

## **THE WORST TIME IN HISTORY TO DEMAND BIOFUELS**

**By Dennis T. Avery, Hudson Institute  
Presented to the Pacific Northwest Animal Nutrition Conference  
Tacoma, Washington, October 8<sup>th</sup>, 2008**

The modern world is rationing food aid to the earth's poorest peoples. Food has become scarce and expensive—and will become more so in the years ahead—as we divert a major proportion of our agricultural resources to producing a tiny amount of biofuels that 1) create an artificial food shortage; 2) price food beyond the means of the world's poor; 3) yield hardly any extra transport energy; and 4) aggravate emissions of greenhouse gases to the atmosphere.

With supreme irony, we are shifting from food to biofuels in a frantic effort to prevent burning fossil fuels from overheating the planet—at a time when the earth is cooling. The federal mandate calls for 15 billion gallons of corn ethanol by 2015, and a massive 36 billion by 2022, though the corn ethanol contribution is supposedly capped at 15 billion.

Corn ethanol currently yields only about 50 gallons worth of gasoline per acre per year, and we burn more than 135 billion gallons of gasoline annually. That means it would take millions of additional acres of crops to produce much ethanol. The University of Minnesota estimated that turning the country's whole corn crop—the world's largest—into biofuels would provide only about 12 percent of our gasoline consumption.<sup>1</sup>

As America's corn ethanol production has risen from about 4 billion gallons in 2005 to about 8 billion in 2007, U.S. corn prices soared from about \$2 per bushel to more than \$7 per bushel last year. Mississippi River floods boosted corn to nearly \$8 this year, before it settled back to about \$6 in mid-August for December delivery

The World Bank says global food prices rose more than 80 percent during the 2005–2008 period, and that most of the food inflation has been due to the expansion of biofuels—primarily in the United States and Europe.<sup>2</sup> Prices of wheat, rice and other farm commodities rose in sympathy with corn, recognizing that the biofuels mandates are really a sharp increase in the demand for all cropland, worldwide. These corn prices imply a doubling of corn land values,

---

<sup>1</sup> Hill, J.E, et al., 2006, "Environmental economic and Energetic costs and benefits of biodiesel and ethanol biofuels," *PNAS*, Vol. 103, pp. 11206-11210.

<sup>2</sup> "Biofuels Blamed for Food Price Crisis," Internet site: Planet Ark, London, July 7, 2008.

according to Bruce Babcock of Iowa State, with an implied need to clear millions of additional acres of land around the globe for additional crop plantings.

This has increased the food insecurity for more than 130 million people. Agriculturists at the World Bank, the FAO, Iowa State and many others have also warned that this time the higher food prices and greater food scarcity will not be just a temporary interruption of the long-term increase in the world's Green Revolution-inspired food security.

The latest food security report from the U.S. Department of Agriculture says the "food distribution gap" between the needs of the poor and the food aid available will rise 30 percent by 2017, to 57 million tons, up from 44 million tons in 2007.<sup>3</sup>

In addition, consumers worldwide are just beginning to feel the inflation of meat, poultry, and milk prices. Higher feed prices first trigger sell-offs of underweight hogs, still-young hens and low-yielding dairy cows. But the second phase is a sharp cutback in the production of protein foods. American hog farmers are already asking their veterinarians the best way to euthanize their piglets, because it would bankrupt their families to feed them to market weight on \$7-per-bushel corn. In the 1940s, many families could afford to eat chicken only on Sundays. Will we see that again?

The current food crisis is likely to last as long as the affluent nations massively pursue biofuels, either crop-based or cellulosic. We have chosen to create an artificial scarcity of global cropland. After all, we were already farming the earth's current cropland base before the biofuel craze began. Thus the mandates will force massive efforts to clear forests, convert grasslands and drain wetlands to get more biofuels.

Even if cellulosic ethanol becomes cost-effective—no certainty—it will take large tracts of cropland to produce the switchgrass crops and the eucalyptus/pine/poplar plantations to supply the cellulose. In addition, it is likely that big four-wheel-drive mechanical "bundlers" will roam the wild forests, gathering understory growth and woody debris for the ethanol processors. This will reduce wildfire risks, but will also mean roads leading into the forests from nearby ethanol plants.

### **The Worst Moment to Demand Biofuels**

---

<sup>3</sup> Stacey Rosen et al., July 2008, *Food Security Assessment 2007*, Economic Research Service, U.S. Department of Agriculture.

Unfortunately, this is the worst moment in all history for the public to demand a big surge of biofuels. The world was already committed to redoubling world food and feed production by about 2040 to:

- a) Feed the last big surge in human numbers (to perhaps 8 billion) before declining birth rates stabilize population and then start a slow decline after 2100.
- b) Offer high-quality diets to 800 million people per year who have not yet achieved them, and an even larger number of people who cannot yet afford more than the barest caloric sufficiency from cereal-based diets.
- c) Respond to the world's rising affluence and the basic human hunger for high-quality protein with further sharp increases in global supplies of meat, milk, eggs, and fresh produce. China's pork demand has already doubled in the last decade, and India's poultry demand is soaring.

We need to remember that food abundance has helped the world's birth rate come down dramatically as high-yield farming and economic growth have spread in recent decades. In 1960, the average Third World woman had 6.2 births. Today, she's having about 2.7 births, in part because peasant families are more confident that food sufficiency will allow their children to survive into adulthood. The world's poor countries have come three-fourths of the way to population stability (2.1 births) in half a century. However, that still means another 40 percent increase in population to feed.

More important, the World Bank expects incomes to double in the coming decades, so figure on meat, milk, and eggs—resource-costly foods—for 7 billion people instead of today's 1.5 billion affluent consumers. There will even be a pet food challenge. Rich people have fewer children, but they have more pets. If China reaches half of America's current pet saturation, that will mean 250 million companion cats and dogs to feed—few of them vegetarian

### **The Organic Delusion**

All told, we'll need to more than double current world food and feed output to satisfy the agricultural demands of 2050. If we insist on producing this agricultural abundance organically, expect also to either starve half the world's people or clear the rest of the world's forests to get more planting room for low-yield crops. Denmark's high-level Bichel Committee in 1999 found that an all-organic mandate would cut that country's human food production in half, due the shortage of organic nitrogen. Vaclav Smil at the University of Manitoba says a

global organic mandate would need the manure from another 5–7 billion cattle—and where would we get the forage?

The University of Michigan published a paper last year announcing that organic farming could triple the world’s current food output, using green manure instead of nitrogen fertilizer, and needing no pest-protection chemicals. However, the Michigan study was led by a fully trained *geologist* with no farming experience, and her team did no original research. They praised my friend, Roberto Peiretti of Argentina for getting 37 percent more corn yield organically—but Roberto is President of the Latin American No-till Farmers Association. His crop production system starts with herbicides, and moves on to nitrogen fertilizer and genetically modified seeds.

Britain’s Prince Charles has recently attacked genetically-modified foods—again—claiming that the biotech companies are conducting a massive “experiment with the earth” that could destroy our food supplies. The good news is that, if Prince Charles is right about our experimenting with biotech, the experiments have been successful.

- In China and India, biotech has raised cotton yields by about one-third—on 15 million acres of cotton. That effectively releases another 5 million acres of prime cropland to grow food crops, in the two countries whose increasing food and feed demand has been putting the most additional pressure on global food supplies.
- Biotech corn and soy yields are also significantly higher than non-biotech, in part due to better pest control.
- The newest biotech varieties have a more efficient pathway for nitrogen use efficiency, so farmers can use half as much expensive nitrogen fertilizer and still get full yields. There’s little N left to leach into nearby streams, and virtually none to gas into the atmosphere as the virulent greenhouse gas nitrous oxide.
- In Africa, new genetically researched corn varieties from the International Maize and Wheat Improvement Center yield four times as much corn by suppressing the viciously endemic witchweed, which invades grain plants through their roots. The gain in African food security is massive.

Let’s think instead of a Missouri farmer named Rip Cullen. Cullen has produced 347 bushels of corn per acre, and 154 bushels of soybeans per acre, using lots of

chemical inputs and supplementary irrigation. That says more about the world's science-based food production potential than any organic yields I've seen.

I also think farmers get too little credit for the "more durable stewardship" they've been providing the world's farming resources over the past 50 years.

- Remember that high-yield seeds and farming systems are feeding twice as many people per acre. That's why the earth still has 16 million square miles of forests—without the need for a massive campaign of forced abortions as in China.
- No-till farming is being practiced on hundreds of millions of hectares worldwide, supported strongly by the biotech corn and soybeans that make weed control more effective than ever before in history.
- Food processing radically reduces spoilage losses in most countries today, and the chemicals that inhibit mold and bacteria have greatly reduced such diseases as stomach cancer throughout the first world.
- Confinement feeding produces fewer greenhouse gases per animal, and needs only about one-third as much of the planet's scarce land as outdoor livestock and poultry production.
- Dairy cows treated with rBST produce about 8 percent more milk, which means fewer cows eating less feed grain and belching far less methane gas into the atmosphere.

### **Biofuels Worsen Greenhouse Emissions—Their Death Knell?**

Ironically, the death knell of the biofuel program may already have been sounded—in February of this year when the environmental movement belatedly published two studies in the February 29 issue of the journal *Science* about "carbon debt." The Nature Conservancy's Joseph Fargione wrote: "Converting rainforests, peatlands, savannas, or grasslands to produce food crop-based biofuels in Brazil, Southeast Asia and the U.S. creates a 'biofuel carbon debt' by releasing 17 to 420 times more CO<sub>2</sub> than the annual greenhouse gas reductions that these biofuels would provide by displacing fossil fuels." Converting the land to crops releases the organic carbon stored in the plant biomass and soils of the native habitats.<sup>4</sup>

---

<sup>4</sup> Fargione, J. et al., 2008 "Land Clearing and the Biofuel Carbon Debt," *Science* 319: 1235–1238.

Since we needed all of our cropland for food and feed even before the biofuels were mandated, essentially all of the biofuels must, in effect, be grown on “converted” land. Tim Searchinger of Princeton University says that burning corn ethanol is roughly twice as bad for the atmosphere’s carbon dioxide CO<sub>2</sub> levels as burning gasoline itself, and it takes up to 167 years to repay the carbon debt. Switchgrass is almost as bad, and it can’t even be turned cost-effectively into ethanol because we lack the enzymes to break down its cellulose.

Searchinger projects that, by 2016, the current U.S. corn ethanol mandates will use up to 43 percent of U.S. corn, the production from nearly 32 million acres. This would raise crop prices by up to 40 percent for corn and by somewhat lesser amounts for other crops, as corn continues to displace still more wheat and soybeans.

Converting peatland rainforest to palm oil production—as Indonesia is doing for export to European biodiesel producers—is the most environmentally destructive practice of all. Burning peat releases massive amounts of CO<sub>2</sub>, and the resulting carbon debt persists for more than 400 years. Equally unfortunate, the orangutans of the Indonesian rainforest find the newly planted palm seedlings irresistible delicacies. Thousands of the apes have been reported captured, and presumably eaten. Where were these Greens when the biofuels mandates were being considered and installed?

The EU is already questioning whether it should scale back its biofuels mandates. After all, much of its biofuel is based on imported palm oil, which Europe can comfortably give up.

How soon can the U.S. get out from under the biofuels mandates? It’s all about domestic politics, with Iowa’s early Presidential caucuses, and half the senate being elected from states where corn growers are now invested in ethanol subsidies. It will be up to the livestock producers—and consumers wilting under undreamt-of-prices for meat, milk and eggs— to offset the corn growers’ political clout.

### **The Global Warming Link**

Due to fears of man-made global warming, we have been trying to stop burning coal, and to avoid using or drilling for more oil and gas. Out of environmental concerns, we also stopped building hydroelectric dams. Nor have we built any nuclear power plants in recent decades. Thus, we have ruled out expansion for 85

percent of the world's current energy supply. The only "new" source of energy on which the political systems have been able to agree is biofuels.

Because we are not mining, drilling or building for more energy capacity, oil prices worldwide have surged from \$30 per barrel to more than \$140. Gasoline in America has risen to more than \$4 per gallon. Diesel fuel in Britain has reached \$11 per gallon, two-thirds of that government taxes to discourage the burning of fossil fuels.

The high prices of both fuel and food have triggered a massive blue-collar revolt across the First World. Fishing fleets have gone on strike throughout Europe. Farmers have blockaded gas stations. Truckers have been organizing huge traffic slowdowns all over the known world.

We need to understand these facts:

- The earth warmed a net of only 0.2 degree Celsius during the 58 years between 1940--when humans began to seriously spew CO<sub>2</sub>— and the earth's warmest recent year, 1998. That tiny 0.2 degree C of warming—which occurred while the climate forcing power of CO<sub>2</sub> was supposedly at its strongest—is barely measurable on our thermometers.
- The forcing power of CO<sub>2</sub> declines logarithmically, so the warming which has occurred is evidently about three-fourths of whatever global warming could be expected to accompany a redoubling of atmospheric CO<sub>2</sub>. That's the conclusion of meteorology expert Richard Lindzen of MIT.<sup>5</sup> Whatever CO<sub>2</sub> impact is left should not be fearsome.
- The "fingerprint" of human-caused global warming is present in all the climate models—a strong high-level atmospheric warming about 5-8 km above the equator. No such above-the-equator atmospheric warming has occurred. Instead, the atmosphere and the earth's surface have warmed about equally there.
- The earth's temperatures stopped rising in 1998.

---

<sup>5</sup> Lindzen, Richard, 2008. "Atmospheric Chemistry and Physics," in *Global Warming: Looking beyond Kyoto*, Brookings Institution, Washington, D.C

- The sunspot index has had a 79 percent correlation with earth's temperatures since 1860, with a lag of about 10 years.<sup>6</sup> The sunspots began predicting a global temperature decline in 2000, and global thermometers turned downward in 2007.
- The planet has cooled at least 0.5 degree C in the past 18 months despite continued increases in greenhouse gas emissions.<sup>7</sup> The first half of 2008 was the coolest in at least five years. Our global temperatures are about as warm now as they were in 1900.
- NASA's Josh Willetts, who gathers the data from 3,000 new ARGO high-tech ocean buoys worldwide, recently admitted on National Public Radio, "The oceans stopped warming 4-5 years ago."<sup>8</sup>
- NASA's Jason satellite confirmed this spring that the north-central Pacific Ocean has entered its cool phase.<sup>9</sup> Pacific Rim tree rings indicate that this cooling phase of the 50–60year Pacific Decadal Oscillation is likely to last 25–30 years, and has correlated with short-term global temperature trends for the past 400 years.<sup>10</sup>
- The global climate models predicted none of this.

CO<sub>2</sub> did not cause the warming from 1850 to 1940, because it occurred too soon—before much industry or autos were built. The declining global temperatures from 1940 to 1975 occurred despite the first big surge of human greenhouse emissions. These facts argue that CO<sub>2</sub> has not been controlling our climate over the past century; nor during the past dozen years of non-warming; nor during the current outright cooling.

---

<sup>6</sup> Willie Soon, 2005, "Variable Solar Irradiance as Plausible Agent for Multi-Decadal Variations in Arctic-wide Surface Air Temperatures of the past 130 Years," *Geophysical Research Letters* 32, 2005.

<sup>7</sup> "Four sources Say Globally Cooler in the Past 12 Months," website: Watts Up With That, February 19, 2008. The four sources included the UK's Hadley Climate Research Center, the U.S. Goddard Space Institute, the University of Alabama/Huntsville, which monitors the temperature satellites and high-altitude balloons, and Remote Sensing Systems of Santa Clara, CA. The website presents the appropriate records.

<sup>8</sup> Andrew Revkin, New York Times reporter, "Ocean Cooling and Global Warming," internet site: dot earth, April 1, 2008.

<sup>9</sup> "Larger Pacific Climate Event Helps La Nina Linger," Internet site: ScienceDaily, April 22, 2008.

<sup>10</sup> D'Arrigo, R., et al., 2005, "Tropical-North Pacific Climate Linkages over the Past Four Centuries," *Journal of Climate* 18, 525--5265.



The “scientific consensus” is still predicting temperature increases of 2–5 degrees C for the 21<sup>st</sup> century, and claims we’re bringing near-ultimate doom upon our planet and ourselves by continuing to use fossil fuels. The alarmists claim the CO<sub>2</sub> released by this fossil fuel use has unleashed massive global warming that will destroy a million wild species and perhaps make human life untenable.

We must remember, however, that the UN Intergovernmental Panel on Climate Change has not offered any evidence that our warming is man-made. Rather they’ve said that “it couldn’t be anything else.” We’ve watched a remarkable substitution of politics for science. The UN essentially called a big meeting, listened to the discussion, and then proposed a policy to stop warming—without ever finding what caused it. Why don’t we cure cancer the same way? We can call a meeting, listen to the discussion and propose a cure that will negatively affect every human on earth. Why will it matter whether we understand the cause or not?

Meanwhile, Greenpeace tells us that fuel prices need to triple again from these already-dangerous levels in order to wean us away from fossil fuels—toward solar panels and wind turbines, which currently provide less than 1 percent of our energy. The latest word from the big EU power company E.ON is that wind power is so erratic that we would need 90 percent of the installed wind capacity in *non-wind* “spinning reserve.” Ninety percent?! Why build the wind turbines at all? Why waste the steel, carbon fiber and cement, let alone the man-hours?

But energy has been one of the keys to civilization: adding 30 years to the average lifespan of people all over the planet in the last century and offering the education and lifestyle choices associated with modern life.

Without fossil fuels, how many forests will be cut down for firewood, driving to extinction how many forest-dwelling wild species?

Without kerosene, will Third World women and children have to continue breathing the fumes of indoor fires—the health equivalent of a two-pack-a-day cigarette habit?

### **The 1,500-Year Climate Cycle**

- In the 1980s, we got our first look at the planet’s temperature history going back 400,000 years—from the oxygen isotopes in the Greenland

and Antarctic ice cores.<sup>11</sup> The ice cores revealed a moderate, natural 1,500-year climate cycle, with sudden warmings that lasted centuries and featured stable weather and good times for humans. The cold phases were stormy, harsh, and often involved famines. The cycle has since been confirmed by evidence from seabed and lake sediments, fossil pollen and cave stalagmites around the world.<sup>12</sup> What if our current warming is part of this natural cycle, and unstoppable?

- The modern global warming began about 1850, when human industries were still mostly powered by water wheels. There were surges in temperature from 1850–1870 and again from 1916–1940, all when most of the world was still pre-industrial. Why did 70 percent of the modern warming occur before human industries and autos put much CO<sub>2</sub> into the air?
- Global warming advocates say they can't explain the surge of global warming from 1976 to 1998, so it must therefore be due to human-emitted CO<sub>2</sub>. However, the global warming advocates also can't explain the planet's warming from 1915–1940. Nor can they explain the global *cooling*, which occurred from 1940 to 1975, just when the first huge clouds of CO<sub>2</sub> were being emitted from the world's suddenly global industrialization.
- Arctic ice diminished dramatically last year, but it's all back this year, and a big Russian icebreaker got frozen in the ice of the Northwest Passage for a week this spring. A NASA press release in October of 2007 said the open water probably owed more to winds that shift ice south than to melting temperatures.<sup>13</sup> It couldn't have been global warming, because the ice extent in the Antarctic recently is the largest ever seen.<sup>14</sup>

Al Gore's movie showed ice core data from the Antarctic with temperatures and CO<sub>2</sub> levels moving dramatically but in lockstep through four Ice Ages, with the presumption that the CO<sub>2</sub> changes were driving the temperature changes.

---

<sup>11</sup> W. Dansgaard et al., 1984, "North Atlantic Climatic Oscillations Revealed by Deep Greenland Ice Cores," in *Climate Processes and Climate Sensitivity*, F.E. Hansen and T. Takahashi, eds., American Geophysical Union Monograph 29, pp 288–98.

<sup>12</sup> Fred S. Singer and Dennis T. Avery, 2006, *Unstoppable Global Warming—Every 1,500 Years*, Rowman and Littlefield.

<sup>13</sup> "NASA Examines Arctic Sea Ice Changes Leading to Record Low in 2007," NASA press release, Oct. 1, 2007.

<sup>14</sup> University of Illinois Polar Research Group Cryosphere website.

Recently, more refined studies in the Antarctic have shown that temperatures in the ice cores change 600 to 800 years before the CO<sub>2</sub> levels. Instead of more CO<sub>2</sub> producing warming, the warming produces more CO<sub>2</sub>. The reason: the oceans hold 70 times more CO<sub>2</sub> than the air, and as water gets warmer, the laws of physics force the water to release CO<sub>2</sub> to the atmosphere.<sup>15</sup>

Equally important, experiments at the Danish Space Research Institute have recently shown that small variations in the sun's irradiance are amplified four-fold on earth—by cosmic rays creating more or fewer of the low, wet clouds that cool the earth by deflecting heat back into space. The Danes have actually seen cosmic rays create the energized cloud seeds in a laboratory reaction chamber.<sup>16</sup>

There is already a strong 79 percent correlation between sunspot numbers and the earth's temperatures since 1860. That correlation is currently increasing by the year. There is only an "accidental" 22 percent correlation between CO<sub>2</sub> and our temperatures.

The solar-driven 1,500-year climate cycle has been documented by more than 700 scientists who have published peer-reviewed evidence of the past climate changes in ice cores, seabed sediments, tree rings, fossil pollen, cave stalagmites, mineral despositits, etc. There is *no* physical evidence to confirm the Greenhouse Theory.

That leaves us with a biofuels program designed to fend of a global warming that isn't happening, using a corn crop that produces little gasoline per acre, and nowhere near a significant contribution to either energy independence or national security. Worst of all from the corn farmer's standpoint, the evidence shows the Modern Warming that essentially occurred from 1850 to 1940 was almost all natural.

Our real concern should the inevitable cooling that is on its way. If it's a Little Ice Age, the climate will be cold, nasty, stormy and unstable. If it's the Big Ice Age, the earth's temperatures may drop 15 degrees C.

### **What's Next?**

The food riots in Mexico and the Caribbean, the fishing fleet strikes in Europe, and the truckers' fuel protests across the world tell us that the world will not

---

<sup>15</sup> Caillon, N., et al., "Timing of Atmospheric CO<sub>2</sub> and Antarctic Temperature Changes Across Termination III," *Science* 299: 1728–1731.

<sup>16</sup> H. Svensmark and N. Calder, 2007, *The Chilling Stars: A New Theory of Climate Change*, Icon Books.

quietly accept a continuing “let’s pretend” approach to global warming. Unless a strong new trend of global warming begins quickly the whole scare is likely to unravel.

This is entirely reasonable, given that our global warming since 1940 is probably a miniscule 0.1 degree after we discount for urban heat islands, bad thermometer placements and land-use changes.

However, the world will still be in a warming phase of the 1,500-year cycle. Expect some further moderate further warming—probably no more than 0.5 degree C—over the next century.

More important, the long climate cycle is likely to mean additional drought problems, particularly for the southern United States. This is because the tropical rain belts move hundreds of miles north during global warming, which moves the normal moisture from Kenya north to the Sahara, and Mexico’s arid climate north into the lower U.S.

#### **Adapting to the Drought Problem:**

Genetic engineering is now the fastest-spreading technology in history. Genetically modified cotton, corn, and soybeans are being produced all over the world. New biotech drought-tolerant wheats are outyielding conventional varieties by 20 percent in field tests, and drought-tolerant corn will come soon.

In Africa, genetically researched corn varieties are tolerant of an herbicide named imazopyr that can suppress the endemic witchweed. Witchweed would otherwise steal half or all the small farmers’ grain. Yields are four times larger, and food security has increased by an even bigger margin.

Cropping shifts are also a drought strategy. Expect somewhat more grain to be grown in a warmer, wetter, Canada, and perhaps in Siberia. Further south, farmers may shift to biotech sorghum, millet or other drought-tolerant crops.

Cities like San Diego can desalinate drinking water and recycle their gray water to a much greater extent, as long as there is energy.

And as long as mankind has brains, there will be energy—whether everyone likes that or not.

*DENNIS T. AVERY is a senior fellow for the Hudson Institute in Washington, DC and is the Director for the Center for Global Food Issues. (www.cgfi.org) He was formerly a senior analyst for the Department of State. He is co-author, with S. Fred Singer, of Unstoppable Global Warming Every 1500 Hundred Years. His weekly columns are distributed to hundreds of newspapers, posted throughout the internet, and emailed to individuals. He may be contacted by email to: cgfi@hughes.net*