

Fuel Required for Field Operations

he table below contains estimates of the *average* quantity of diesel fuel required for field operations. The estimates include only the fuel required for actual field work. No allowance is included for machine preparation or travel to and from the field. Because fuel consumption values for any particular operation vary between tractors and soil type, actual fuel requirements may be as much as 35 percent higher or lower than the values listed in the table.

Engine efficiencies increase over time. Older tractors manufactured before 1990 or those in poor repair may use 10 percent or more additional fuel. Older gasoline powered equipment uses about 50 percent more gasoline than the table values indicate.

Fuel requirements for tillage machines were calculated for a central Iowa loam soil. If your soil is heavier, the values in the table should be increased slightly. Values were calculated for a 7-inch plowing depth and 3- to 6-inch operating depth for other tillage machines. Field speeds were assumed to be 4 to 6 mph for all tillage operations, 5 mph for planting and spraying, 4 to 5 mph for forage harvesting machines, and 4 mph for corn and soybean harvesting.

The values for row-crop operations were calculated for 30-inch rows. They should be adjusted for other row widths. All values were calculated assuming efficient materials handling in the field, proper tractor ballasting to keep wheel slippage below 15 percent, properly tuned and adjusted tractor engines, and partload tractor operation efficiency by shifting up a gear and throttling the engine back.

Table 1. Approximate fuel required for field operations, in gallons per acre.

Field operation	Fuel type Diesel	
Fertilization Spreading dry fertilizer, bulk cart Anhydrous ammonia (30-inch spacing)	0.15 0.55	
Tillage Shredding cornstalks Moldboardplow Subsoiler/ripper Disk-chisel plow Chisel plow Offset disk Tandem disk, plowed field Tandem disk, tilled field Tandem disk, cornstalks Field cultivate, plowed field Field cultivate, tilled field Seedbed conditioner	0.45 1.70 1.70 1.30 1.10 0.85 0.65 0.55 0.45 0.70 0.65 0.90	

Table continued on page 2

Page 2 File A3-27

Table 1. Approximate fuel required for field operations, in gallons per acre. (cont.)

Field operation	Fuel type Diesel	
Planting(30-inchrows)		
Planter, seed only, tilled seedbed	0.40	
Planter with fertilizer and pesticide attachments,	0.55	
tilled seedbed Till-planter	0.55 0.55	
No-tillplanter	0.55	
Graindrill	0.30	
Broadcast seeder	0.15	
Airdrill	0.70	
Weed control (30-inchrows)		
Sprayer, trailer type	0.10	
Rotaryhoe	0.20	
Rowcropcultivator	0.40	
Harvesting hay		
Mower	0.30	
Mower-conditioner,PTO	0.55	
Self-propelled windrower	0.45	
Rake Baler	0.25 0.40	
Daici	0.40	
Forage harvester		
Green forage	0.85	
Haylage	1.15	
Corn silage	3.25	
High-moisture ground ear corn	1.70	
Forage blower		
Green forage	0.30	
Haylage	0.25	
Corn silage	1.25	
High-moisture ground ear corn	1.70	
Combine		
Combine, soybeans	1.00	
Combine, corn	1.45	
Hauling, field plus 1/2 mile on gravel road		
Green forage	0.30	
Haylage	0.20 1.25	
Corn silage Corn grain	0.20	
Soybeans	0.20	
Hauling, add following values to those above for each add		
Green forage	0.15	
Haylage	0.20	
Corn grain	0.80 0.15	
Corn grain Soybeans	0.15 0.05	
50 y 50 cm is	0.03	