

Industrial Agribusiness: Economic Solution or Environmental Disaster?

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To maintain its dominant position in an increasingly global food market, the United States government instituted massive reforms in its domestic farm policy during the early 1970s. These extensive structural changes to an agricultural policy, which had remained largely untouched since its creation after the Great Depression, have produced significant economic transformations in domestic agriculture by encouraging the consolidation of farms and the increased market power of a few food processors. This trend toward oligopoly has produced drastic social and environmental ramifications both within the U.S. and abroad.

Due in part to a thirty-million-ton grain sale to the USSR and a drought in the Midwest during 1972, domestic agricultural prices hit an all-time high in 1973 (causing farmers to kill chicks because they couldn't afford to buy feed and horse meat to be sold by certain grocers).¹ To lower food prices, President Nixon empowered Secretary of Agriculture Earl Butz to restore market stability by restructuring the U.S. food system. While he urged farmers to "get big or get out" and to plant their fields from "fencerow to fencerow," Butz also began to completely overhaul the structure of the U.S. farm bill by doing away with Roosevelt's New Deal farm policies.

The 1973 Farm Bill, as envisioned by Butz, replaced the previous method of supporting commodity prices with loans from the government with a new direct-subsidy-payment system that supplemented farmers' income in an attempt to reach an established target price. Butz abolished the Ever-Normal Granary which had been established under the New Deal to help

¹ Pollan, Michael, The Omnivore's Dilemma, 51

stabilize the agricultural market's volatility. The Granary, operated by the USDA, allowed farmers to choose whether or not to sell their goods after an excellent growing season (which would drive prices below their targets) by offering them the option of a "non-recourse loan" in the amount the farmer would have gotten for his goods at the target market price.² If he chose the loan, the farmer gave his harvest to the USDA as collateral. When prices rose above the target price, the USDA released grain from the Ever-Normal Granary to the market.

The move to a direct-subsidy payment served to remove the price floor from the commodity goods market, which has revolutionized the economics of agriculture. "Instead of keeping corn out of a falling market, as the old loan programs and federal granary had done, the new subsidies encouraged farmers to sell their crops at any price, since the government would make up that difference."³ The government, however, has made up increasingly less of that difference, because successive farm bills have continued to lower the target prices of commodity goods-- in order, the government has explained, to become more dominant in the world commodity market.

By abolishing the granary and the non-recourse loan system, the government forced farmers to sell their goods, no matter how far prices fell. These policies have prompted an annual cycle of debt in which farmers must continuously increase their crop yields in an attempt to break even. According to Iowa corn farmer George Naylor, "(f)armers facing lower prices have only one option if they want to be able to maintain their standard of living, pay their bills, and service their debt, and that is to produce more."⁴ In 2005, Naylor received \$1.45 per bushel of corn he sold to the Iowa grain elevator. Even with the government subsidy for corn (\$0.28 per

² Ibid. 52

³ Ibid. 52

⁴ Ibid. 53

bushel—no matter what the market price of corn is) and the loan rate subsidy of \$0.42 (to meet target price of \$1.87), Naylor makes a total of \$2.15 a bushel—\$0.35 shy of what Iowa State University researchers estimate it costs to grow a bushel of corn.⁵ A farmer whose average yield is 220 bushels per acre loses seventy-seven dollars per acre. As increasingly more farmers plant more crops and more effective, genetically modified crops, in hopes of breaking even at the end of the season, the supply of commodities grows, causing prices to decline further. As a result, many farmers have been forced into bankruptcy, which has facilitated the consolidation of U.S. farms. Earl Butz and the 1973 Farm Bill laid the foundations for our present agricultural policy—one which continues to support the consolidation of America’s many small farms into a few large ones and the emergence of an oligopoly among food processors.

Over the next three decades, increasing numbers of small farmers were forced into bankruptcy, aiding in the consolidation of the US farming system and the increased specialization at every stage of agricultural and livestock production. Throughout the 1980s and ‘90s, a few food processors succeeded in concentrating their market power by buying out many impoverished small farmers. During the five year period from 1982-7, 153,217 U.S. family farms were bought out by corporations, more than double the number of farms they acquired between 1973 and 1981.⁶ According to Christopher Cook, author of Diet for a Dead Planet, while several agribusiness firms were concentrating their market power both horizontally and vertically in the late 1990s, “more than 17,000 farmers went out of business each year, destroying local economies and turning many rural communities into ghost towns.”⁷ As farmers struggled to break even financially by increasing their crop production with larger farms and

⁵ Bruckner, *et al.* “Towards a Global Food and Agriculture Policy”

⁶ Cook, Christopher. Diet for a Dead Planet, 112.

⁷ *Ibid*, 126-7.

increased crop yields per acre, more began specializing in a single crop so that they could maximize efficiency with machines designed to harvest one crop. Mel Anderson, president of the Idaho Potato commission, found that the number of potato farmers in Idaho declined by 50% from 1993 to 2008, to less than 800; those remaining farmers needed to harvest at least 2,500 acres to break even.⁸ Farming on such a scale requires several tractors, worth approximately \$130,000 each, as well as other expensive equipment such as global positioning satellites to ensure that rows are straight.⁹ The U.S. agriculture system is rapidly progressing towards a degree of consolidation and specialization that would shock even Earl Butz; in 2005, Thomas Dorr, the current Under-Secretary of Agriculture, announced that “the right scale for farms in the future will be about 200,000 acres of cropland under a single manager” who specializes in a single crop monoculture.¹⁰

Such large-scale consolidation of farms is not exclusive to the agricultural sector. Feedlots or concentrated animal feeding operations (CAFOs) are increasingly the norm in livestock production because, like crop monocultures, they enable the development of massive animal populations which can be slaughtered and marketed with artificially low costs to the food processor. According to the USDA, although hog production has only slightly increased in the past four decades, the number of hog farms has decreased from 1,057,570 in 1965 to 75,350 in 2002.¹¹ This process of farm consolidation has facilitated the emergence of an oligopoly which controls nearly every aspect of food production.

⁸ Apple, RW. “For Baking, for Mashing, Forever.”

⁹ McKibben, Bill. Deep Economy 52

¹⁰ Ibid. 56

¹¹ Martin, Andrew. “Factory Farm Foes Fed Up.”

In the past three decades several agribusiness corporations have significantly concentrated their market power, both horizontally and vertically, to create one of the most powerful oligopolies in the world in the areas of trading and processing agricultural commodities.¹² Because of their low-risk and highly subsidized position between farmers and ranchers on one side and food retailers on the other, food processors such as Cargill have been able to buy out subsidiary companies which encompass nearly every aspect of food production—including the supply of bank loans, currency deals, risk insurance, and the manufacture, wholesale and transportation of seeds, pesticides, fertilizer, feed grain, cattle and chicken feedlots and contract hog production.¹³ Between 1995 and 2000, the market power, defined as “the ability to affect price (setting buyer prices above and/or supplier prices below open market levels), to reduce competition (by keeping out new entrants) and to set standards for a sector of economic activity,”¹⁴ of the top four food processors in the U.S. greatly increased; in five years the concentration ratio of these four firms has doubled from seventeen to thirty-four percent.¹⁵ Concentration ratio is one method of measuring market power, and once that of the four largest firms in a market (CR4) reaches forty percent, the market is no longer considered competitive.¹⁶

Cargill in particular has amassed enormous market power in every key phase and sector of food production, and because it operates in more than 160 countries (as of 2006), it can further control market prices by “playing off Brazilian orange growers against Florida ones, U.S. wheat growers against Russian ones and German oilseed farmers against Australians.”¹⁷ The corporation’s goal, which it claims to have achieved and surpassed for the past four decades, is to

¹² Oligopoly Watch

¹³ Cook, 141

¹⁴ Murphy, Sophia “Concentrated Market Power and Agricultural Trade”

¹⁵ Oligopoly Watch

¹⁶ O’Brien, Douglass

¹⁷ Murphy, Sophia

double in size every five to seven years.¹⁸ Because it is a private corporation, (the U.S.'s largest, with eighty-five percent owned by heirs of its founders), Cargill has little obligation to disclose its finances, operations, or business practices to the media or government.¹⁹ Researchers have, however, been able to ascertain that it is the world's number one seller of grains, controlling over forty percent of the world's U.S. grain production.²⁰ In addition, according to the non-profit think-tank Oligopoly Watch, Cargill is the world's second-largest supplier of livestock feeds and the second-largest meat processing company in the U.S., ranking in the top three for beef, poultry and pork production. Cargill is the world's largest flour milling company and its third largest soybean producer; it ranks second in U.S. ethanol production (behind Archer Daniels Midland).²¹ In addition, Cargill owns subsidiary companies that operate its grain elevators and orchestrate its massive transportation network worldwide. Other Cargill holdings manufacture all the oil-based polymers it needs to create the plastics used in packaging its commodities.²² Despite its legal troubles (Cargill is currently facing twenty-five civil suits regarding price-fixing—one of which it settled before trial for thirty-four million dollars, according to the Washington Post²³), Cargill has managed to steadily increase its annual revenue (see note 1), amassing over seventy-one billion dollars in 2005.²⁴ As Cargill continues its quest to double in size every five to seven years, it will seek to acquire more and larger subsidiary companies so that it can maximize its profits by increasing its market power—through horizontal consolidation and vertical integration.

¹⁸ Heffernan, William "Report to the National Farmers Union"

¹⁹ Oligopoly Watch

²⁰ Cook, 143

²¹ Hendrickson, Mary and William Heffernan "Concentration of Agricultural Markets"

²² Murphy, Sophia

²³ Quoted in "Oligopoly Brief: Cargill" Oligopoly Watch

²⁴ Murphy, Sophia

The transformation of the U.S. agricultural system—from one characterized by many, multi-faceted small farms to one dominated by large-scale industrial monocultures, CAFOs and an oligopoly of food processors—has significantly affected traditional farmers. Because successive farm bills have continued to lower the target prices for commodity goods and the majority of direct subsidy payments go to large, industrial farms, over sixty percent of farmers now earn incomes below the poverty level.²⁵ Many of these farmers will be the end of the line of those who attempt to make a living through agriculture—according to the 2000 census, farmers over the age of sixty-five outnumber those under thirty-five by a factor of six.²⁶ The annual income of these aging farmers continues to decline. Because most of the revenue in the food industry comes from phases in which the farmer has no involvement—the processing or value-added stages or the manufacture of farm equipment, chemicals and seeds—the farmer takes in “less than ten cents of the typical food dollar.” As a result, when an American buys a loaf of wheat bread, he pays as much for the wrapper as he does for the wheat.²⁷ In 2000, for example, only \$123 billion of the \$661 billion that consumers spent on food went to the farmers (see note two).²⁸ Food retailers and grocers also register immense profits—one study from February 2004 found that farmers sold lettuce to food processors for nineteen cents per pound, while consumers paid \$1.92 for a pound of lettuce—a markup of more than 900%.²⁹ As consecutive farm bills continue to lower the target prices for commodity goods, more small farmers are forced to sell out to larger industrial corporations, strengthening the market power of companies like Cargill while simultaneously requiring massive infrastructure to transport agriculture products.

²⁵ Cook, Diet for a Dead Planet

²⁶ Halweil, 60

²⁷ Ibid. 63

²⁸ Ibid. 128

²⁹ Cook, Diet for a Dead Planet

With the consolidation to a few geographically dispersed food producers and processors, the transportation of food has increased considerably. Aided by advanced-food storage technology and the prevalence of relatively inexpensive fuel, food now travels great distances to reach consumers. An analysis of the USDA Agriculture Marketing Service's 1997 arrival data from the Jessup, Maryland terminal found that the average distance produce traveled was 2,146 miles, an increase of twenty percent from two decades earlier.^{30,31} This increase in the transportation of food has required enormous energy inputs from fossil fuels. Cornell University researcher Dr. David Pimentel found that U.S. agriculture, "largely through its reliance on petrochemical-based pesticides and fertilizers, uses some 400 gallons of fossil fuel a year to feed each American," which adds up to more than one trillion gallons of oil a year just to manufacture food.³² Between 1910 and 1983, energy consumption for domestic agriculture increased 810%, but the energy used on the farm is only one fifth of that used in the next phases—processing, production and distribution.³³ According to researchers at the Leopold Center for Sustainable Agriculture, the production of one bushel of corn requires a half-gallon of oil, considering its use in making pesticides, fueling farm equipment, producing fertilizer and powering the irrigation process.³⁴ Low shipping costs also encourage the increased transportation of food; according to the USDA economic research service, it costs fifty percent less to ship food by air than it did twenty years ago, and while "U.S. annual expenditures for shipping food have grown from just over four billion dollars in 1967 to twenty-four billion in 1997," they have decreased from seven to five percent as a share of the total food marketing bill during this period.³⁵ Transporting food

³⁰ Pirog, *et al.* "Food, Fuel and Freeways"

³¹ Halweil, 29

³² Cook, 5

³³ McKibben, 64

³⁴ Pirog, *et al.* "Food, Fuel and Freeways"

³⁵ Halweil, 36

over highways has also increased dramatically. In 1965, there were 787,000 combination trucks registered in the United States, and these vehicles consumed a total of 6.658 billion gallons of fuel. Three decades later, there were 1,790,000 combination trucks on the roads, using 20.294 billion gallons of fuel.³⁶ The wide-spread consolidation of small farms into CAFOs and industrial monocultures, along with the expansion of the food transport network across the nation, has given consumers access to fresh non-seasonal produce year round, but it has also wrought wide-spread and extensive environmental damage.

CAFOs and the growing use of fertilizers, pesticides and fuel have produced higher yields per acre of crops and livestock, while also causing immense soil erosion and generating water and air pollution. Currently, approximately 85% of all U.S. cropland is sprayed with pesticides, bringing the total annual pesticide use in U.S. agriculture to over one billion pounds.³⁷ Paradoxically, the increased use of pesticides since the mid-twentieth century has helped to produce insect species which are genetically resistant to the pesticides designed to thwart them. Between 1950 and 1990, the number of insect species resistant to pesticides exploded, from 18 to over 500.³⁸ Newer pesticides are increasingly more toxic—more than one third are designated as “carcinogens, reproductive toxins and acute nerve poisons” by federal regulatory agencies—and are causing increasingly greater environmental damage.³⁹ They are responsible for killing an estimated 67 million birds annually.⁴⁰ Roughly half of all pesticides end up in waterways; a 2000 report by the U.S. Fish and Wildlife Service found more than 139 different pesticide

³⁶ Pirog, *et al.* “Food, Fuel and Freeways”

³⁷ Cook, 162-3

³⁸ *Ibid.* 165

³⁹ *Ibid.* 166

⁴⁰ *Ibid.*

residues in U.S. groundwater. Toxins such as atrazine and metolachlor are then absorbed by aquatic species and have been found in the flesh of 64% of edible fish.⁴¹

CAFOs are possibly the most egregious threat to the environment, as they contribute enormously to soil erosion and air and water pollution. Because they are largely unregulated (according to a 2002 report by the Congress' General Accounting Office, "loopholes in federal regulations and inconsistent enforcement leave an estimated 60 percent of the largest CAFOs unregulated"⁴²), CAFOs are not required to treat or dispose of livestock excrement. When tens of thousands of animals are housed together, their waste becomes highly concentrated—over 160 times as corrosive as municipal sewage.⁴³ Livestock produces waste at an alarming rate of 68,000 pounds per second.⁴⁴ Unlike on small farms, where livestock manure can be used as an organic fertilizer, at CAFOs this waste becomes an environmental hazard. One CAFO in Utah raises more than 1.5 million hogs each year, producing more waste every day than the entire city of Los Angeles.⁴⁵ In North Carolina, at one of the centers of what boosters call Big Pig, "hogs outnumber citizens, and they produce more fecal waste than California, New York and Washington combined."⁴⁶ Often, the manure lagoons which form at CAFOs overflow or leak during storms, causing large-scale water pollution. One recent overflow of an excrement pit at Iowa's Lincolnland Farms leaked into the Kishwaukee River, spreading manure 37 miles downstream and killing more than 70,000 fish, according to EPA documents.⁴⁷ In 1995, a 25-million-gallon (twice the volume of the Exxon-Valdez) spill at Big Pig caused the immediate death of approximately 12 million fish, as well as massive water pollution of nearby rivers.

⁴¹ Ibid.

⁴² Martin, Andrew

⁴³ Scharplaz, Jim

⁴⁴ Senate Agriculture Committee

⁴⁵ Halweil, 74

⁴⁶ McKibben, 60

⁴⁷ Martin, Andrew

Many of these spills go unreported, but a 2004 EPA report states that run-off from CAFOs pollute our waterways more than all other industrial sources combined and have polluted 35,000 miles of rivers and contaminated groundwater in 17 states.⁴⁸ In 2005, a Senate Agriculture Committee report concluded that animal waste is the largest contributor to pollution in 60% of the rivers and streams classified as “impaired” by the EPA.⁴⁹ Because such massive numbers of animals raised in close confinement are susceptible to disease, livestock are injected and fed high doses of antibiotics. These, the hormones they’re given to increase growth, and the pesticides used on their feed, all eventually end up in waterways, causing both water pollution and unforeseen effects on wildlife.

CAFOs contribute to air pollution by creating tons of particulate dust and noxious fumes and generating immense quantities of the gases which factor into global climate change. A study published by the Consumers Union in Texas stated that the state’s CAFOs produce more than 14 million pounds of particulate dust annually which contain “biologically active organisms” such as bacteria, mold and fungal spores; once inhaled, these organisms act as carcinogens to the soft tissue lining of the lungs.⁵⁰ Livestock feces also release harmful gases such as hydrogen sulfide and ammonia into the atmosphere. The EPA estimates that livestock manure is the source of 80% of U.S. ammonia emissions.⁵¹ Airborne ammonia is highly acidic and is a leading contributor to acid rain. Livestock also produce large amounts of methane and nitrous oxide, two gases which trap carbon dioxide in the atmosphere, reflecting heat back to the earth’s surface and raising global temperatures. The 2006 U.N. report “Livestock’s Long Shadow” asserts that livestock contribute more to global warming than all the automobiles in the world combined,

⁴⁸ “Environmental Issues Specific to the Agriculture Industry”

⁴⁹ “The Environmental Beef with Meat”

⁵⁰ Consumers Union

⁵¹ EPA “Review of Emission”

largely because of the amount of methane (which has a global warming potential [GWP] 23 times that of carbon dioxide) and nitrous oxide (with a GWP 296 times that of carbon dioxide) emitted from enteric fermentation and excrement.⁵²

Factory farming has also been linked to the degradation of soil quality, with massive tracts of barren land required to hold and contain livestock rather than pastures in which it could graze. The past half-century of intensive farming has used up half of the available topsoil in the U.S. ; soil continues to be eroded at a rate 30 times faster than it can be replaced.⁵³ According to the Worldwatch Institute, the livestock industry is directly responsible for 85%, or some 200 million acres, of soil erosion in the U.S.⁵⁴ While the large industrial approach to agriculture affords some benefit in food choices and availability to the general population, as well as great wealth to a few large food producers, its detrimental effects significantly outnumber the convenience it offers.

Reforms in domestic agricultural policy during the 1970s reorganized the U.S. food system by transforming the country's previously agrarian society into one characterized by industrial agriculture, factory farms and oligopoly power. These corporations, which control food production and distribution, have demonstrated little regard for the natural resources from which they profit. Because Agribusiness firms spend enormous funds on Congressional lobbying – an annual average of \$119 million (as compared to \$49 million spent by military contractors) – they enjoy privileged access to the policy-makers that shape agricultural policy.⁵⁵ The fundamental issue which remains, then, is whether the U.S. political system is both capable

⁵² “Livestock’s Long Shadow”

⁵³ Cook, 158

⁵⁴ Goldsmith, Zac.

⁵⁵ The Agribusiness Accountability Initiative

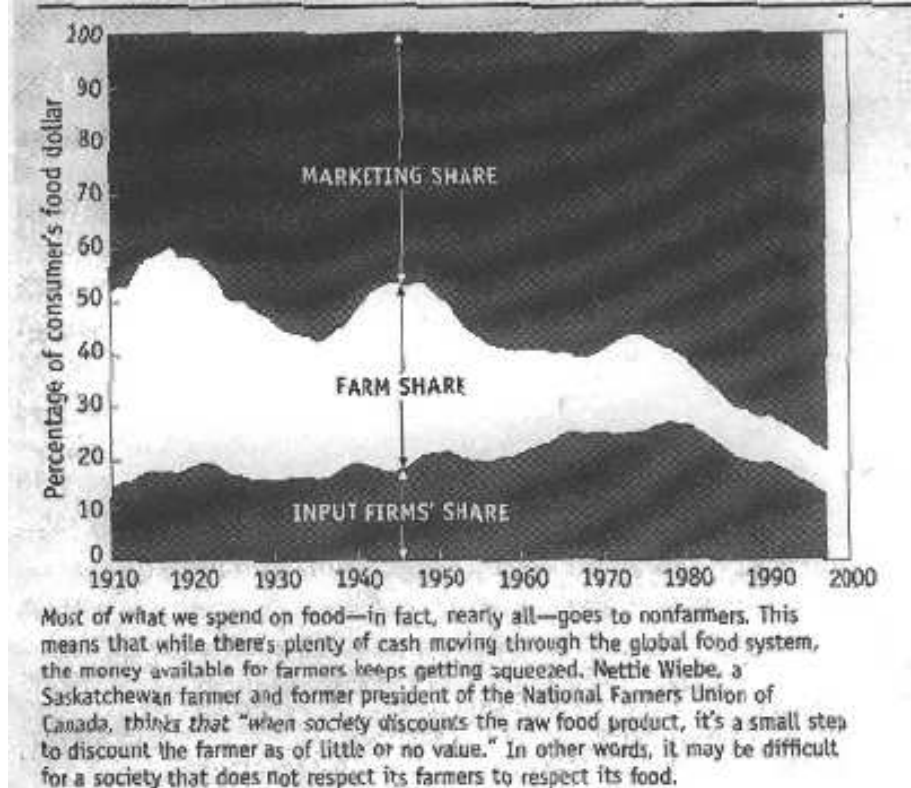
of and willing to restructure its economic policies to create a more healthful, beneficial and equitable agricultural system.

Notes

1. Cargill's Revenue (in Millions of US \$) *see footnote 24 for citation*

2001	48,631
2002	50,398
2003	54,390
2004	62,907
2005	71,066

2. Farmer's Declining Share of the Food Dollar, 1910-1997 *from Eat Here p. 45*



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