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Climate Neutral Farms

**ClieNFarms EIP-AGRI Practice Abstracts**

# Application of Biochar

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Agriculture sits in a unique position in the economy, being not only an historic and current source of warming greenhouse gas emissions (GHGs) but also with the potential to act as a GHG sink, therefore acting as part of the solution to anthropogenic climate change.

Such greenhouse gas reduction (GGR) practices come in both natural and novel forms. Natural forms include carbon sequestration via afforestation and the building of soil organic matter. Novel, technologically based forms include the application of biochar to farmed land.

Biochar is a carbon-rich substance produced from biomass (plant matter) which can be used to store carbon dioxide taken up from the air by plants. Biochar is created by a process called pyrolysis, where the biomass is heated to very high temperatures under low oxygen conditions.

Biochar can be produced from a wide range of feedstock materials, including some waste materials that have no other use, such as domestic green waste, agricultural and forestry residues. Biochar can potentially be applied to soils to sequester carbon for centuries, removing carbon dioxide from the atmosphere, and thereby not only helping achieve national climate & GGR targets but also potentially rapidly raising the soil organic carbon level of agricultural soils. It can also improve the soil by increasing pH of acidic soils, improving water and nutrient retention, and improving soil structure and workability.

These can benefit a crop by improving productivity and reducing carbon footprint.

At GWCT Allerton Project we are part of a project assessing the impact of applying 10t/ha of biochar to direct drilled winter wheat. We will be assessing yield, soil emissions, herbicide efficacy and soil biology.

If proven, this practice stands to be particularly beneficial where farmers can produce their own biochar on-site utilising their own organic materials, especially elements such as waste timber, hedge cuttings or crop residues which would otherwise be left to rot down. There is the added potential of generating valuable carbon credits in the pyrolysis process.



Figure 1: Agricultural operations for the application of biochar.



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