TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE — SOIL CONSERVATION SERVICE

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ENERGY CONSERVATION - FUEL EFFICIENCY

The following information was transmitted by National Bulletin No. 190-1-21 dated February 11, 1981, and provides data SCS employees can use in conservation planning with land users to help them conserve fuel energy.

With increasing fuel costs, more and more land users will be interested in alternative tillage systems. The calculated changes in fuel consumption can easily be converted into dollars per acre by using the current cost of fuel.

The table on the next page showing amounts of fuel required for many field operations is based on data from "hundreds of farmers" according to Tom Curl who reported these Iowa State University figures in Progressive Farmer, 11/80. This data is dependable for the Southwest as well as the Midwest and elsewhere.

The following simplified example shows how savings can be achieved with different tillage practices.

Conventional tillage - Corn for Grain	6.3	gallons diesel fuel per acre. (gpa)
No till - Corn for Grain		
Spread fertilizer	0.15	gpa
Plant (fluted Coulters and Herbicide) . .	0.50	
Harvest	1.60	
	2.25	gallons diesel fuel per acre
Savings	4.05	gal. (66%)

Savings can vary as much as 35 percent depending on tractor size, wheel slippage, and soil type. Care should be exercised to only analyze one type of fuel. Multiply the saved gallons by the current cost to determine the amount of savings per acre.

Prepared by Walt Bunter, State Agronomist, Plant Science Staff, Soil Conservation Service, Davis, California

FUEL REQUIRED FOR FIELD OPERATIONS

Field Operation	Gallons Per Acre	
	Gasoline	Diesel
Fertilization		
Spreading dry	0.20	0.15
Anhydrous Ammonia (30" rows)	0.80	0.60
Tillage		
Shredding Cornstalks	0.70	0.50
Moldboard Plow	2.70	1.90
Chisel Plow	1.70	1.20
Offset disc	1.35	0.95
Powered Rotary Tiller	2.30	1.60
Tandem disc, plowed field	1.00	0.70
Tandem disc, tilled field	0.85	0.60
Tandem disc, cornstalks	0.70	0.50
Field-cultivate, plowed field	1.15	0.80
Field-cultivate, tilled field	1.00	0.70
Springtooth harrow, plowed field	1.00	0.70
Springtooth harrow, tilled field	0.85	0.60
Pegtooth harrow, tilled field	0.45	0.30
Planting (30 inch row)		
Planter, seed only, tilled seedbed	0.65	0.45
Planter with fertilizer and pesticide and attachments, tilled seedbed	0.85	0.60
Till-planter (sweep)	0.85	0.60
No till planter (fluted Coulter)	0.70	0.50
Harrow-plant Combination	1.30	0.90
Rotary strip till-plant	1.50	1.05
Grain drill	0.50	0.35
Broadcast seeder	0.20	0.15
Weed Control (30 inch rows)		
Sprayer, trailer type	0.15	0.10
Rotary hoe	0.30	0.12
Sweep Cultivator	0.65	0.45
Rolling Cultivator	0.60	0.40
Cultivator with disc hillers	0.65	0.45
Powered rotary cultivator	1.00	0.70

Other Similar Operations You Want To Add:

FUEL REQUIRED FOR FIELD OPERATIONS

Field Operation	Gallons Per Acre	
	Gasoline	Diesel
Harvesting		
Cutterbar mower	0.55	0.35
Mower-conditioner, pto	0.85	0.60
Self-propelled windrower	0.70	0.50
Rake	0.35	0.25
Baler	0.65	0.45
Stack-forming wagon	0.70	0.50
Forage harvester		
Green forage	1.35	0.95
Haylage	1.80	1.25
Corn silage	5.20	3.60
High moisture ground ear corn	2.75	1.90
Forage blower		
Green forage	0.50	0.35
Haylage	0.35	0.25
Corn Silage	2.00	1.40
High-moisture ground ear corn	0.65	0.45
Combine, soybeans	1.70	1.10
Combine, corn	2.35	1.60
Corn picker	1.75	1.15
1/Grain drying, corn	10.90	7.50
Hauling, field plus 1/2 mile on graveled ro		
Green forage	0.55	0.35
Haylage	0.30	0.20
Corn Silage	2.00	1.40
Corn grain	0.30	0.20
Soybeans	0.12	0.08
Hauling, add following values to those above for each additional mile on gravel road		
Green forage	0.20	0.14
Haylage	0.30	0.20
Corn Silage	1.30	0.90
Corn grain	0.20	0.15
Soybeans	0.07	0.05

Other Harvesting Operations You Want To Add:

1/ Note that grain drying requires considerable fuel, thereby, presenting an excellent opportunity to exercise some alternatives.