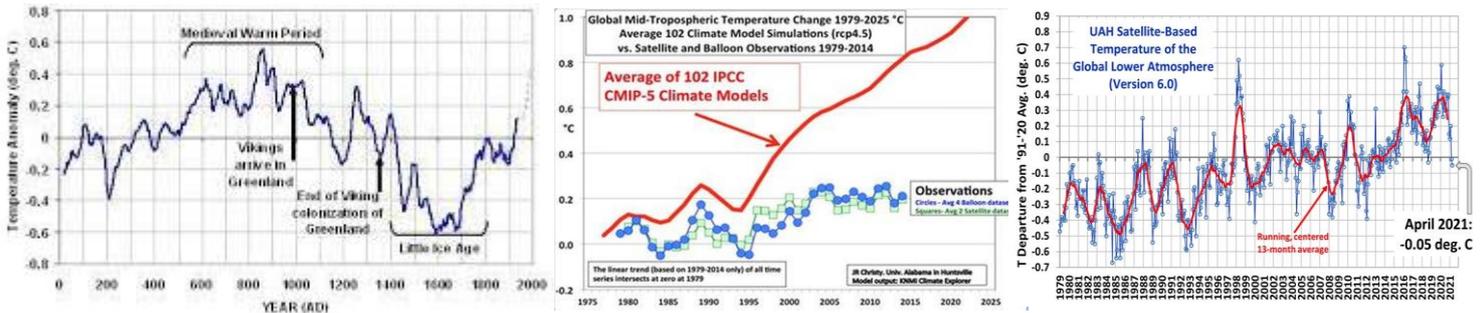


Introduction

While there is no doubt that the Earth has warmed over the last 40 years (see graphs 1-3 below). There is also evidence of a cyclical nature of global temperature changes. History shows a warmer past where Vikings grew crops on a land that was then green at 1,000 AD and English skated on the River Thames in 1640 for four winters. This history is not disputed and nor is Climate Change. Climate always changes and it always will. While climate change captures media attention, with significant research funds awarded, there are more pressing and damaging issues to the health of people and the planet. We are losing our soil, and rapidly! Without soil, farming will be greatly challenged. The answer to solving this serious problem is rarely talked about.

Graph 1: Left: 2,000 years of global temperatura, Centre; estimated versus actual 40 yr global temperatura, Right; Actual NASA global temperatura (Roy Spencer).



Panagos et al 2015 shows that >5 t/ha of cropland soil is lost annually in Europe. Such soil losses from tillage are unsustainable. Tillage washes soils into oceans – never to be seen again. However, no-tillage retains soil and builds soil health, soil C, soil water retention and is powerful for drought mitigation. Farmers in tough, fragile and dry climates know this well. This is why Australian farmers are now almost 100% no-till farmers (Crabtree 2010 www.no-till.com.au).

Contrast the farming styles and the impact it has on soil health and erosion are seen in the adjacent pictures; 1 and 2.

The left photo shows a sustainable technique and the right is not sustainable. The world needs to be informed of the looming food challenges if these soils continue to be lost at such a rapid rate.

The risk of crop failure and famine from tillage based agriculture is high. In Africa where populations could double within 20 years it is an urgent issue. Europe seems mostly asleep to this issue.



Picture 1. R Peiretti – no-till in Argentina



Picture 2. Dr Chris McDonough in Tanzania

Increasing CO₂ levels to 600 ppm would not likely reduce food production, as higher levels stimulate crop growth, yet it would be warmer and possibly wetter. Provided rainfall does not decrease, which has been the case mostly for the last 100 years. In contrast, the loss of soils due to tillage is a current and real catastrophe. No-tillage does work, especially in drought areas and it preserves and builds soil. Tillage has huge consequences for the earth and its peoples. We know that without soils we will struggle to grow enough food! Tillage destroys soils and its capacity to absorb and hold water and to grow crops.

Europe is losing too much soil to erosion, washing valuable soils away at an alarming rate. In some areas half of the 100 cm of original topsoil, has been lost and it continues with little public attention. No celebrity talks about this and very few politicians. In 30 years' from now we might look back and say that it was a global silent crime that we ignored and we did it with tillage. We will have lost our most precious resource and we did not stop it – is this what we want? We won't get it back. The world must re-think – what could cause mass starvation – the loss of our soils?

No-tilled soils hold a secret power that few are aware of. It's called glomalin, a glue that holds soil together and it builds up with years of no-till and it improves soil water infiltration, allowing soil to store more water to better cope with drought, and stops the soil from sealing over. Tillage smashes and oxidises glomalin and the mycorrhiza that make it and causes rivers to bleed soil into the oceans. Also no-till allows farmers to store carbon – the greatest C storage capacity on earth. Further ignored is that Europe purchases biotech grains, especially soya, to feed their animals and therefore themselves. Yet, they denigrate the safety and the value of the technology. This has caused African governments to fear a tool that would greatly reduce African poverty and starvation.

Conclusion

If global warming is what makes young people feel there is no hope, then imagine how they would feel if they learnt about the real effects of tillage on soil health? With a changing climate we can adapt, but it will be a greater challenge to overcome from the current and ongoing topsoil loss and the threat that it could cause future wars and starvation. So let us talk louder with the community about what tools farmers need to have to help them adopt no-tillage and help to save and heal our soils! There should also be more policy focus on the loss of soils within the EU and the potential and implications for African topsoil loss in a wet and subtropical environment.