

vation farming; the farms have largely been converted from continuous row crops to continuous meadow.

But we are not achieving the same results in some other parts of the country in curbing soil erosion and sediment delivery. The advent of highly mechanized farming using six- to eight-row equipment militates against the installation of terraces or other land protection measures that would interfere with planting, tilling, and harvesting equipment. The tight cost-price squeeze on the farmer leaves him little financial leeway to worry about sediment problems 100 miles downstream. Conservation farming adjusted to the needs of highly mechanized operations is urgently essential in many parts of the country.

Forest burns poses a serious problem in sediment delivery. With loss of protective cover, soil erosion on such areas may become intense.

CHEMICAL FERTILIZERS

We Americans apply 32 million tons of chemical fertilizers on our lawns, gardens, fields, and pastures. Some folks think this is a tremendous tonnage of chemicals that may be contaminating our soils, our streams, and ground waters by runoff and deep percolation.

The average use of chemical fertilizers per cropped acre in the United States is only one-tenth the level used in the Netherlands. Even so, fertilizer use in the United States over the past 50 years has doubled about every 10 years.

Since nitrogen and phosphorus are the nutrients of primary concern that enable growth of "algal blooms" on ponds, lakes, and streams, naturally, a suspicious eye is sometimes cast at Agriculture's widespread use of these chemicals.

Some nitrogen is moving from fertilized fields with land runoff, but most of our evidence indicates this is a minor contributor to stream nitrogen at the present time.

Mr. DADDARIO. On that point, Mr. Grant, Dr. Commoner at the New York AAAS meeting said he thought that nitrates from ground water were a danger. They have appeared in milk, drinking water, and food. Now, this runs somewhat contrary to what you have just said, that it is a minor contributor. If this is so, what should we do about it and how do you feel about Dr. Commoner's remarks in that regard?

Mr. GRANT. May I ask Dr. Wadleigh to respond to this since this is in his particular area.

Dr. WADLEIGH. Dr. Commoner especially emphasized the nitrate content of spinach as a baby food. Samples have been found carrying up to 3,000 or 4,000 parts per million of nitrate. I happened to look up some data in a 1907 issue of the Journal of the American Chemical Society the other day wherein analyses of spinach and many other foods for nitrate were made. In 1907, the spinach samples collected were found to contain from 3,000 to 4,000 parts per million of nitrate. Last year a group of chemists published data on similar samples of spinach from local markets. The samples contained from 250 to 800 parts per million of nitrate. The increase in use of nitrogen fertilizer on the land over this 60-year time has not been reflected in an increase nitrate content of vegetables.

One also has to recognize that nitrate accumulates in soils as a natural process. Back at the turn of the century, in 1910 and 1911,