

**Stephen Temple
Copy's Green Farm
Norfolk**



The farm business is situated in North Norfolk and consists of a 500 acre dairy farm combined with an arable and cheese making enterprise. Since returning to England in 1998, Stephen has developed the business with an environmental mind-set which resulted in Stephen winning the Farmers Weekly Green Energy Farmer of the year award in 2010.

An anaerobic digester plant was installed in 2009 which enabled the business to diversify. The plant benefits from receiving payments under the Renewable Heat Incentive and produces biogas for heat and electricity production both used on the farm and exported to the national grid. Forage maize is grown to provide fodder for the dairy herd as well as being used as feedstock for the anaerobic digester. The digestate produced is not classified as a waste and as a result there has been no requirement to gain a permit for the anaerobic digester plant or the spreading of the digestate.

Working under the ethos 'if farming is not sustainable, there is no future', the business is run within a holistic outlook which aims to see how all aspects of the business can work together. The digestate from the anaerobic digester provides nutrient benefit, improves soil structure and reduces the use of manufactured fertiliser; this resultant increased yield improves the quality and consistency of the feedstock.

Soil improvement strategy

Digestate

The anaerobic digester is currently being fed with cattle manure from the dairy herd, excess silage, maize wholecrop and whey from the cheesemaking enterprise which generates high quality digestate for use on the land. The digestate produced from the process also poses a lower risk to the environment and adjacent watercourses than the slurry and whey used within the feedstock; thus reducing the risk of causing a pollution event.

With data showing that around 80% of total nitrogen and 50% of total phosphate in digestate is readily available¹, Stephen's digestate has the right composition to deliver significant benefits for his crops and soil. Furthermore digestate provides high proportions of readily available potash alongside other essential micro-nutrients such as Magnesium and Sulphur. The digestate has provided the arable cropping especially the maize, with high quality varied nutrients, for high yields and increased soil quality.

1- WRAP (2012).Beat rising cost of fertiliser and extreme weather by using digestate and compost.

Strip tillage for maize production

Maize production has always been an integral part of Stephen's farm business as the maize provides high quality fodder for the dairy herd, yet more recently the maize can be inputted directly into the anaerobic digester. Stephen sows his maize via the strip tillage method, thus reducing cultivations on the soil which benefits its soil quality.

Strip tillage provides many benefits for the soil, but especially when sowing row crops such as maize, strip tillage decreases the risk of soil erosion through decreasing the amount of soil disturbance and increasing the organic matter content within the soil. Strip tillage involves cultivating narrow strips of soil where seed is drilled, leaving ground between the strips undisturbed. The system also reduces the amount of passes machinery has to do over the soil, thus reducing traffic and decreasing compaction issues. The decreased traffic also lowers the time spent in fields, this allows for the earlier harvesting of the maize and establishment of cover crop over the winter.

Minimal disturbance has brought further benefits to Stephen's soil; reducing cultivations can increase soil organic matter which enables the development of a deeper root structure within the soil profile. Greater soil organic matter and decreased compaction increases food and oxygen availability to enhance the biological function of the soil.

Summary:

Key techniques used within the farming system:

- Integrated farming system that brings the separate enterprises together.
- Minimal cultivations within maize production systems, particularly through the use of strip tillage
- The use of high quality digestate on the land to increase soil quality and profitability as a viable product to compliment manufactured fertiliser.