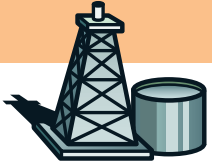








| BIOFUEL | WHAT'S IT COST? (per gallon, summer 2007) | HOW MUCH ARE WE MAKING? (gallons of expected U.S. production, 2007) | HOW MUCH CAN WE MAKE? (gallons, capacity under construction) | HOW MUCH LAND WOULD IT TAKE to replace 5% of U.S. gasoline consumption? | WHAT'S GOOD ABOUT IT? | WHAT'S BAD ABOUT IT? | WHO'S BACKING IT? | HOW MUCH WOULD IT REDUCE GLOBAL WARMING? (percentage of greenhouse gases compared with petroleum) |
|---|---|---|---|---|---|---|---|---|
| GASOLINE & PETROLEUM DIESEL (for comparison)  | \$3.08 (gasoline); \$2.79 (diesel) | 136 billion (gasoline); 63 billion (diesel) (refinery yield) | 143 billion (gasoline); 67 billion (diesel) (figures are 2012 estimates) | In 2006, the United States consumed 142 billion gallons of gasoline and 49 billion gallons of diesel | Large supplies (for the moment). Massive industrial infrastructure in place. | Releases ancient carbon into the atmosphere, causing warming of the planet. Nonrenewable. Domestic production degrades wildlands; foreign production harms national security. Diesel soot is a major pollutant. | The major oil companies, OPEC, and the Bush administration | Leading cause of global warming |
| CORN ETHANOL  | E85 (85% ethanol, the most common U.S. blend): \$2.10; E100 (pure ethanol): \$2.48 | 5.7 billion (note: all ethanols yield about a third less power than gasoline) | 11.4 billion | 117 million acres (roughly the size of Oregon and Idaho combined) | It's homegrown, so it promotes energy independence. Politically popular, some infrastructure already in place. | Corn production can degrade soil, requires intensive fertilization, and encourages use of genetically modified varieties. | Agriculture giants Archer Daniels Midland and Monsanto; corn farmers; political candidates looking for Midwest votes; and the U.S. government, which subsidizes it at the rate of 51 cents per gallon | Figures vary widely depending on how the mill producing it is fueled: If biomass, the reduction is 54%; if natural gas, 22%; if coal, there is a 4% increase over gasoline. Average improvement is about 15%. |
| SUGARCANE ETHANOL  | Roughly \$1 in Brazil; not available in the United States, partly due to a tariff of 54 cents per gallon | 4.2 billion in Brazil | No known plans to produce in the United States | 41 million acres (the size of Wisconsin) | Most energy efficient of all the biofuels. Can be grown on marginal soils in a tropical climate. | Smoke from cane burned after harvest creates pollution and health hazards. | No effective lobby in this country (corn producers are very eager to keep it out of the U.S. market) | 56% |
| CELLULOSIC ETHANOL (from switchgrass, slash, and agricultural byproducts)  | Not commercially available | Test production only | Unknown | If switchgrass, 35 million acres (the size of New York); if logging slash, 39 million acres (the size of New York and Connecticut combined) | Major greenhouse-gas reductions, plus some grasses can actually remove CO ₂ from the atmosphere and store it in the ground. | Wide-scale utilization could displace native plants and wildlife habitat. | Many environmentalists; President George W. Bush, who promoted it in his 2006 State of the Union address; and Waste Management, Royal Dutch Shell, Dupont, and Goldman Sachs | 90.9% |
| SOYBEAN BIODIESEL  | B20 (20% biodiesel, common blend): \$2.53; B99/100: \$3.31 | 292 million (estimate) (note: all diesels are 20–30% more fuel efficient than gasoline) | 1.4 billion (the same facilities make biodiesel from soybeans and cooking grease) | 138 million acres (the size of Arizona and Colorado combined) | Biodiesel burns more cleanly than petroleum diesel, producing only half as much soot and 60–90% less of other air pollutants. Soybean oil is otherwise underutilized, as soybeans are grown primarily for meal. | Clearing of forests for planting could increase CO ₂ and decrease biodiversity. Combustion produces dangerous soot (although only half as much as petroleum diesel) and 10% more nitrogen oxide. | Europe, where it is the dominant biofuel | 59.7% |
| COOKING GREASE BIODIESEL  | Grease is a cheaper source than soybeans, but soybean production is subsidized so the price is essentially the same | 52 million (estimate) | 1.4 billion (the same facilities make biodiesel from soybeans and cooking grease) | Lots of greasy spoons | Recycles a material that would otherwise be discarded. | Combustion produces dangerous soot (although only half as much as petroleum diesel) and 10% more nitrogen oxide. | Favorite of do-it-yourselfers, some of whom collect and refine cooking grease into fuel | 75.6% |
| ALGAE BIODIESEL (experimental process using algae grown in large greenhouses)  | Not commercially available | Test production only | Unknown | 353,000 acres (about half the size of Yosemite National Park) | Algae can use CO ₂ as food, so the process can recycle up to 80% of CO ₂ from power plants. Doesn't require arable land. | Well suited to desert areas, but large farms could reduce wild habitat. Requires significant amount of water, although water can be recycled. | GreenFuel Technologies, Algae BioFuels, and Solix Biofuels | Figure not available |

ILLUSTRATIONS BY PETER HOEY

