

May 2014

CC271 Farm Energy Tips - Use Energy Wisely - Fuel Use

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Shelton, David P. and Bashford, Leonard L., "CC271 Farm Energy Tips - Use Energy Wisely - Fuel Use" (2014). *Historical Materials from University of Nebraska-Lincoln Extension*. 3188.

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JUN 17 1988

Farm Energy Tips



— USE ENERGY WISELY —

Fuel Use

CC271

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During 1973, at the height of the oil embargo, terms such as "energy crisis," "shortage," "fuel allocations," and "fuel rationing," were heard constantly. Now, some four years later, these terms have all but disappeared from our everyday vocabulary. In 1973 farmers were promised preferential treatment in the event of an energy emergency. Now, we get only a few minor signals that fuel supplies will be anything but adequate.

Suppose that an extremely tight energy situation suddenly developed, and fuel suppliers indicated that they could supply only 85 percent of the fuel used last year for farm production. Do you know how to stretch 850 gallons (3200 l) of fuel to do the work of 1000 (3800 l)? Do you know where your fuel is presently being consumed, and how much fuel per acre each of your operations require?

A little extra time for record keeping can prepare you for the situation described above. It is good management to know the average fuel consumption for each farming operation, as well as for each farm power unit. This information can be used to find operations or power units which consume excessive amounts of fuel.

For example, from these records, you determine that one diesel tractor consistently burns about 0.75 gallons per acre (7.0 l/ha) while disking. On the next two or three fill-ups, this same tractor, when disking, uses 1.2 gallons per acre (11.2 l/ha). The fuel consumption records tell you that the

tractor has developed a mechanical problem that might otherwise have gone undetected for some time.

Fuel consumption records can be used in other ways. For example, you might list all operations performed on a certain crop, along with fuel requirements. By knowing how many acres of that crop are grown, you can calculate how much fuel could be saved by eliminating an operation, say one disking, or by substituting an operation that requires less fuel. Using a chisel plow instead of a moldboard plow or disking at four inches (10 cm) rather than at six inches (15 cm) will reduce fuel usage.

In an on-going study by the Department of Agricultural Engineering at the University of Nebraska-Lincoln, more than 100 farmers throughout the state are keeping detailed records of their fuel usage. Many farmers are surprised to learn just how much fuel each operation requires. Many of these farmers have since begun to ask how they can conserve fuel.

These farmers are using a specially designed "Energy Use Handbook" for recording fuel use information. They also use fuel meters attached to their fuel supply tanks to measure fuel used. Each time a vehicle's fuel tank is filled, the appropriate entries are made in the handbook for that vehicle. These booklets are then collected, summarized at the University, and the results returned to the farmer.

However, a special booklet and a computer are not required to get a good idea of fuel usage (although a pocket calculator comes in handy). A good fuel meter is essential for accurate records.

DATE	OPERATION	DEPTH	CROP NAME	FUEL USED	ACRES (WORK)	SPEED (M P H)	HOURS	
							CLOCK	TRACTOR
5/10	DISKING	6"	MILO	30.3	32	4.0	7½	
6/4	CULTIVATE	2"	CORN	13.5	20	4.5	4.5	3.1
6/5	OIL CHANGE			12 quarts				2050.2

Figure 1. Field operations.

These meters are available through many farm supply stores or fuel dealers.

Figures 1 and 2 show pages and examples from the handbook farmers are using. For your own field operations records, the most important entries are operation, fuel used, acres, and hours. You might want to keep track of both tractor and clock hours, or only one of these. From these entries, you can determine such things as gallons per acre, gallons per hour, and acres per hour.

From the first line of Figure 1, you can calculate that this tractor required about four gallons per hour ($30.3 \div 7\frac{1}{2}$) for disking at six inches (15 cm). You can also determine that the working rate was 4.3 acres per clock hour ($32 \div 7\frac{1}{2}$) and it took 0.95 gallons per acre ($30.3 \div 32$).

From the second line, you can see that cultivating corn required:

0.67 gallons per acre (6.25 l/ha).

3.0 gallons per clock hour (11.4 l/hr).

4.4 gallons per tractor hour (16.7 l/hr).

4.4 acres per clock hour (1.8 ha/hr).

The third line shows that you can keep

DATE	PURPOSE OF TRIP	MILEAGE WHEN FILLED	FUEL USED	OIL ADDED	M P G (optional)
4/8	HAUL FEED	11135.8	16.5		8.2
4/9	OIL CHANGE	11140.2		6 qts.	
4/9	CHECK CATTLE	11175.3	6.3		5.6
4/10	GET PARTS	11287.8	10.5		10.7

Figure 2. Transportation.

maintenance records as well as fuel records. Here, the reading of the tractor's hour meter has been recorded.

For information on transportation vehicles (cars, trucks, and pickups) you need only to keep track of the miles travelled and fuel used. Miles per gallon are easily calculated from these figures. You may find it more economical to use the family car, where practical, than to use the four-wheel drive pickup.

We strongly urge installation of a fuel meter on each fuel tank, and the keeping of records of fuel usage. Be prepared for a few surprises—such as a truck that gets only three or four miles per gallon (0.8-1.1 km/l), or one tractor that requires twice as much fuel as another one. Use these records as a basis for management decisions. Remember, any fuel that you can save will translate directly into increased profits.

Installing fuel meters and keeping fuel consumption records will give you a good start toward "Using Energy Wisely," and getting the most from your fuel dollars. You may find that it is possible to make 850 gallons (3200 l) of fuel do the work of 1000 (3800 l).

This material was prepared and printed by the University of Nebraska, Department of Agricultural Engineering, Institute of Agriculture and Natural Resources, under a cooperative agreement with the Federal Energy Administration and the states of Nebraska and Kansas.