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SOME ECONOMIC EFFECTS OF IRRIGATION WITH WATER FROM THE MISSOURI RIVER RESERVOIRS

Editor's Note: This is the second of two Newsletters that summarize findings of research about reservoir impacts conducted by Dr. Robert Vertrees, Assistant Professor

Introduction. This Newsletter reports findings of research about local economic effects, or impacts, that have resulted from irrigation with water withdrawn from the four reservoirs along the Missouri River within South Dakota. All of this irrigation has heretofore taken place within counties that border upon the four reservoirs. These counties are referred to herein as "reservoir counties."

Trends. Irrigated farmland in the reservoir counties increased from 548 acres in 1949 to 20,134 acres in 1969, date of the last completed U. S. Census of Agriculture. This increase gave these counties 14 per cent of the total irrigated farmland in the state in 1969 compared to less than 1 per cent in 1949.

Since the 1969 census, information about irrigation has been obtained from questionnaires circulated by the S. D. Department of Natural Resource Development. Returns indicate that the reservoir counties have continued their fast growth in irrigated acres. In 1973, the year before cattle prices plummeted and grain prices soared, about 25,000 total acres were irrigated within these counties. Close to 65 per cent of this total, or 16,000 acres, were irrigated with water withdrawn from the reservoirs.

Income Effects. Estimates were made of the additional personal income (before federal taxes) generated by irrigating

these 16,000 acres in 1973. These estimates were based upon studies conducted at S.D.S.U. about the costs, returns, and area effects of irrigation within Central South Dakota.

In comparison with per-acre net returns from dryland farming, each of these irrigated acres added an average of \$22.00 to the personal incomes of farm managers. Hired farm workers had their incomes increased by an average of \$6.50 per irrigated acre.

At these estimated levels of return, farm managers received about \$350,000 additional income and hired workers took in an extra \$105,000 as a result of irrigating the 16,000 acres. Another \$215,000 estimated gain in personal income was received by employees of businesses that supply farmers with the goods and services required to irrigate and by employees of county governments that took in more tax revenues because of this irrigation.

Taken together, initial increases in the incomes of farm managers, farm workers, and employees of suppliers and local governments totaled \$670,000. A large share of this initial gain in income was spent and respent for a wide variety of goods and services within the reservoir counties. As a result of these expenditures, the total additional income received within the area was greater than just the amount of the initial increase.

Studies indicate that the "income multiplier" in the reservoir counties is approximately 1.65. Using this multiplier, irrigation of the 16,000 acres caused the total personal income of area residents to increase by an estimated \$1,105,000.

Geographic Differences. The estimated farm and area effects referred to above were not uniformly distributed throughout the elongated group of counties that surround the reservoirs. Greater than average impacts upon the income of farm managers and hired farm workers took place in counties where irrigation has been concentrated.

These counties include Charles Mix and Hughes Counties, which irrigated between 4,000 and 5,500 acres in the early 1970's, and Yankton, Buffalo, Lyman, Sully, and Corson Counties, which then irrigated between 1,000 and 3,600 acres. Economic impacts resulting from expenditures by farmers for the goods and services required to irrigate as well as impacts from expenditures by residents whose incomes were initially increased by irrigation were probably greatest in Yankton, Hughes, and Walworth Counties. These counties include the major regional trading centers of Yankton, Pierre, and Mobridge.

Relative Magnitude. Research was unable

to link the aforementioned income effects to any changes in the employment or number of establishments within industries that supply irrigators. This result reflects the small relative magnitude of the income effects. The estimated \$350,000 in additional farm income only amounted to 0.2 per cent of the total income received by the area's farm proprietors in 1973. Similarly, the estimated \$1,105,000 increase in total farm plus non-farm income due to irrigation was only 0.2 per cent of the area's total.

The 16,000 acres actually irrigated with reservoir water in 1973 comprised less than 10 per cent of all acres within the area classified as irrigable with water from the reservoirs. If all the irrigable acres actually become irrigated, somewhere around 5 per cent of the area's farm income and total income could be due to irrigation with water withdrawn from the reservoirs. These areawide percentages might be increased somewhat if development of full irrigation potential brings additional agricultural processing facilities or supplies of irrigation equipment into the reservoir counties. These percentages would also be substantially greater in those counties with above average shares of irrigated acres or business trade.

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