

# *The CARBON PLAN for our farm*

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The carbon plan for the present and future years is to prove that lower intensity farming is a way of sequestering carbon while being profitable and keeping people on the land.

Bigger is not necessarily better but production from biological farming or regenerative farming can be just as productive, but without the negatives of high intensive chemistry only farming.

Our goal is to produce an actively growing biosphere on the farm, and so produce an abundance of nutrient dense forage, from in our case multiple species old pastures and without the need to use the old NPK system of soluble salts.

Where inputs are used, they should come from naturally mined materials like lime, polysulphate, basalt, rock phosphate etc... In most Irish soils, there is an abundance of NPK but in a locked up form. The biology needs to be stimulated to release it, if and when the plants need it. The other minerals must not be forgotten : Sulphur, molybdenum, cobalt, manganese, copper and on through the periodic table, Some would say, some of these are not necessary for plants to grow, but they are essential to the animals that eat these plants, including ourselves. These are 95% digestible through the plant as opposed to 30 to 50% through supplementation.

To stimulate biology we add humates, molasses, biochar, basalt, inoculants of different kinds, either bacterial or fungal. The genetic potential is seldom realized in farming because of inadequate nutrition or poor growing conditions.

Biological systems in the future, will far out-perform chemical systems which usually short circuit proper biology and make it redundant. Not easy to achieve, but we will try to paddock graze throughout the growing season with short stays in each paddock and leave at least 4 inches of grass when leaving the paddock. This is the solar panel that allows the leaf to recharge the roots which feed the biology in the ground, which in turn feed the plant that grows the leaf. All this adds carbon to the soil, keeps an open soil, water holding capacity increases and it will be more able to withstand unusual climatic changes . Organic matter is built through photosynthesis and biology and this produces stable humus. Where adding organic matter via farm yard manure through decomposition can loose carbon to the atmosphere, adding biochar to the manure or slurry will help lock it in to the ground until the plants need it. This is a way to reverse global warming, taking CO2 out of the atmosphere and sequestering it back into the soil, from where it came from in the first place.

A project for this year is to get a flame cap kiln to make bio-char. This uses a simple technology burning scrap wood, where the flame itself excludes oxygen from the bottom layer which will pyrolyze rather than ash. This makes charcoal while producing very little smoke. This bio-char will be used in slurry, farm yard manure and in the vegetable garden. By using bio-char in the slurry, the more soluble nutrients will be locked in the pores of the char instead of leaching away and made available to plants when needed, via biology, microbes, mycorrhiza, bacteria, and so on. The surface area of 1 gram of ground bio-char is equivalent to the surface area of a football pitch. Bio-char will in itself sequester carbon by being very stable and will stay in the soil for many hundreds of years, some say thousands. This method produces nutrient dense forage which in turn has the potential of producing truly forage finished animals, without the need for cereals. This will only happen where soil biology is vibrant and plants themselves have high levels of lipids stored in the leaves. Only then can we truly say Irish forage fed beef is the best in the world.

There is also the misconception that only clover /legumes can produce nitrogen. Wrong. All green living plants in relationship with soil microbes can and do through the process of photosynthesis – exudates capture atmospheric nitrogen. The atmosphere is 78% nitrogen, 20% oxygen, the balance is all the rest. This equates to 74 to 78 thousand tons of atmospheric nitrogen above each hectare of ground. (and farmers buy it in bags across the world.....)

Best results will be achieved using efficient hardy breeds, still able to digest a forage based diet, and not dependent on cereal crops. We have been using Aubrac for the last 20 years and they fulfil all our criteria of easy cared and efficient cattle. They are very saleable to a variety of markets and ensure both ease of management and good returns.

If every farm across the world could keep a green cover on the ground for as long as possible, we could restore the carbon in soils. 80% of the world soils have been depleted or lost and soil organic matter has dropped on average from 5% to 1%. That is a huge amount of carbon that has been gasified.

It is this thin veil that keeps us alive and there is very little governmental protection for this critical ecosystem, it has and is being mined by extractive agriculture.

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