

# The Myerscough College Ag Net Zero Challenge, Cornthwaite Moors

Land management is amongst the largest contributors to climate change and there is an urgency for agriculture to transform from being a net emitter of carbon (CO<sub>2</sub>e) to a net sequester of carbon (CO<sub>2</sub>).

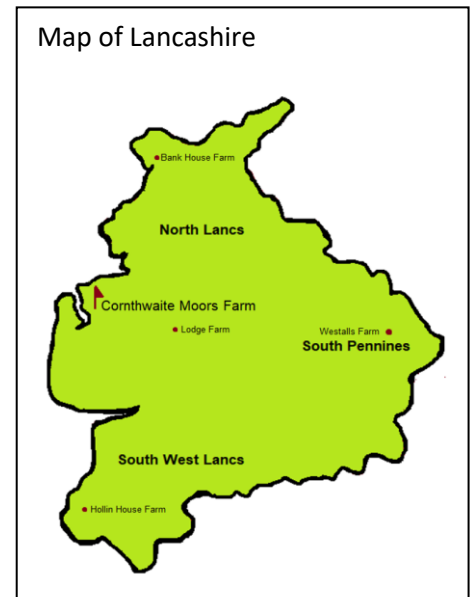


The Myerscough College Ag Net Zero Challenge is part of The Lancashire Colleges' Strategic Development Fund Pilot, supporting colleges and local employers to work together to create a skilled workforce for a future low-zero carbon economy.

Carbon Farm Roadshow #3 Courtesy of Cornthwaite Moors Ltd, Mary and Tom Cornthwaite

## Farm Profile

Cornthwaite Moors 327 hectares  
 Moors Farm Large Dairy Intensive  
 Hambleton 720 dairy cows / 540 followers / 1500 store lambs



The Cornthwaite's family from Moors Farms near Hambleton in Lancashire, volunteered to participate in the Myerscough College Ag Net-Zero Challenge. They undertook a whole farm carbon audit to identify areas of improvement within their farm business to reduce carbon emissions.

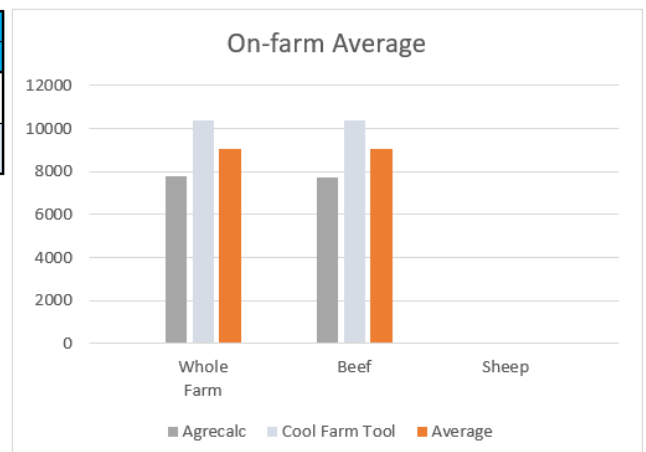
**The Carbon Audit:** A carbon audit is an assessment of the emissions of carbon dioxide equivalents (CO<sub>2</sub>e) produced by each enterprise within a business and, where possible, looks at the sources of sequestration within the business. The carbon audit at Cornthwaite Moors was carried out by Carbon Metrics - a company that specialises in analysing and interpreting existing data and generating a targeted management plan to show how net-zero strategies can be achieved. The farm audit is calculated by using a carbon toolkit. There are currently over 70 toolkits available with no standard industry requirements for data. Therefore, in this case study, we used the average of two carbon audit calculators, Agrecalc and Cool Farm Tool, to produce the results.

Cornthwaite Farms emit 9,072.74 of CO<sub>2</sub>e, and their woodlands are sequestering 65.34T of CO<sub>2</sub>. The farm is a net emitter of CO<sub>2</sub>e from its farming activity, emitting 9007.20T into the atmosphere each year.

Carbon Emissions CO <sub>2</sub> e (tonnes)	Whole Farm	Beef	Sheep
Agrecalc	7751.61	7716.97	34.64
Cool Farm Tool	10393.88	10354.64	39.24
Average	9072.74	9035.81	36.94

Carbon Sequestration CO <sub>2</sub> (tonnes)		
Crop	Farm Sequestered	Farm Percentage
Woodland (Agrecalc)	65.34	100%
<b>Total</b>	<b>65.34</b>	<b>100%</b>

Net Carbon Emissions (tonnes)	
Total Emitted	9072.74
Total Sequestered	65.34
Carbon Balance	9007.40
Percentage towards Net-Zero	1%



Strengths	Areas for Consideration
<p>The farm is currently producing milk with a good carbon footprint of 0.89kg. This is due to maximizing efficiency per animal and lowering production.</p> <p>The farm has several smart infrastructure systems in place to minimise the need for human effort and maximise productivity. For instance, the farm's new calf shed is designed with the latest technology/robotics to provide optimal nutrition for calves. The animals' high welfare and nutritional needs are considered in every aspect, including automatic feeders that guarantee their daily caloric intake without requiring human intervention.</p> <p>Being part of the Tesco Sustainability Dairy Group, Cornthwaite Moors use the ECO2 carbon footprint model and is committed to ruminant nutrition. The inclusion of key additives in feeds supports a reduction in methane emissions. For example, Mycosorb reduces any Mycotoxins' adverse effects. Rumitech is the first feed additive assured by The Carbon Trust. It is unique in being comprised of natural essential oils that lower methane emissions and improve milk yield and efficiency.</p>	<p>Investigate the purchase of a dribble bar or an injection system. The benefits are to deliver the slurry onto the soil to harness value, reduce rotation period, reduce carbon emissions, minimise crop contamination and reduce the smell. This investment can be supported by Farming Equipment and Technology Fund.</p> <p>Nutrition for dairy herd as part of the dairy herd's diet soya bean meal makes up a large percentage of their daily intake. There could be efforts made to source foods which have lower environmental implications such as substituting soya bean meal for other homegrown proteins with lower embedded carbon emissions.</p> <p>Install a smart meter to monitor electricity use and to assess efficiency of equipment and activities. Use thermostats, time clocks, motion sensors and low energy bulbs. Increase lagging on hot water pipes, reduce number of hot washes in dairy and renew milk pump or other equipment. Undertake regular machinery checks and maintenance, use correct tyre pressure, and improve journey planning.</p>
Carbon Opportunities	Benefits for the Business
<p>The farm is in an ideal position to develop its electricity from solar panels to power operations such as lighting or a milking parlour, significantly reducing what is needed from the National Grid. Excess electricity generated but the farm can be exported back to the grid.</p> <p>Explore renewable power options such as electric or hydrogen fuel cells. The generated power can be stored in batteries to drive on-farm machines used on-farm.</p> <p>The farm can consider woodland planting on marginal land, regeneration agriculture practice, and cropping for dairy feed to boost carbon sequestration.</p>	<p>With the farm's innovative approach for improving efficiency measures, there is a real opportunity to lead the way towards Net-Zero within large-scale dairy operations.</p> <p>By following the areas of consideration, the farm can expect an improved return on investment and a further fall in CO2e.</p> <p>Furthermore, introducing renewable energy sources can potentially reduce their carbon footprint further.</p>

**Dairy Calf Management:** The second-largest annual expense for dairy farms is rearing heifer calves, accounting for about 20% of production costs.

In 2020, Cornthwaites designed and constructed a state-of-the-art facility to house calves. The building was built with attention to ventilation rates, temperature control and monitoring growth within the space. The new facility allowed calves to be housed in pairs or groups to improve animal welfare. This not only reduces labour input and space requirements but also improves calf health!

Calf management at Cornthwaite Moors includes calf jackets for cold weather and automatic feeders to ensure optimal intake. In addition, a dedicated staff member monitors appetite, growth rate, and nutrition levels from day one to ensure maximum performance.



Cornthwaite's Calf House



Robotic Silage Pusher

**Improved productivity:** Cornthwaites have embraced smart technology and robotics to improve productivity on the farm. For example, investing in a robotic silage pusher stimulates frequent feed consumption throughout the day and night, resulting in a higher feed and nutrient intake among the cows. Fresh feed is the best motivator for cows, who eat 10 to 14 meals a day, to come to the feed fence. Pushing the feed 6 to 8 times per day reduces the amount of rest feed by approximately 50% and ensures constant access to fresh feed.

Frequent feed pushing also has a positive effect on claw health. Since feed is literally within reach for all cows, this lowers the pressure on their front claws and necks because they no longer need to reach for their feed. When there is a limited feed supply, subordinate cows are chased away, causing them to make sharp turns, putting extra pressure on their claws.

This has a positive effect on animal health, fertility, and production - ultimately resulting in a reduction in CO2e.