Purdue Economists Detail World Food Shortages, Biofuels' Impact, High Prices

by Marcia Merry Baker

Within days of the July 18 UN General Assembly Special Session on the world food crisis, a reference report was released in Washington, D.C. on the historic scope of global grain and oil crop underproduction, the impact of biofuels, and soaring food prices. *What's Driving Food Prices*, an Issue Report (July 2008) by the Illinois-based Farm Foundation, was released at its July 23 briefing at the National Press Club. The 28 graphics in the 80-page report document why emergency measures for expanding production and interim food relief should be an international priority—as several national representatives said to the UN meeting. However, institutionally, UN agencies are so far blocking, not furthering, needed action.

The authors of the study, three economists from Purdue University, one of the preeminent agriculture institutions of the United States, also stayed within the confines of an "even-handed" approach to catastrophe, in most of their written comments, and their Appendix of 25 reviews of the recommendations of other agencies, ranging from *The Economist* of London, to the U.S. Congressional Research Service. The three are agriculture economists: Philip C. Abbott, Christopher Hurt, and Wallace E. Tyner. However, their presentation of data and charts speaks for itself of the urgent need for international collaboration to reverse what will otherwise result in mass famine.

We here present excerpts and indicative graphics of the central points of their report. The full report is posted on www.farmfoundation.org.

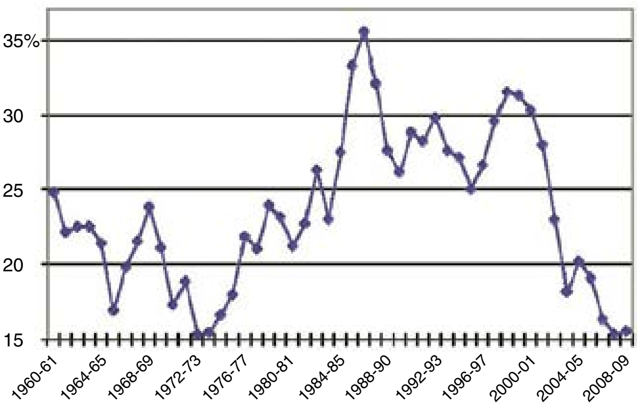
World Grain Stocks—'Too Little'

To begin with, leaving aside the critical questions of food price hyperinflation from speculation, cartel looting practices, etc., there is absolute and severe underproduction of food. Indicative is today's ultra-low level of grain carryover (year to year) stocks, taken as a ratio of the volume of grain used in a year. This is defined in the report: "The stocks-to-use ratio measures the amount of ending stocks as a percentage of a full year's use" (for any purpose). **Figure 1** shows this yearly ratio for world grains up through 2008 (forecast), beginning in 1960, the point when the U.S. Agriculture Department's series, called PSD (Production, Supply, and Demand) began. The level the for 2006-07 crop year was the lowest since 1972-73.

FIGURE 1

Stocks-to-Use Ratio for Total Grains in the World, 1960-2009

(Percent)



Source: Philip C. Abbot, Christopher Hurt, Wallace E. Tyner, *What's Driving Food Prices?*, Issue Report (July 2008), Illinois: Farm Foundation.

The Purdue report stresses this metric of stocks-to-use to show food shortages, by providing as an introduction, a table of the ratio for eight basic commodities, as well as total grains, under the heading, "Last Time the Stocks-to-Use Ratio Was as Tight or Tighter than Current Period": 1) corn (1973-74), 2) wheat—a record low ratio (since 1960, when the data series began), 3) rice (1976-77), 4) soy oil (1976-77), 5) palm oil (1972-73), 6) rapeseed oil (1975-76), 7) soybean meal (1984-85), and 8) rapeseed meal (1966-67).

Moreover, the ratio of stocks-to-use *understates the shortages*, because the "use" side of grains, oils, and oil seed meals, is itself way below what it would be if all nations and peoples had sufficient food. However, the point is well taken that, even if use of food is under-defined, there is simply "too little."

The report states: "There is a point at which ending stocks are so small that they reach minimum or 'pipeline' levels. This means total stocks will be used up at the time the new crop is ready to harvest. . . . The line between surplus stocks and shortages can be very thin. . . . It has become narrower in the last decade as governments got out of the storage business [disallowed under the World Trade Organization dictates—ed.] and private end-users developed the philosopohy of just-in-time delivery, and thus held minimum stocks in inventory.

"The transition from surplus stocks or 'too much' [in WTO market terms—ed.] to 'too little' came quickly for most agricultural commodities from 2006 to 2008. Once that thin line was crossed, prices were 'unbolted' as everyone asked what the value of food should be in a world of 'too little.' Ending stocks for many commodities are near record lows. . . ."

To ramp up production, requires various combinations of putting more area into agricultural use, and creating more productivity per unit area, involving volume, quality, and timeliness of inputs (fertilizer, water, light, seeds, drainage, etc.). **Figure 2** shows that the area harvested for grains (1960-61 to the present) has been declining over the past 20 years, and only now is on the way up—unfortunately, partially reflecting the biofuels acreage craze after 2002.

There are many causes for the declining area, including sprawl from residential, commercial, and industrial activity, as economies were de-structured during the decades of globalization. Instead of a landscape of thriving towns, agriculture regions, and industrial zones, vast areas of decay have come to characterize many nations. Agricultural land has been lost to salination, and even to forced set-asides, done in the false name of "saving the environment."

Going against this trend, critical land and production expansion programs have been announced for agriculture in recent months, by Russia, China, India, and also by Japan, including on behalf of Africa. Additionally, several nations are offering tracts of their land to others, for food use. Guyana has made such an offer to the island nations of the Caribbean. In July, Pakistan made a food-for-fuel offer to Saudi Arabia, of 700,000 hectares. These initiatives show that if concerted multi-nation actions can be mobilized, world food production could be doubled in a short period of time.

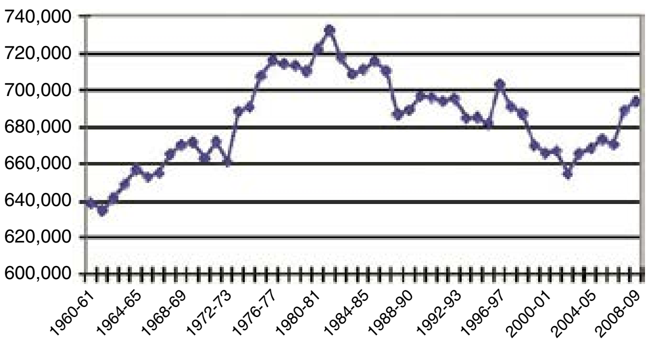
Deadly Biofuels

In the meantime, the continued diversion of grain and oil crops to non-food use, is a direct cause of the food supply crisis. The major agro-cartels dominating grain and oilseeds—Cargill, ADM, Bunge, Louis Dreyfus, and others, and the financial powers behind them—have presided over a vast shift of agriculture in the United States, Brazil, and the European Union, into biofuels, despite the world's desperate need for food and farm capacity.

FIGURE 2

Area Harvested for Total Grains in the World, 1960-2009

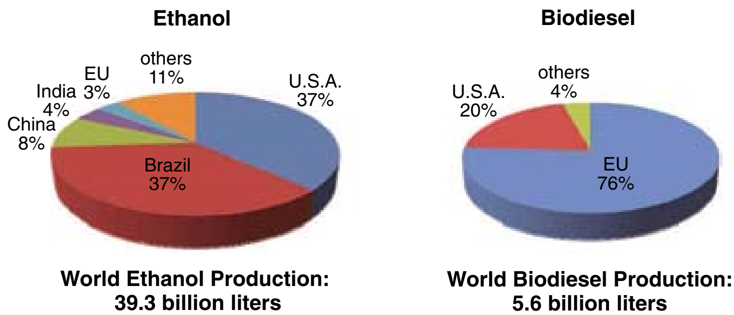
(1,000 Hectares)



Source: Philip C. Abbot, Christopher Hurt, Wallace E. Tyner, *What's Driving Food Prices* , Issue Report (July 2008), Illinois: Farm Foundation.

FIGURE 3

Global Biofuels Production, 2006

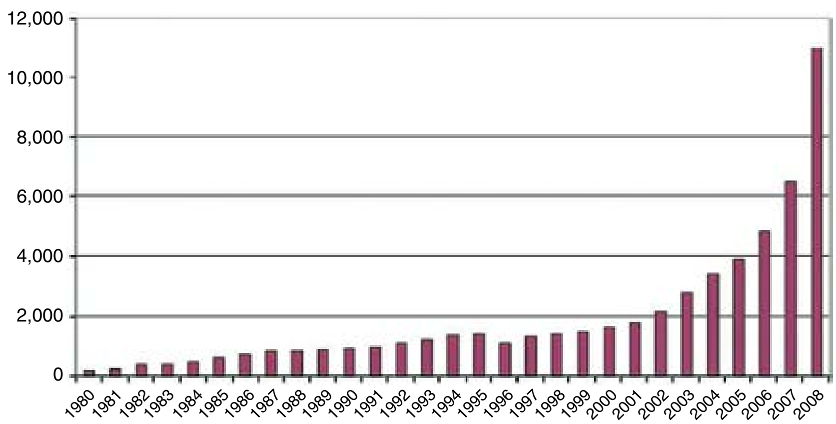


Source: Philip C. Abbot, Christopher Hurt, Wallace E. Tyner, *What's Driving Food Prices*, Issue Report (July 2008), Illinois: Farm Foundation.

FIGURE 4

Ethanol Production, 1980-2008

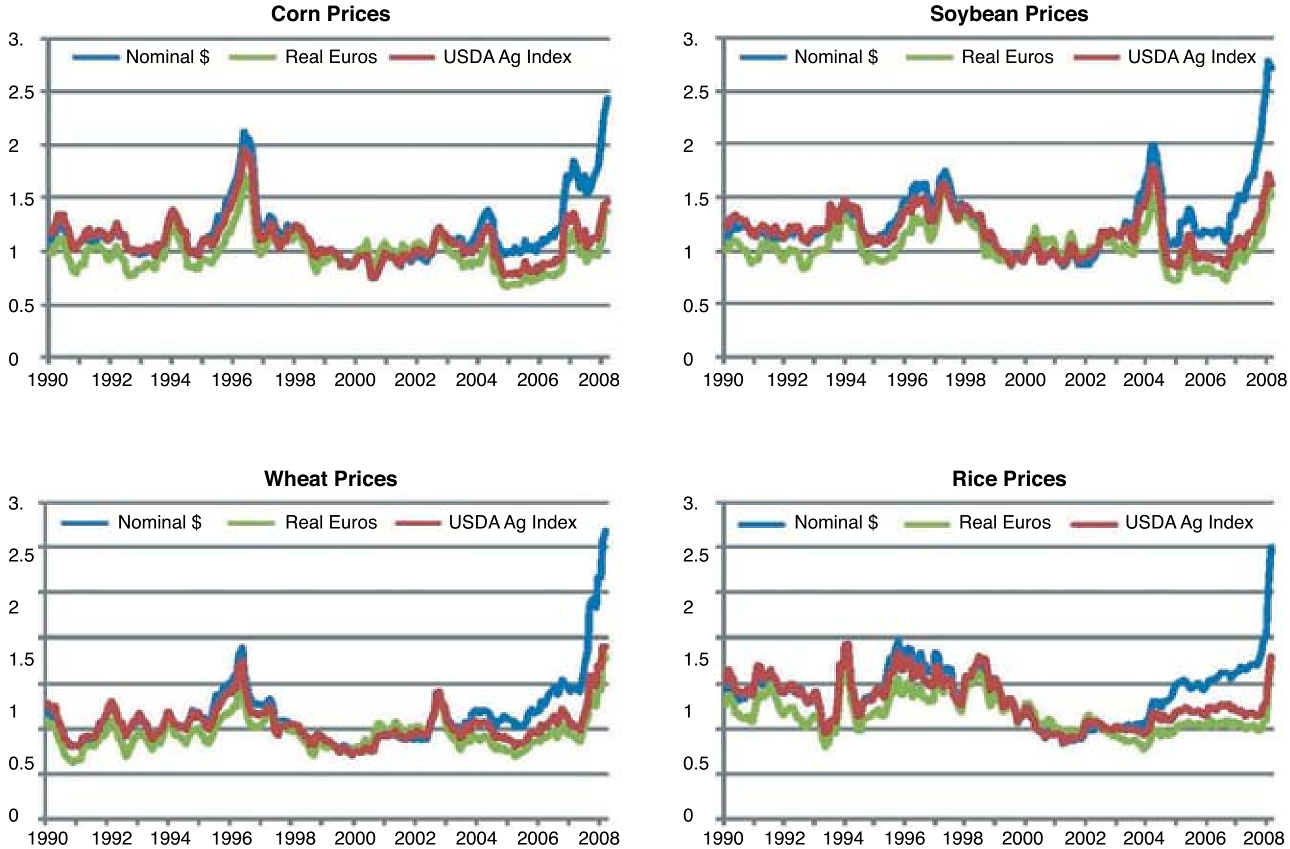
(Million Gallons/Year)



Source: Philip C. Abbot, Christopher Hurt, Wallace E. Tyner, *What's Driving Food Prices*, Issue Report (July 2008), Illinois: Farm Foundation.

FIGURE 5

Agricultural Commodity Price Indices in Various Currencies, 1990-2008



Note: Commodity prices are normalized to equal 1.0, on average, for 2002.
Source: Philip C. Abbot, Christopher Hurt, Wallace E. Tyner, *What's Driving Food Prices*, Issue Report (July 2008), Illinois: Farm Foundation.

Figure 3 from the report, underscores the point. It shows the location of global biofuels production as of 2006. In **Figure 4**, the recent surge in U.S. ethanol production is clear, constituting a huge loss of corn from the world's food chain. The report summarizes the situation:

"Biofuels have grown significantly in recent years in several regions of the world. The main biofuels are ethanol from corn or sugarcane, and biodiesel from oilseeds or palm.... For ethanol, the global leaders are the United States and Brazil. U.S. ethanol is mainly from corn. Brazil uses sugarcane. In 2007, the United States overtook Brazil as the leading ethanol producer in the world. Brazil and the United States together make up about three-fourths of global ethanol production, with small amounts produced in the European Union, China, India, and other countries.

"For biodiesel, the global leader is the European Union (EU) with more than three-fourths of global production. In 2006, the United States had 20 percent of global production, but that share is probably smaller today, as biodiesel has stagnated in the United States, and continued to grow in the EU. Biodiesel is more important in the EU than ethanol because a much higher percentage of the automobile fleet is diesel.... In the EU, rapeseed is the primary feedstock, whereas soybeans are used in the United States. Rapeseed contains about 40 percent oil, and soybeans about 18 percent. The EU has ambitious targets to grow biodiesel production and consumption in the years to come...."

In sum, the food supply crisis now affecting millions of people, is considered by its enforcers as a biofuel "success." The report makes the point, in an understated way: "Biofuels added major new demands on an already tightening stocks situation, especially since 2004/5. For the three main vegetable oils, industrial growth (primarily biodiesel) represented 37 percent of total growth from 2004/05 to 2007/08.

For corn, the biofuels surge is even more compelling. By 2008/09, industrial use led by increases in corn use for ethanol will have accounted for 65 percent of consumption increase compared to 35 percent for feed use in the four years from 2004/05 to 2008/09."

Runaway Food Prices

When this picture of diversion of farm capacity to non-food use has added to it the uncontrolled speculation in grains and all food commodities, the desperation of nations becomes clear. **Figure 5**, from the report's section on "Exchange Rates, Food Prices, and Agricultural Trade," gives price indices for four staples—corn, wheat, soybeans, rice—in two currencies (the U.S. dollar and the euro) and in a U.S. Department of Agriculture index, over the past 18 years.

The hyperinflationary phase of 2007-08 is outstanding. True, the devaluation of the dollar makes any dollar-denominated trend higher than another currency, but the whole situation is out of control.

For countries whose people have come to expend a high share of their income on food, the high prices and shortages mean automatic misery. The report provides a table showing food price inflation over the past year, in 11 nations, ranked by the size of their share of expenditure on food, from 65% to 21%; with the United States and Germany alongside for reference, where 10% of household expenditure goes to food, with a food price inflation rate of 5.1% (U.S.) and 7.4% (Germany).

A few examples make the point: In Bangladesh, where 65% of household expenditure goes for food, there has been 14.2% food price inflation over 2007-08. In Sri Lanka, with 62% going for food, the food inflation has been 25.6%. In Kenya, where 51% goes for food, the food inflation has been 24.6%. In Haiti, with 50% going for food, the food inflation was 11.8%. In Egypt, with 42% going for food, the food inflation has been 13.5%. (The report's figures are from the *OECD-FAO Agricultural Outlook 2008-2017* (Paris and Rome, 2008).

Gore's Solar Proposal

How It Kills: Some Elementary Facts

by Laurence Hecht

The genocidal Al Gore's widely advertised claims to the contrary, there are no improvements in solar conversion energy technology significant enough to make his solar power proposal into anything but a greenie wet dream—and, for basic scientific reasons, there never will be. If implemented, the great achievement of solar power would be the needless death of hundreds of millions, perhaps billions, around the globe by the denial of nuclear power. Gore's proposal to replace fossil fuels with solar, wind, and other "renewable" energy sources is thus a deadly fraud.

The basic problem with using solar power as a source of electrical power is the low density of energy flux from the Sun. Measured in watts received per square meter of land area at the Earth's surface, the yearly averaged solar flux varies across the United States from about 160 in the New England states, to 240 in Albuquerque, N.M., for a nationwide average of 200 watts per square meter. If all that solar energy could be converted directly into electricity, you could light two 100-watt bulbs for every square meter (about 11 square feet) of land area—during the day, that is.

Of course, all the Sun's heat cannot be converted into electricity. Take the latest solar plant to be brought on line, Nevada Solar One, a solar concentrator plant near Boulder City, Nev., which incorporates the latest German-built parabolic mirrors to focus the Sun's heat on specially designed vacuum-insulated steel and glass receivers produced by Germany's Schott firm. Although rated at 64 megawatts peak generating capacity (that is, at full Sun), the actual averaged generating capacity of the plant over the 24-hour day is somewhat under 15 MW. This is produced on a land surface area of 1.3 million square meters (321 acres, not counting auxiliary facilities), bringing the actual electrical generating capacity of the plant to 11.4 watts per square meter. Thus it takes about 9 square meters, or 96 square feet of plant area, to generate enough electricity to light a 100-watt bulb—during the daytime.[1]

1. To replace all 1,090 gigawatts of electrical generating capacity of the United States with solar plants would require a surface area of 37,000 square miles—approximately the land surface area of Virginia. To deliver a modern level of electric power to the world's population and industrial