

CTF in Midwest Forage Operations

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Economic margins in production farming are diminishing, causing an urgent need for farmers to become increasingly efficient. Modern technologies and management practices have increased efficiencies, but there seems to be a push for better results. A proven way of increasing forage yields is the practice of controlled traffic farming (CTF). It is relatively new, especially in the US, but researchers have observed positive outcomes in European studies. The goal is to designate permanent travel lanes during field operations.

There is on-going debate whether one should spread the traffic evenly over the entire field or drive in the same wheel tracks and risk causing concentrated damage. CTF makes a compelling case for the latter. The main goal is to minimize the overall level of compaction and increase yields in the undisturbed areas enough to offset traffic lane losses. By using GPS and auto-steer systems, field trafficking can be reduced from 80% to as low as 17–21% for 26 and 40' working widths, respectively. Reductions in trafficked area have resulted in a 12% increase in yield in just the first year and can increase up to 24% with continued practice, as proven in grass forage operations (Hargreaves, 2014).

There are secondary benefits to CTF, including less fuel consumption. Tires are most efficient on compact surfaces, so by having designated traffic lanes, wheel resistance can be reduced, causing less fuel consumption. Another benefit is reduced overlap. By using guidance systems, overlap can be reduced, increasing efficiencies and maximizing implement capacities. A third benefit is greater water infiltration caused by improved soil structure and reduced compaction. Higher infiltration can increase yields by helping to maintain proper soil water levels and reduce runoff that may carry away applied nutrients.

One challenge to creating traffic lanes is matching equipment track width. If implements fall outside of designated traffic lanes, overall trafficking increases and yield potential is reduced. In the Midwest, there is a higher prevalence of alfalfa in forages, which can be more susceptible to traffic damage. Yield losses can amount to 6% per day that traffic is delayed after cutting, largely due to new stem reduction caused by breakage from tires. CTF could minimize these losses. Increased yield potential may be even higher for alfalfa than for grasses due to stem breakage vulnerability (Schmierer et. al., 2004).

It is important farmers know which machines in their fleet can be utilized to reduce field traffic – which lane width can their machines already support, which ones need to be replaced or modified, and, which are limiting track width and percentage of field trafficked.

To aid farmers, UW-River Falls researchers have developed a spreadsheet tool which contains data collected from a multitude of drills, seeders, fertilizer spreaders, mounted and self-propelled mowers, rakes, tedders, mergers, self-propelled harvesters, and tractor- and semi-towed trailers. Farmers can utilize their own data in conjunction with the spreadsheet tool to determine the number of unique traffic lanes and the percent of the field trafficked. The tool can be found at bit.ly/CTF_Calculator.

CTF promises to improve yields and extend stand life, but advantages need to be weighed against machinery/technology investments. Look at your machinery and consider whether it can be adapted to reduce traffic or consider traffic when making your next investment.

For more information:

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