

# Less tillage, less fuel

By DANA PETERSEN

**N**O doubt about it, crop production means getting your hands dirty and certain types of fieldwork are an inevitable part of the process. Planting, harvesting and weed management are required activities, but tillage is the culprit that consumes more fuel per acre than nearly any other field operation.

"Diesel fuel for field operations is the greatest use of direct energy on many Iowa farms," says Mark Hanna, Iowa State University Extension ag engineer. "Tillage should be carefully evaluated to ensure that fuel, labor and ma-



**Farm Energy**

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chinery costs are providing adequate returns."

This is the right year to evaluate your fall tillage. If you're considering no-till, look for ISU resources to help you make the transition. Also, talk to friends and neighbors with previous experience. If tillage is unavoidable, look for opportunities to save fuel by minimizing tillage and choosing

the right equipment for the job.

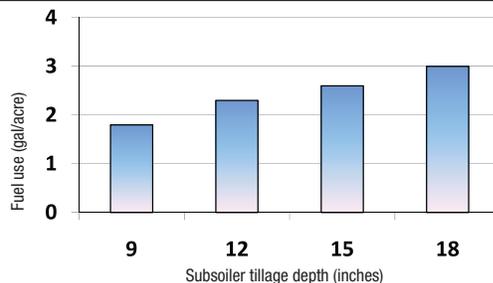
Let's fuel up on facts. The graph shows typical fuel use in corn and soybean production for common field operations, including tillage. It's taken

from ISU publication "Limiting Field Operations," PM-2089D. On the far right, you notice that planting, spraying and harvesting the crop consumes an average of 2.2 gallons per acre of diesel fuel. Combine use during harvesting consumes as much or more fuel than planting and spraying.

By comparison, a single pass for primary tillage in the fall (chisel plow, ripper or moldboard plow) combined with one pass of the disk or field cultivator in the spring can also consume an average of 2.2 gallons per acre. Multiple passes with the disk or field cultivator demand even more time and may add significantly to fuel costs.

Implement selection can impact fuel consumption. Also, deeper tillage requires more fuel. For example, using a chisel plow for primary tillage requires less fuel than using a ripper. Additional efficiencies can also be achieved by adjusting tillage depth.

Tillage depth affects fuel use



The other graph with this article shows a proportional increase in fuel usage per acre according to increasing tillage depth for a ripper or subsoiler (this data also comes from publication PM 2089D). As a rule of thumb, Hanna says secondary tillage should typically be no more than half the depth of primary tillage. Not only is fuel consumption minimized with shallow secondary tillage, but soil compaction and water loss are also reduced.

Besides tillage adjustments, if a smaller implement does not fully load the tractor, use a higher gear and reduce engine speed to maximize fuel economy. "Shift up and throttle back," says Hanna. "Also check the tire inflation, fuel and air filters, and make any necessary ballast adjustments before beginning fieldwork."

Developments in precision ag

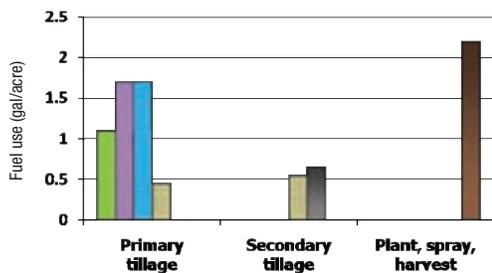
technology continue to set new benchmarks for fuel efficiency. Autosteer, GPS and field mapping can aid in navigating the most efficient route across any field. By using precision tools to eliminate overlapping and minimize turns, you can ensure that you're getting the most from your equipment.

The good weather can't last forever, and fieldwork will be wrapping up soon. Throughout the winter months, I'll be discussing a variety of farm energy resources that can help you make good decisions for your operation. If crops are your business, minimum tillage is one way to improve your energy efficiency, but there are many ways to save.

Petersen is the program coordinator for the Farm Energy Conservation and Efficiency Initiative, sponsored by the Iowa Energy Center.

Tillage passes add to the tab

Chisel Subsoil M plow Disk Fld cult Plant, spray, harvest



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