UNIVERSITY OF FLORIDA

Florida Cooperative Extension Service

Energy for Florida Egg Production[1]

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Energy Facts

Florida Egg Production

*There are about 10,500,000 laying hens .
Statewide, uses 4.39 trillion Btu of energy,
3.6% of all energy used in Florida agriculture.
Per dozen eggs, uses 21,600 Btu of energy.
$30 return per million Btu of energy used.*

Eggs are produced in Florida by about 10,500,000 laying hens (1990). Layers rank seventh among all Florida agricultural commodities in direct energy requirements and tenth in total primary energy requirements. Layers require 4.3% of the direct and 3.6% of the total primary energy required for all Florida production agriculture.   Statewide, egg production accounts for 1.65 trillion Btu of direct energy and 4.39 trillion Btu of total primary energy.

The annual amount of direct energy for egg production according to FAECM is 15.6 million Btu/100 layers and the total primary energy is 44.2 million Btu/100 layers. This is 7,600 Btu (equivalent to 0.06 gallons of diesel fuel) of direct energy per dozen eggs produced and 21,600 Btu (equivalent to 0.16 gallons of diesel fuel) of total primary energy per dozen eggs.   The major energy inputs for egg production are "other costs" (46%), gasoline (33%), electricity (7%), and labor (6%). "Other costs" for layers consists of such inputs as feed, replacement pullets, housing and capital equipment, and repairs (Figure 1, Table 2).

Comparison of the value of egg production with its energy requirements shows that the value per million direct Btu of $81 is somewhat below the average for all Florida agriculture production of $136. The value per million total primary Btu of $30 is also somewhat below the state's average of $44.   The consumer is purchasing a higher than average invested energy when purchasing eggs than when purchasing the average complement of Florida agricultural products. The producer may find that when energy prices increase, eggs will become less competitive than the average Florida agricultural product, unless egg production can be made more energy efficient.

FLORIDA AGRICULTURE PRODUCTION ENERGY

The data presented in this fact sheet were developed using the Florida Agricultural Energy Consumption Model (FAECM), a computer model. FAECM uses acres of production or livestock numbers and the energy used to make the production inputs required per acre or per head to quantify the *primary* energy used in Florida for agricultural production. This *primary* energy consumption includes fuels, lubricants and electricity, called *direct* energy inputs, as well as the energy used in providing all production inputs (*indirect* energy inputs).

It takes energy to drill an oil well, pump the crude oil out, refine it and transport the diesel fuel to the grower. It takes the energy in the natural gas feedstock plus the energy used to construct the production plant, power the production plant and drive the truck to get the nitrogen fertilizer to the grower. FAECM quantifies the eight direct energy sources (diesel fuel, LP gas, etc.), the indirect energy used to make those eight energy sources available and the indirect energy used to provide thirteen major agricultural inputs (nitrogen fertilizer, pesticides, etc) to determine the energy required to produce agricultural commodities in Florida.

In total, FAECM is a model that predicts all the energy required to provide all inputs necessary, up to the farm gate, for all of Florida's agricultural production, FAECM does not address energy requirements for any transportation, packing, processing, distribution or other functions provided for agricultural commodities after they leave the farm gate.

FAECM shows that direct energy inputs for Florida agricultural production have remained relatively constant since 1974 (Figure 1). Variations are due mainly to changes in commodity production levels and a changing mix of commodities produced. The reduction in total primary energy is due primarily to increases in energy efficiency of industrial production systems for agricultural production inputs.

Florida consumed 66% more energy in 1990 than in 1974, due in large measure to its increased human population. Florida agricultural production energy, expressed as a percentage of the rapidly increasing Florida total energy consumption, has decreased sharply from 7.8% in 1974 to 3.9% in 1990.
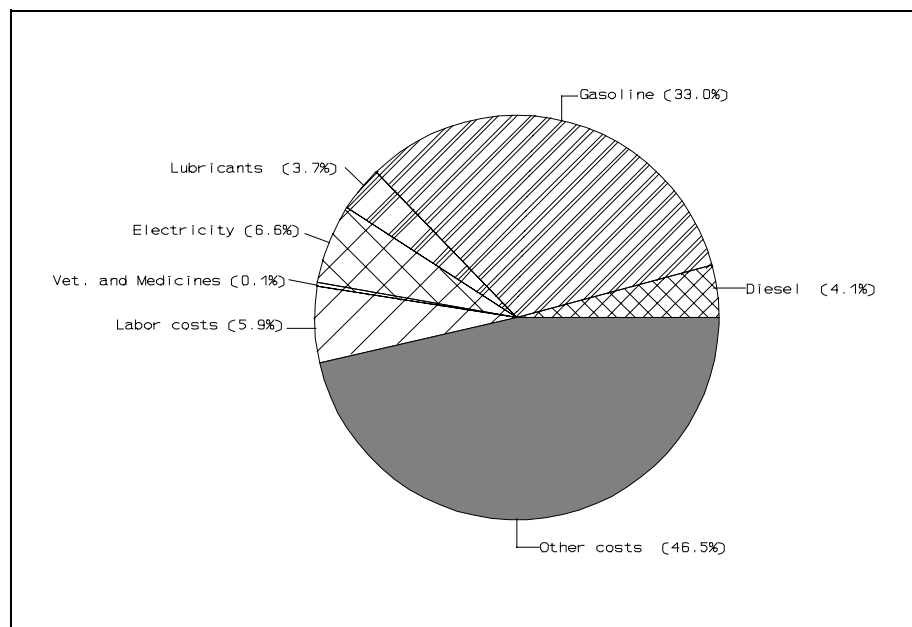

Figure 1. Primary energy inputs for Florida egg production.

Table 2. Primary energy inputs for Florida egg production.

Energy Inputs	%
Other costs	46.5
Gasoline	33.0
Electricity	6.6
Labor	5.9
Diesel	4.1
Lubricants	3.7
Veterinary and medicines	0.1

FLORIDA AGRICULTURAL PRODUCTION ENERGY

Total Primary Energy

Direct Energy

Trillion BTU'S

160
140
120
100
80
60
40
20

1970   1975   1980   1985   1990

YEARS