

**ADDRESS BY
AUSTRALIA'S NATIONAL SOIL ADVOCATE
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AC, AO(Mil), CVO, MC (Retd)
ON THE OCCASION OF**

**THE AUSTRALIAN CHINA SUSTAINABLE AGRICULTURAL TECHNOLOGY FORUM
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TUESDAY 1 MAY 2018

**Marie Fudge
Professor Mei
Mr Richard Warner
Friends All**

SLIDE 1 – Save the Soil, Save the Planet

1. Ladies and gentlemen. Thank you for inviting me to speak to you today on a subject about which I am very passionate - healthy soil and regenerative, resilient agriculture. I regret my inability to attend the full forum. I am very impressed with the program structure.
2. May I extend my personal and very warm welcome to our distinguished visitors from the Chinese Academy of Agricultural Sciences including Vice President Professor Mei Xurong who is an expert in dryland agriculture, an interest that I also share. I have had a long and close association with China. For example last year in November I had the pleasure of meeting with President Xi Jin Ping and had the opportunity to hear his thoughts on agriculture and other issues.
3. As former Governor-General of Australia I met with former President Hu Jintao on a number of occasions; when he visited Australia in 2007, in China in 2005 on a State visit and then in 2008 for the magnificent Beijing Olympic Games. I see agriculture as a powerful catalyst in enhancing the relationship between our two countries.

SLIDE 2 - To feed the people we must save our soil and we must save our soil to save the planet

4. Today I wish to speak to you about the global imperative facing us, namely food security, and the vital importance of a healthy, resilient soil and healthy landscapes needed to produce nutritious food for our rapidly increasing global population and in a sustainable way.
5. Some of our previous and current world leaders have understood this imperative.

SLIDE 3 – Franklin Roosevelt – “The history of every nation is eventually written in the way in which it cares for its soil” and “the nation that destroys its soil, destroys itself”

6. Jim Yong Kim, the President of the World Bank, heralded a warning for us when he said:

SLIDE 4 - “fights over water and food are going to be the most significant direct impacts of climate change in the next five to 10 years”

7. The UN Secretary General, His Excellency Antonio Guterres made these comments a few months ago noting that soil and water will increasingly underpin global social stability and security.

SLIDE 5 –“Food security is under threat around the worldWith food insecurity, we must add economic insecurity as scarcities of staple crops cause price

surges.

One-third of the world's population already lives in countries experiencing water stress it threatens to become a catalyst for conflict."

"military minds around the world take climate change very seriously indeed as a threat multiplier with direct consequences for peace and security."

8. The common element underpinning all of these statements, and the element we can do something about, is how we best manage our agricultural soil and by extrapolation, our water and plant assets.

SLIDE 6 - Global Context

9. So what is the global situation in respect to our soils and our agricultural landscapes?
10. At a time when we have to almost double global food production by 2050 to feed a projected 9.7 billion people, we are losing soil at the rate of around 1% per year to aridification, desertification, erosion, urbanisation and so on. According to the UN Food and Agriculture Organisation, for every meal we eat, we lose 5 kg of soil and that globally the rate of soil loss far outpaces the natural cycle of soil formation.
11. Our agricultural practices have been having an impact on the landscape since man first changed from being a hunter/gatherer to a fixed location farmer, but this impact has increased exponentially over the last few hundred years.

SLIDE 7 – Middle East Region

12. A prime example of this is in the Middle East in the region known as the Fertile Crescent, now occupied by the modern territories of Iraq, Jordan, Lebanon, Israel, Palestine, Syria, Iran and Turkey. Farming, as we know it, began there some 11,500 years ago. For centuries the region was a major food producer and led the ancient world in agricultural innovation. Today however, deforestation, damming and large scale irrigation has caused widespread soil erosion and salinisation which, without appropriate soil and natural resource management, has turned productive fields into barren salt pans and desert. Aquifers are running dry or have run dry in many of these countries, including Iran, and what was productive top soil has eroded away. War has not helped either. This has sobering implications for present and future management of landscapes worldwide

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13. A further critical issue for agricultural land managers relates to water availability. Water supplies for agriculture and drinking are decreasing in many areas, with aquifers, for example, in India, China, Sub-Sahara Africa, the Middle East and even California already depleted or at much reduced levels. Similarly, ground water supplies are at very low levels as well, with reports of desperate situations for some communities in various regions of Africa, India, China and the Middle East. Further, many of our major global rivers are polluted or dammed which has the effect of depriving countries, towns or cities downstream of adequate supplies of water. An example of damming is the Mekong River.
14. Climate change will have an increasingly serious impact on agricultural production. Substantial global agricultural areas have decreasing soil organic carbon levels, which impacts on a soil's capacity to hold water within the soil. As soil contains twice as much carbon as the atmosphere it should be better used to draw down more carbon dioxide from the air via photosynthesis.

SLIDE 9 – World soil charter – 9 actions for governments

15. But good things are happening! In June 2015, member nations of the United Nations Food and Agricultural Organisation (FAO), including Australia and China, endorsed the World Soil Charter which sets out 9 actions for governments. These 9 actions include to **“Promote sustainable soil management that is relevant to the range of soils present and the needs of the country”** and **“Incorporate the principles and practices of sustainable soil management into policy guidelines and legislation at all levels of government ideally leading to the development of a National Soil Policy”**. I will speak about an Australian soil policy shortly. It is pleasing to see that globally we are making some headway in this area.

SLIDE 10 – Australia

16. So what is the situation in Australia? Whilst we have many excellent and innovative farmers backed up by world class scientists who work to produce clean, green and healthy food, we still have substantial land management problems including:
 - a. Soil carbon loss. EXPLAIN
 - b. Water evaporation, particularly in the more arid areas where there is a lack of vegetation coverage. EXPLAIN
 - c. Over use of chemicals, pesticides and insecticides leading to a loss of biota, and although this practice has decreased in most areas, it has left some soils with greatly reduced resilience.

- d. Loss of nutrients such as phosphorous and magnesium as a result of some out dated agricultural practices.
 - e. Salinity is still a major problem in parts of the country although many areas have overcome this with appropriate planting of perennial grasses, shrubs and trees.
 - f. Erosion and excision of one million kilometres of our streams and rivers through rapid run off from deforested slopes is affecting water flows, wetland health, flood plain function, irrigation systems, fish and other wildlife.
17. But – and it is a very important ‘but’ - we do have the answers, and I would like to outline my thoughts on a three pronged strategy which I believe will give us a positive result in the regeneration of our agricultural landscape, and the methodologies of which may well be able to be extrapolated to other interested countries, including of course, China.

SLIDE 11 Three Pronged Strategy

18. This three pronged strategy involves;
- First - The global imperative**, about which I have just spoken and whilst of serious concern, provides opportunities for countries such as Australia to share its success stories with the world through the export of our knowledge and expertise.
 - Second** is what I call ‘**fixing the paddock**’. This involves bringing together farmers who have adopted soil, water and plant management practices that have regenerated the good health of their soils, to achieve economic productivity, environmental and social benefits. We will soon have 30 of these case studies which we intend to roll out to 100 over the next 2-3 years.
 - Third** is the development of a national policy to restore and maintain the health of the Australian agricultural landscape.
19. Let me flesh out the second and third prongs of the strategy in a little more detail.
20. “Fixing the paddock” requires an understanding of the fundamentals of a healthy soil, namely the microbial, fungal and mineral content of the soil itself, water (the hydrology), the plants (diversity rather than monocultures), and then successfully integrating the management of all three elements. If we mismanage any one of the three, the other two will also fail.

SLIDE 12 – Soils For Life

21. The Soils For Life organisation, of which I am Chairman, is a not for profit, registered environmental organisation with the principal purpose of encouraging farmers to adopt sustainable, regenerative landscape management – to build resilience and to achieve better triple bottom lines, that is better financial, environmental and social outcomes.
22. We now have 30 leading practice agricultural case study sites across the country and a proven mentoring program in western New South Wales. We will expand that number to 100 sites over the next two to three years.
23. A key objective is to establish a long-term soil, water, agricultural research base with information readily available to other farmers, the soil science community, governments and the public and private sectors.
24. Let me give you just two examples of innovative leading practice farmers in Australia, who are already building, or who have built, resilience into their land and are now reaping the benefits, including more than trebling their stocking levels, improving crop health and yields, and also their life and work balances.

SLIDE 13 – Haggerty’s semi-arid – WA

25. These farmers have changed semi-arid non-productive sand into good soil which is producing highly nutritious grain, high quality wool fibre and excellent lamb.

EXPLAIN – the Haggerty slide (150-300 mm rain pa. Sandy soil. Top cover. Grazed sheep. Sowed into pasture. Worm juice fertilizer. Results – Quality wheat, sheep – mulesing, grazing 3 hours per day. Quality wool. Wheat strong.

SLIDE 14 – Beetaloo Northern Territory

26. In the north of the country, this enterprise has quadrupled their grazing herds using sophisticated cell grazing management techniques.

EXPLAIN – Beetaloo slide – 400,000 ha. 18,000 head 10 years ago. Degraded. Hot fires. Now – 100,000 head. Controlled cell grazing. Water pumped. No fires.

27. We know that a focus on sustainability in agriculture is vital for future nutritious food and quality fibre productivity. All our case studies now have productivity, economic, social and environmental measurement criteria. Research is transparent, comprehensive and long term.

SLIDE 15 – A Common National Soil Policy

28. This leads to the third prong of my strategy which I call ‘**fixing the policy**’.
29. To support the regeneration of our agricultural landscapes, I believe we need a nationally or indeed a globally agreed aim or objective “to restore and maintain the health of our agricultural landscapes so that the soil, water and vegetation are managed in an integrated and sustainable manner”. Such a policy will help to achieve a sustainable triple bottom line result for the landholder, the country and a positive flow on to the global community.

SLIDE 16 – National Natural Strategic Assets – Soil, Water, Vegetation

30. Having defined our policy objective, I suggest we then need to have acceptance with all governments, that soil, water and vegetation be declared key national, natural strategic assets to be managed accordingly and in an integrated way. Developing this policy needs the input of all key players including respective ministers of agriculture, environment, mining, health, education, indigenous, trade, regional development, defence, plus the private sector, and very importantly, the community.

EXPLAIN – health, education, defence

SLIDE 17 – Policy Components – recognise farmers, reconnect urban and rural communities, stocktake our knowledge, regulation overburden

31. As part of this policy, there must be public acknowledgment for our farmers to be recognised and rewarded for their stewardship of the landscape as well as being paid a fair price for their products. In this way, the social benefits flow on as more families will stay on the land; the local community will prosper, as there will be more families staying and therefore more children at the school; more purchases at the local stores and so on. The social benefit, benefits everyone.
32. We must reconnect urban and rural dwellers, so that those living in towns and cities understand where their food comes from, the importance of healthy soil and healthy landscapes, and the contribution made by farmers to the environment over all. To do this effectively, Soils For Life is working with Australian governments and others to establish a garden in every primary and junior secondary school across the country with an integrated syllabus, good resources and education for teachers. This will ensure that our children learn about soil and its vital components, the importance of water and the need for diverse vegetation coverage of the land.
33. Such a national policy includes a need to stocktake the existing soil/water/agricultural knowledge base, establish the consequent scientific shortfalls

and then refocus research priorities accordingly: for example, broad acre soil carbon measurement, reducing inorganic nitrogen leaching, reduction of evaporation/runoff, etc. EXPLAIN – Soil Carbon, satellite

34. And finally, with a national soil policy there is an imperative to look at the regulations governing the management of our landscapes to ensure that good work is not inhibited by often **contradictory regulatory overburden**.

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35. Ladies and gentlemen, let me summarise my remarks by asking these questions.

36. Does it make sense to:

- a. Agree a national and global objective to restore and maintain the health of all agricultural landscapes?
- b. Agree that the three components of a healthy landscape; namely its soil, water and plants, be declared as key national or even global, natural strategic assets, to be managed accordingly and in an integrated way?
- c. Acknowledge that it is the farmers who are looking after and caring for a very large area of our arable land globally on behalf of all those who live in cities. Those farmers need to be supported, rewarded and recognised as the primary carers of the planet's agricultural landscape.
- d. Reconnect urban dwellers with their rural roots by educating the young through the establishment of a garden in every primary and junior high with a syllabus incorporated into all subject areas and appropriate teacher resources.
- e. Stocktake our current national and global knowledge base on soil, water, plants and food nutrition and the location/s of such knowledge, with a view to defining key gaps and refocusing our scientific research accordingly? Importance of soil carbon measurement.
- f. Establish a long term research base in all countries to provide the scientific evidence underlying successful farming practices perhaps educating the 100 leading practice farming case studies based on Soils For Life methodologies? And,
- g. Communicate these results, solutions and practices quickly and easily for adoption by agricultural communities everywhere.

37. I think it does make sense and I hope you do too.

38. To conclude. A healthy soil is vital for sustainable life. Indeed if you eat, you should be involved! I've provided some thoughts for you on how we might 'fix the policy' and 'fix the paddock' for the benefit of mankind.

SLIDE 19 - To save the planet, save the soil

39. In a nutshell, *to save the planet we must save the soil.*

40. Thank you.