

## THE NEW ISSUES: LAND, WATER, ENERGY

*by Tom Fulton and Peter Braestrup*

The biggest single new fact about America's agriculture is that U.S. farm exports are expected to reach a record 170 million tons this year—despite a world economic slowdown.

"At the rate exports are increasing," noted Lauren Soth, columnist and former editor of the *Des Moines Register and Tribune*, "the danger of over-exploitation of the land . . . is becoming imminent. Yet exports have been the lifeblood of American agriculture and are vital to farm prosperity."

Therein lies the dilemma.

The old surpluses are gone. One-third of the nation's 400 million acres of prime crop land are devoted to export production. We now export 60 percent of our wheat, more than half of our soybeans, nearly one-third of our corn. "Expansion of exports," observed the new U.S. Secretary of Agriculture, John Block, himself an Illinois corn and soybean farmer, "is a key to a market-oriented agricultural policy."

For the Reagan administration, as for its predecessors, there is another reason to push farm exports: Their dollar value, some \$41 billion last year, constituted a major offset to the \$80 billion the United States paid out for imported oil.\*

Such pressures have begun to stir debate within farm groups and the U.S. Department of Agriculture (USDA) bureaucracy, and among academic specialists. To most Americans, living in city or suburb, the discussion may seem remote; it rarely gets into the mass media; food is something that comes ready-packaged at the A&P and seems to cost more every time one reaches the check-out counter.

But new "farm issues," aside from the perennial congressional debates over subsidies to some types of farming, most notably dairy farming, are emerging. Some minor matters get lots of media attention—scattered foreign ownership of U.S. farm land, the loss of farms to "suburban sprawl," or the im-

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\*The net U.S. "farm trade surplus" in 1980 was \$24 billion; the United States spent \$17 billion for imported coffee, rubber, cocoa, bananas, tea, spices, and other farm products.



*James A. Parcell, the Washington Post.*

*In 1979, protesting high production costs, hundreds of farmers staged a "tractorcade" past the Department of Agriculture building in Washington.*

portance of "corporate agribusiness" in California vegetable production and Delaware broiler output. But the major new national issues revolve mostly around the future use and sufficiency of land, water, and energy—and, to varying degrees, their seriousness stems from the pressure to produce more food for export.

Let us begin with the land itself.

"It has often been said that the thin layer of topsoil is all that stands between man and oblivion," observed Don Paarlberg, an agricultural economist. "While there is some poetic license here, there is also much truth."

What worries Paarlberg, Soth, and others is the long-term loss of topsoil from the nation's prime farm land, almost all of which is now in production.

During the long years of crop surpluses, and of federally subsidized retirement of up to 60 million acres of crop land, little heed was given to erosion of topsoil. More USDA "conservation" subsidies apparently went to farmers for liming and other production-enhancing techniques than for expensive terracing, contour farming, and the like. The new postwar technology permitted farmers to use (cheap) chemical fertilizer and no manure, to omit soil-building clover and grass from crop rotations, and to keep planting remunerative corn and soybean row crops year after year. The sudden 1970s surge of export demand

merely re-enforced the trend.

The results were dramatic.

After 40 years of federal effort and \$30 billion in outlays nominally spent to promote conservation, the USDA estimated in 1977 that soil erosion was a major problem on over 20 percent of the nation's crop land. Annual erosion rates exceeded 10 tons of topsoil per acre, twice the "tolerable" level, on 32 percent of the land in crops such as soybeans in the Southeast, and on 19 percent of acreage in crops such as corn and wheat in the Midwest.\*

Even if economists question the reliability of such data—since they are not collected on a regular basis and are often subject to revision—the problem is clearly one that merits attention. In Iowa, the thickness of the rich black topsoil that the first settlers plowed during the mid-1800s, has diminished in some places from two feet to one. If such depletion continues unabated, according to federal estimates, the Midwest's yields of corn will probably decline by as much as 30 percent by the year 2030.

Why are so many U.S. farmers "mining" the soil? The farmer, it is important to remember, is in business to grow and sell a crop at the least possible short-term cost. Given the pressures of inflation and high land prices, as well as keen competition for the land, he has no incentive to do otherwise. It is easier, faster, and cheaper, on rolling land in Iowa, for example, to practice "straight row" cultivation of corn and soybeans than to follow the contours of the hillside, even though the resultant erosion is five times greater. Plowing fields in the fall eases the farmer's workload during the busy spring planting season, although it increases erosion by 10 percent.

Government price supports and the demand for U.S. corn and soybeans overseas now give the farmer every incentive to plant row crops on marginal (hilly) land, to rent more such land, and to maximize short-term benefits. In effect, the farmer has

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\*An annual soil loss of 10 tons per acre equals the loss of one inch of topsoil every 15 years.

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relied on fertilizer to compensate for the loss of topsoil; fertilizer use doubled in 1960–75, and yield per acre has increased.

To cut back, overall, on production of corn, soybeans, and wheat and to cultivate less intensively would raise farm prices since less food would be produced. A major attempt to curb soil erosion, and thus avert long-term penalties to society as a whole, implies either cost to the farmer or some added cost to the taxpayer or consumer. One proposed “massive” plan of conservation measures to “minimize the national sediment load” would eliminate 90 percent of crop-land erosion but would cost \$13.4 billion.

### Farming in Chicago

Other proposals are far more modest. But almost no plan suggested so far fails to inflict pain on *someone*. One new approach that is gaining favor among farmers is “no-till” or “minimum tillage” cultivation, where the ground is left unplowed and largely undisturbed, herbicides kill off weeds and grass, and the next crop is seeded into the trashy residue of the previous one. This technique reduces erosion by as much as 80 percent on hilly land; it requires fewer tractor trips (hence less tractor fuel), helps retain ground moisture, and takes less of the farmer’s time. But the expanded use of herbicides alarms environmentalists. The effective use of these chemical weed killers requires sophistication and care; the threat of run-off of herbicides in water supplies frightens many local citizens.

Other conservation techniques, such as crop rotation (corn, then oats, then clover, then corn again), interseeding alfalfa with corn, or strip cropping (sod and corn), are all well known. To mandate their use is to impose a short-term financial burden on the farmer, especially the small farmer. In effect, he must interrupt or curtail production of more remunerative crops (e.g., corn). Proposals have been made by some USDA administrators to link other benefits that the farmer gets from the government, such as crop allotments or low-cost loans, to his compliance with accepted conservation measures. This stern approach, known as “cross-compliance,” has not been greeted with huzzas by Congress or by export-minded farmers.

Other land issues are more popular in the media than they are important to agriculture. Suburban rowhouses eating up fertile cornfields make vivid, even distressing, television pictures. However, in its effects on U.S. food production—as opposed to aesthetics or land “stewardship”—the continuing loss of farm land to suburban development, highways, and even

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strip mining remains small. The current loss of one million acres a year equals a loss of only 0.4 percent of U.S. prime crop land.\*

Around the major cities, particularly in areas like eastern Connecticut or New York City's suburbs, farming may disappear entirely just as it is about to do within the city limits of Chicago and as it has long since done in the Bronx. Since 1970, in New York's Long Island, Pennsylvania's Lancaster County, and several areas of New Jersey, local conservationists and county officials have tried to preserve farm land by buying development rights, by giving farmers special property tax relief, or by zoning land exclusively for farming. None of these efforts seems to have stopped spreading suburbanization; only high home-mortgage interest rates and higher gasoline costs for commuters seem to slow down such growth.

### **Draining the Ogallala**

*Water:* From the Dakotas, Nebraska, Kansas, Oklahoma, and Texas to the West Coast, it is water and not land that is the big issue. In the most arid regions, agricultural development has meant irrigation—in the beginning through private efforts and then through the 1902 Reclamation Act, which brought federal and state subsidies for cheap water projects to make the desert bloom.

All told, irrigated acreage has doubled (to 56 million acres) since 1950. It now accounts for more than one-fourth of the nation's crops and nearly one-seventh of the nation's total prime crop land. In the East, irrigation is used to permit double cropping—rice and soybeans, for example, in the Mississippi delta. But its big impact has been in the West where the thirst for water is enormous. Arizona's citrus farmers and California's celery and lettuce growers could simply not exist without subsidized irrigation.

Washington currently spends some \$5 billion a year on management and planning of all kinds of water projects, mostly under the auspices of the U.S. Department of the Interior. Without federal subsidies, little irrigation would take place. Indeed, water projects have been pushed well beyond what pure economic feasibility would have permitted. The water subsidy for California's Wetlands project, for example, runs to \$1,540 per

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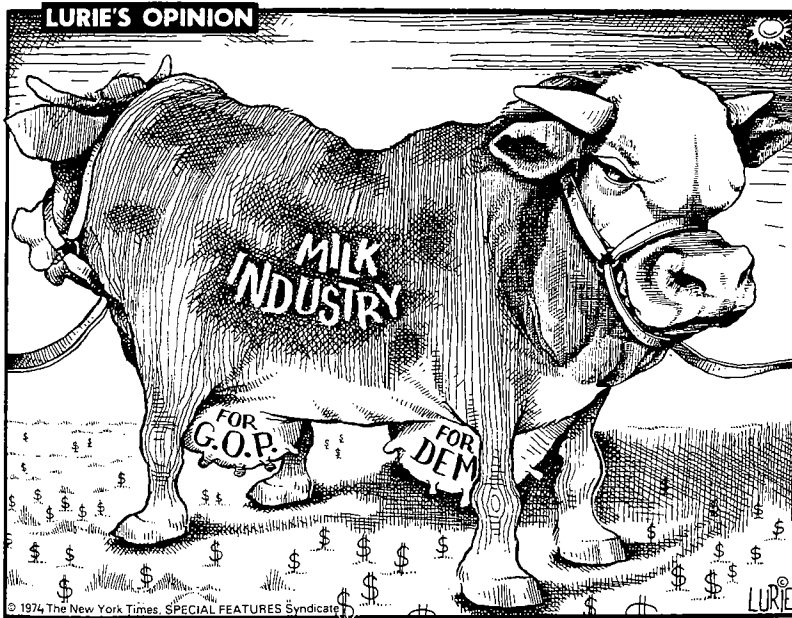
\*The widespread notion that foreigners, especially oil-rich Arabs, are buying up the best U.S. crop land is also exaggerated. According to the USDA, foreign investors, mostly British or Canadian, held an interest in 1979 in about 5.2 million acres of farm, forest, and pasture—less than 0.5 percent of the total. And almost half of this acreage was timber.

acre, roughly equal to the cost of the land itself.

Taxpayers have dug into their pockets twice for these irrigation projects: first, for the direct subsidy and second, for the crop price-support programs that were required, in part, because of the surpluses swelled by production on these subsidized lands. Consumers, on the other hand, have benefited, in the short run at least, from lower food prices.

Most of the more feasible water projects have been built—the exploitation of the Colorado, the Rio Grande, and other rivers is almost complete. Farmers have begun to tap ground water. In California, since 1953, ground water has provided 40 percent of total water used. In Arizona, since 1953, ground water has provided a little less than half. Under heavy pumping, the water level is falling, but the draw-down continues. Farmers are simply drilling deeper to get their water—at extra expense. Water itself remains cheap—priced below its true cost and utility.

However, a water shortage seems to be near. On the High



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*For its generosity to candidates of both parties, the dairy lobby is labeled "an equal opportunity employer" in the caption of this 1974 cartoon.*

### ALTERNATIVE FARMING

Long before he left office, Bob Bergland, President Carter's Secretary of Agriculture and himself a Minnesota farmer, worried aloud over the impact on conventional farming methods of "energy shortages, food safety, and environmental concerns."

He noted that "many large-scale producers as well as small farmers and gardeners are showing interest in alternative farming systems," with less reliance on petrochemicals, mechanization, and monoculture.

At Bergland's orders, a USDA study team interviewed 69 successful "organic," or "organic-conventional," farmers in 23 states, surveyed agricultural schools and county extension offices, and did other research. In mid-1980, they reported their findings.

Most of the 69 farmers owned their farms outright, hence felt less financial pressure than did others with heavily mortgaged farms. Most were veterans of "chemical-intensive" farming; they had developed their own practical "organic" crop- and livestock-raising techniques, relying heavily on soil conservation, crop rotations, and the use of manure instead of nitrogen fertilizers. Their production costs were lower, but so were their incomes. Controlling weeds and insects without chemicals was a major problem, especially for organic fruit and vegetable producers.

Even so, as energy costs rise, the USDA team predicted, mixed livestock-crop farmers may find "organic farming just as economical or even more so than chemical-intensive farming." Many "organic" methods, in fact, are already used by conventional farmers. Yet, the team observed, any general shift by America's big cash grain

Plains stretching from Nebraska to eastern New Mexico and from Colorado to the Texas Panhandle, irrigation has come from water in the eight-state Ogallala aquifer, an underground lake. In some places, its water is currently being drawn down an average of 14 times faster than it is being replaced. Net aquifer depletion in Texas runs from one to five feet per year. Given the rising costs of fuel for pumping, irrigation in some areas may prove uneconomical well before the water runs out. But the fact remains that the Ogallala aquifer is being drawn down at a rate considerably greater than it is being recharged.

All told, perhaps one-fourth of America's irrigated crop lands utilize subsoil water faster than it is being renewed. Moving water by pipeline or canal from the Mississippi to northern Texas or New Mexico would cost over \$400 per acre foot, over 10 times what farmers say they can now afford for irrigation water.

farmers to totally chemical-free farming would cause a sharp drop in U.S. food production.

To some degree, official interest in "organic" farming reflects the broader environmental crusades of the 1970s and a new back-to-the-land movement. Overall, from 1970 to 1980, the population of America's nonmetropolitan counties increased 15 percent, reversing a long exodus. Most of the rural newcomers were not farmers; but in some areas, notably New England and the upper Midwest, scores of abandoned small farms are now being reactivated by retired folk, young city couples, or "returnees," usually with outside incomes.

Coinciding with USDA studies, private groups have focused on alternatives to large-scale agriculture. They range from Control Data Corporation's Rural Venture project to Nebraska's Center for Rural Affairs, to Pennsylvania's Rodale Press, publisher of *New Farm* (circulation: 60,000). They variously urge easier credit and favorable tax policies for small farmers, especially beginners; more research on nonchemical farming methods; better marketing of crops.

As some of these groups see it, developing labor-intensive specialties—livestock, fruit, vegetables—rather than corn or soybeans may enable more small farmers to survive. For example, higher shipping costs have raised the supermarket prices of California's mass-produced vegetables in the East and Midwest; small vegetable farmers near the big cities have already begun to compete for California's old customers.

None of this is likely to change the face of American agriculture or halt the trend toward "bigness" in food processing and marketing. But energy prices—reflected in rising fertilizer, fuel, and pesticide costs—may lead both the USDA and private corporations to investigate how all farmers can produce more with less.

In Kansas and Nebraska, where the "mining" of water has become extensive, corn and other feed crops have been grown under irrigation since the 1950s to fatten beef cattle. As subsoil water supplies diminish, farmers here may shift back to dry-land wheat farming, while the Corn Belt to the east, with its ample rainfall, resumes its old role of "finishing" beef for market.

Almost every region west of the Mississippi, according to the U.S. National Water Assessment, has insufficient water from all sources for future agricultural production based on present levels of use. The federal government estimates that Western farmers' demand for water will rise only six percent from 1975 to the year 2000. But the demand for water by all other users—industry, municipalities, miners—will increase by 81 percent. And the prospects for bringing in enough extra water to satisfy



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the needs of developers of oil shale or the processors of Western strip-mined coal are dim.

In the past, Washington sought to solve the problem simply by supplying water to meet agricultural demand. Now, strong resistance by both the Reagan administration and Congress to high-cost projects, whose agricultural benefits can only be marginal, has set in. Some specialists argue that the over-expansion of irrigated agriculture, fostered by federal subsidies, has to be ended for the farmers' own good. In any case, a struggle in the West between farmers and nonfarm interest groups over dwindling water supplies seems inevitable.

### **Rotation versus Corn-on-Corn**

*Energy:* As everybody knows, U.S. agriculture is energy-intensive; total tractor horsepower has more than doubled since 1951: More field work, the field-picking and shelling of corn, the use of bigger and bigger combines, and the general trend toward labor-saving mechanization have all required more fuel. Less obviously, U.S. farmers also use sizeable amounts of fuel for irrigation pumps, for drying corn and other harvested crops, for heating animal pens and breeding cages, and for transporting crops to market. Most important, petrochemicals are used in fertilizer and insecticides.

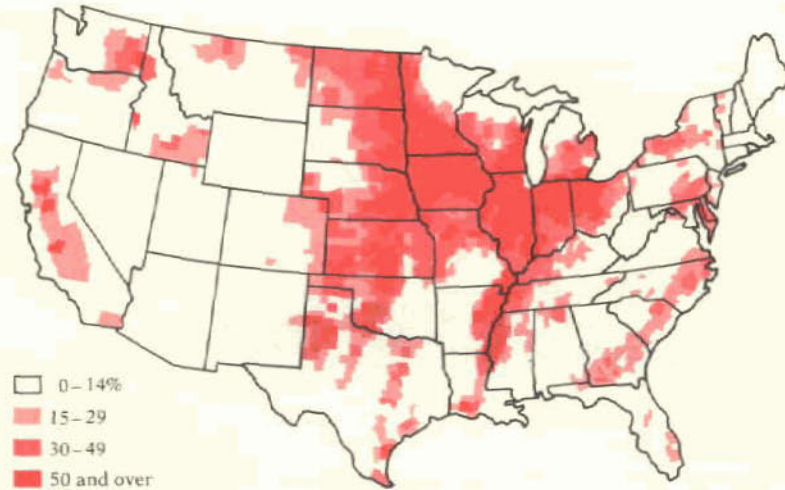
Thus, for corn, the energy outlay per acre in "gasoline-equivalents" is: fertilizer, mostly nitrogen, 40 gallons; natural gas for drying the corn, 20 gallons; tractor fuel for tillage and cultivation, 10 gallons; herbicides and insecticides, 5 gallons. In sum, it takes about 75 gallons of gasoline-equivalents to produce and harvest one acre of corn.\*

One current research effort is devoted to reducing the use of chemical fertilizer, especially nitrogen. Legumes (clover, alfalfa, vetch) add nitrogen "organically" to the soil. A test using these legumes in a crop rotation produced as much protein and cost less in terms of chemical fertilizer than did the usual "corn-on-corn" monoculture many farmers currently practice. But for a cash grain farmer, the economics are poor. He cannot sell the legumes for as much money as he could get for the corn. The dwindling numbers of mixed livestock-grain farmers, on the other hand, can use clover and alfalfa in rotation and thereby save on chemical nitrogen—livestock can eat the legumes as hay or pasture and provide manure that is returned to the soil as fertilizer.

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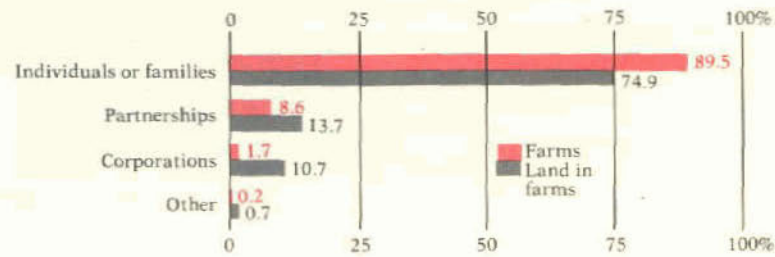
\* Yet agricultural production uses only 2.6 percent of the nation's total energy.

**HARVESTED CROPLAND AS A PERCENTAGE OF LAND AREA, BY COUNTY, 1974**



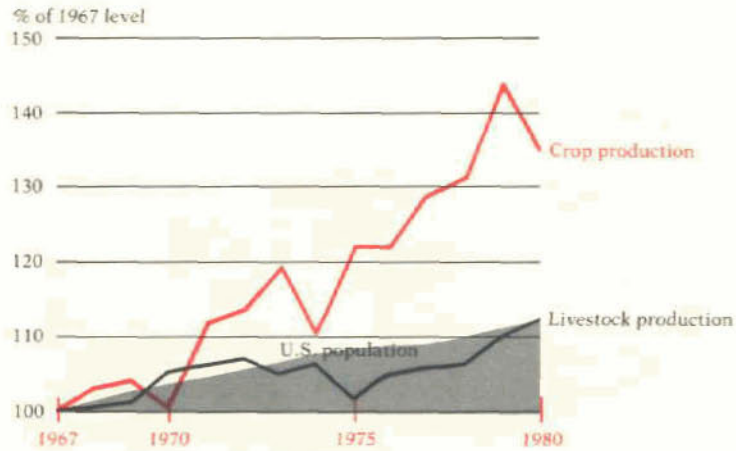
*The map highlights only the nation's prime crop land—the Southeast's soybean and tobacco country, Mississippi's cotton and rice fields, the Midwest's Corn Belt, Dakota wheatlands, irrigated acreage north of the Texas Panhandle, California's fertile valleys. Including woods, pasture, and range (not shown), all land in farms adds up to one billion acres. Little of it is owned by absentee corporations; most farm corporations, like most farm partnerships (below), are family affairs. But family farms can be big: In 1978, farms (or ranches) of at least 2,000 acres accounted for only three percent of all farms but almost half of all farm acreage.*

**FARMS AND FARMLAND, BY TYPE OF ORGANIZATION, 1974**



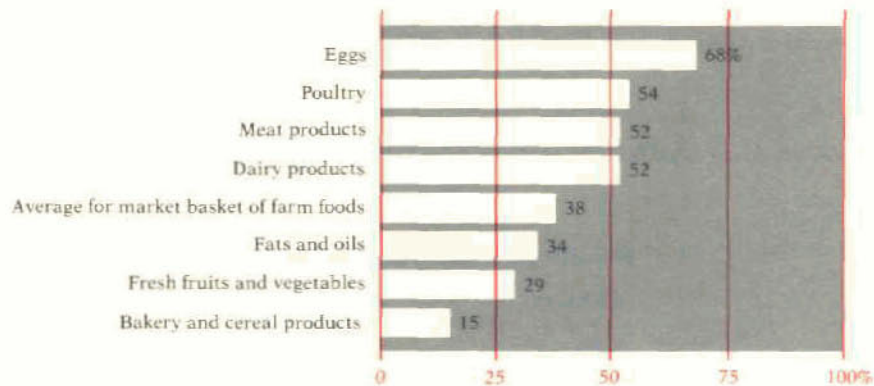
Source: U.S. Bureau of the Census.

**CROP AND LIVESTOCK PRODUCTION, 1967-80**



*The export push since 1971 has spurred higher U.S. grain production, but droughts have hurt output; the overall trend in livestock masks ups-and-downs in the cattle business. Below: The "spread" between what farmers get for their products and what consumers pay for food has steadily grown since 1973 as the middleman's costs of labor and packaging have gone up faster than farm prices.*

**FARM SHARE OF RETAIL FOOD PRICES, 1979**



Source: U.S. Department of Agriculture.

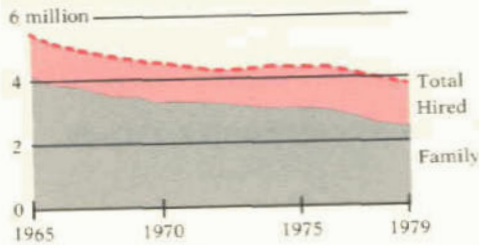
**PRICES RECEIVED AND PAID BY FARMERS SINCE 1967**



	1976	1977	1978	1979
	(as % of 1967 prices)			
Prices received	186%	183%	210%	241%
Crops	197	192	203	223
Livestock	177	175	216	257
Prices paid	187	196	212	240

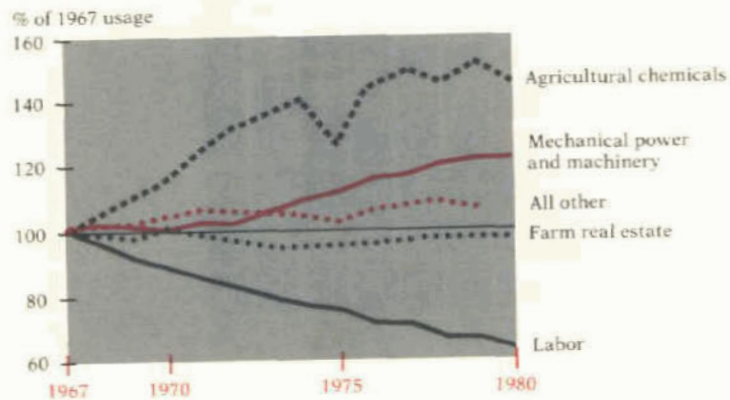
*About 6.2 million Americans lived on farms in 1979. Of 3.8 million "farm workers," only 1.2 million were hired hands; migrant harvest workers totaled 212,000. Four-fifths of all farms are owned by children of farmers.*

**PEOPLE EMPLOYED ON FARMS**



Source: U.S. Department of Agriculture.

**CAPITAL-INTENSIVE FARMING: INPUTS, 1967-80**

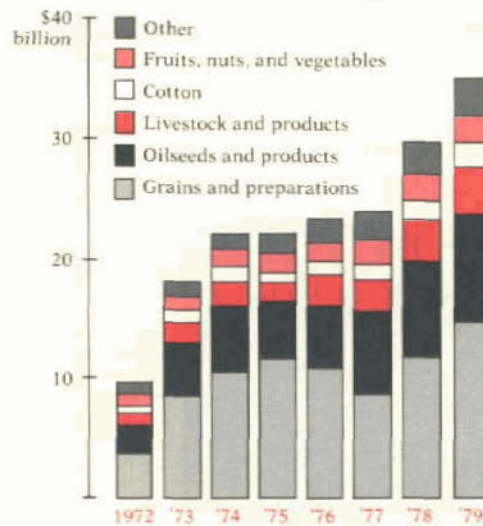


**WHERE U.S. FARM EXPORTS HAVE GONE** (in billions of dollars)

	1976	1977	1978	1979
Asia	\$7.6	\$8.1	\$10.5	\$12.2
Western Europe	8.1	8.6	9.5	10.3
Eastern Europe and USSR	2.5	1.7	2.9	5.0
Latin America	1.9	2.2	3.2	3.7
Canada	1.5	1.5	1.6	1.7
Africa	1.2	1.4	1.6	1.7
Other	0.1	0.1	0.1	0.1
<b>TOTAL</b>	<b>23.0</b>	<b>23.6</b>	<b>29.4</b>	<b>34.7</b>

*Even before Jimmy Carter's 1980 partial grain embargo, Japan was the No. 1 overseas customer of U.S. farmers. Washington's 1971 decision to "float" the dollar effectively cut the price of U.S. products and helped start the current export boom.*

**VALUE OF U.S. FARM EXPORTS, BY COMMODITY, 1972-79**



Source: U.S. Department of Agriculture.

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For most farmers, nitrogen fertilizer will remain a major energy item. While fuel prices rose 207 percent from 1973 to 1980, the price of nitrogen-rich anhydrous ammonia fertilizer went up 161 percent. More efficient use of such fertilizer is likely as its cost keeps rising. But not to use any nitrogen fertilizers, as one study pointed out, would mean a significant drop in U.S. agricultural output.

As for fuel, farmers, like everyone else in America, will adjust. For some in the West, both reduced water supplies and the higher cost of fuel for pumping will cause a shift to production of more valuable crops on irrigated land, from alfalfa to corn, for example. To reduce fuel costs in the Midwest, there will be greater incentives to go to "minimum tillage" for corn or soybeans, reducing both tractor time and soil erosion. Still others will use solar heat to warm hog houses and milking parlors, or rely on windmills for part of their electricity. Livestock farmers may use bio-gas derived from hog or cow manure as practical production methods evolve.

*Gasohol:* Nourished by federal loan guarantees and tax breaks, the infant "gasohol" industry is designed to reduce U.S. dependence on OPEC oil. A mixture of 90 percent gasoline and 10 percent ethyl alcohol (ethanol), gasohol was pushed strongly by Jimmy Carter's administration. Last year, total output of ethanol increased 300 percent to 150 million gallons.

Various projections have been cited in Washington calling for a rapid build-up in production capacity to make enough alcohol—10 billion gallons—from all sources to "stretch" U.S. gasoline supplies by 10 percent by 1990.

### **Food for Fuel?**

In the case of ethanol, one possible long-term problem lies in the fact that corn is now the cheapest, most practical feedstock. (Indeed, Carter's critics saw his 1980 promotion of gasohol largely as a sop to Midwest corn farmers angered by his partial embargo on U.S. grain exports to the Soviet Union.) One bushel of corn makes 2.5 gallons of ethanol; at current production levels, the effect on overall demand for corn is insignificant.

A fast build-up, however, would have a major impact. According to Purdue economist Wallace Tyner, production of, say, four billion gallons of ethanol in 1984 might possibly lead to a 30 percent increase in corn prices. Many farmers would then switch to growing corn rather than soybeans and other lower-priced crops to supply the new "ethanol market." Higher U.S. corn prices might hurt exports of the grain. Incentives to culti-

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vate additional erosion-prone marginal land might increase. So would the cost of feeding hogs, cattle, and chickens—and consumer meat prices.

However, neither Tyner nor specialists in Washington expect so dramatic a future. Rather, they foresee gradual change, well below the projections of gasohol's enthusiasts in Congress.

The Reagan administration did not repudiate the Carter gasohol plan, even as it lifted the Carter grain embargo last April. But the newcomers have ruled out further loan guarantees for ethanol plants: Federal help will go for research; ethanol production capacity will be left to private enterprise, albeit with the crucial retention of a four-cents-a-gallon federal retail tax exemption (plus similar state exemptions) for gasohol. As it is, gasohol now costs the motorist slightly more at the pump than does regular gasoline. Only a major rise in the price of regular gasoline is likely to make gasohol more competitive. And some critics claim that current methods of making ethanol (including growing and processing the corn) consume more total energy than they produce.

### **Bigger May Not Be Better**

*The "Family Farm"*: There has been much rhetoric, particularly among environmentalists and Farm Belt politicians, about threats to the future of the "family farm." Merely defining the "family farm" or the "small farmer" has caused some difficulty. The decline in total farm numbers and the increase in the average farm's acreage usually start the discussion. But these numbers conceal as much as they reveal.

One can start at the top. A fifth (477,000 in 1974) of all farms are what the USDA calls "primary" farms: They earned more than \$40,000 in 1974 in gross sales of what they grew. In 1974, they accounted for over 78 percent of all U.S. farm output. And their operators are overwhelmingly farmers and their kinfolk, not "agribusiness corporations." Almost half of these farms are crop farms (grain, cotton, sugar, tobacco). Within this "primary" group is an elite: the 64,000 farms with over \$200,000 in sales; they account for 40 percent of farm output.

The primary farms are the big engines of U.S. *production*; their owners get over 75 percent of their revenue from crops and livestock; they own 70 percent of the farm land and rent much of the rest. They are in the best cash position to buy more. And their predominance is growing.

Four-fifths of all farms in America are in the *under-\$40,000* gross sales category. What now keeps most of these family farms

**FEDERAL FARM PROGRAMS**



The U.S. Department of Agriculture, with 91,232 employees and a \$48 billion budget in 1981, is no longer simply the champion of the farmer. There aren't enough farmers and farmworkers left to sustain USDA's influence in Washington by themselves. Like his predecessor, Secretary of Agriculture John Block has been bequeathed a wide range of other responsibilities (and clientele): "food assistance" to the needy overseas (\$1.6 billion); "rural development," including loans for housing, utilities, and cable TV (\$14 billion); food stamps and school lunches (\$14.8 billion); food safety and quality (\$356 million); the Forest Service and kindred operations (\$2 billion).

Indeed, the "farm programs" category now accounts for only \$9 billion, or less than a fifth of the department's program outlays.

Of this total, only \$246 million goes to help farmers pay the costs of soil conservation. Roughly \$5.4 billion is earmarked for commodity loans and payments—down from \$6.6 billion in 1979. But the total federal commodity payout is unpredictable and may vary widely from year to year, depending on weather, export demand, free market prices, and the amount of crop land ordered "set aside" by the Secretary of Agriculture. Eligible for help are producers of corn and other feed grains, wheat, upland cotton, rice, soybeans, peanuts, tobacco, wool, sugar, and dairy products.

Through a complicated array of federal crop loans, direct payments, and commodity purchases (notably of milk), the USDA, in effect, guarantees each producer of these commodities a "minimum" price, if he cannot do better on the open market. The farmer, in return, accepts varying USDA curbs on his planted acreage ("set-asides") or actual production, as Washington seeks to keep supply in line with demand. With exports running high, no set-asides have been ordered for acreage devoted in 1981 to wheat, corn, and other feedgrains. Although nominal limits have been set since 1970 on the total annual amount any single farmer may receive, according to a 1981 USDA study, they "have never proved effective" due to various unpublicized exemptions. To get these programs through Congress, outnumbered Farm Belt legislators now have to make deals with urban lawmakers—endorsing food stamps for the poor in return for U.S. payments to farmers.

Notably unprotected are ranchers and livestock farmers, among others, who face steadily increasing costs but receive prices that may drop by 25 percent from one year to the next, even as consumers complain about high meat prices at the supermarket.



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going is off-farm income—factory wages, salaries, dividends, retirement benefits. From 1960 to 1974, nonfarm income per farm increased on the average about seven percent per year. The trend has given farm families a financial security not found in agriculture, which is volatile in both yield and price, and thus has averted the further depopulation of the countryside.

Indeed, one-third of America's farms sell less than \$2,500 worth of farm products a year, but in 1978, *their* owners' average family income slightly exceeded the national median of \$17,640. These may be small farmers, but, contrary to the claims of subsidy-seeking farm lobbyists, no longer are small farmers necessarily needy, low-income folk.

How big is the most "efficient" farm? Long accepted was the notion that the capital-intensive new technology, particularly mechanized equipment, made "bigness" synonymous with efficiency, and thus lower consumer food prices. Every farm is different; raising wheat in Kansas is not the same as raising cotton in Texas. Yet with bigness, it was said, came lower production costs to the farmer per bushel of wheat, per bale of cotton, per pound of beef on the hoof.

But at some point, more "efficiency" and more acreage do not march together. A 1979 USDA technical study indicated that most—90 percent—of the "economies of scale" could be captured on family farms of relatively small acreage. But achieving the last 10 percent required that farms more than double in size.

For example, an Iowa corn and soybean farmer in 1979 could reach the 90 percent efficiency level with only 300 acres, selling \$60,000 worth of crops. To attain 100 percent efficiency, the same farmer would have to work 640 acres; he would then sell \$145,000 worth of crops. (As it happened, such primary farms in Iowa averaged 401 acres and \$123,000 in gross sales.) The most powerful incentive to buying—or renting—more land may simply be the desire among farmers to increase family net income—not to become more "efficient."\*

Washington helps this along. Federal subsidies to producers of corn, wheat, and other commodities are based on the national *average* costs of producing each crop. The larger, more efficient farmers *specializing* in corn or wheat have lower-than-average costs, hence the subsidies tend to provide them with a windfall gain.† Since subsidies are paid on a per-bushel basis, these

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\* See *A Time to Choose: Summary Report on the Structure of Agriculture*, Washington, D.C.: U.S. Department of Agriculture, 1981.

† In 1978, one percent of the farmers, those with large farms, got 29 percent of all the federal commodity program payments.

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farmers, in turn, can put extra cash into buying more land. Thus, indirectly, federal crop payments have an unequal effect; like the tax laws, they tend to favor the bigger farmer and help him to acquire smaller, neighboring farms.

Land, water, energy—these elements shape the long-range problems facing American agriculture. But, like the long-range energy problems evident to specialists but ignored by politicians during the 1950s, they have received little serious attention in Congress, the media, or the White House. Any major remedies involve financial burdens on farmers, consumers, or taxpayers. Hence, they also promise political pain to elected officials. It is much easier to inveigh against high meat prices, or “corporate agribusiness,” or “federal meddling.”

Thus, few of the real issues crop up in the congressional debate over this year’s farm bill, which will guide federal policy through 1985. In essence, the current Congress, like its recent predecessors, is simply tinkering with the farmer’s “safety net”—the crop-subsidy legislation created during the Great Depression of the 1930s. Both Republicans and Democrats tend to view the new surge in exports as a boon—keeping up grain prices and reducing farmers’ need for subsidies.

However, as Lauren Soth observes, America cannot possibly “feed the world,” or continue to serve as a “ready reserve” granary (as it has for the Russians). Its best land is already under cultivation; the pressure to “mine” more land and Western water is already high. Fairly soon, the United States will have to decide whether to restrict exports and pay farmers to conserve land, or risk the long-range loss of the productivity of America’s soil. U.S. agriculture, in effect, is experiencing a bonanza that, unexamined, could ruin us all.