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Case Study

Bioethanol from US corn

Under the EU Renewable Energy Directive (RED), corn bioethanol produced outside of the European Union has one the lowest “default” greenhouse gas savings of all biofuels, at just 26% carbon saving. These “default” levels are based on assumptions about typical fertiliser use, yields, transport distances and energy inputs, but actual data can be used instead to give more accurate calculations of the carbon savings achieved.

In order to find suppliers who can demonstrate greatest carbon savings, Greenergy has gathered detailed carbon emission data from a number of producers, and has used this data to calculate accurately the carbon savings that have been achieved. Whilst some producers were at or close to the 26% “default” level, a few were able to show much greater savings.

One producer achieved a 54% carbon saving from its biofuel – more than double the default level. Here’s how:



On the farm

The US producer sources all corn locally (within a 60 mile radius) from cooperatives or directly from farmers. These farms have reduced the carbon emissions associated with growing the crops by:

- > Increasing yield by 33%*.
- > Efficient use of machinery, reducing diesel consumption by 72%*.
- > Cutting application of inorganic nitrogen fertiliser. This reduced nitrous oxide emissions from the soil. Nitrogen fertiliser production is also highly energy and carbon intensive.

At the bioethanol production plant

The producer has reduced the amount of carbon emissions produced during the conversion of corn to bioethanol by:

- > Significantly decreasing energy consumption a saving of 46%* electricity and 33.5%* steam use.
- > Increasing by-product production. The by-products produced during the ethanol production have a higher carbon intensity than the bioethanol itself, so by producing more by-products, the carbon content of the bioethanol is improved.
- > Reducing transport requirements by converting raw bulky corn to concentrated bioethanol before transportation to the UK.

“DEFAULT” CARBON SAVING FOR US CORN UNDER RENEWABLE ENERGY DIRECTIVE:

26%

SAVING ACHIEVED BY GREENERGY SUPPLIER:

54%

*In comparison to RED default values