

Two bushels of soil lost for each bushel of corn produced

AGRICULTURE

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professor who specializes in natural resources issues, said the post-World War II technology of chemical pesticides and fertilizers has deluded farmers and scientists into thinking that soil erosion is having little impact on crop production.

"In the 1950s, technology substituted for inherent soil productivity. Now, the technological developments seem to have leveled off," said Timmons. "There are no breakthroughs coming along."

"If that's true, there could be big drops in crop yields in the future."

Fragile Lands

Lands in western and southern Iowa, put into crop production about five years ago when grain prices were high, are "fragile lands that will wash and blow, and we're headed for some real problems in terms of erosion and water quality," Timmons said.

"If we don't keep our resource base secure and productive, so that we can continue exporting agricultural products to help pay for our imports, we're not going to be able to bail ourselves out of this inflation and dollar problem," he said.

With the rush to plant more and more acres with corn and soybeans, "a lot of the conservation practices have gone out the back door," said Howard P. Johnson, a professor of agricultural engineering. "Terraces have been plowed out, and contouring has stopped because it's a nuisance to the big new cultivating machines."

Just how serious is the soil erosion problem in Iowa, a state that provides one-tenth of the nation's food supply and produces more than 20 percent of the country's farm exports?

State conservationist William J. Brune estimates that on unprotected hilly farmlands in Iowa the soil erosion loss averages 13 tons per acre annually, three times what is considered acceptable. At that rate, one inch of topsoil would be removed every 12 years.

Iowa soils originally contained an average of 16 inches of topsoil, said Brune. Over the past century of farming about half of that has disappeared into rivers and streams, leaving an average layer of eight inches.

Less and Less Loess

In the fragile loess soils of western Iowa, the erosion is much worse than the average, 25 tons per acre and more. But the soils there are extremely deep, and the immediate concern is the effect the erosion has on water quality, as sediment washes into waterways.

In southern Iowa, an actual "wearing out" of the land is the big fear. "The topsoil there is very thin, and the subsoil is very poor," said agronomist Pesek.

"On some of our steeper cropland, the soil has already eroded to the subsoil, leaving no topsoil," Brune said. "The major difference in the cropland situation today is the increase in intensity of farming."

Between 1967 and 1977, an additional 1.4 million acres of Iowa land were put into corn production, and nearly 2 million acres of soybeans were added.

Some of this land was of marginal quality, previously kept in pasture or planted with crops that have a less severe impact on the land than do soybeans, which are notorious for adding to erosion problems.

"The increased acreage of corn and soybeans has reduced the use of rotation systems," Brune said. "Consequently, there has been an increased soil erosion problem on these lands."

Another, more dramatic way to view the soil erosion loss in Iowa, said Brune, is to consider that farmers are losing two bushels of soil for every bushel of corn they produce.

Using the commonly accepted theory that topsoil erosion cannot total more than four or five tons per acre annually without eventually disappearing altogether, Brune estimates that 14 million acres of Iowa cropland — slightly more than



REGISTER PHOTO BY JIM MAGDANZ

Soil erosion on Iowa farmland

A wide river of sand runs through William Fatland's soybean field about 10 miles southwest of Nevada in Story County. Raymond Day, whose son farms for

Fatland, said the erosion was so bad they were unable to cross the waterway with a tractor. The water washed out all plant life in a swath as wide as 30 feet.

half the total — lose more soil than that each year to water erosion.

In addition, 4.3 million acres of Iowa land suffer wind erosion "above acceptable levels," he said. About 9 million acres of land are adequately treated with soil conservation measures — terracing, contouring, strip cropping, grass waterways, reduced tillage, subsurface drainage.

Sediment Loss

Still, said Brune, an estimated 200 million tons of sediment wash from Iowa cropland each year. "We haven't missed this soil so far," he said, "because we've put more and more fertilizer on the soil to keep yields up. But what would happen if we couldn't get fertilizer?"

Even using fertilizer, Brune said, there is evidence that farmers suffer economic loss from erosion. He cited a 1973 University of Missouri study indicating that the net income of farmers fell \$18 per acre on moderately eroded fields and \$33 per acre on severely eroded fields, as a result of reduced corn harvests.

Even though Iowa has been somewhat in the forefront in setting up state programs to control erosion and to give aid to farmers who install conservation practices, William H. Greiner, executive vice president of the Soil Conservation Society of America, said, "We have not been the best stewards of our soil and water resources in this state. We're a leading state in agricultural products, and we've lost half our resource base."

A study last year by the U.S. Water Resources Council reported severe

gully erosion in the entire Des Moines River basin. The study said the river "transports an average sediment load of 23,000 tons daily. This excessive sediment load creates serious problems in the use of surface water for water supply purposes."

What is the solution? Is there one?

William D. Shrader, an ISU agronomist, expresses the pessimistic view that "within our society, economics dictate what land will be in crop production and will erode."

Erosive soil could be removed from production without having any drastic effect on the national grain supply, but such a step seems unlikely, Shrader believes.

"No solution to the problem of undesirable rates of erosion is in sight," he concluded. "Subsidies that would induce farmers to farm in a way that would control erosion would be so costly that the public would not be willing to pay the price."

"Penalties necessary to force compliance by farmers would be so unpopular in the farming communities that they would result in widespread bankruptcies of the farmers."

Some other experts are more

hopeful. A number of them believe that so-called "minimum tillage" has a great deal of promise.

In minimum tillage agriculture, a farmer drastically reduces the amount of plowing he does and leaves residue from the previous year's crop on the land. That reduces soil erosion by keeping a cover on the land, making it less subject to damage from wind and water.

Many farmers are beginning to practice minimum tillage, although the scientific verdict is not yet in on the issue of how crop yields are affected. Even if they are slightly reduced, some proponents argue, the farmer will perhaps have saved enough in fuel costs to make up much of the difference.

Another possible drawback is that minimum tillage apparently requires the use of more herbicides and pesticides to get rid of weeds and insects.

"I'm a little concerned about minimum tillage," said Rupert Cutler, assistant U.S. secretary of agriculture for conservation. "It saves soil, but we may end up with more chemical pollution."

In Iowa and throughout the nation,

the new factor that is going to force some prompt decisions on soil erosion is Section 208 of the federal water pollution law. That section, which mandates a sharp reduction in farm-caused non-point source pollution, has led to a whole new government process, including the creation of state and local "208 committees" to plan an environmental clean-up of farming operations.

"208 Plan"

Once a state "208 plan" is approved by the secretary of agriculture and the administrator of the Environmental Protection Agency (EPA), identifying critical areas of non-point source pollution, contracts will be written between the federal government and farmers, paying them up to 50 percent of the cost of installing "best management practices" to alleviate the pollution they cause.

The effort has been dubbed the Rural Clean Water Program (RCWP). Because of the failure of the Carter administration to recommend any money for the program in the next fiscal year, it is uncertain whether it will get off to any sort of start before 1980. Legally, however, the federal government is bound by the water pollution law to try to achieve "fishable and swimmable" quality waters throughout the nation by 1983.

Iowa farmers who showed up in July to testify at an Agriculture Department-EPA hearing in Des Moines to solicit public comment on proposed RCWP regulations expressed doubts that the 50 percent sharing provision would be sufficient to draw farmers into the program.

Several of the witnesses were farmers who also are active as district conservation commissioners and favor an RCWP program. They said many other farmers are not yet convinced of the seriousness of the erosion and related pollution problems they cause, nor of the inevitability of the government stepping in.

Farmers Unconvinced

"We've got an awful problem getting farmers to understand what is going on," said Elmer C. Ketelsen of Grand Mound. "Iowa is where the sediment problem is, with intensive agriculture, and this is where the money should be spent."

As part of the effort to develop an Iowa "208 plan," the state Department of Soil Conservation has identified areas of the state with the greatest need for pollution control, and has concluded that the biggest single problem is with the watersheds that feed the Rathbun Reservoir in southern Iowa's Appanose County.

Erosion is so serious in that part of the state that the reservoir's life could be drastically shortened by a huge accumulation of silt. In the Rathbun Reservoir area, soil loss is between 11 and 16 tons per acre each year, the state department's assessment shows.

Wade Hauser, an agricultural economist at the department, said there are "tremendous sediment problems" in most of the reservoirs constructed in Iowa in recent years.

A big education effort is needed to sell farmers on the idea that it is in their long-term interest to get serious about soil conservation, state officials said.

The farmers' reluctance, viewed with the evidence that soil erosion and all its associated ills are on the increase in Iowa, dramatizes the roadblocks that federal and local officials face as they try to reduce farm-caused pollution in the nation's leading farm state.

"We've been preaching the ethics of

conservation for years, but now it looks like we're going to have to start leaning on people a little more," said agricultural engineering professor Johnson. "But some farmers don't give a damn about conservation, and there could be a backlash if they're pushed."

TUESDAY: The failure of federal soil conservation programs.

CITIES IN NEED ARE NOT LIMITED TO NORTH: STUDY

WASHINGTON, D.C. (AP) — The typical problems of cities are not confined to the Northeast and the Midwest but are shared by those in the South, a Congressional Budget Office study suggests.

Representative Henry Reuss (Dem., Wis.), who requested the study, made it public Sunday with the comment that it "should help reinforce the perception that severe urban problems, warranting national attention, are by no means limited to the Northeast and Midwest."

Reuss, chairman of the House Banking Committee and its subcommittee on the city, cited a composite index devised by the budget office from data on such factors as high unemployment and low per capita income and applied to a sampling of 39 cities.

On this "composite measure of social need" Newark, N.J., appeared as the neediest of the 39 urban areas indexed. But four of the 10 "high need cities" were from below the Mason-Dixon line. In addition to Newark, the 10 were Cleveland, Ohio; St. Louis, Mo.; Detroit, Mich.; New Orleans, La.; Buffalo, N.Y.; Miami, Fla.; Gary, Ind.; Baltimore, Md.; and Tampa, Fla.

"Moderate Need Cities"

Birmingham, Ala., headed the list of "moderate need cities," followed by Philadelphia; Jersey City, N.J.; Atlanta, Ga.; Boston, Mass.; Chicago, Ill.; Cincinnati, Ohio; Louisville, Ky.; Rochester, N.Y.; Pittsburgh, Pa.; New York, N.Y.; Sacramento, Calif.; Milwaukee, Wis.; San Jose, Calif.; Akron, Ohio; Columbus, Ohio; San Diego, Calif.; Norfolk, Va.; and Oklahoma City, Okla.

Listed as "low need cities" were Kansas City, Mo.; Los Angeles, Calif.; Phoenix, Ariz.; San Francisco, Calif.; Houston, Texas; Indianapolis, Ind.; Denver, Colo.; Minneapolis, Minn.; Seattle, Wash.; and Dallas, Texas.

Analyzing five programs for cities, several of which are before Congress for continuation or modification, the study found the Anti-Recession Fiscal Assistance and Local Public Works programs to be especially responsive to the three categories of need — social, economic and fiscal — which it considered.

The Community Development Block Grants program was projected to do equally well as changes in its distribution formula take effect.

CETA Studied

Other programs studied were the Comprehensive Employment and Training Act (CETA) and General Revenue Sharing.

The five programs combined are providing \$21 billion in federal assistance this year, with local governments receiving about 90 percent of the total.

Monsoon floods spread death, hunger in India

NEW DELHI, INDIA (AP) — India's official death toll from monsoon-season floods is 1,023 and the havoc, hunger and misery is spreading along the rain-swollen Yamuna and Ganges rivers.

Figures on the number of flood-related deaths since the monsoon rains began in late June were given by Irrigation Secretary C. C. Patel. Unofficial estimates are much higher.

Patel said an estimated 34.5 million persons — one Indian in 18 — have been displaced or otherwise affected by floods. He said damage to crops, structures and public utilities is estimated at \$111.6 million.

The Yamuna and Ganges slowly receded from the flooded cities of Delhi, Mathura, Agra, Allahabad and Benares in northern India. But hundreds of thousands remained in refugee camps or searched for missing relatives.

Flood alerts were sounded at Yamuna River cities below Agra, 180 miles southeast of New Delhi, and at Ghazipur, Patna and Malda on the lower Ganges.

Army units were rushed to northeast India's Malda District, near

the Bangladesh border 180 miles north of Calcutta, where the situation was described as grave.

Large areas of Agra, site of the Taj Mahal, and Benares and Mathura, two of the seven sacred cities of the Hindu religion, remained under water.

The 300-year-old Taj Mahal was closed to tourists Friday night when the Yamuna covered the roads to Agra, but the structure was not flooded.

Many Hindu temples were flooded in the Mathura area 125 miles south of New Delhi and thousands of pilgrims were reported trapped in hostels by water entering the lower stories.

The Khrishna Janma Bhoomi temple complex at Mathura, said to be the birthplace of Lord Krishna of the Hindu deity, was spared.

The annual floods are the worst here in years. Patel said centralized flood control in India started in 1976, and the government will spend \$100 million for flood control over the next five years. The total spent since 1955 is \$75 million.

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