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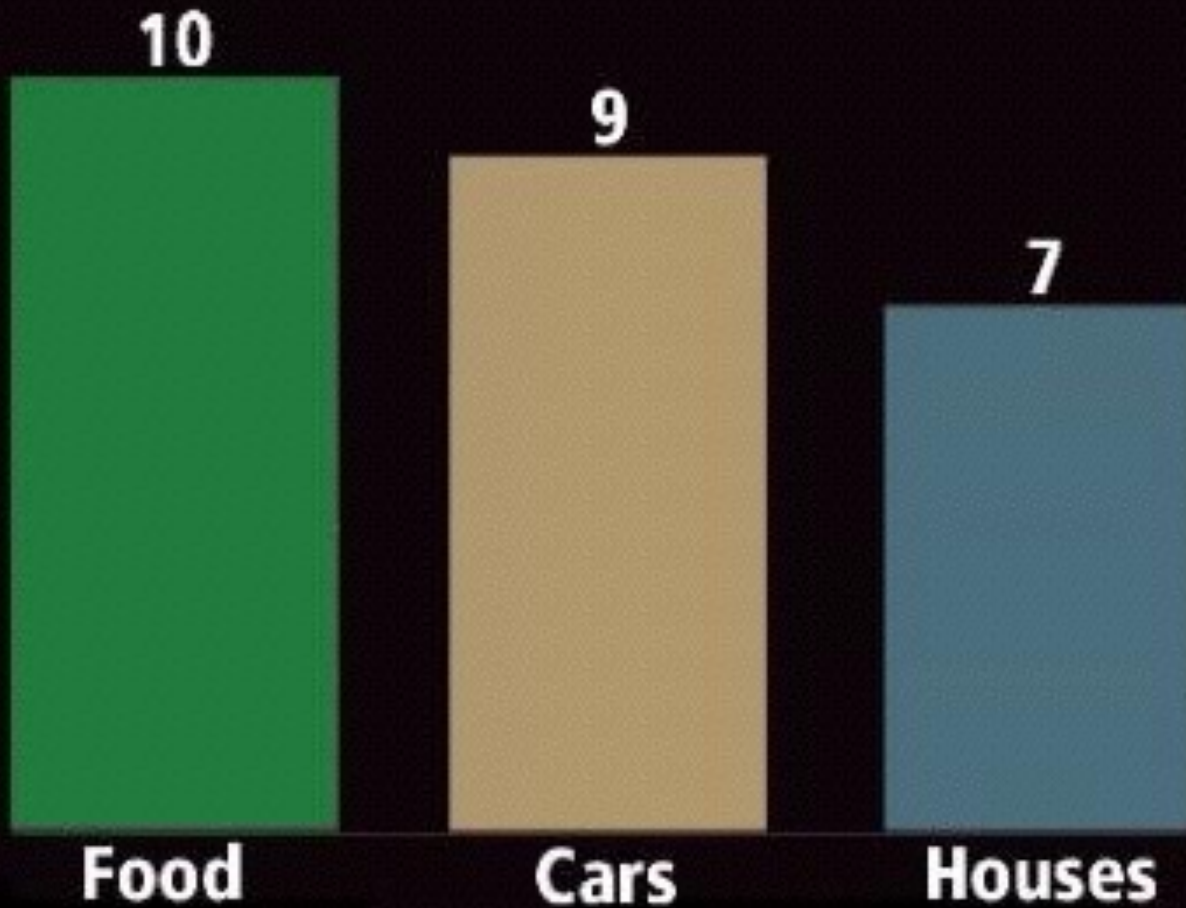


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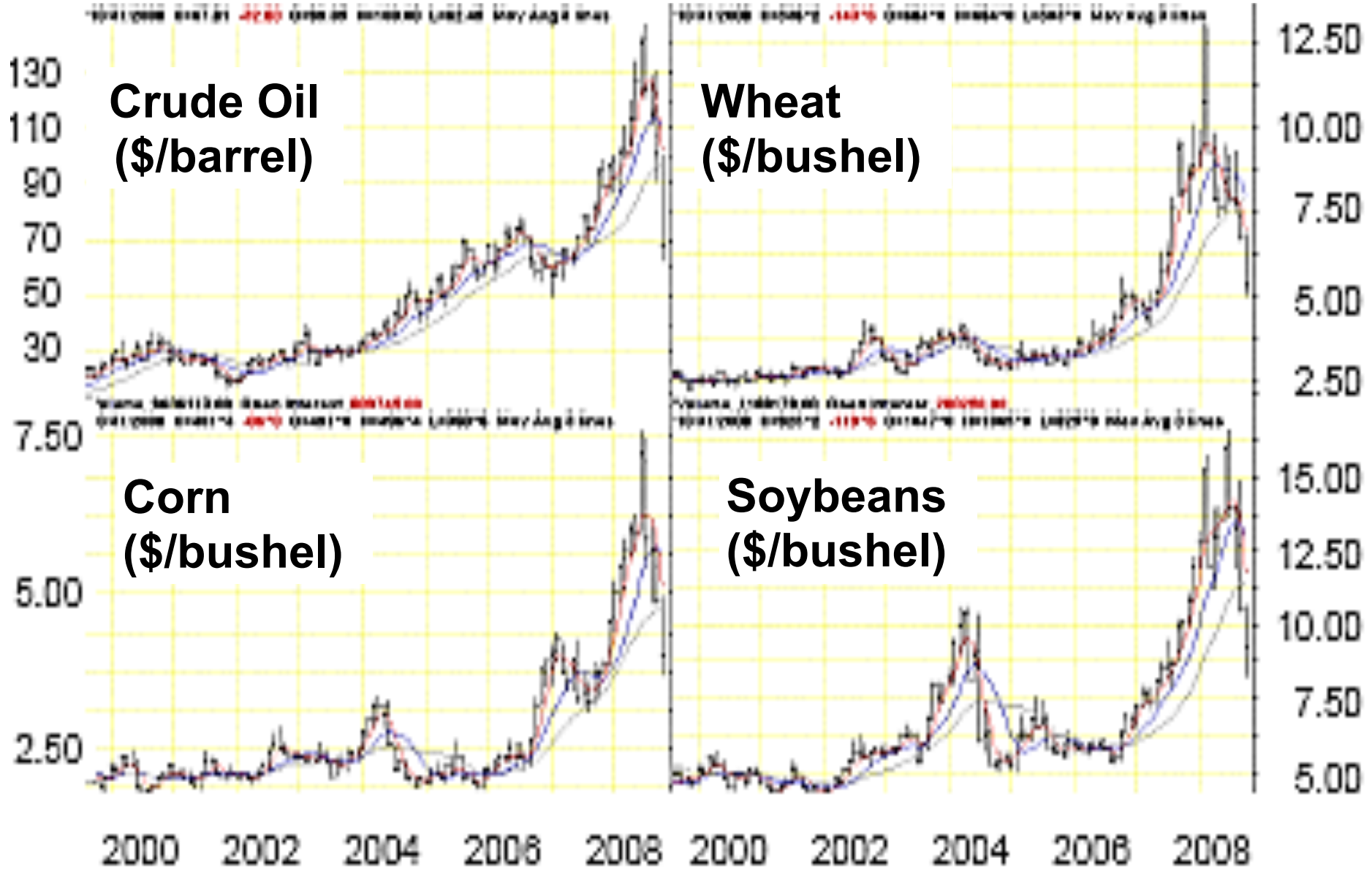


U.S. Per Person Barrels of Oil Equivalent Used (yearly)



0 Oil Equivalents/Person

Oil and Food Prices in lock Step



Fossil Fuel Inputs for Global Ag Biz

10 units of fossil energy = 1 unit of food energy

- 28% for the manufacture of fertilizer
- 20% for the operation of field machinery
- 10% for farm and wholesale transportation
- 11% for irrigation
- 9% for processing
- 10% for retail distribution
- 8% for miscellaneous

100% Total

Solar/Electric Small Farm

.01 units of fossil energy for = 1 unit of food energy

- **0%** for the operation of field machinery
- **0%** for farm and wholesale transportation
- **0%** for irrigation
- **0%** processing
- **0%** retail distribution
- **1%** miscellaneous

1% of Global Ag Biz

Solar Charged Electric Tractors



Tractors require weight for traction



Solectrac™



Batteries provide useful weight for traction



E- Porsche and E-Tractor '93



E-tractors Built in Ft. Bragg shop '94



Built for Ford-New Holland '95

Solectrac™



Onboard inverter for mobile AC power

Heckerth, 07-08-96



**Scratch-built with wheel motors, adjustable seat and solar shade canopy 1996
First use of linear actuators, exchangeable battery packs and remote control**



Solectrac™



Heckeroth, 06-20-98

Scratch-Built Crawlers 2008 - 2010



Good for low compaction and high traction but had low operating efficiency



Solectrac™

Heckerroth, 10-08-07



Before poisons and inefficient hydrostatic drive there were high clearance, adjustable track cultivating tractors like the Allis Chalmers 'G'. The 'G's' was 10 HP and had no PTO





Prototype #1: AC motor; lead acid batteries; used transmission; no front hitch



Prototype #2: DC motor; Lithium batteries; used transmission; front, mid & rear hitch



Prototype #3: AC motor; Lithium batteries; used transmission; front, mid & rear hitch



Prototype #4: AC motor; Lithium batteries; NEW transmission; HC; front, mid & rear hitch



Short wheel base; 20" clearance; good forward visibility; complete roll cage; 8 speeds forward and reverse; front, mid and rear Category 1, 3 pt. hitches with rear PTO and adjustable track from 44" to 72"



**The eFarmer
is made for
organic row
crop farms**





Unloading the eFarmer at the International Testing Lab with the exchangeable pack on the mid hitch and loader bucket on the front hitch



Battery Exchange and Implement Motor Connectors Front and Rear with No Exposed Cables



Category 1, Three Point Hitches Front, Mid and Rear Operated by Linear Actuators at 20 Times More Efficiency Than Hydraulics with No Toxic Fluids



Exchangeable battery pack can be quickly mounted on any hitch for extended run time



Rear hitch with PTO can carry and power any Category 1 implement



Three Hitches can do 3 tasks with on pass



**Solectrac is also manufacturing an Electric Utility Tractor
The eUtility can be used on: small farms, large indoor
equestrian arenas, commercial greenhouses, vineyards,
hobby farms, and livestock operations.**



The eUtility can replace any 25 – 40 diesel tractor. It has Category 1 three point hitch and a 540 rpm PTO

Land Area and Water Needed to Fuel Farm Traction without Oil

	Land	Water
40 Acre Horse Farm <small>* New Mexico Horse Council</small>	20-80 Acres Pasture for 2 Horses 1-5 Acres Winter Feed	Over 300,000 gallons
40 Acre Bio-Fuel Farm <small>* Missouri Ag extension</small>	10 Acres Soy Beans for 600 gal	30,000 gallons
40 Acre Solar/Electric Farm	.05 Acres of Barn Roof	No Water

Barn Roof Power Plants

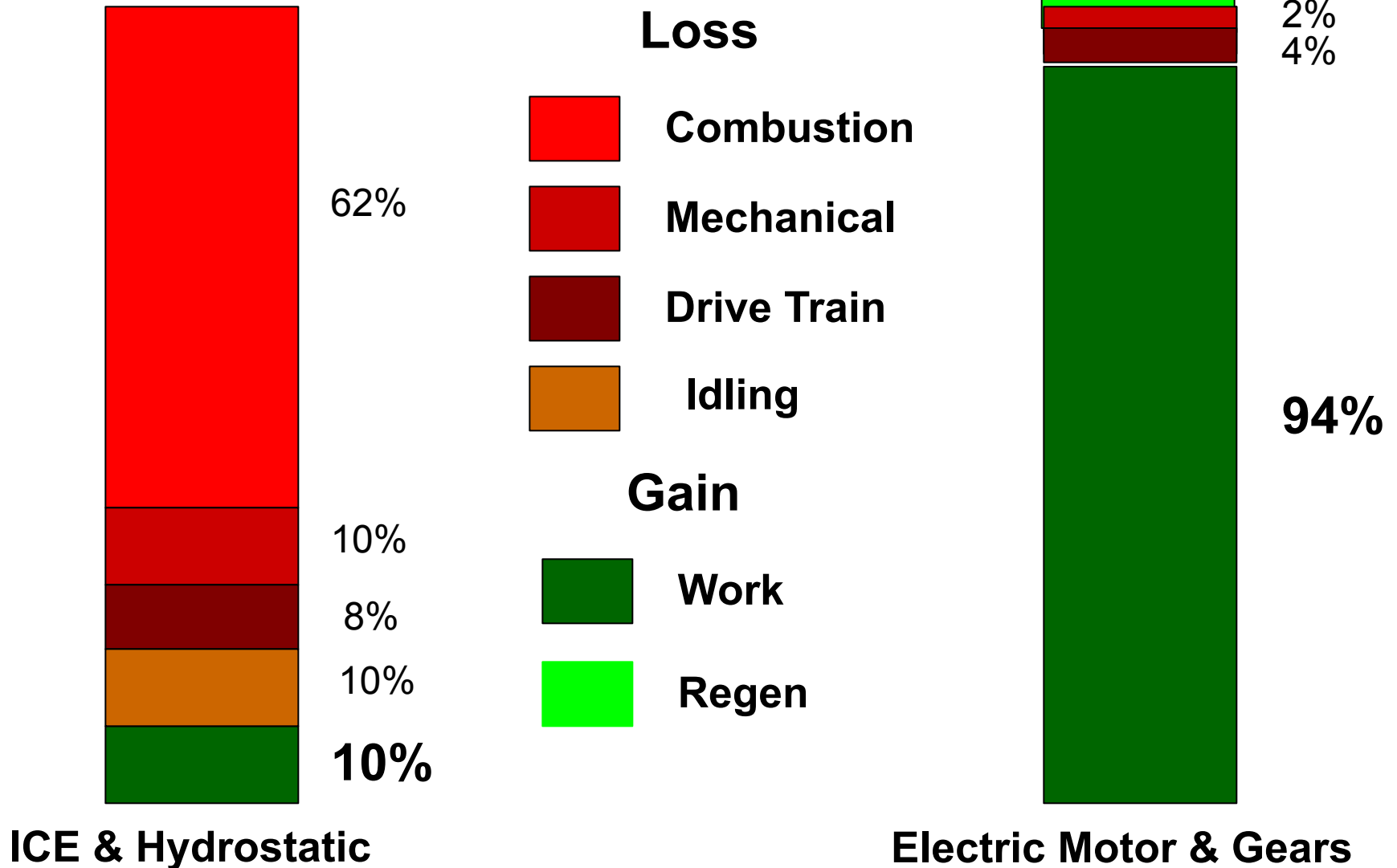


Heckeroth Homestead '93



The Mother Earth News 2006

Drive Train Efficiency



Comparing Fossil Fuel with Solar Charging

Vehicle Type & Fuel Source



Combustion



Electric tractor & 1.5 kW PV

Liquid fuel used
300 hrs/yr for 25 yrs

7,500 gals

ZERO

Energy used 25 yrs

250 MWh

60 MWh

Fuel cost/hr

\$10.00

\$0.80

Fuel cost/yr

\$3,000

\$240

Fuel cost over 25 yrs
\$10.00/gal, \$4/watt

\$75,000

\$6,000 *

CO₂ / 25 years

100 tons

trace

Assumptions average next 25yrs : 1 gal/hr, \$10.00/gal, 30kWh/gal, 28lbs CO₂/gal,

* Current installed cost and performance for 3 kW PV w/ 25 year warranty