

# Timely maintenance saves fuel

**T**HIS time of year, many of the folks I know like to chase away their cabin fever by spending time in the farm shop. Tractor maintenance is a great excuse for some shop work this month, and it can help you to maximize fuel savings in the months ahead.

Start by cleaning dust and debris from the tractor's radiator screens. Heating,



## Farm Energy

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air conditioning and instrumentation in the tractor cab require extra airflow, and

you may be surprised by how dusty those screens are. Obstructed screens can reduce airflow necessary to cool a tractor's radiator. Excessive heat typically decreases performance and may cause internal wear and tear on engine parts.

Speaking of engine performance, replacement of fuel and air filters is critical to maintaining tractor performance and

fuel efficiency, says Mark Hanna, Iowa State University Extension ag engineer. Primary and secondary filters trap small particles as air and fuel enter the tractor's engine. As more and more particles build up over time, flow of air and fuel in the engine's cylinders becomes increasingly restricted, thus reducing combustion efficiency.

"Replacing dirty filters with new ones allows the engine to achieve maximum power output while also minimizing fuel demands," says Hanna. "In fact, fuel consumption may drop by 3% or 4% with those clean filters in place."

Previous test data illustrate these fuel savings for filter replacement and general maintenance in a past study conducted by the University of Missouri. Some of the results are summarized in fact sheet PM 2089L, "Tractor Maintenance to Conserve Energy," available on our website [farmenergy.exnet.iastate.edu](http://farmenergy.exnet.iastate.edu).

### Replace filters, clean screens

In addition to replacing filters and cleaning screens, you can conserve fuel during day-to-day activities such as cooldown idling. A larger tractor will burn half a gallon of fuel or more during 10 minutes of idling, says Hanna. While a few minutes of idling after hard work is recommended to circulate cooling oil (particularly to the turbocharger), idling for eight or more 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.

If you need a block heater in the winter, using a timer may provide another opportunity for energy savings, says Hanna. "Assuming 12 cents per kilowatt hour for a 1,000-watt block heater, you can save more than a dollar a day by simply installing a two-hour timer for that heater instead of leaving it plugged in all night."

These are just a few of the simple maintenance procedures Hanna recommends to reduce on-farm fuel and energy use. Off-road diesel prices fluctuated quite a bit this past year, and small changes can add up to big dollars. When you've finished up in the shop, don't forget that farm management resources from Ag Decision Maker can help to illustrate the impact of fuel costs for your farming operation. Download calculation tools at [www.extension.iastate.edu/agdm](http://www.extension.iastate.edu/agdm) or follow @ISU\_AgDM on Twitter.

For an illustration of current and historical off-road diesel prices, see the price forecasts provided by Kevin Dhuyvetter, professor and farm management Extension specialist at Kansas State. His forecasting overview is available in PDF format at [www.agmanager.info/farmmgmt/machinery](http://www.agmanager.info/farmmgmt/machinery).

And here's some fuel-saving tips for tractors:

- Clean radiator screens often to maintain engine performance.
- Conserve fuel with consistent replacement of a tractor's primary and secondary fuel and air filters.
- Consult the operator's manual to determine if cooldown idling time can be reduced to five minutes or less.
- Consider a timer to conserve electricity when using a block heater.
- Use Extension resources to find more information online.

Petersen is with ISU Farm Energy.

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