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The Shape of Tomorrow's Farming

By Dennis Avery

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Tomorrow's farming will look like today's, only more so. Crop and livestock yields per acre must triple again to protect wildlife habitat. Biotechnology will be increasingly vital. Confinement feeding will be even more important, to leave room for wildlife. Organic will prove to be a fad, as will locovores and vegetarians. Activists will be less credible than over the past 50 years.

The world's farmers are facing the biggest challenge in their history. Expect more than 8 billion humans by 2050, with 7 billion of them affluent—compared with only 1.5 billion affluent today; trade and technology are powerful forces for increased wealth. Expect also a continuing surge in the number of companion cats and dogs, none of them vegetarian.

World food production must double by 2050, and production of meat and milk will more than double. Children need the key micronutrients of livestock products to prevent such diseases as pellagra and blindness due to severe Vitamin A deficiency. Their cognitive development also seems to benefit from high-quality protein.

Farming intensity must triple on the best land, in order to protect the poorer land which houses three-fourths of the wild species. Good farmland will become even more important, as one of the scarcest resources.

Most of the increased farm output will and must come from the best-quality land, which maximizes yields and minimizes land requirements per pound of food. It also minimizes soil erosion, humanity's most ancient and implacable enemy.

- The only "frontier expansion" now available to the world's farmers is in the Brazilian interior, where another 400 million acres of pasture could be converted to crops if the livestock are put into confinement.
- Some other cropland expansion will be possible in arid places such as Turkey, with no-till farming.
- Some tropic cropland will also become more productive as aluminum-tolerant cropping systems become possible, but these lands often have higher levels of biodiversity, a major conservation concern.

There will be little room for organic farming, and those who insist on organic food will increasingly be seen as greedy threats to the wildlife. It will not help that the organic movement has been closely tied to the now-collapsing global warming scare. A University of Michigan paper in 2007 claimed that "organic could feed the world," but it radically overstated organic's nitrogen production.

The campaign against "factory farms" must end, because there will be too little good land to waste on hog and poultry "playgrounds." Confinement feeding is not only kinder to the animals, but it boosts feed efficiency (less cropland needed per pound of meat).

Confinement feeding most importantly allows us to make better use of the manure—organic fertilizer—created in livestock systems. This highly valuable by-product is poorly used in non-confinement systems, much of it leaching into nearby streams.

- Confinement systems save the wastes under zero-discharge requirements, and it is spread (or increasingly, tilled into the soil) of the crop fields. There, it makes its maximum contribution to soil fertility and tilth, while having no negative impact on water quality.
- Where livestock concentrations are too intense to use the manure effectively, new confinement operations must be approved that are more scattered.

Nitrogen fertilizer will become even more important to farming. The off-farm activists's attacks against both nitrogen and organic fertilizer is costly and counter-productive to society.

- Fertilizer use will be encouraged by the new flood of shale gas being produced around the world.
- Fertilizer will also be encouraged by a biotech breakthrough in nitrogen-efficient crop plants. Already, half the normal application of N can produce a "full yield" in rice, wheat or rapeseed. Corn is likely to follow soon.
- Nitrogen efficiency will not only cut farmers' fertilizer costs, but will radically reduce the problem of N leaching into nearby streams.

There will be no room for biofuels, and no rational need for them. It was never possible for the few high-quality acres which could be spared from food production could make much of an impact on our massive need for energy. Now we find that if the world's total cropland must be expanded to produce biofuels, they create more greenhouse gases than burning gasoline.

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> ***"The problem of "overpopulation" has already come and gone..."***

The world will stop worrying about greenhouse gases, and turn instead to using its fossil fuels more efficiently, against the day when they become too valuable to burn.

Shale gas and tar sands oil will be recognized as the West's buffers against Middle East, Russian and/or Venezuelan adventurism.

The problem of "overpopulation" has already come and gone. Births per woman in the poor countries have dropped from 6.1 in 1960 to 2.7 or less today, with stability at 2.1 births.

- Children are urgently useful on peasant farms, as both labour and social security.
- In the city, children are an expensive ego investment, and the global pattern is increasingly "less than two" per family.
- The last Moslem country is likely to reach population stability before 2050.
- The human population will then begin a long, slow decline.

The activists who have been so prominent in the past half-decade are likely to decline in importance after the collapse of the global warming scare.

- The environmental movement has carried on a virtual war with all aspects of productive farming, even claiming that peasant farmers creating soil erosion and hunting endangered species were the "appropriate future of farming."
- The global warming collapse will hurt the credibility of the activists.
- The credibility problem is already hitting the journalists who were the activists' "willing accomplices."
- The decline of some activism will be a major benefit to farming, though it should not relieve farmers of their need to "talk to consumers" more effectively.

The global warming scare has been done in by bad science and impossible politics.

- The global warming before 1940—0.5 degree C—was due to a long, natural moderate cycle called the Dansgaard-Oeschger cycle. Seabed sediments and ice cores show more than 500 of these 1,500-year cycles in the past million years.
- About 40 percent of the "warming" indicated in our thermometer record since 1940 has been due to the growth of urban heat islands and land use changes.
- Temperature data sets seem to have deliberately dropped "cool" thermometer sites: high altitude, high latitude and rural.

- There has also been deliberate manipulation of temperature data. For example, New Zealand officially shows a strong warming since 1940, but none of their individual data sites shows a temperature increase.

The "Green dream" could never have succeeded. When the costs of eliminating fossil fuels became apparent, every country would have reversed its greenhouse laws. Unfortunately, massive amounts of costs would have been incurred in the greening process.

> ***The "Green dream" never could have succeeded...***

Imagine trying to tax nitrogen fertilizer—made with natural gas—out of the farming economy.

- Imagine that after 10 years, half the N had been taxed away from the farmers, but food production would have dropped by one-third, and food prices would have quintupled.
- Would the public have allowed the rest of the N to be taxed away, or would they have defended the nitrogen fertilizer plants?
- How would the governments have persuaded soldiers to take over the N plants? By offering food they couldn't get in the open market?
- It would have led to open revolt.

How warm will Canada's farmland get? We have good news and less-good news, but the overall outlook is bright.

- The 1,500-year cycle usually has delivered about half of its warming in its first few decades. The 0.5 degree C warming from 1850-1940 could well be half of a total warming of 1degree C—or slightly more.
- The rest of this global warming cycle would likely be delivered erratically over the next 300-700 years—if we're lucky. (The "little ice ages" have featured famines, disease epidemics, and truly awful winters.)
- In the short term, the earth's temperature seems to be governed by the 25-30 year spurts of the Pacific Decadal Oscillation. The PDO shifted into its cool phase in 2008, so we must expect modestly cooler temperatures for the next 20-25 years.

After that, Canada and its farmland will get somewhat warmer and wetter.

FURTHER READING

January 2006

Alex Avery Interview

Conversations from the Frontier

In both urban and rural communities, stereotypes and preconceived notions about intensive livestock operations, factory farming, the development of genetically modified crops and the use of crop protection products and fertilizers are rife.

http://www.fcpp.org/publication.php/1266

March 2008

Questioning the Global Warming Science

This annotated bibliography of selected peer-reviewed papers questions the current state of Global Warming science.

http://www.fcpp.org/publication.php/2108

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ABOUT THE AUTHOR

Dennis T. Avery is the director of the Center for Global Food Issues at the Hudson Institute. He grew up on a Michigan dairy farm and received degrees from Michigan State and the University of Wisconsin. He won "outstanding performance" awards from three different U.S. government agencies, and received the National Intelligence Medal of Achievement in 1983 while working for the U.S. State Department. He has been a senior fellow of the Hudson Institute since 1989. A popular speaker, he also writes a weekly column on current environmental and global warming issues. His writings have appeared in the *Wall Street Journal, Christian Science Monitor, Miami Herald, Seattle Times, Des Moines Register,* and dozens of other newspapers and websites. He has also been featured in *Fortune, Forbes, The National Journal* and in *The Atlantic Monthly.*

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The author of this study has worked independently and the opinions expressed are therefore his own, and do not necessarily reflect the opinions of the Board of the Frontier Centre for Public Policy.

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