Table 1. Inputs and outputs per acre and energy ratios for mixed crop and livestock farms.

	<u>P</u>	er acre of cropla	and	Farm	Energy ratio
Farms	Marketed crops (C)	All marketed outputs (O) ^a	All purchased inputs (I) ^b	energy ratio (O/I)	of marketed crops to outputs (C/O)
		— million Btu -		-	unitless ———
Sunshine Farm					
Without photovoltaic array	5.5	5.8	3.4	1.7	0.95
With photovoltaic array	5.5	5.8	3.3	1.8	0.95
Pennsylvania dairy farmi	2.4	3.5	2.0	1.8	0.69
Groups of Amish farms ^c					
2 groups (PA) ⁱⁱ	0.7-0.9	2.8-6.6	3.3-9.4	0.7-0.8	0.14-0.25
4 groups (PA, WI, IL) ⁱⁱⁱ		2.1-5.1	1.3-5.2	1.0-1.6	
Groups of conventional far	rms ^c				
3 groups (PA) ⁱⁱ	0.8-1.6	5.5-6.9	13.2-17.5	0.4^{d}	0.14-0.29
3 groups (PA, WI)iii		2.7-4.9	8.3-9.8	0.3-0.6	_
Group with greatest marketed output (IL)iii	10.9	18.4	9.2	2.0	0.59

^a Outputs from crops and animals.

^b Inputs for crops, animals, and things used on the farm.

^c The reported data are averages for individual groups, not unaveraged numbers for individual farms, and are given as ranges of averages. States are indicated in parentheses.

^d The ratio was the same, by coincidence, for the three groups of farms defined by dairy herd size.

Table 2. National energy ratio of marketed outputs to purchased inputs for farming in the US and UK^1 and in other countries.

	3 7. ()	Energy
Country	Year(s)	ratio
US	1940	2.3
	1970	0.9
	1974	1.0
UK	1950	0.4
	1972	0.3
Israel	1969-70	0.3
Netherlands	1964-65	0.5
France	1970	0.7
China	1978	1.2
New Zealand	1978-79	1.4
Egypt	1972-74	1.8
Pakistan	1977	2.9
Australia	1965-69	3.1a

^a A ratio of 2.8 has also been calculated.^v

Table 3. Energy ratio of output to input for various energy sources.

Nonrenewable fossil fuels vi Oil & natural gas (US wellhead) Discoveries – 1940s	Energy source	Energy ratio
Discoveries − 1940s − 1970s >100 − 1970s Production of earlier discoveries − 1970s − 1980s 20 − 1980s Coal − 1950 (US mine) − 1970 (US mine or strip) 30 Renewable fuels Sthanol (grain, sugarcane, crop residues) vi − 2.6 Ethanol (grain, sugarcane, crop residues) vi − 2.6 0.7-1.8 Methanol (tree plantation) vi − 2.6 2.6 Vegetable oil (precursor to biodiesel) vii − 1.8-4.6 1.8-4.6 Biomass tree crops (fertilized) vii − 1.1-12 1.1-12 Biomass herbaceous crops (fertilized) vii − 2.5 1.1-12 Biomass crop, then gasification viii,x 2.5 Anaerobic digester biogas (8 countries) vi 1.5-3.1 Solar flat-plate collectors (heat) vii 2.5 Non-solar electricity production vi 2.5 Coal-fired, US average 9 Western surface coal − no scrubbers − scrubbers − scrubbers 6 − scrubbers 2.5 Natural gas-fired vii 2.3 Nuclear light-water reactor 4 Solar-related electricity production Photovoltaic arrays vi 1.7-10 Parabolic-thermal collectors xiii 3-8 <t< td=""><td>v v</td><td></td></t<>	v v	
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$\begin{array}{c} \text{Coal} - 1950 (\text{US mine}) \\ - 1970 (\text{US mine or strip}) \\ \hline 30 \\ \hline \\ \textit{Renewable fuels} \\ \hline \\ \text{Ethanol (grain, sugarcane, crop residues)}^{\text{vi}} & 0.7-1.8 \\ \hline \\ \text{Methanol (tree plantation)}^{\text{vi}} & 2.6 \\ \hline \\ \text{Vegetable oil (precursor to biodiesel)}^{\text{viii}} & 1.8-4.6 \\ \hline \\ \text{Biomass tree crops (fertilized)}^{\text{viii}} & 6-13 \\ \hline \\ \text{Biomass herbaceous crops (fertilized)}^{\text{viii}} & 2-5 \\ \hline \\ \text{Anaerobic digester biogas (8 countries)}^{\text{vii}} & 2-5 \\ \hline \\ \text{Anaerobic digester biogas (8 countries)}^{\text{vii}} & 2-5 \\ \hline \\ \text{Non-solar electricity production}^{\text{vi}} & 2-5 \\ \hline \\ \text{Non-solar electricity production}^{\text{vi}} & 2-5 \\ \hline \\ \text{Non-solar electricity production}^{\text{vi}} & 2-5 \\ \hline \\ \text{Natural gas-fired}^{\text{vii}} & 2-5 \\ \hline \\ \text{Natural gas-fired}^{\text{vii}} & 2-5 \\ \hline \\ \text{Natural gas-fired}^{\text{vii}} & 2-5 \\ \hline \\ \text{Nuclear light-water reactor} & 4 \\ \hline \\ \text{Solar-related electricity production} \\ \hline \\ \text{Photovoltaic arrays}^{\text{vi}} & 2-3 \\ \hline \\ \text{Nucleor bermal collectors}^{\text{vii}} & 3-8 \\ \hline \\ \text{Wind turbines}^{\text{vii},\text{vxv}} & 3-18 \\ \hline \\ \text{Conventional or small hydroelectric}^{\text{xvi}} & 10-12 \\ \hline \\ \text{Biomass-fired (plus crop production)}^{\text{viii,xviii}} & 3-3-3 \\ \hline \\ \text{With advanced cogeneration}^{\text{viii,xviii}} & 8-9 \\ \hline \\ \hline \\ \text{Energy conservation} \\ \hline \\ \text{Double-pane windows}^{\text{vix}} & 136 \\ \hline \\ \text{Ceiling insulation}^{\text{vix}} & \frac{136}{61} \\ \hline \end{array}$		
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	Passive solar housing xii	10-25

Energy in Agriculture and Society: Insights from the Sunshine Farm, Marty Bender, 3/28/01 http://www.landinstitute.org/texis/scripts/vnews/newspaper/+/ART/2001/03/28/3accb0712

Notes for Tables 1-3.

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