

701—64.14(452A) Audit of farming operations. When, upon audit, a person claiming fuel tax credits or refunds for farming operations is unable to justify such credits or refunds with detailed records of the actual use of the motor fuel, the department will use the tables listed below to estimate the motor fuel used for farming operations.

Table I will be used to estimate the amount of fuel used in field operations if the farmer possesses adequate records to indicate actual field operations or procedures. This table reduces each field operation to the amount of fuel per acre it generally requires to complete the operation.

Table II will be used to estimate the amount of motor fuel needed to produce one acre of each crop if the farmer does not possess adequate records to indicate actual field operations.

Table III will be used to estimate the fuel needed for livestock feeding operations.

Table IV will be used to estimate the fuel needed for cleaning operations used in livestock feeding operations.

Table I. Fuel Required for Various Field Operations Under Typical Iowa Conditions

Field Operation	Gallons/Crop Acre	
	Gasoline	Diesel
FERTILIZATION		
Spreading dry fertilizer, bulk cart	0.22	0.14
Anhydrous ammonia (30-inch spacing)	1.17	0.75
TILLAGE		
Shredding cornstalks	1.01	0.64
Moldboard plow	3.06	1.95
Chisel plow	1.87	1.20
Offset disk	1.51	0.96
Powered rotary tiller	2.60	1.60
Tandem disk, plowed field	1.05	0.67
Tandem disk, tilled field	0.89	0.58
Tandem disk, cornstalks	0.68	0.44
Field cultivate, plowed field	1.30	0.83
Field cultivate, tilled field	1.19	0.76
Spring-tooth harrow, plowed field	0.79	0.50
Spring-tooth harrow, tilled field	0.71	0.46
Peg-tooth harrow, tilled field	0.20	0.13
PLANTING (30-inch rows)*		
Planter only, tilled seedbed	0.54	0.35
Planter w/fert. and pesticide attach., tilled seedbed	1.00	0.65
Till-planter (sweep)	0.85	0.55
No-till planter (fluted coulter)	0.73	0.48
Harrow-plant combination	1.74	1.11
Rotary strip-till-plant	2.36	1.51
Grain drill	0.67	0.44
WEED CONTROL (30-inch rows)*		
Sprayer, trailer type	0.22	0.13
Rotary hoe	0.27	0.17
Sweep cultivator	0.74	0.47
Rolling cultivator	0.62	0.40
Sweep cultivator, w/disk hillers	0.79	0.51

Field Operation	Gallons/Crop Acre	
	Gasoline	Diesel
Powered rotary cultivator	1.14	0.73
HARVESTING		
Cutterbar mower	0.57	0.35
Hay conditioner, trailed	0.60	0.37
Mower-conditioner, PTO	0.88	0.57
SP windrower	1.00	0.65
Rake	0.40	0.25
Baler	0.77	0.50
Stack-forming wagon	0.87	0.55
Forage harvester		
Green forage	1.70	1.09
Haylage	2.30	1.46
Corn silage	7.06	4.51
High-moisture ground ear corn	3.43	2.20
Forage blower		
Green forage	0.57	0.37
Haylage	0.40	0.26
Corn silage	2.25	1.44
High-moisture ground ear corn	0.71	0.46
Combine, soybeans	2.29	2.41
Combine, corn	3.15	2.05
Corn picker	1.54	1.00
Hauling, field + ½ mile on graveled road		
Green forage	0.61	0.39
Haylage	0.33	0.22
Corn silage	2.22	1.55
Corn grain	0.33	0.22
Soybeans	0.13	0.09
Hauling, add following values to those above for each additional mile on gravel		
Green forage	0.22	0.16
Haylage	0.33	0.22
Corn silage	1.44	1.00
Corn grain	0.33	0.17
Soybeans	0.08	0.06

*Reduce fuel used by 10% for 40-inch row spacings, with plantings and cultivating operations

Table II. Estimates of Fuel Burned for Crop Production Under Average Soil and Weather Conditions in Iowa

Crop Production	Fuel Used Gallons/Crop Acre	
	Gasoline	Diesel
CROPPING SYSTEM		
Corn—conventional methods	10.50	7.60

Crop Production	Fuel Used Gallons/Crop Acre	
	Gasoline	Diesel
Corn—plowing with minimum tillage planting	8.35	5.95
Corn—no plowing minimum	6.65	4.75
Corn harvested and stored as whole-plant silage		
Conventional methods	13.30	9.60
Plowing with minimum tillage	11.10	8.00
No plowing minimum tillage	9.45	6.75
Small grains—oats, barley, rye, wheat, etc.	4.70	3.35
Soybeans—conventional methods	10.00	7.20
Small grains—with plowing	7.20	5.20
Hay—dry cured, 3 cuttings, baled	13.30	9.60
Haylage—3 cuttings or dry chopped	20.00	14.43
Using combined type cutting with self-propelled cut, crush, window implement		
Hay—3 cuttings	8.00	5.75
Haylage—3 cuttings	14.65	10.55
Corn drying—		
with favorable drying conditions	1 gallon propane will dry 7 bushel	
with good drying conditions	1 gallon propane will dry 6 bushel	
with unfavorable drying conditions	1 gallon propane will dry 5 bushel	

Table III. Estimates of Fuel Burned for Livestock Feeding Operations Under Typical Iowa Conditions

Livestock Production (includes all fuel used to remove feed from storage, process and deliver to feeders)		Fuel Used Gallons/Animal or 100 birds produced	
Animal	Feeding Period	Gasoline	Diesel
Swine	Raise 1 pig to market including feeding sow and boar	0.45	0.33
Dairy	Cow milking 9,000 lbs. milk/year	1.11	0.83
	Cow milking 12,000 lbs. milk/year	1.50	1.11
	Heifer—1 year	0.45	0.33
Beef	Steers—grown from 400 to 1200 lbs.	2.00	1.44
	Heavy steers—grown from 700 to 1200 lbs.	1.11	0.83
	Heifers—grown from 400 to 850 lbs.	1.50	1.11
	Yearlings—grown from 650 to 1200 lbs.	1.95	1.39
	Cows—winter and raise calf to 400 lbs.	1.00	0.72
Sheep	Lambs—native, from birth to market	0.67	0.50

	Feeder lambs—50 lbs. to market	0.14	0.11
Poultry*	Raise 100 broilers from birth to market	0.83	0.61
	Raise 100 pullets from birth to laying	3.00	2.16
	Layers for 1 year—100 birds	8.30	6.00
	Raise 100 turkeys from birth to market	8.30	6.00

*Does not include fuels used for brooding of pigs, chicks, or poults.

Table IV. Estimates of Fuel Burned for Cleaning Lots and Barns and Hauling for Field Spreading under Typical Iowa Conditions

Type of Livestock Operations	Fuel Used Gallons/Animal Produced	
	Gasoline	Diesel
Cleaning beef feedlots with bedding used in housing		
Per animal marketed	2.50	1.78
Cleaning beef feedlots, no bedding used in housing; for feedlots holding up to 1,000 cattle at one time		
Per animal marketed	1.39	1.00
Cleaning beef feedlots without housing, 1,000 to 4,999 cattle on feed at one time		
Per animal marketed	0.56	0.39
Cleaning beef feedlots, without housing, over 5,000 cattle on feed at one time		
Per animal marketed	0.45	0.33
Cleaning dairy buildings and lots with bedding used in housing (includes scraping lots) per year		
For each milk cow in herd	7.50	5.40
Cleaning dairy buildings with liquid manure* collection, storage and hauling, per year		
For each milk cow in herd	10.00	7.20
Cleaning swine confinement finishing barns with liquid manure* system, haul and spread		
Per pig raised to market	0.45	0.33
Cleaning swine finishing barns and lots; may be bedded		
Per pig raised to market	0.33	0.25
Cleaning sow housing, per year		
For one sow (includes cleaning farrowing house)	2.90	2.10

*If liquid manure is field injected into the soil to meet EPA or Iowa standards to control pollution, add 20% to the amount of fuel required.

This rule is intended to implement Iowa Code section 452A.17.