Science Societies

Tractor Guidance Systems Benefit From Experienced Operators

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The tractor-guidance screen as seen during a fertilizer application; the blue lines are the areas covered by the tractor. Photo by Mike Popp/University of Arkansas.

Tractor guidance systems help growers more precisely and efficiently apply fertilizer and pesticides by reducing gaps and overlap. However, efficiency gains from these precision agriculture tools have been reported differently by different researchers.

In *Agricultural & Environmental Letters*, researchers who studied this question recently reported that operator experience level during non-tractor-guidance operations affected the efficiency gains estimation in these systems. Operators with six or more years of tractor driving experience reduced overlap by 7.7% and 20.6% compared with operators with two to three and zero to one years of experience, respectively. By extrapolating this result to previous work showing 20% gains in efficiency, the researchers found that tractor guidance systems are likely responsible for even more savings, depending on operator experience level.

Considering that 82% of U.S. farms are small farms, the adoption of tractor guidance systems could result in vast environmental and economic savings. But small-scale growers are not very comfortable with these new precision agriculture tools and technologies and the start-up costs they entail. University extension program can be developed to train growers on precision agriculture tools and realize these benefits.

Adapted from Kharel, T.P., Ashworth, A.J., & Owens, P.R. (2022). Evaluating how operator experience level affects efficiency gains for precision agricultural tools. *Agricultural & Environmental Letters*, *7*, e20085. https://doi.org/10.1002/ael2.20085

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