PETER ANDREWS

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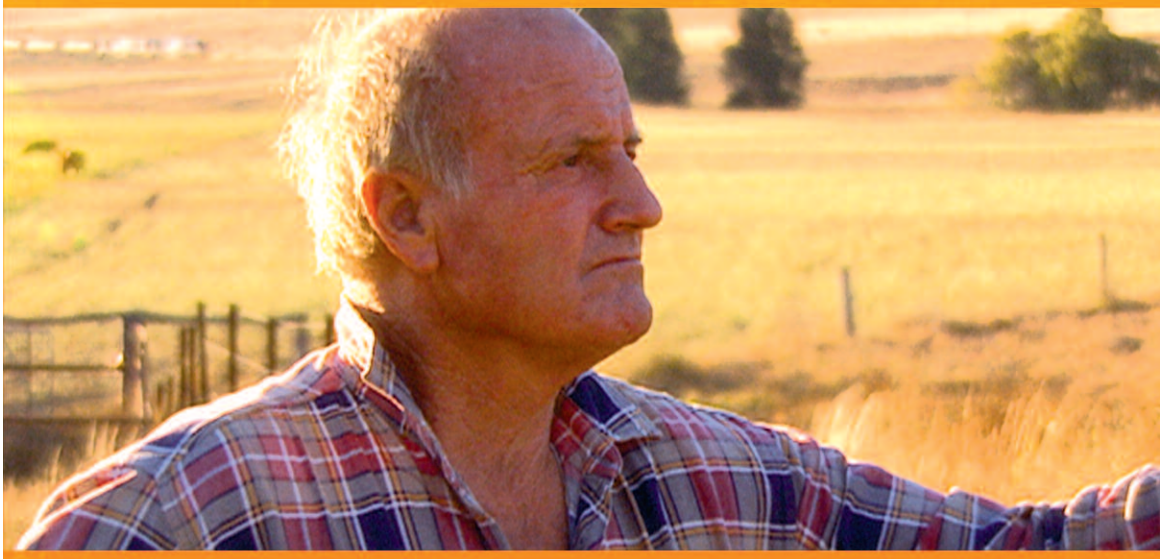

BEYOND *the* BRINK

Peter Andrews' radical vision for a sustainable Australian landscape

1 WHY NOT AUSTRALIA?

My previous book, *Back From The Brink*, appeared towards the end of 2006 and has continued to sell strongly until the present. If a book keeps selling long after the initial flurry of interest, my publisher tells me, it is almost certainly because it is being promoted by word of mouth. People read it, find it interesting or enlightening, and urge friends and relatives to read it, too. I would like to think that this is what has happened with *Back From The Brink*, although I cannot be sure of that. What I can be sure of is that there was, and is, a substantial number of Australians willing to at least consider the quite radical ideas that I tried to get across in the book.

I take a lot of heart from this. Travelling around Australia as I do constantly, I sense a growing conviction among people at large that we need a sharp change of direction — that what we have been doing to the landscape, even with the best of intentions, has been wrong, desperately wrong. People may have no idea why it is wrong or what they should be doing instead. They just know intuitively that the path we are following is taking us downhill, possibly to destruction. They are right, of course. Calamity does await us if we keep doing to the landscape what we have been doing. The good news is we can fix the problem. In fact, fixing it is relatively easy. All it needs is a change of mindset. A willingness to renounce old, time-honoured practices and beliefs. A willingness to allow the Australian landscape to regain the cover of vegetation that it once had.

As anyone who has read *Back From The Brink* would know, I am not a greenie. I am not in favour of conservation for its own sake. Like everyone else, I marvel at the intricacies of nature, and I am constantly amazed at the efficiency of the natural systems that evolved in Australia to ensure a sustainable landscape. But in all the work I have done on the Australian landscape over the past forty years my motivation has been practical, not philosophical. I did not start out with any preconceived ideas. I have simply read the evidence that is sitting there in the landscape for all to see. My conclusions have been entirely objective. If I want to see more trees growing on our hilltops, it is not for the sake of the trees. It is because I know that trees there would generate enough fertility to make the farming land below more productive.

As a farmer myself, I can see that our landscape has become more and more degraded, year by year. Salinity is spreading at a terrifying rate and threatens to be the ruination of much of Australia's rural land. Our major river-based agricultural systems, especially the Murray-Darling, are in a state of collapse. Fertility has been running down relentlessly just about everywhere, with the

result that farmers are having to spend more and more on chemical fertilizers not to increase production but just to maintain it. This is not just an Australian problem, either. Indeed, it is one of the main reasons that food prices have been soaring right around the world.

These may seem huge, complex problems, but the truth is they have a single, quite simple cause: a loss of vegetation across the landscape. Virtually everything that is wrong with our landscape can be traced back to this. I am not just talking about the disappearance of trees, either. I am talking about the loss of all kinds of vegetation, including, in particular, weeds. In *Back From The Brink* I explained how plants — and plants alone — can control the salt in the ground and prevent outbreaks of salinity. Plants are just as vital where fertility is concerned.

The equation here is a simple one — so simple that once you grasp it you will think it amazing that it is not the guiding principle by which all farmers run their farms and all governments run their departments of agriculture. First, what is it that makes makes soil fertile? Answer: organic matter. How does the organic matter get into the soil? Answer: for the most part, by plants dying and being recycled or shedding leaves and bark. So how can we get more organic matter into the soil and make the soil more fertile? Answer: by allowing more plants to grow, knowing that eventually they will die or shed leaves and bark, and that all this organic material will be incorporated in the soil.

It is all so simple. Vegetation is the primary source of fertility. The more you have of it and the more of it that ends up in the soil as organic matter, the more fertile the land will be. Conversely, the less you have of it and the less of it that ends up in the soil, the less fertile the land will be. Tragically, this has been the story of Australian farming over the past 220 years. Farmers have relentlessly stripped their land of vegetation in the absurd belief they could produce more by doing so. Nearly all of them are still at it. Their land is dying around them, starved of life-giving organic matter, yet farmers are pressing on regardless, still madly killing every plant they think might compete with a crop or pasture. It is a monstrous folly.

Every plant is a solar-powered factory producing the organic material on which all life depends. Every plant is also a pump, which is constantly raising water from the ground to keep the factory operating. A plant is actually a very sophisticated unit, which accumulates minerals as well as manufactures carbon compounds. Yet we treat plants as if they were of minimal importance to us, as if they were completely expendable.

In this book you will find that I use the term ‘green surface area’ over and over. I mean by this the total surface area of green foliage. A farm’s green surface area is

all-important because it is a measure of how much photosynthesis takes place on the farm and, therefore, of how much carbon is extracted from the air and incorporated in plant tissue. In short, it is a measure of how much organic matter is produced on the farm, which means it is ultimately a measure of the farm's fertility. Provided a plant is green, irrespective of what kind of plant it is, it represents productivity, for it can enhance the soil. You can either slash the plant where it grows and let it rot down into the soil, or you can chop it up as mulch and transport it to some other part of the farm. Either way, it adds to the farm's production.

The fact that all the major problems of our landscape have a common cause, a lack of vegetation, means that they also have a common solution. That solution, simply, is, one, to grow more plants — trees, weeds, scrub, grass, the lot — and, two, to stop killing plants that are already growing. Stop ploughing; stop spraying out paddocks before sowing crops and pasture; stop killing weeds; stop clearing forests, especially forests on the high points of the landscape. Sure, farmers will need to break old habits, but if they want to stay in business, if they want to have a future in farming, their old habits will have to be broken, anyway.

Will enough farmers listen to the arguments, realise they are on a downhill path and take a new direction? I hope so for their sake, although it would certainly help if they were given a lead by some far-sighted politician with the ability to get things moving in that new direction.

Recently, someone I had not previously heard of, Achim Steiner, wrote an article in the *Sydney Morning Herald*. The title below his name was United Nations Under-Secretary General and executive director of the United Nations Environment Program, which, frankly, meant nothing to me. But if I had heard Achim Steiner say in a speech what he wrote in that article, I would have stood up and applauded. It was the most enlightened bit of thinking by someone in authority that I had come upon in a very long time.

Here is part of what he had to say: 'By harnessing the river systems and using fertilizers and chemicals, Australians have enjoyed bountiful supplies of meat, grains, vegetables and dairy products that in many developing countries with similar climates and conditions are often in short, life-threatening supply. Australia's governments and citizens, however, know that this bounty has come at an increasing environmental cost . . .

'The business-as-usual temptation might be to clear more forests, drain more wetlands, and dam or divert more river systems, while pouring even greater quantities of fertilizer and pesticides on chemically saturated soils. This approach is likely to prove an environmental dead end and a market failure of enormous

and far-reaching consequences. We are now pushing the limits of many of our economically important ecosystems that support pollinating insects, keep soils fertile and replenish the water supplies . . .

'Some country is also going to rise to the challenge of developing true 21st-century agriculture — agriculture that reflects the need to conserve and does not run down the natural life-support systems of the planet; which will feed two billion-plus extra mouths and is adapted to a globally warmed world. In doing so that country will lead the way in sustainable and profitable farming that generates food security at home and new export markets in agricultural science and skills abroad. That country will also be a beacon of hope and help to the less well-off in the even more vulnerable arid economies of Africa, Asia and Latin America. Why not Australia?'

It is not often you read something as absolutely spot-on as that.

2 FEEDBACK

Although I have been engaged in a study of the Australian landscape and how it functions for almost forty years, I have no scientific qualifications whatever. Scientific qualifications do carry weight, and I fully expected that some of my conclusions in *Back From The Brink* would be challenged on scientific grounds. At the least, I thought I would ruffle a few scientific feathers. This has not happened. The most common criticism of the book's contents that I received personally was that it portrayed Aborigines as destroyers of the landscape instead of gentle custodians of the landscape. But this was an objection made not on scientific grounds but on emotional grounds. There can be no doubt that in the 60000 years or so that the Aborigines had sole occupancy of the Australian continent they did enormous damage to the landscape, mainly by routine burning. The sad fact is that European settlers and their descendants have done even more damage in a mere 220 years.

Someone I know came upon a website recently where there were several readers' comments about *Back From The Brink*, one of them from a woman who said she enjoyed everything in the book with one exception — my reference to the damage that Aborigines had done to the environment. I gather there was an implication in her comment that I was speaking without any knowledge of Aboriginal people. Well, the fact is I grew up with them. Our sheep station near

Broken Hill was visited several times each year by the same Aboriginal families, who lived and worked on the place for months at a time. They might come at lamb-marking time, or shearing time, or crutching time. I worked with them and went hunting with them. Once, while setting a rabbit trap with an Aboriginal kid about my age, my finger got caught in the trap, and the Aboriginal boy jumped on the trap to free it but succeeded only in twisting the trap and damaging the finger more. To this day I have a scarred finger tip to remember him by.

As far as I know, nobody denies that Aborigines burned entire landscapes repeatedly. There is any number of eye-witness accounts by early explorers who watched them doing it. So for those who wish to defend what the Aborigines did — like the woman on the website — the question at issue is not whether they did a huge amount of burning, for that is beyond doubt, but whether the burning did real damage. I would like answer the question with a simple illustration. If you are a gardener and you have a few bales of lucerne straw, you will be able to grow plants successfully in the straw if you add a bit of soil to it. But if instead you light the straw with a match and burn it, there is no way you will be able to grow a garden. No matter how you look at the matter, burning a garden cannot be good for it. On the contrary, it is obviously bad. It must be bad for a landscape, too. Common sense tells us that.

One thing that confuses people about the rights and wrongs of Aboriginal burning is that there are many plants in Australia today that are able to withstand fire. So people conclude that the Aborigines did not do any damage. If plants can withstand burning, why not burn them? What these people fail to understand is that these fire-resistant plants are lone survivors. The plants that were not fire-resistant were long ago burned out by the Aborigines and have disappeared. We can only imagine what a magic landscape existed here 60,000 years ago, before the Aborigines arrived. Today, most of it has gone.

Lest it be thought that I have singled Aboriginal people out for blame, let me point out that very few races of people anywhere in the world have been successful at nurturing the landscape. In virtually every part of the planet the landscape has been degraded to a greater or lesser extent by the people living there. So Aborigines are by no means alone in harming the land in their possession. On the other hand, it does nobody any good to try to deny that the Aborigines did harm it. Unless we are honest enough to recognise the role that they played over many thousands of years in the degradation of Australia's landscape, we cannot possibly come to a real understanding of why our landscape is in such a desperate state today.

The book did not attract the opposition from the scientific community that might have been expected, given that many of the ideas I advanced in it were

completely at odds with established scientific thinking. In fact, quite a few individual scientists went on record as saying that they agreed with me. One well-known environmental scientist wrote to me to say he strongly supported my views on willow trees — namely, that they are a huge plus for the environment, not a negative, and that official eradication schemes are a stupid waste of public money. This scientist went on to say that he himself was planting willows by the hundreds — and that, if he had a daughter, he would name her Willow.

Another scientist was kind enough to write that I had dealt with an immensely complex subject — namely, the Australian landscape and how it functions — with simplicity. I took this as a special compliment because I have always felt that, although there is a bewildering complexity in the detail of how the landscape operates, the underlying principles are really quite simple. I like to think of the landscape as a car. True, a car is a very complicated machine. You could spend your whole life studying just one of its functions in detail. Yet to operate a car successfully you need only know to fill it with fuel when it needs it, to put water in the radiator and battery when necessary, to top it up with oil as required, to check the tyres periodically and to get an oil change and service every so often.

The landscape is much the same. It will operate successfully if we allow it to — that is, by making sure it is not denied its basic requirements. Much of the responsibility here falls on individual farmers. They are the people mainly responsible for what happens, or does not happen, to the landscape. What has been the general reaction of Australian farmers to my proposals for managing the land? Well, I am not really in a position to judge. There are supposed to be around 200,000 farmers in Australia today (a lot fewer than there used to be, incidentally) and, although I have spoken to many hundreds of them since *Back From The Brink* was published, this is hardly a representative sample.

The impression I have formed from those that I have spoken to is that farmers are very receptive to the quite radical ideas I have been presenting. Not one of the farmers I have spoken to has told me, whether verbally or in writing, that he thought I was wrong. On thde other hand, many have come to me and said that the book had opened their eyes to things that had never occurred to them before — even simple things like the essential role that weeds play in sustaining the landscape.

As I have said before, the feeling I get as I move around the country is that most farmers know that the way they have been farming is wrong — that it cannot go on indefinitely. The trouble is they have not known what else to do. On top of that, a majority of them are under financial pressure. They are being hounded by

their bank managers. To do what I advocate would require them to stop doing what they have done all their working lives and start doing something quite different. A big ask, I agree. Many of them have said to me that, although they generally agreed with my ideas, they simply could not afford to implement them. My reply is that they cannot afford not to.

3 FOOD PRICES

On a world scale, the really big issue today, the one that impacts most severely on the lives of most people, is not the Iraq War, or the latest international credit crisis, or even soaring fuel prices. It is the rising price of food around the world. Globally, food prices are said to have been rising by forty per cent a year, which, according to the United Nations, is enough to shift another 100 million people around the world into poverty. In 2008 I was interested to read a United Nations report that focused on the causes of the problem and possible remedies. It concluded that farmers were to blame for more than a third of the world's badly degraded land (an under-estimate, in my opinion) and it called on farmers everywhere to change their production methods. In particular, it urged them to adopt more natural and ecological farming techniques.

I was interested in the United Nations report because, somewhat to my surprise, I thought it was basically correct as far as it went. Yes, farming methods are largely to blame for the degradation of the world's farming land and, yes, farmers need to adopt more natural farming methods. I read the report and wondered if at long last there might have been an outbreak of common sense among the people who control the world's affairs. Because that is all that is needed to solve the land degradation problems causing the current rise in global food prices: common sense.

The United Nations report certainly showed common sense in recognising there was a direct link between modern farming methods and food prices. Previously, most people had found it easier to blame the fact that a proportion of the world's grain output was now being hived off for bio-fuel production, thus creating a food shortage and a surge in prices. In fact, I suspect that much, or even most, of the crops being used in bio-fuel production would not be fit for human consumption anyway. By and large they are genetically modified crops growing in depleted soils, which are too deficient in nutrients to be marketed as food.

Let us take a step back and look at the basic factors that have landed us in the desperate situation we are in today. Modern approaches to farming — including, in particular, the compulsion farmers have to kill plants, whether by ploughing, eradicating weeds, ripping out trees or spraying paddocks wall-to-wall with

herbicide before seeding them — have resulted in a steady run-down in the land's fertility. The only way farmers can maintain production is to spend more and more each year on expensive fertilizers, chemicals and various kinds of feed supplements, and the only way they can recover that extra cost is to raise prices. Hence the global problem.

How different things were half a century ago, when Australian soils were still relatively fertile (although not as fertile as they had been a century before that). We know the soils were fertile from the extraordinary outputs in farm produce that were achieved without fertilizers of any kind. We also know the soils were fertile from the amazing growth in Australia's sheep population throughout the nineteenth century and for the first seventy years or so of the twentieth century. This would not have been possible if the sheep had not been exceptionally healthy. On the property where I grew up in western New South Wales, my father did not spend a penny on fertilizers, herbicides, drenches or animal supplements, yet our sheep were healthy and robust. At the time, he was typical of Australian farmers generally.

The popular view of sheep and cattle farmers today is of people struggling to make ends meet. When I was a boy, the popular view of them was of people loaded with money. Whenever the word 'squatter' was used it was invariably preceded by the adjective 'wealthy'. This was true: sheep and cattle graziers were certainly wealthy. Some were wealthy beyond imagination, like the first of the great pastoralists, James Tyson, to whom Banjo Paterson devoted one of his poems. Tyson was so wealthy that he once offered to lend the Queensland Government half a million pounds to help build a trans-continental railway. Today, the idea of a sheep and cattle farmer (which is precisely what Tyson was) offering a loan to a state government is too fanciful even to consider.

Why were 'men on the land' so rich a couple of generations ago? Wool prices had something to do with it. So did low labour costs. But I would suggest that the main reason was the natural fertility of the land where they ran their sheep and cattle. In my grandfather's day, graziers counted on earning ten pounds for each pound invested. Why? Because they did not have to spend anything. Their outputs were high and their inputs negligible. The land was so fertile that it carried huge numbers of stock without any money being spent on fertilizers, supplements and the like. Today, on their fertility-depleted properties, spending money on fertilizers and chemicals is all that farmers seem to do.

This decline in fertility has occurred in virtually every part of the world — even in so fertile-rich a country as the United States. In the mid-1800s, the American grasslands supported as many as 100 million bison without anyone spending a cent on them. Bison can weigh up to two tones or more, so in terms of the feed they consumed the 100 million bison might have been the equivalent of 300 million cattle. I have no doubt that those same American grasslands would have

no hope of supporting 100 million bison today without a vast investment, probably running into billions of dollars, in fertilizers, chemicals and feed supplements.

So where have we gone wrong? The vital issue, the one on which everything else depends, is the loss of green surface area, which, to repeat my definition of it, simply means the total surface area of green foliage. Green vegetation is the life source of the planet. It converts sunlight and atmospheric carbon dioxide into a product that sustains all living things. That product is, of course, organic matter. Let me make again the points I made earlier about the link between green surface area and fertility. The difference between sand and soil is that soil contains organic matter. Organic matter is what makes soils fertile. Since green plants are the source of organic matter, it follows that the greater the green surface area of any landscape, the greater the quantity of organic matter produced and, therefore, the greater the fertility of the soil — provided, of course, that the organic matter that the plants produce is recycled back into the soil. This is why in my previous book I said that every farmer needs to be able to walk out of the farmhouse, look around his property and recognise that everything he can see that is green and growing on his place — blackberry, thistles, Paterson's curse, the lot — represents productivity.

The fundamental error that farmers made in Australia was to assume they could use the same farming methods here that farmers had always used in Europe. They could not see that the Australian landscape functioned in a way that was essentially different from the way the European landscape functioned. In Europe, there is an annual freeze and thaw and a regulated movement of fertility and water. In Australia, there is a random movement of fertility and water relative to rain events. But white settlers could not see that, and they made no attempt to adjust their farming methods to suit the different environment they found themselves in.

As a result, fertility was leached from the soil at an alarming rate in large areas of Australia. Why did this happen? Well, whenever rain falls on the soil it will start to move and transport soluble nutrients in the soil unless there are plants there to control it. If there are no plants there, whether because they were sprayed out or ploughed out, the nutrients will be washed out of the soil by the moving water — that is, leached. This is what has happened in much of rural Australia. Today, the level of carbons in the soil (the most accurate measurement of fertility) is only a tiny fraction of the level of 220 years ago, when white settlers first arrived. According to one calculation that I have seen, the current level of soil carbons is down to as little as six or seven per cent of what it used to be.

Farming in Australia has all but ceased to be viable, given its heavy dependence on fertilizers and chemicals. Here is the problem in a nutshell. Spending on

fertilizers and chemicals may still result in a profit in a good year, but good years nowadays are almost the exception rather than the rule. In Australia, where you now get two or three years of drought in five, the money you spend on fertilizers and chemicals is therefore likely to be lost two or three years out five. It is hard to imagine how any farmer facing odds like that could remain viable.

In fact, I believe we have already passed the critical point where farming in Australia, with its present methods, ceased to be a viable occupation financially. I remember visiting Western Australia four years ago and speaking to a group of farmers who were struggling to survive in their horrendously degraded landscape. I told them they could not possibly afford to go on spending what they were spending on propping up their farms with fertilizers and chemicals. Recently, I went back to the same area. I found that farmers who had reined in on the spending were still doing it tough but at least had their heads above water. Those who had kept spending at the same rate all owed a million or more to the bank and, to all intents and purposes, were broke and out of business. A very sad situation.

By failing to adopt new farming methods to suit the Australian landscape, Australia's early farmers missed out on a great opportunity. Confronted with conditions that were obviously different, they could have stepped back, viewed the science of farming in a different light and embarked on a different course. By doing so, they might have given a lead to the rest of the farming world. But, no, our farmers blundered on, doing things exactly as they had always been done. They are still doing things that way today — ploughing, irrigating and killing every weed in sight. As my friend Willie Ripl, the noted Polish limnologist, once remarked to me, if we farm the same way as the ancient Romans did, with the same plants and the same animals, why would we expect to get a different result?

Ripl was referring, of course, to the desertification of North Africa, which is often blamed on intensive farming there by the Romans. Two thousand years ago North Africa was wonderfully fertile area that for a time was the empire's main source of wheat. So what did the Romans do to turn it into a desert? They ploughed, they drained, they irrigated, they grew crops as monocultures, they cut down forests. (In fact, it has even been argued that large-scale deforestation by the Romans in Italy, both for agriculture and wood, was the real cause of their empire's downfall.) In short, the Romans did everything that farmers are still doing everywhere around the world, which is why around a third of the world's agricultural land is said to be no longer productive.