

Carbon Farming: the Best Way to Sequester Carbon and Reverse Global Warming

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Rob Wheeler, UN Representative, Global Ecovillage Network
www.ecovillage.org/climatesolutions
rob.wheeler@ecovillage.org

Many ecovillage communities have been experimenting with different means of carbon farming and have gone well beyond carbon neutral to become net negative carbon communities. These villages provide many examples and best practices for sequestering billions of tons of carbon and reversing global warming. You can read about our success stories at: www.ecovillage.org/COP21.

While there's no question that we need to reduce GHG emissions, over the last 25 years emissions has actually accelerated. In 2013 there were roughly 50 parts per million more carbon pollution in the atmosphere than in 1988. While we have to replace fossil-fuels with renewables, other measures are needed as well.

The alternative we propose is to net sequester – go beyond zero – at the home, village and regional scale. We have many tools for accomplishing this – carbon farming, agroforestry, ecosystem restoration, and biochar in everything from clothing to buildings.

Humanity has actually released far more carbon to the atmosphere from soil disruption, desertification, and deforestation since the beginning of agriculture than from fossil fuels. So now we have the

opportunity to reverse the process and rebuild and sequester megatons of carbon in our soils.

The safest and most effective approach is to capture it with millions of species of green plants, animals, insects, fungi and micro-organisms, burying it deep in soils in carbon-rich molecules that are stable for centuries or longer. And because complex organic carbon molecules retain many times their weight in water, we can also restore vibrant life to billions of acres of parched, desertified areas that were once healthy forests or grasslands.

Unfortunately most of these carbon farming practices and techniques are not yet a part of the mainstream climate discussion. It is unspeakably ironic that the most effective, most beneficial, least risky and least expensive approach to reversing global warming is not yet on the table.

As years pass without strong global action on climate, the threat of the Earth's temperatures rising by more than 2oC has become increasingly likely and alarming. According to a 2014 UNEP report, the "emissions gap," between what our governments are willing to do and what is required is estimated at 8 to 10 billion tons of CO₂ in 2020 and 14 to 17 billion tons in 2030.

An article on the Global Ecovillage Network COP21 website at www.ecovillage.org/cop21 by Hans-Peter Schmidt entitled Humus or Famine states that deforestation and degradation release an estimated 4.3 to 5.5 Gt CO₂eq per year, with agriculture producing 5.0 to 5.8 billion metric tons more. We've lost between 55 and 320 billion tons of carbon or roughly 25% to 75% of the original humus content.

Healthy soil has humus levels between 3.5% and 6%. Our more intensively used soils are 2% or below. But when the Europeans

arrived in the Amazon River basin centuries ago, the native peoples had built the Terra Preta soils to 10 - 15% resulting in incredibly rich farming communities - in a region with naturally low carbon soils.

We can achieve the same by closing organic cycles, applying organic matter (composts, green manure and mulch), mixed cropping, continuous soil cover, minimizing tillage, and applying biochar to our fields.

By increasing the carbon content of the soil to just 10% worldwide over the next 100 years we could sequester the equivalent of 900 billion tons of CO₂, reducing it by 110 ppm in the atmosphere, thus returning to pre-industrial levels.

Albert Bates states, in an article on the GEN COP21 website, **“We could sequester 1 gigaton of carbon annually by switching to carbon farming. And with biochar increase this to 4 to 10 PgC per year using biomass-to-energy pyrolysis reactors.”** And then add tree planting, wetland restoration and bamboo stands. Reforestation, particularly at the edges of deserts, provides the largest available wedge to combat climate change, potentially contributing 80 GtC(PgC)/a.

These things are not only do-able, but are already being done in ecovillages around the world. We can sequester more greenhouse gases than we emit. We can go back to pre-industrial carbon levels while restoring ecosystem health and replenishing our depleted soils. All we have to do is plant trees, build terra preta soils, and organically store carbon in our planet's terrasphere like the Indians did centuries ago in their settlements along the Amazon River.