Morrison's blocked sale of the Kidman pastoral empire — stock, plant and property — to Chinese government interests is a another good example of a diversion of public debate to serve corporate interests.

It is one of the largest operations in the world — 185,000 cattle in 100,000 square

kilometres of pastoral land made relatively drought-proof by being spread over 16 properties and outstations in three states. It produces about 15,000 tonnes of beef each year, including about 1.3% of Australia's boxed beef exports. It encompasses about 2% of Australia's landmass and comprises a complete supply chain from breeding to fattening to market.

It should be bought by the government, kept as a national trust and run as a cooperative network of properties by young Australian farmers and Aboriginal communities who cannot afford to buy into the market.

Instead, the debate is presented by both major parties as being about whether foreign or Australian corporations should be permitted to buy this irreplaceable national asset. The mining industry environmental disaster created by BHP Billiton in Brazil shows that no corporation is different to any other and that none act in the public interest.

Foreign investment review changes

Political grandstanding by the Labor Party alleging that the government's foreign investment review changes are "xenophobic" is cover for the fact that neither political party is doing anything real to control how much rural land corporations are taking over. Neither major party is prepared to act to protect sustainable farms or invest in modernising agricultural infrastructure. They both prefer to lease or sell national assets to corporations so they can make huge profits.

In February last year, Bowen said that the new rules "risk driving investors elsewhere at a time Australian agriculture is hungry for capital. It is inconceivable that Australia will be able to scale up production to expand our food exports and fully tap into the growing consumer markets of Asia without additional foreign investment."

He also claimed that while the ALP supports moves to increase transparency in Australia's foreign investment regime, lower thresholds on agricultural land would be a red-tape nightmare for potential investors.

Then-prime minister Tony Abbott parroted these concerns while supporting the changes as "options to modernise the foreign investment framework to reduce the cost of red tape".

The Foreign Acquisitions and Takeovers Legislation Amendment Act, which passed through parliament in November 2015, enables the treasurer to either allow, allow with conditions, or block a purchase by a foreign person or company of a significant interest in Australian land. If the sale has already happened and the Treasurer is satisfied it is against the national interest, the Treasury may make a disposal order to unwind it.

One change from the previous law is that the substantial interest threshold for an

entity or trust has been raised from 15% to 20%, which means foreign persons or entities acquiring a stake of less than 20% will no longer need foreign investment approval, as long as they are investing less than $53 million. It is expected that the act will result in a $667.2 million rise in consolidated revenue over four years from application fees.

The only people not to benefit from the changes are the farmers. The new foreign investment thresholds also do not protect any farm in which mining has declared an interest.

The Foreign Acquisitions and Takeovers Act 1975 (FATA) and Australia's Foreign Investment Policy are the main regulators of foreign investment in Australia. Since 1989, FATA has divided Australian land into two categories: rural and urban land. For land to be rural, it must be used wholly and exclusively for carrying on a business of primary production, such as farming, horticulture or forestry. All other land is classed as urban.

This means that, according to FATA, the land supporting an active farm is rural land but the abandoned farmland next door is urban land. Mining on farmland, which farmers do not have the right to refuse, would mean that farmland would not be considered rural land and the review threshold would be much higher. The threshold for review of rural land is $15 million whereas the threshold for developed non-residential commercial real estate remains at $54 million.

Once mining declares an interest in land the price falls well below market value as nobody wants to buy it. Most farms would be lucky to reach those thresholds no matter how viable they were before mining started. It becomes a buyers' market, and again the corporations cash in, unregulated and unreviewed.

In addition, for United States and New Zealand investors, Australia's “free trade” treaty obligations may result in their investment proposals not being subject to these new thresholds.

It is clear that Australia still welcomes foreign investment in agriculture. Agriculture features prominently in the Liberal Party’s 2030 Vision for Developing Northern Australia, and whether those plans happen will depend on Australia continuing to attract foreign investment.

The Coalition government has ambitious plans for Australian agriculture — as long as it is not expected to commit public investment into it. Agriculture features prominently in the Liberal Party's 2030 Vision for Developing Northern Australia and its fulfilment of those plans will depend on Australia continuing to attract foreign investment.

Corporate mining investment

However, attracting corporate investment in agriculture still runs a poor second to

facilitating corporate mining operations. Corporations are jostling to develop Darwin as the terminus of the North-East Gas Interconnector and the hub of a $22.4 billion shale gas development, a monstrous floating liquefied natural gas (LNG) facility and a military service hub for Border Patrol and naval ships.

It is yet to be seen which farmers will benefit from this northern Australian development. Australian farmers have been told they have no right to say no to companies mining their land. In the Northern Territory under the Country Liberal Party, pastoralists had no rights at all when it came to dealing with mining and exploration companies. Mining companies could simply move onto properties without notice that they were arriving or what activities they were planning to undertake, and start digging up ore.

Rivers, local communities and cattle have been poisoned by mining waste, and fracking operations were planned within NT national parks.

ABC's Landline reported 90% of all pastoral properties are now under an exploration licence by the mining, oil and gas industry. Sherwin Iron had a full-blown workers camp and mining operation underway at Mt McMinn Station without owner Dan Cahill even being aware they were there. He said they were allowed, just in the exploration phase, to take a bulk sample of up to 200,000 tonnes of ore worth around $20 million from the station to sell to China.

The final straw came when Sherwin Iron built a six-metre-high dam wall, which collapsed during the wet season and flooded the highway. Cahill does not know how many cattle were lost. The Environmental Protection Agency has since found out that Sherwin Iron did not wait for drainage pipes to arrive from Darwin because it was in a hurry to complete the wall.

As Cahill told ABC Landline: “Something’s gotta give. And it did give. There could’ve been, you know, a 100-tonne truck driving across that when it gave way. It could’ve been disastrous. It could’ve caused lives. You know, if that happened to us in the transport industry, I’d be talking to you behind bars at the moment. But these guys seem to get away with it. It’s just mind-boggling.”

Cattle farmers have been lobbying the NT government for years, to bring in mandated access agreements, but the Australian Petroleum Production & Exploration Association (APPEA) and the Minerals Council refuse.

APPEA's Steven Gerhardy said: “Putting something forward in legislation is difficult, in that it could reduce the flexibility available to both parties to tailor an agreement that suits them. Voluntary agreements, we think, work best.”

And in Australia, it is what the corporations think that matters.

Dust following the plough, northern Mallee, between Renmark and Mildura.

Appendix 2

Fix Farming by Junking the Corporate Model

By Elena Garcia

Australian farming is in crisis. I want to survey and explain this crisis. And in the appendix which follows I put forward for discussion a Manifesto for Sustainable Australian Farming.

Multinational corporations are buying up prime food-producing land, just as free trade treaties come into play that will allow them to sue governments that affect their profits by attempting to regulate their use of that land. This is a massive threat to Australia's ability to continue to produce sustainable clean, green food to feed its population and export globally.

This process of expropriating family farmers for corporate agribusiness takeovers is being carried out as a multi-pronged corporate attack by banks, corporate raiders, mining companies and by the supermarket duopoly of Coles and Woolworths, which keeps prices cheap for consumers by contracting producers at prices too low to make a profit or sometimes even cover costs. Australia's major grain competitor tried to buy all our east coast grain handling infrastructure, including ports, with the enthusiastic support of the ALP. Corporate raiders like Gina Reinhart and Gerry Harvey have bought dairy farms at bargain prices, and are now switching to intensively farming dairy cows and have the funds to build processing plants that can process and export the dairy products to the expanding middle classes of Asia. Reinhart has now bought the Kidman beef cattle empire, in partnership with a Chinese company.

At the same time there is increasing speculation in water rights. Farming cannot survive without clean water. The most reliable source of water is artesian, which the

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This is an edited version of a talk given at the Socialism for the 21st Century Conference, Sydney, May 2016.

mining industry can access unregulated and pollute at will. Meanwhile banks are foreclosing on drought-struck farmers so they can sell the still viable farms to corporations, both domestic and foreign.

At a time when increasing climate catastrophes are hitting, farmers increasingly can't afford insurance, and the banks don't offer affordable loans to rebuild. Some lenders were devaluing properties across the region by up to 30%, forcing graziers to pay higher interest rates because the loans were now considered higher risk.

Farmers cannot win this battle against the corporations without allies. Australia is one of the most urbanised countries on earth. Eighty-nine per cent of Australians live in urban areas. We have some of the cleanest, most regulated food production in the world. If you want to protect that quality, it is time to support and protect our farmers.

Urban-rural disconnect

There is considerable alienation of urban and rural Australia. This lack of understanding is disastrous. Too many of the 89% of Australians who live in urban areas believe that farmers are the sole cause of land clearing. They are unaware that the Queensland Statewide Land Cover and Tree Study for 2012-2014 shows tree coverage in the state has actually increased by 437,000 hectares over the three years, despite the clearing of 300,000 hectares in the same period, most of which was done as regrowth control on previously cleared ground for fire and grassland management. Much of the rest of the clearing was in the 80% of the state which was drought declared, where there was reliance for livestock fodder on resilient acacia and mulga which regrow vigorously after rain.

Urban Australians do not see the impact of the concrete and lawn sprawl of suburbia and development covering the best farmland in Australia like a creeping disease. It is a terrible fact that retiring farmers have little choice if they want a decent price to retire on but to sell their land to developers to subdivide, or to foreign or domestic corporations. We really need a Land Trust sponsored by the government to buy fertile farmland at a decent price, so farmers can retire in comfort, and keep it reserved for farming use by young farmers and cooperatives, to supply the present and future domestic food needs of Australia. If cities and towns need to expand, then they should spread up or down, not outwards like giant cancers.

Farmers are disillusioned with all the major parties. None are tackling the big issues. Dozens of new rural parties are being created, and the rise in support for One Nation is one result. However even if every rural voter voted for a single one of those parties, with only 11% of Australians being rural they could never form a government.

What is needed is a manifesto of constructive solutions that can be taken to every

candidate, urban or rural, whether independent or in a party, to get a commitment of support for those policies, ideally with an accountability clause to allow a recall vote by constituents if politicians break their commitments.

Farmers are environmentalists

Farmer are environmentalists. Unlike corporations, they farm for the long term, for their children, not for the quick buck. Farmers and agricultural businesses — according to the latest ABS figures (2009-2010) — manage 52% of the Australian environment. If they don't manage it sustainably they go broke very fast. They are on call 24/7, generally have to rescue themselves in disasters, and may sometimes make a profit but seldom make a wage. It costs a lot more to live in the bush, and internet, phone and school services urban people take for granted are not available. Health services are far away.

There are approximately 134,000 farm businesses in Australia, 99% of which are family owned and operated, and as of 2010-11 they employ only 307,000 people to manage 417.3 million hectares of land, including the 46.3% of Australia that is marginal land. Marginal land is where poor quality vegetation and bushfire fuel is converted by livestock into high quality human-edible protein.

A 2013-2014 White Paper showed that agriculture contributed $51 billion (2% of GDP) and accounted for 15% of our merchandise exports. More than half the continent is under agriculture. Yet the value of agricultural operations 2011 Bureau of Statistics study shows 40% of Australian farms earn below $50,000 per annum. In a recent survey of 93 family farms, 48% were living on additional wages drawn from outside of the farm, 12% had ceased operation due to low farmgate prices, and 35% were considering leaving the farming industry for the same reason. Increasing climate change disasters just add the last straw.

We need state-owned rural banks that provide long-term low interest loans for general rural production, supporting sustainable farm practices and water infrastructure.

We also need state-owned rural insurance programs to enable farmers and rural communities to survive the increasingly severe and frequent climate events without crippling insurance premiums.

Every part of Australian agriculture is under relentless attack. Big Ag is moving in, and this is the real threat to animal welfare. Humane family farmers are being replaced by toxic factory farming.

Dairy industry crisis

The dairy industry is in complete crisis. The $1/litre supermarket price wars started the attack on dairy sustainability. Australia's largest processor, farmer-owned

cooperative Murray Goulburn, then allowed outside investors to become members, so as to get the funds to build more infrastructure to take advantage of export opportunities, and put the priority on paying returns on those investments out of their annual profit, at the cost of returns to the farmers who supply the product. An overestimation of the global market price meant that when milk prices dropped below that figure, they slashed its farmgate milk price retrospectively and without warning in late April. As former chief executive Gary Helou left Murray Goulburn in May 2016 with a $10m payout, farmers were left owing an average $120,000 "overpayment" debt each to Murray Goulburn based on payments set at his promised and "achievable" $6/kg milk price. The farmgate price paid to their dairy farmers dropped to $4.31/kg or 33c/litre — nearly half the costs of production. Fonterra, the other major processor, matched the farmgate price drop.

Milk on average costs a dairy farmer approximately 42-45c/litre to produce in Victoria. With these latest cuts it works out that the dairy farmer is 9c a litre at least out of pocket, plus the retrospective payment. Add on to this the added stress of little or no rain and having to buy additional feed supplements for animals normally on pasture. As one kg grain returns one kg extra milk, feed prices mean farmers lose roughly 4 cents per litre with every extra kilo of grain fed. This hits milk production in two important ways. Cows are sold, leaving fewer in the herd producing less milk per farm; and dairy cows are fed less grain and produce less milk per cow. Milk price cuts don't just affect dairy farmers. They have a flow on effect for whole communities. The catastrophic result has been more than 200 Victorian and Tasmanian farmers who supplied Murray Goulburn with milk have quit the industry or switched to rival milk companies forcing Murray Goulburn to cut jobs and draft plans to close processing plants once its milk supply losses drop below the 10% or 400 million litre mark.

In Australia, the dairy sector contributes $13 billion to our economy. "Get big or get out" has been a refrain of the dairy industry since its full deregulation in July 2000, when farmers had to consolidate and gain economies of scale to survive. In 1983, there were 20,060 dairy farms (according to Dairy Australia) with an average herd size of 90; in 2014, there were 6314 with an average herd of 268 cows. In Victoria — where most dairy farms are — total cow numbers remained the same between 1980 and 2010, but milk production doubled. Only about 3% of Australian farms are corporate, according to Dairy Australia, with most being family-operated small or medium-sized businesses. But these family farms are still run on mainly rain-fed pasture.

During the same period, many dairy farms overseas have been switching to factory farming, getting much bigger and more intensive. In the Persian Gulf, Almarai in Saudi Arabia has a facility housing a herd of 67,000. In the United States, Fair Oaks Farm in

Indiana has 37,000 cows milked 800 at a time, 23 hours a day. Housing cows in the same shed where they are milked and food is brought to them conserves their energy for milk production — none is "wasted" on staying cool or warm, grazing or walking to the dairy. As a result of this and an optimised diet, some cows are milked five times a day and annual output can top 12,000 litres (compared to an Australian grazed dairy cow average of 6000). Large herds and housing systems remains a rarity in Australia, but in the past two years there has been a flurry of investment in factory farming in the $13 billion dairy sector from wealthy entrepreneurs and corporate investors, both Australian and foreign.

Fruit & vegetable crisis

Australian fruit and vegetable crop growers have also been squeezed out as cheap imports drive down prices. The buy-up of Australian food processing by US corporations like Heinz and CocaCola-Amatil means that the Australian food processing plants, that provided farmers with an alternative market to Coles/Woolworths-controlled fresh fruit and vegetable sales, have been closed down and relocated overseas to poorer wages and conditions.

SPC is basically the only major processor left and owners CocaCola-Amatil have severely cut suppliers and quantities, forcing the mass bulldozing of orchards as farmers cannot afford the maintenance costs to keep them pest-free. Many jobs in rural and regional areas have been destroyed and food-miles greatly increased as cheap, poor quality imports are used to replace previously Australian-grown and processed high quality product.

Livestock

The livestock industry is still reeling from the worst drought in Queensland history around Longreach, interspersed with record devastating floods, combined with plagues of feral animals that destroy de-stocked pastures and rip up and erode catchments, sending our topsoil out to the Barrier Reef and down the Murray Darling catchment. The closure of regional abattoirs, followed by the banning of the live export trade, meant that farmers could not sell their stock and were forced to choose between keeping them to strip their pastures, shooting them, or spending crippling amounts to freight them hundreds or thousands of kilometres south by truck, as the railways have been sold to the mining companies and just move coal. Despite the breaking of the four-year drought, there are not enough young animals available to fill the demand for re-stocking.

- We need to bring down the cost of freight and revitalise our rural communities by

re-nationalising and expanding the railways and building high-speed rail.

- Put the priority back on moving agricultural products on rail rather than mining products.
- Bring back night trains for moving livestock.
- Keep the WA freight lines open for farming not mining, and minimise the trucks on our roads.

Save family farms

Most farmers have not had a wage rise in 40 years, since Whitlam reduced tariffs by 25%. What it will take for farmers to be able to continue is reliable profitability.

The standard market solution is to bring down farmers' costs. Farmers have little control over input prices and output prices. With a high Aussie dollar from the mining boom, exports were dear and imports were cheap. The government pushed farmers to get big or get out, to go into debt to expand, to buy more land, more machinery, use herbicides and pesticides instead of labourers.

Now we have a perfect storm of farm debt of more than $68 billion (as of 2011), increasing climate disasters, and corporations keen to move in and bring in high-input American Big Ag GM crops and methods like spraying glyphosate on grain prior to harvest, to speed up the harvest. Industrial agriculture makes bigger profits by "externalising" the costs of the degradation of soil structure and water quality and the toxins that accumulate and pollute our environment and our food so that these real production costs are not included in the price. If we don't want to use those unsustainable methods to "bring down farmers costs", we need to reduce those costs by policies like:

- Supplying a farm labour force paid award wages, transported and insured by the federal government — a Land Army. This would reduce unemployment, supply farm labour to farmers desperate for it, and bring a crucial injection of wages for those labourers to spend in rural communities, which then translates into more taxes and income for the government and keeps rural services like schools and hospitals open. It would also equip people with job skills and experience.
- Encouraging the establishment of farmer-owned rural cooperatives in areas such as purchasing inputs and marketing produce. These bodies have an impressive history in rural Australia. Example: Cooperative Bulk Handling in WA.
- Establishing a national milk pool to put in a floor price. All milk would be sold through the pool and processors would bid for milk with a minimum price set at a fair level, but if demand was higher or their product mix allowed they would need to bid higher to secure supply. It would be based on a farmer-owned co-op where each supplier only has one share and one vote — as opposed to the public float of

the Murray-Goulburn co-op to raise money for processing infrastructure.

- Investing government and superannuation funds in processing and infrastructure upgrades for national food security, instead of encouraging sell-offs of farms, food processing, ports and railways to multinational corporations who are major competitors to our industries, and signing free trade agreements that put our quarantine protections and clean food production at risk.
- Encourage farmers markets and direct-farm ordering, which means producers can receive over 80% for every product sold, compared to the 15%-25% that most supermarkets offer.

Managing weeds & pests

All land owners and land occupiers (public and private) are responsible for managing noxious weeds and established pest animals on their land and can be fined up to $60,000 if they don't. Feral animals are a major cause of land degradation/erosion and native plant and animal extinctions. Feral cats are the major threat responsible for native animal decline and extinctions. However feral pigs, camels, goats, deer, buffalo, horses, rabbits, wild dogs and foxes are destroying our national parks and catchments, while funding for rangers is slashed. Noxious weeds like cats claw creeper kill the trees along our rivers, fill our grasslands with toxic or inedible plants, and choke and poison our waterways. These weeds could be processed into biofuels if funding was made available.

	Conservation status					
Threat factor	Extinct (30 spp.)	Critically Endangered (10 spp.)	Endangered (10 spp.)	Vulnerable (36 spp.)	Near Threatened (52 spp.)	All Extinct, threatened, and Near Threatened (138 spp.)
Predation by feral cats	5.4 (22)	4.6 (8)	2.9 (9)	2.9 (29)	1.9 (29)	3.2 (97)
Predation by red fox	3.0 (13)	2.4 (4)	1.5 (5)	1.9 (19)	1.1 (17)	1.9 (58)
Inappropriate fire regimes	0.6 (6)	4.4 (7)	2.1 (6)	2.3 (22)	1.4 (22)	1.7 (63)
Habitat loss and fragmentation	1.8 (11)	1.0 (2)	1.3 (4)	0.9 (13)	0.8 (15)	1.2 (45)
Livestock and feral herbivores	2.1 (14)	0 (0)	0.2 (1)	0.5 (7)	0.5 (8)	0.8 (30)
Disease	1.4 (7)	1.2 (2)	1.0 (2)	0.4 (7)	0.2 (4)	0.7 (22)
Climate change; severe weather	0.2 (1)	0.8 (1)	0.5 (1)	0.9 (9)	0.8 (14)	0.6 (26)
Predation by dingoes and dogs	0.1 (2)	0 (0)	0.2 (1)	0.6 (5)	0.1 (2)	0.3 (15)
Hunting	0.6 (3)	0 (0)	0 (0)	0.1 (1)	0.1 (2)	0.2 (6)
Predation by black rats	0.4 (2)	0.4 (1)	0 (0)	0.1 (2)	0.0 (1)	0.2 (6)
Poisoning by cane toads	0 (0)	0 (0)	0.6 (1)	0.3 (3)	0.0 (1)	0.1 (5)
Timber harvesting	0 (0)	0.3 (2)	0.2 (1)	0.1 (1)	0.1 (3)	0.1 (8)
Other	0.5 (2)	1.4 (4)	2.0 (5)	1.2 (12)	0.3 (6)	0.8 (29)

Values in body of table are mean threat impact score across species (where 8 indicates that the threat poses an extreme extinction risk; 5, a very high risk; 4, a high risk; and 2, a moderate risk; Methods). The bracketed number indicates the number of species for which the threat factor was considered a risk. The category "other" includes a wide range of factors including disturbance at roost sites, pollution, habitat degradation due to weeds, and hybridization.

Major threat factors considered responsible for the extinction or decline of Australian mammal species (see http://www.pnas.org/content/112/15/4531.full.pdf).

Feral animal plagues not only devastate our farms but cost millions of dollars in lost income to farmers every year, including large-scale and cruelly savage livestock injury and slaughter by feral predators like foxes, wild dogs and cats. By law all land owners and occupiers, (including the Crown), must, in relation to their land, take all reasonable steps to eradicate prohibited weeds and established pest animals and prevent them spreading on their land; and avoid causing or contributing to land degradation which causes or may cause damage to land of another land owner;

This is expensive in labour and money. We need to turn it into an income source.

- We need assistance to set up new industries of mobile abattoirs to process livestock on-farm and to process feral carcasses in remote areas into food, fertiliser, felt, hides, and maggot meal to substitute for unsustainable fish meal.
- And when seasons are dry and farmers de-stock their land to protect their pasture, they also need the flexibility to be able to cull and sell for meat and hides the plague-proportion common breeds of kangaroos and wallabies that move in, to prevent the ground being stripped bare and hundreds of thousands of roos starving slowly to death. This is another alternate supply of income, and is not only humane, but stops this terrible waste of food.

Threats to water supply

At the same time that farmers can be fined $60,000 for contributing to land degradation, unconventional gas and other mining companies can bulldoze pipelines and roads across creeks, put in quarries wherever they want, and dump poison into dams, aquifers and plastic bags in landfill. The overflow of toxic water from flooded operational mines and 50,000 abandoned mines is also poisoning our drinking and farming water. Clean fresh water is our greatest natural resource.

Clean water is essential to sustainable Australian farming, and the right of farming access and environmental use of it is entrenched in our Constitution. The March 2016 Surat underground water impact report refers to a water level drop of more than *200m* in the Walloon Coal Measures artesian basin from CSG mining, with 469 affected bores and another 100 decommissioned bores. They state the aquifers were quite separate — before the 5600 CSG wells and 12,000 monitoring wells went in. Now methane bubbles constantly from the Condamine River after nearby CSG fracking.

The water that is pumped up to bring the gas also brings up the carcinogens previously locked in the coal, and they go into landfill or overflow the evaporation ponds in floods, or are discharged into the Chinchilla water supply. The Kenya water treatment plant outflow goes directly into the Chinchilla water supply. Testing at the outflow showed toxins above safe levels.

The Great Artesian Basin is one of the world's largest underground water reservoirs, covering 1.7 million sq km. The Adani coal mine doesn't just risk the Great Barrier Reef. The plan is to pump out the Galilee aquifer in order to mine the coal, but they don't know if it is connected to the Great Artesian Basin and if it will pump it out too. It is already foreshadowed that a couple of outback towns will lose their water supply if the mine goes ahead. We have no other water out there. According to Associate Professor Larelle Fabbro, of Central Queensland University, large dams change water quality and encourage toxic algal blooms. The longer water is stored, the poorer the quality of water, and the bigger the dam, the more the water quality changes for the worse.

CSG mining requires holes to be drilled hundreds of metres to reduce pressure in the seam and allow methane gas to be extracted. The loss of pressure could be enough to stop bores flowing throughout the basin, which is the sole water source for towns and farms across 22% of Australia. Already landholders south of Wallumbilla have seen their previously free-flowing bores at times stop flowing completely and start releasing levels of gas unseen in the region before. Landholder measurements showed pressures unchanged for a decade dropped from 140KPA to 95KPA in just over 12 months. That equates to a decrease of 4.5 metres of head.

It also risks removing the driving force of many of the free-flowing artesian bores and springs. Equipping the bores with pumps would be hugely expensive. Killing the springs will devastate freshwater ecosystems, among the most threatened ecosystems, where wildlife has declined faster than in the oceans or on land. Research shows that the best way to help freshwater species is to restore rivers. This includes fencing out livestock, stabilising river banks, removing weeds, replanting native vegetation and expanding floodplain areas.

But this can be expensive. Changing farm and land-use practices around rivers have improved water quality in Queensland rural catchments. Yet many other catchments nationally continue to deteriorate in water quality and biodiversity, particularly in urban areas and mining developments.

- Industries that pollute our water catchments and groundwater must be stopped immediately and liable for all costs of cleaning up all past pollution by the industry.
- Clean water is crucial to all of us. Landholders need assistance to protect streamside vegetation, including help to fence-out animals, put in alternate water points, remove feral animals and replant vegetation to prevent and repair erosion.

Bushfires contribute to global warming

Subsidised fencing and water points will also help end overgrazing and assist in fire management. Barry Cohen commented in the *New Spectator* in 2011 "Among the

millions of words spoken and written about carbon emissions, the fact that a third of Australia's emissions come from [wild]fires is never mentioned."

For at least 20,000 years Australia was actively managed by Aboriginal peoples using cool burns in the appropriate seasons, to create grasslands and open woodlands for grazing animals that were hunted, and to plant and manage food-producing plants. 46.3% of Australia is marginal land unsuitable for cropping. Now these marginal lands are managed by graziers in a similar fashion to produce mostly organic free-range cattle.

Much is seasonal grasslands with native grasses on poor soil with little water. Left unmanaged the vegetation grows vigorously when it rains, then dies and feeds huge bushfires, particularly as increasing heatwaves dry out the soil and vegetation. Lack of management also encourages dense sucker growth, which then becomes an even worse fire risk. Rangeland rotational and holistic grazing is the best way to manage this marginal country and produce food from it with minimal water use and minimal use of fire. It also allows considerable carbon storage in the soil. Subsidised fencing and water points will enable holistic grazing.

Methane emissions

A great deal of emphasis has been placed by some on contribution of cows and sheep to Australia's methane emissions. However livestock methane emissions are used as food for methanotrophic bacteria in the soil and neutralised. It was never a problem until industrial farming agricultural practices started destroying these methanotrophic bacteria, which are very sensitive to chemical fertilisers and herbicides. The role that grazing livestock plays in reducing bushfires is also never factored into agricultural greenhouse emissions.

Pasture grasses holistically managed with ruminants can build 500 kg of carbon per hectare in a year by pumping carbohydrates they make from atmospheric carbon dioxide into the soil to feed microbiota. What is needed to establish these pastures is subsidising cell fencing to assist in rotating pasture and preventing overgrazing; reducing erosion through smart burning practices; and replacing microbiota-destructive pesticide, herbicide and nitrate fertiliser use with integrated pest management and livestock manures.

We need assistance to transition pastures to encourage key microbiota. Properly managed grass-eating ruminants help build and cool soil, maintain moisture levels and sequester carbon.

To quote Elizabeth Farrelly "Eat free range, fully grass-fed, holistically grazed meat and help save the planet." And our farmers.

Appendix 3

A Manifesto for Sustainable Australian Farming

By Elena Garcia

1. **Protect clean water.** Enforce Section 100 of the Australian Constitution and protect sustainable farm and environmental use of water. Prosecute and ban the operations of mining and agribusiness corporations that pollute water, the banks that fund their operations, and the politicians who allow them to continue to do so. Charge full remediation costs for total damage, past and present, by industries, not "make-good" bandaids.
2. **Focus support on small farmers rather than corporate agribusiness.** Target to replace emissions-intensive high-input industrial agriculture with small-scale sustainable agriculture. Keep clean healthy food cheap for consumers and increase farmgate returns for farmers, while protecting producers and consumers from cheap and toxic factory-farmed imports and supermarket price-fixing. This can be done two ways:
   a. Ban speculation on water, farmland, and agricultural and food prices. Limit the power of corporate supermarket retailers and control middleman profit margins and encourage alternatives;
   b. Make farm labour affordable by establishing a Land Army. A mobile farm labour force with the federal government paying award wages, all transport and all insurance costs.
3. **Build alternatives to the supermarkets:**
   a. Farmer-owned rural cooperatives. Encourage their establishment in areas such as purchasing inputs, food processing, and marketing produce. These bodies have an impressive history in rural Australia. Farmers markets, direct-

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Minor changes have been made to the text for the second printing (2017).

farm ordering and ethical internet farmer/consumer links would allow producers to receive more than 80% of the price of produce compared to the 15%-25% that most supermarkets offer.

b. A national milk pool to establish a floor price. All milk would be sold through the pool and processors would bid for milk with a fair minimum price. It would be based on a 100% farmer-owned cooperative where each supplier only has one share and one vote.

c. Government and superannuation-fund investment in food processing and infrastructure upgrades. This would be for national food security, instead of encouraging sell-offs of farms, food processing, ports and railways to multinational corporations who are major competitors to our farming industries.

Bring down the cost of freight and revitalise our rural communities by re-nationalising and expanding the railways and building a national high-speed rail network. Put the priority back on moving agricultural products by rail rather than mining products. Bring back night trains for moving livestock.

Keep the WA freight lines open for farming not mining, and minimise the trucks on our country roads. Protect the truckies that are the key link between farms and rail networks and end-point freight delivery.

4. **Establish an agricultural wages board** to ensure fair pay, fair working hours and safe conditions for farm employees and truckies.

5. **Block agribusiness profiteering from farmers and trashing our environment for profit:**

   a. Ban all patents on plant and animal genetics.

   b. Place a moratorium on the planting of GM crops until it can be proved they will not cross-pollinate or contaminate adjacent farms.

   c. Ban the use of bee-killing neonicotinoid pesticides and amphibian-killing glyphosate/RoundUp. Label all domestic and imported produce with all pesticide and all GM content, including feed fed to meat components of product content.

   d. Invest in farmer-led research into holistic solutions and integrated pest management rather than on corporate research on profitable new inputs to sell to farmers. Keep responsible research in public hands, freely accessible by all. Stop corporatising the CSIRO and re-fund pure research into solving global problems.

   e. Withdraw from the World Trade Organisation, the World Bank and the International Monetary Fund and their forcing of industrial farming on small farmers. Defend the right of every country to food security and food policy

control (food sovereignty). No signing of free trade agreements that put our quarantine protections and clean food production at risk. Ban Investor State Dispute Settlement (ISDS) provisions, which allow multinational corporations to sue the Australian government in secret courts if our laws affect their future profits. Ensure all businesses pay at least the small business tax rate on all operations within Australia and end public subsidies to corporate operations.

f. Stop all fracking, oil sand extraction, coal and uranium mining and any mining that leaves toxic poison in our water, soils and air.
g. Protect wilderness from toxic development.

6. **Improve environmental and animal welfare standards of farming by subsidising costs of transition to agroecology instead of agrochemicals.** Encourage respect for nature and natural resources and protection of biodiversity. Adopt the Five Freedoms and stop factory farming of livestock, and instead integrate them into traditional methods of crop rotation, land preparation, fertilising and pest control, and recycling crop residues and clean farm wastes.

   Use livestock to manage marginal country and weeds. Encourage establishment of wildlife corridors, both urban and rural, to link wildlife communities. Stop feeding grain to fatten cattle and sheep, and ban use of cereals for biofuel production. Instead subsidise the costs of processing environmental weeds into biofuels.

7. **Integrate livestock, wild and feral animals into sustainable grasslands and marginal country management, wildfire hazard reduction and carbon storage.** Encourage farmers to increase productivity by allowing co-grazing of native wildlife and certain feral animals like brumbies and donkeys in controlled areas, by enabling farmers to harvest them to manage and protect the land in times of drought or to control animal population growth beyond the ability of the land to sustain without damage.

   Introduced feral animals, particularly cats, are driving native animals and plants into extinction. The cost of controlling any of these animal species on its own is prohibitive. Subsidise the establishment and marketing of a feral animal products industry that will cover the costs of a total feral animal control program nation-wide, and provide farmers with supplementary income. This requires:

   a. More regional abattoirs.
   b. Mobile abattoirs.
   c. Bone grinders on trucks to produce fertiliser.
   d. Turning entrails into sterile maggot meal to replace using unsustainable fish meal as animal feed.

e. Converting hides and fur to leather and felt, and fat to tallow.
f. Changing legislation to allow regulated and humane home kill sales.
g. A campaign to win public support.

8. **Protect catchments and waterways.** Rivers are the lifeblood of our country. Research also shows that the best way to help freshwater species is to restore rivers. This requires subsidised fencing-out of livestock from riparian zones and building water troughs away from fragile water sources; and subsidising feral animal control, stabilising river banks, removing weeds, replanting native vegetation and expanding floodplain areas.

   Landholders also need assistance to transition to low-input agroecological farm and land management. We can make it cheaper to protect freshwater wildlife by including farm and land management, subsidising cell fencing to assist in rotating pasture; reducing erosion through smart burning practices; and replacing microbiota-destructive pesticide, herbicide and nitrate fertiliser use with integrated pest management and livestock manures.
9. **Create a Land Trust** as a land access scheme for Australian new entrants and a retirement plan where old farmers can sell their land for a fair price and have it kept for Australian-owned farming, not mined or developed.
10. **Establish a Rural Bank** to supply low-interest long-term loans to sustainable farmers and new entrants, and a cheap farm insurance scheme to re-establish food production after climate disasters;
11. **Institute democratic community agricultural policy formation systems in rural communities and local government.**
12. **Full human rights for rural people, including rights to food, water, employment, housing, education, health care, communication, rest and culture.** Limit maximum private dam sizes rather than charging for rainwater stored in farm dams for irrigation, and subsidise irrigation efficiency technology to limit water wastage.

    Restore basic services cut off from remote West Australian Aboriginal communities. Bring rural areas up to the same mobile phone coverage, internet speeds and lower costs as those accessed by urban Australians, to facilitate access to healthcare, education and government and business services.

    Restore ABC Radio National rural coverage including the weekday Bush Telegraph program and shortwave transmission for remote regions. Make an immediate and substantial increase in the Living Away from Home Allowance and Allowance for Isolated Children to enable equitable access to education for all Australians and to reduce pressure on rural Australian communities to relocate to urban areas.

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Free-range beef cattle in marginal country, Queensland.

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