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A record amount of fertilizer is being used by U.S. farmers this year. Use last year was 14 per cent above that in the preceding year and about three times the prewar amounts. The USDA's Fertilizer Industry Advisory Committee has estimated that supplies for the 1953 crop year will be increased about 12 per cent. Nevertheless, there probably will still be shortages of nitrogen, although there'll be adequate supplies of potash and nearly enough phosphate to meet all demands.

The rapid growth in use of fertilizers has been general in all parts of the country, but the north central states—including the Seventh District—have been setting the pace. It is estimated, for example, that consumption in this area totaled 4.6 million tons in 1950, compared with 1.1 million in 1940. The Southeast, however, leads all areas in total consumption, reflecting the long continued high level use of fertilizer for tobacco and cotton.

Farm production has responded to the increased use of commercial plant foods. The USDA estimates that about 25 per cent of 1951 crop production can be attributed to fertilizer. This compares with 22 per cent in the record crop year of 1948 and 15 per cent in 1938. Fertilizer is sure to play an important role in further increases in farm production.

Farmers will spend nearly a billion dollars for commercial plant food this year. This compares with only 261 million dollars in 1940. Relative to cash farm income, however, fertilizer expenditures are no higher than in some prewar years, still below 3 per cent.

With much additional manufacturing capacity scheduled to come into production in the next three to four years, industry leaders are wondering whether farmers will continue the recent rapid expansion in fertilizer use, especially if farm product prices should decline somewhat. It is interesting to note, in this connection, that with the sharp declines from 1947 to 1950 fertilizer use expanded year by year.

It would be profitable to use more fertilizer on most farms. In response to an inquiry from the National Fertilizer Association, soils experts at several Midwest colleges have estimated the run per dollar invested in fertilizer. For wheat in Michigan, it is estimated that \$1 invested in fertilizer brings a return of about \$3.60; for corn, a return of about \$3.46. Wisconsin farmers "can expect to get \$3.00 increased crop values for each dollar's worth of fertilizer used." An Indiana study indicated that over a complete four year rotation, including corn, soybeans, wheat, and hay, returns ranged from \$3.28 to \$5.12 per dollar spent for fertilizer. Illinois reports numerous instances in which farmers have doubled current yields through adoption of soil conservation and fertility improvement programs with resulting sharp increases in profits. Estimates have been made that under conditions of strong demand for farm products it would be practical to increase fertilizer use in Iowa by five to seven times over the 1950 level. Even with a decline in farm product prices, it would be profitable to use fertilizer more extensively—on more land and, in most cases, heavier applications per acre.

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These data, of course, are only rough approximations of what may be experienced on individual farms. Nevertheless, they are indicative of the tremendous undeveloped market for commercial fertilizers and of equally tremendous opportunities for Midwest farmers to increase production and realize additional net income.

A major difficulty in achieving a more rapid increase in the use of fertilizers, assuming that supplies are available, is the lack of specific knowledge as to the production response which given applications will provide on individual farms and fields. Much more local experimentation is needed.

Agricultural Extension workers as well as some bankers are encouraging farmers to make tests on their own fields by leaving check strips without fertilizer and also by making exceptionally heavy applications on other strips. The yields must then be checked accurately. This experimenting, of course, should be preceded by a program of soil testing and a review of information already available from state colleges and other sources. Also, the relationship between fertilizer costs, yield response, and crop prices needs to be considered as this will determine the most profitable rates of application. To make applications which do not yield profits is to waste resources. Similarly, to apply too little is to make less than full use of one's land.

Farmers may need to use more short-term credit as they make additional outlays for fertilizer. It may be appropriate, therefore, for both farmers and agricultural lenders to devote additional attention to the financial requirements of soil fertility programs and to take steps to assure the development of information needed in their community to handle such needs effectively.

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