

**MAJOR GENERAL THE HONOURABLE  
MICHAEL JEFFERY, AC, AO(Mil), CVO, MC (Retd)**

**NATIONAL SOIL ADVOCATE,  
CHAIR, SOILS FOR LIFE**

**OPENS THE 3<sup>rd</sup> INTERNATIONAL CONTROLLED TRAFFIC FARMING CONFERENCE  
FEDERATION UNIVERSITY  
MOUNT HELEN CAMPUS, BALLARAT**

**WEDNESDAY, 13 FEBRUARY 2019**

Councillor Jim Rinaldi (Deputy Mayor of the City of Ballarat, representing the Mayor)

Mr Chris Bluett (Chairman, Australian Controlled Traffic Farming Association)

Board Members

Speakers and Delegates

Sponsors

Ladies and Gentlemen

- Thank you for inviting me to wonderful Ballarat to open your third International Conference.
- I extend my welcome to your international attendees and trust you will leave the Conference inspired and impressed by the work of Controlled Traffic Farming Australia.

## PAUSE

- I am here today wearing two hats and I want to explain the function of each and to link each to the controlled traffic environment.
- In 2012, I was appointed Australia's Advocate for Soil Health, and hope that the Federal Government will retain this role upon the completion of my term.
- We have never needed this advocacy more, because we face the combined impacts of climate variability, drought, salinity, nutrient runoff and the alarming fact that around 50% of the rain that falls on Australia simply evaporates, mainly because many of our soils are so bare that the water rapidly runs off taking top soil with it, the soil lacks adequate carbon, or is so compacted that the rain cannot filtrate.
- And this last issue of compaction has as an important solution, the principle of controlled traffic.
- My other hat is as Founding Chair of the not for profit Soils For Life organisation.
- Our objective, quite simply, is to restore, maintain and preserve the health of the Australian agricultural landscape, comprising some 55% of our continent and managed by around 100,000 farmers on behalf of 23 million urban Australians.
- At Soils For Life, we demonstrate how to regenerate, maintain and protect strong healthy soils through some 24 carefully selected and performance measured farming case studies.
- We intend rolling these out to 100 in the coming two to three years, Australia wide.
- The principles are very simple – “to restore and maintain the health of the Australian agricultural landscape by successfully integrating the management of our soil, water, plant (and where appropriate our animal) assets”. One fails, so do the other two or three.
- The term is regenerative agriculture; I call it common sense!

- You can find out more about our work and our case studies on our website, [www.soilsforlife.org.au](http://www.soilsforlife.org.au).
- You might also like to join our Facebook Group – we have around 1,000 members from around the world, and they use the Group interactively to talk through their issues and learn from other like minded farmers.
- Interestingly, many of the Group members are young people, studying regenerative agriculture or getting into farming, and learning from our wise case study examples.
- These 24 innovative farmers have studied their landscapes closely, and worked out how to maintain permanent vegetation cover, retain more precious water in their soils – where it does its job - and reduce or, in some cases, even eliminate the use of fossil fuel inputs, chemicals, pesticides and inorganic fertilisers. I am not anti fertilisers, but reduction is a good thing.
- In so doing, they have successfully scored the healthy landscape trifecta, that is integrating the management of their soils (microbial, nutrient and fungal function), their water (the hydrology) and their plants (diversity, rather than monocultures).
- The majority of our case studies are livestock or mixed farms rather than 100% cropping, and I understand there are different challenges in adopting some of these practices to your broad acre cropping operations.
- But the graziers can learn from you too, by adopting controlled traffic methods on their pastures, rather than screaming all over them on the four wheeler!
- However, cropping does feature in our case study portfolio, and our latest case study, at Brownlow Hill near Camden, involves a lucrative lucerne producer who uses a combination of stable waste and minimal tillage to great effect.
- Our case study farmers are highly productive - and they're making money.
- *Their goals are your goals.*
- Controlled traffic farming has a fairly long history, with a broad goal to benefit not only your farms, but your environment and the environment of your catchment.
- And, of course, to preserve and maintain your precious soils.
- Our Soils For Life farmers, and the thousands of farmers here and overseas who are practicing all, or some of the practices of regenerative farming, also have in mind the environment beyond their front gate.

- In the process of so doing, they're increasing the levels of carbon in their soils.
- And there has never been a more urgent need to do so...

## PAUSE

- Soil – healthy soil, regenerated soil, non compacted soil, active working soil, has a proven capacity to draw down carbon and keep it there, yet we've literally overlooked it in the national debate about climate change.
- Simply put, I believe, along with former Chief Scientist Robin Batterham, that healthy soils have the capacity to absorb, like a sponge, at least sufficient CO<sub>2</sub> to meet our Paris Agreement target, and accordingly we should be pursuing with the utmost vigour, a cheap, accurate, broad acre soil carbon measurement system.
- Such a system may well demonstrate the possibility of neutralising Australia's total annual industrial emissions of around 550 million tonnes of CO<sub>2</sub>, thus allowing a more orderly transition to renewable energy options, or even nuclear.
- Some suggest that healthy soils may also have the capacity to catch up with the last 50 years' legacy emissions, but whatever the case, I don't think we have been focusing hard enough on the possible answer; sequestering carbon into our soils through enhancing our photosynthetic capacity.
- With integrated, regenerative landscape management, farmers store and retain large amounts of soil organic matter, which can remain in those soils for millennia.
- It is a sad fact that in our Australian agricultural landscapes, our soil carbon levels have decreased from a healthy 4%-5% at settlement to around 1% today and I suggest this is an important reason why we are not maximising the retention of water in the soil.

### EXPLAIN: 8:1 ratio

- There are, of course, various established methods of sequestering carbon in our soils, such as slowing down water, limited till, managed cell grazing, forest rejuvenation, pasture cropping, crop rotation and controlled traffic farming.
- And yet a lot of that good work can come undone by oxidation.
- So – like any sponge – our soils can absorb and convert CO<sub>2</sub>, but bad land management practise can also squeeze it out.

- I said earlier that there is no greater need for a focus on soils than there is today.
- So let's take a brief look at what we've done to planet Earth –

## PAUSE

- The issue – feeding 10bn people by 2050 from the present 7bn when we've degraded half of the planet's soils.
- We've turned 5 billion hectares – or 40% of the land surface – into desert and wasteland.
- We've polluted most of our great river systems in China in particular and also reduced their flows by damming. The Mekong is a good example of the latter.
- In India, Pakistan, sub Sahara Africa, China and the Middle East we are steadily mining aquifers established over geological time. Even California is now critically short of water.
- According to Walter Jehne from Healthy Soils Australia, *in the last 70 years* some of our industrial forms of agriculture have accelerated carbon oxidation through excessive use of non organic fertilisers, bio-cides, irrigation, fallowing and the impact of hot fires. Hot fires in Northern Australia release more CO<sub>2</sub> than all our industrial emissions combined. (Note – Beetaloo (Katherine)).
- We must cool the surface of the planet to convert carbon oxidation to bio-sequestration, in order to regenerate the resilience and hydrology of the soil carbon sponge. Explain – paddock, house, tree, carpark.
- This can only be done by maximising photosynthesis and doing it quickly by maximising the area of land under perennial green plant cover, including in our cities.
- This should include cropping areas too, and in my extensive travels I have been increasingly delighted to see, green cover under harvested crops, and direct seeding into perennial cover.
- Once we establish that green cover, we have to keep it there permanently, and hence the need to utilise selected native perennials that grow green in our traditional summer months.
- And we have to maximise the degree to which the carbon fixed is bio-converted into stable soil carbon rather than being oxidised back into the atmosphere through poor soil management, hot fires and so on.

- Our Soils For Life farmers know this and are happy to share their knowledge.
- Unfortunately, many of their neighbours still continue with their old industrial agriculture practices – even firing their stubble - but the current drought is forcing them to ask questions of themselves, including taking a look at the land management practices we promote.
- I tell them not to be afraid to go for change – to give it a go, one step at a time, to transition, if you like, bit by bit.

## PAUSE

- Let me turn to the use of technology..
- Our cropping farmers were way ahead of their time 30 years ago, with the introduction of laser levelling.
- The adoption of this technology was all about using water wisely and effectively.
- And technology should be the hand maiden of broad acre farmers.
- Most farmers employ some technology, with drones the latest addition to the technological toolbox.
- But many are working in the vacuum of their own farms, or their own catchments, without being provided with a regional, national or global picture of how much carbon they are storing, or how little.
- *There is, to my dismay, no co-ordinated, clear approach to measuring carbon in our soils, cheaply, accurately, quickly and broad acre.*
- Yet soil carbon is the common indicator of soil health – indeed, I would argue the most important element of farming in adjusting to today’s changing climate.
- Perhaps a suitable technology might include satellites working to ground sensors, to detect and measure soil carbon in real time.
- I have challenged our scientists to come up with a way to measure soil carbon on a broad scale cheaply, accurately and quickly and establish where our soil carbon levels are good and vice versa.
- As scientists, they need to work with other scientists to update, collate and co-ordinate soil carbon and other agricultural science knowledge, and provide it to non-

scientists like me in a straightforward and timely manner.

- They need to provide that knowledge to government, as a basis for funding, under the Emissions Reduction Fund, for example.
- And – most important – they must provide that information to farm businesses through a revised extension service system, so that farmers can make good decisions about their land and animal management including qualifying for carbon credits.
- And we really need science to help provide answers in retaining more of the 50% of the rain that falls in this country that evaporates straight back into the atmosphere because it can't penetrate the soil, for reasons earlier explained - this is 25 times the quantity of water in all our dams and five times the quantity in all our rivers – wasted.
- It's a national tragedy.

PAUSE

- I want to also address the issue of people, especially our young ones.
- We have a deficiency of young agricultural scientists on the ground, armed with scientific and “on the ground” knowledge, to advise farmers on how to go about improving their hydrology, managing their landscapes better and keeping carbon in the “soil sponge”.
- To deal with this, I suggest we need to urgently re-establish sufficient numbers of research stations in rural and regional areas, to service our 100,000 farmers, employing young, well trained and independent agricultural scientists, who have a properly planned, long term career path.

EXPLAIN

- A love of such science could come from the establishment of a vegetable garden in every primary and junior high school in the country with a mandated syllabus, agreed by the Curriculum Council.

EXPLAIN Mansur trailer

PAUSE

- This is one of the 10 major recommendations I've included in my report to Government: *“Restore the Soil: Prosper the Nation”*.

- Broadly, the report has as its objective “to restore and maintain the health of the Australian agricultural landscape by integrating the management of our soil, water, plant and where appropriate, animal assets.

EXPLAIN – briefly – Soil, water, plant – strategic assets; SPT farmers; reconnect urban / rural; science; regulatory

- The government is providing a whole of government response to the Report.
- To conclude.
- In all of this regenerative agriculture activity now taking place around the country, controlled traffic farming is an important method to help restore and maintain the good health of our agricultural landscape.
- I congratulate you all on expanding the knowledge base in your industry of the importance of the concept and better informing farmers on how to go about doing it.
- I’m impressed by your advances, with an average of 85% of your soils remaining uncompacted and in good health.
- And that means that your soils have better water infiltration, reduced inorganic fertiliser requirements and – the great news – better yields.

## PAUSE

- So, I take my hats – both of them - off to you for your forward thinking and conscientious approach to the ground beneath your crops and your feet.
- And, on that note, I’m delighted to officially open the Third International Controlled Traffic Farming Conference.
- Thank you.