

AEN-94

Saving Fuel in the Field

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Skyrocketing fuel prices have gotten everyone's attention. Here are some simple tips to help you as producers save money on fuel bills.

Stay out of the field. *What?! You mean quit farming?!!!* No, don't quit farming, but consider each field operation, especially tillage operations, to make sure they are absolutely necessary. Do you *really* need that fall tillage pass? Do you need to till the whole field? A subsoiling operation, for example, may not be necessary over the whole field. It might be sufficient to subsoil only part of the field.

If you haven't already done so, maybe it is time to stop tilling altogether and go to no-till production. The fuel savings combined with the savings in tillage equipment could far outweigh the yield drag that you might incur.

Another option is to consider alternative tillage systems such as strip till where you only till strips across the field as opposed to the whole field. These implements generally have lower draft than broad acre tillage equipment of the same width. They also give you the opportunity to incorporate fertilizer in the row to potentially save some fertilizer.

Look for other ways to combine operations. For instance, can you combine fertilizer or chemical application with another operation such as planting or tilling?

Raise it up. If you really must till, do you really need to till so deep? You can save a lot of fuel by not going so deep. Look carefully at all soil engaging implements to see if you really need to go as deep as you are going. Could you raise the coulters on your planter just a bit

and still get a good seedbed? How about that subsoiler? Researchers have shown that you may not need to subsoil to the same depth in all parts of the field. A little scouting with a soil probe or penetrometer to measure the depth of the hardpan may allow you to till shallower in some parts of the field while still breaking up the hardpan.

Shut it off. One great advantage that mechanization has given us over animal power is that we only have to feed our tractors when we want them to work. Take advantage of that fact and turn off the engine when it is just idling. A lot of fuel gets wasted by letting the engine run during refills and other times when it is not working. Always be careful to allow a few moments for turbochargers and other hot components to cool before shutting off an engine, but then shut off the fuel.

Put good fuel in it. Sometimes we hurt our fuel efficiency by not using good fuel. There might be some minor differences in fuel quality from different suppliers, but most fuel problems are probably caused by improperly managing on-farm storage. Make sure all tanks are properly closed and vented to prevent evaporation, leakage, or the introduction of contaminants such as dirt or rainwater. Beyond that, there are several management techniques that can help maintain a high quality fuel supply.

Moisture is one of the biggest culprits affecting fuel quality. If bulk storage tanks cannot be placed underground, make sure they are covered or at least painted a light color to reflect the sun's radiation to keep the tank at a more constant temperature. Heating and cooling



of the air in the space above the fuel can cause condensation to form in the tank, which puts water in the fuel. Similarly, fill vehicle fuel tanks at the end of the day instead of in the morning so there is very little room for condensation to form as the tank cools overnight.

Diesel fuel is generally a mixture of mostly No. 2 diesel fuel with some other additives such as No. 1 diesel fuel or kerosene to keep it from gelling or hardening in cold weather. The energy content of these additives is generally lower than No. 2 diesel fuel. Work with your fuel supplier to make sure you have as much No. 2 diesel in your fuel supply as possible in warm seasons while not compromising the cold flow properties for fuel stored or used in the winter.

Biofuels (such as biodiesel or ethanol) can also have an effect on fuel efficiency. Like kerosene, they have a lower energy content than petroleum diesel; however, they can help the engine run cleaner and more efficiently. Consult UK CES publications AEN-89 and AEN-90 to learn more about using biodiesel blends in diesel equipment.

Spend more of your time working. Look carefully at your field operating patterns. Are there ways that you could spend less of your time turning and driving “empty” and more of your time working? This is called improving your field efficiency.

Use GPS. GPS technology, in particular lightbars and autosteer systems, has been shown to help you reduce the amount of overlap in the field. Reducing overlap translates directly into fewer trips across the field and ultimately saved fuel.

Fix them up. Machines will run most efficiently when they are well lubricated and maintained. Clean or change air, fuel, engine oil and hydraulic oil filters regularly. Also, engines run most efficiently at one specific operating temperature, so make sure that your radiator is clean and that the coolant system thermostat is operating at the correct temperature. Make sure all bearings, chains, and gear boxes on implements are lubricated properly.

The right tractor for the right implement. Tractors operate most efficiently at their peak power point. Choose implements and tractors to match so that your tractor is operating at its peak horsepower point. Running a big tractor at less than rated power usually means that it is not being as fuel efficient as a smaller tractor working harder while pulling the same implement. Likewise, don't continually lug an engine. Lugging also wastes fuel. Black smoke from the stack is unburnt fuel, and that is wasted money!

Gear up and throttle back. If you are in a situation where you must use a larger tractor than necessary for a particular implement, try using a higher gear and reducing the throttle to conserve fuel. This situation may be quite common on hilly ground where it is harder to pull the implement up the hill than down. Remembering to change the gears and throttle at each end can save fuel. Just remember not to lug the engine too much as this will ultimately use more fuel and could damage the engine. Also, remember that with PTO-driven implements, you need to maintain the engine at rated speed so that the PTO operates at the proper speed for the implement.

Put the power on the ground. Even if you have the right tractor for the right implement, there are still things you must do to make sure the tractor operates efficiently. In particular, make sure your tractor is properly ballasted and that the tires are inflated correctly. In addition to wasting fuel, improper weight and ballast can cause excessive tire wear, excessive wear on the tractor, and even power hop. Companion publication AEN-93 will give more information about how to set up a tractor.

Buy new equipment. Wouldn't it be great to always have new equipment? Of course this isn't always practical, but it is true that newer engines are more fuel efficient than older engines. Manufacturers have made significant improvements in engine technology. Many of these improvements were driven by federal emission requirements, but they have ultimately increased the fuel efficiency of the machinery. If you are purchasing a new or used tractor, you can find independent performance data for most tractors from the Nebraska Tractor Test Laboratory (<http://tractortestlab.unl.edu/>). You can find a publication that helps interpret the test reports at <http://www.ext.colostate.edu/pubs/farm-mgt/05007.html>.