Fuel Requirements for Selected Farming Operations
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FUEL REQUIREMENTS FOR SELECTED FARMING OPERATIONS

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As the fuel and energy situation becomes more critical, farmers, fuel suppliers, and others concerned with agricultural production are encountering a need for more and better information to assist them in estimating fuel requirements, both for specific farming operations, and for the over-all operation of the total farm enterprise. This AGFACT is planned to assist in making these estimates.

Keep in mind that fuel requirements for a specific operation vary widely from one section of the state to another, and even from one farm to another. This is due to such factors as weather, variations in soil type, topography and size of fields, depth of tillage, and many others.

Management ability, and even the specific machines on an individual farm also can affect fuel requirements. For these reasons Table I shows "Average", "Low", and "High" estimates of fuel requirements on a per-acre basis. The "Average" column should fit fairly close to most normal operating conditions. There should be very few EXTREME situations that would not fall within the range bracketed by the "Low" and "High" estimates.

All figures shown in Tables I and III are based on gasoline-fueled tractors and machinery. To determine diesel fuel requirements, multiply figures in these tables by 0.70. For L-P gas, multiply by 1.20.

Many jobs around the farm, such as grinding feed, loading and hauling manure, feeding livestock, repairing or building fences, etc., require fuel, but these fuel requirements cannot readily be figured on a per-acre basis. Normally, these operations require tractor power, and the fuel requirements can be best estimated on per-hour basis. Table II shows estimated fuel consumption in gallons per hour for both gasoline and diesel powered tractors operating at approximately 75 percent of maximum load. Fuel requirements for individual tractors may vary roughly 65 percent to 150 percent of the figures shown. For jobs requiring only very light loading of the tractor engines, the fuel consumption figures shown in Table II should be multiplied by the factor 0.65.

Compiled by Robert G. White, Extension Agricultural Engineer.

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TABLE I. ESTIMATED FUEL REQUIREMENTS FOR SELECTED FARMING OPERATIONS

Operation	Gasoline, Gal. Per Acre *		
	Low	Average	High
TILLAGE OPERATIONS:			
Moldboard Plow	1.30	2.60	5.20
Chisel Plow	.80	1.60	3.20
Heavy Tandem Disk	.55	1.10	2.20
Standard Tandem Disk			
Plowed Soil, First Time Over	.45	.90	1.80
Plowed Soil, Second Time Over	.35	.70	1.40
Corn Stalks, etc.	.40	.80	1.60
Spring-Tooth Harrow	.30	.60	1.20
Spike-Tooth Harrow	.20	.40	.80
Field Cultivator	.50	1.00	2.00
PLANTING OPERATIONS:			
Row-Crop Planter (with fertilizer, etc.)			
40-Inch Rows	.45	.70	1.05
30-Inch Rows	.60	.90	1.35
Grain Drill	.35	.50	.75
Potato Planter	.90	1.35	2.00
Vegetable Planter (Direct)	.90	1.35	2.00
Transplanter	1.20	1.80	2.70
CROP CULTIVATION:			
Row Crops, First Cultivation	.40	.60	.90
Row Crops, Second Cultivation	.35	.50	.75
Vegatable Crop Cultivation	.55	.80	1.20
Rotary Hoe	.15	.25	.40
HARVESTING OPERATIONS:			
Cutterbar Mower	.40	.60	.90
Mower-Conditioner (pto)	.65	1.00	1.50
Mower-Conditioner (self-propelled)	.95	1.40	2.10
Hay Rake	.20	.30	.45
Baler, Hay	.95	1.40	2.10
Baler, Straw	.75	1.10	1.65
Forage Harvester (flail-type)			
Green Chop	2.25	3.40	5.10
Dry Hay or Straw	1.15	1.70	2.55
Forage Harvester (cylinder or flywheel type			
Haylage	2.25	3.40	5.10
Dry Hay or Straw	1.00	1.50	2.25

Table I (Continued)

Operation	Gasoline, Gal. Per Acre *		
	Low	Average	High
Row Crop			
40-Inch Rows	2.15	3.20	4.80
30-Inch Rows	2.40	3.60	5.40
Combine Harvester			
Small Grain	1.00	1.50	2.25
Pea Beans and Soybeans	1.10	1.65	2.50
Corn, 40-Inch Rows	1.20	1.80	2.70
Corn, 30-Inch Rows	1.40	2.10	3.15
Corn Picker			
40-Inch Rows	.85	1.30	1.95
30-Inch Rows	.95	1.40	2.10
Picker-Sheller and Picker-Grinder			
40-Inch Rows	1.00	1.50	2.25
30-Inch Rows	1.20	1.80	2.70
Potato Harvester	1.45	2.20	3.30
Sugar Beet Harvester	1.40	2.10	3.05
Vegetable Harvester	1.60	2.40	3.60
Tree Fruit Harvester (Shaker)	2.65	4.00	6.00
MISCELLANEOUS OPERATIONS:			
Row Crop Sprayer (each operation)	.10	.15	.25
Orchard Sprayer (each operation)	.50	.75	1.15
Stalk Shredder	.60	.90	1.35
Fertilizer Spreader (bulk, spinner)	.15	.20	.30
Anhydrous Ammonia Applicator	1.05	1.60	2.40
Vine Topper (Beets, Potatoes)	1.40	2.10	3.15
Pea Bean Puller and Windrower	.40	.60	.90
Forage Blower			
Dry Hay or Straw	.55	.80	1.20
Haylage or Corn Silage	.95	1.40	2.10

*For Diesel Fuel requirements, multiply the values for gasoline by 0.70, and for L-P Gas, multiply by 1.20. Figures do not include fuel required for hauling seed, fertilizer, et cetera, to the field nor for hauling the harvested crop from the field.

TABLE II. FUEL REQUIREMENTS FOR FARM TRACTORS

Horsepower Class (Max. Observed PTO H.P.)	Fuel Consumption, Gallons Per Hour	
	Gasoline*	Diesel Fuel*
20-39 H.P.	2.7	2.0
40-59 H.P.	4.2	2.9
60-79 H.P.	5.8	4.0
80-99 H.P.	7.6	5.3

(continued)

Horsepower Class (Max. Observed PTO H.P.)	Fuel Consumption, Gallons Per Hour	
	Gasoline*	Diesel Fuel*
100-124 H.P.	--	6.6
125-149 H.P.	--	7.9
150-174 H.P.	--	9.2
175-200 H.P.	--	10.5

* Based on operating at approximately 75 percent of maximum loading

Probably the most difficult fuel requirement to estimate is the fuel required to transport harvested crops from the field to the farmstead. In Table III, estimates have been arrived at on a "per acre, per mile" basis. The first mile is assumed to cover all loading and "in-field" hauling, while the estimates for each additional mile of hauling are assumed to be on roads, and under fairly reasonable hauling conditions. These figures are adopted to short hauls only, not to exceed 3 or 4 miles.

Field Crops are grouped into three general classifications:

1. Those which are both bulky and heavy
2. Those which are heavy, but not bulky
3. Those which are bulky, but rather light in weight

TABLE III. FUEL REQUIREMENTS FOR HAULING FARM PRODUCTS FROM FIELD TO FARMSTEAD

Commodity or Product	Gasoline, Gallons Per Acre*	
	First Mile	Each Additional Mile
Corn Silage, Haylage, Potatoes, Sugar Beets, Cherries (in water), et cetera	2.00	.75
Small Grain, Shelled Corn, Vegetable Crops, Apples (in bulk boxes), et cetera	.40	.15
Baled Hay, Straw, et cetera	.25	.10

* These figures are applicable for short hauls only, such as field-to-farmstead hauling, preferably not in excess of 3 or 4 miles.

Information contained in Tables I, II, and III do not cover all situations that will be encountered on individual farms. For operations not listed in the tables, attempt to match up the unlisted job with a similar one shown in the tables, or attempt to estimate the fuel required on a "per hour" basis, from information given in Table II.

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