

Tractor maintenance saves fuel

As fuel prices creep upward, now is a good time to pull your tractors into the shop and apply a little elbow grease to your maintenance routine.

It goes without saying that tractors and equipment are valuable assets, second only to land for many farm businesses. Making a few small adjustments in the day-to-day operation of equipment and fol-



Farm Energy

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lowing a consistent maintenance schedule can improve your fuel efficiency and mini-

mize fuel expenses.

Take a moment to review the owner's manual guidelines for filters. Filter replacement is a critical step for maintaining fuel efficiency. Both primary and secondary filters trap small particles as air and fuel enter the tractor's engine. As particles build up over time, the flow of air and fuel in the engine's cylinders becomes

increasingly restricted, thereby reducing combustion efficiency. "Fuel efficiency is directly related to the combustion of air and fuel inside a tractor's engine," says Mark Hanna, ISU Extension ag engineer. "Replacing air and fuel filters according to your operator's manual will help you maintain engine power output and optimum fuel efficiency."

Previous test data shows measurable fuel savings for filter replacement and general maintenance performed at the intervals recommended in your owner's manual. A past study by the University of Missouri included testing 99 tractors during six field days across the state. Using a PTO dynamometer, the tractors were initially tested "as is" for maximum power output, and then tested again after air and fuel filters were replaced with new filters. Without any additional modifications, the data shows that fuel consumption was reduced 3% to 4% with new filters while still producing maximum engine power output.

In addition to replacing filters, be vigilant about clearing dust and debris from radiator screens. Obstructed screens can reduce the flow of air required to cool the tractor's radiator. Excessive heat decreases engine performance and causes internal wear and tear. In extreme cases, an engine can overheat.

"A tractor's engine temperature affects its combustion efficiency," says Hanna. "Keep an eye on the engine temperature when you're in the driver's seat."

Other ways to save energy

Besides replacing filters and cleaning screens, you can conserve fuel during day-to-day activities such as cool-down idling. A larger tractor will burn half a gallon of fuel or more during 10 minutes of idling. While a few minutes of idling after hard work is recommended to circulate cooling oil, particularly to the turbocharger, idling for eight to 10 minutes may be excessive. Three to five minutes of idling time may be sufficient for newer tractors, so consult your operator's manual for specific recommendations.

This year's variable weather has everybody guessing what next week or next month may bring. As cold weather operations give way to spring fieldwork, make preparations to switch your fuel supply from No. 1 to No. 2 diesel as the air temperature rises. Unless prohibited by your local fire code, paint aboveground storage tanks white or aluminum-colored. Paint and natural shading can help reduce fuel losses due to evaporation. "Equip large storage tanks with a vacuum and pressure-relief valve," adds Hanna. "This will reduce fuel evaporation loss by limiting pressure fluctuations inside the tank."

As diesel prices trend upward, disciplined maintenance and consistent operation will help you maintain your tractor's power output and fuel efficiency, thereby reducing fuel costs. Your owner's manual is a good resource for recommended maintenance intervals and other guidelines. In addition, follow our energy efficiency tips on *Twitter* @ISU_Farm_Energy or download fact sheets such as "Tractor Maintenance to Conserve Energy," PM 2089L, or "Fuel Efficiency Factors for Tractor Selection," PM 2089O, at farmenergy.exnet.iastate.edu.

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