UNIVERSITY OF FLORIDA
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Energy for Florida Corn for Grain[1]

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Energy Facts

Florida Corn (Grain)

105,000 acres, 4.3% of the cropped land.
Statewide, uses 1.83 trillion Btu of energy,
1.5% of all energy used in Florida agriculture.
Per bushel, uses 254,900 Btu of energy.
$8 return per million Btu of energy used.

Corn was grown on about 105,000 Florida acres in 1990 and ranks nineteenth among all Florida agricultural commodities in direct energy requirements and fifteenth in total primary energy requirements. Corn requires 1.0% of the direct and 1.5% of the total primary energy required for all Florida production agriculture. Statewide, corn production accounts for 0.39 trillion Btu of direct energy and 1.83 trillion Btu of total primary energy.

The amount of direct energy for corn production according to FAECM is 3.72 million Btu/acre and the total primary energy is 18.1 million Btu/acre. This is 52,400 Btu (equivalent to 0.38 gallons of diesel fuel) of direct energy per bushel of corn produced and 254,900 Btu (equivalent to 1.82 gallons of diesel fuel) of total primary energy per bushel. The major energy inputs for corn production are nitrogen (44%), "other costs" (17%), diesel fuel (13%), electricity for irrigation (6%) and gasoline (6%). "Other costs" includes such inputs as seed, repairs, and fixed costs (Figure 1, Table 2).

Comparison of the value of corn production with its energy requirements shows that the value per million direct Btu of $37 is only 27% of the average for all Florida agriculture production of $136. The value per million total primary Btu of $8 is also far below the state's average of $44. Corn production occurs in conjunction with livestock production, and this combination exhibits a higher product value per energy input than corn alone.

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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.

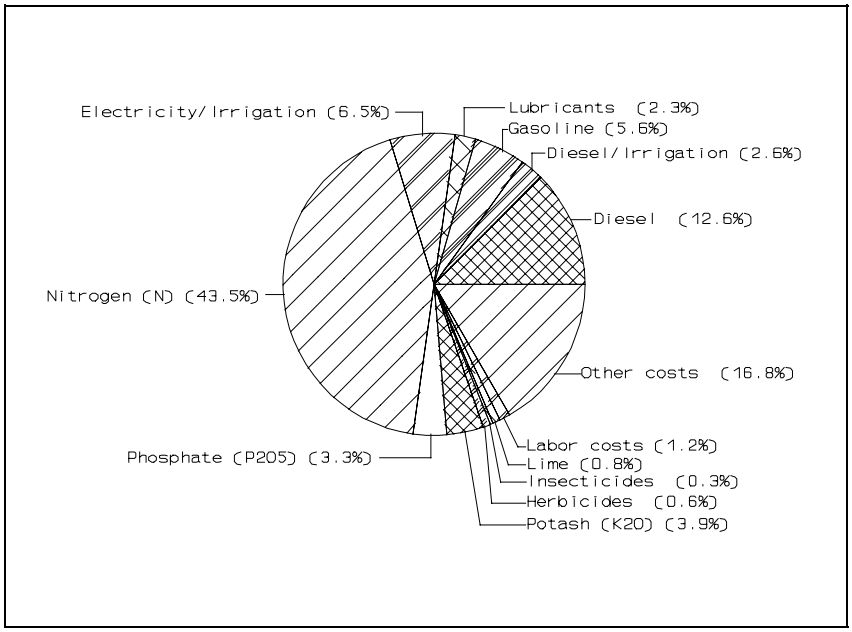

Figure 1. Primary energy inputs for Florida corn (grain) production.

Table 2. Primary energy inputs for Florida corn for grain production.

Energy Inputs	%
Nitrogen	43.5
Other costs	16.8
Diesel for non-irrigation	12.6
Electricity for irrigation	6.5
Gasoline	5.6
Potash	3.9
Phosphorus	3.3
Diesel for irrigation	2.6
Lubricants	2.3
Labor	1.2
Lime	0.8
Herbicides	0.6
Insecticides	0.3