

## Notes on 'How Grazing Cattle Can Save the World' to accompany Rob Havard's PPT

Slide 3: This is not a mountain it is a pile of cow manure that was on fire for 2 years. They couldn't put it out

Slide 4: This is a feedlot in the US and is what most of GHG statistics on cattle come from. This gives an unbalanced viewpoint

Slide 6: Quite important then! How do we manage them without animal agriculture when we have a growing world population to feed?

Slide 7: Desertification is happening at an alarming rate. This is a major cause of GHG/Climate change. Oxidation and carbon release from the soil as part of the process.

Slide 10: Grasslands like this in the UK (this is one I managed and is full of orchids and wildflowers) need sheep and cattle or we will lose them. They can't be managed by machinery alone.

Slide 12: Define keystone species – although it will be a different species in each location. Note the natural mobbing but not in the cattle grazed conventionally.

Slide 14: We have the same number of larger herbivores in North America compared to pre-history and yet that system created a stable ecosystem that built soils and stored carbon. The prairie soils 10 ft deep made of stored carbon and created with large herbivores. Could we re-create this process and store carbon while feeding the world healthy food?

Slide 15: Wild herds are mobbed together by predators – something that we don't do in modern agriculture.

Slide 16: Trampled grass from the mobbing builds soil and fertility.

Slide 17: Grass is broken down by the soil fauna which is fed with trampled grass, dung and urine. All of these organisms die and become part of the earth and store carbon in the soil. Ironically the ploughing of annual veg cropping is far more damaging as it destroys soil life and releases carbon. Soil washes into rivers - currently we are losing 10 tonnes of soil for every tonne of food produced. A staggering statistic - this is caused by annual cropping.

Methanotrophic bacteria break down methane. Methane is heavier than air and sinks down to the soil where it is broken down by these organisms. In a healthy soil these organisms have the ability to absorb more than twice the emitted methane from the cattle above them.

Remember that in one teaspoon of healthy soil there are more organisms than there are people on the face of the earth.

Slide 18: This is when we first worked it out although there are references to these types of grazing systems in the 1700 in the UK.

Slide 19: This type of grazing system that mirrors mobbed wild herbivores has long rest periods which allows the grasses and herbs to produce more root exudates. Plants shoot out 20% of all the energy from photosynthesis through their roots as starches and sugars to feed beneficial symbiotic bacteria and especially fungi. These starches and sugars are made of carbon that has been fixed out of the air.

Slide 21: Is this a rain proof fence or an idea proof fence?

Slide 25: We can store all the anthropogenic carbon emitted since the beginning of the industrial revolution quite easily with some simple policy changes.

Ireland has already got a requirement for 3% SOM in order to claim subsidy. France is following suit. Why the inertia?

The soil is the solution.

Slide 27: This was my grandmother's favourite scripture. As an ecologist I am passionate about protecting the environment but so much is focused on the disaster and has a lack of hope. We need to focus on "that which is good, admirable, excellent and praiseworthy" and not sink in to a cycle of despair and recrimination. Hope!