CHAPTER II. Drainage of Agricultural Lands

This chapter presents agricultural drainage data provided by farmers and ranchers in the 1974 Census of Agriculture and collected for all 50 States for farms with sales of $2,500 and over.

Prior to the 1969 census, the only drainage statistics collected and published from individual farms were in 1920 and 1930. In planning the 1969 census, the U.S. Water Resource Council's interagency task force on water-use data, recommended to again attempt to inventory drained farmland. In 1969, farm operators were asked to estimate total drained land and land newly drained during the census year by three types of drainage systems. In 1974, only two drainage inquiries were asked: First, the acreage of total land drained, and second, the acreage of land newly drained during the census year.

Definitions and Explanations

The definitions and explanations include instructions found in the report form which was mailed to each respondent; see the facsimile shown below.

1974 farm definition—The census definition of a farm is given in volume II, part 1, along with a description of the procedures used in enumeration and methods used in processing the statistics.

Farms with sales of $2,500 and over—Farm drainage data were collected only from those farms with sales of agricultural products of $2,500 and over during 1974. This does not include abnormal farms. An estimated 95 percent or more of all farmland artificially drained is on farms with sales of $2,500 and over.

Land in farms—The acreage designated in the tables as "land in farms" consists primarily of "agricultural" land—land used for crops, pasture, or grazing. In some areas, it may also include considerable areas of land not actually under cultivation nor used for pasture or grazing.

Land in drained farms—The acreage of "land in farms" for those farms reporting artificial drainage in 1974.

Drained land—This acreage refers to farm operator estimates of the acreage of land in the farm in 1974 which was artificially drained by open ditches, underground tile drains, grading dikes, or pumping. Drainage solely for the removal of irrigation waste water was not to be reported.

Land drained by systems installed in 1974—This acreage includes land drained by systems installed during 1974. Included are lands which may have been well drained at an earlier time but required cleaning or renovation of drainage facilities because of silting, clogging, cave-ins, or weed growth.

Qualifications of the Data

Underreporting

Farm operators were asked to make an estimate of the amount of land which should be reported as "land artificially drained" as defined in the census. Since underground tile drains are not visible, the existence of drainage systems installed in the distant past may not be apparent to the current farm operator. It is also difficult for them to estimate the effectiveness of old drainage systems. In other instances, unknown to the farm operator, land may be benefited from the nearby drainage systems of a neighbor, drainage enterprise, or public roads commission. Even in cases when the operator is certain that some of his land is benefited by drainage, he may be uncertain as to the extent of the total benefited area. For these reasons, it is believed that the "drained land" area reported is considerably understated as compared with actual acreage receiving some drainage benefits.

The 1960 Census of Drainage Projects showed 92 million acres of land drained and used for agriculture within 8,461

Section 20 **Was any land on this place ARTIFICIALLY DRAINED?**

☐ YES — *Complete this section*

☐ NO — *Go to Section 21*

	None	Acres artificially drained
1. How many acres in this place were artificially drained? *(Include open ditches, underground tile drains, grading for drainage, dikes, or pumping to control water. Exclude drainage solely for the removal of irrigation waste water.)*	☐	541
2. How many acres were artificially drained by systems installed since January 1, 1974?	☐	542

projects of 500 acres or more in size in 39 States. In addition, estimates prepared in the mid-1960's show another 39 million acres of land drained by individual land owners outside of drainage projects and in small drainage projects less than 500 acres in size.[1] The approximately 130 million acres of drained land accounted for in this fashion far exceed the acreage reported in the censuses of agriculture as shown in table 1.

Apparent Decrease in Drained Land, 1969 to 1974

In 1974, 113,000 fewer farms and 16.8 million fewer acres drained were tabulated than in 1969. Part of this apparent decline in inventory of drained land represents differences in data processing and questionnaire design between the two censuses rather than an actual decline. Two factors appear to contribute toward this large decline in tabulated drained land:

1. In both 1969 and 1974, the introductory inquiry to the drainage section asked "is (was) any land on this place artifically drained?" In 1969, if the lead-in inquiry was "yes" followed by a blank drainage section the review and edit procedure called for supplying drainage entries from reports for farms of approximately the same average size and farm type. However, in 1974 the response to the lead-in inquiry was not keyed and therefore could not be used in the subsequent edit procedure. Any reports returned with the lead-in entry marked "yes" and drainage entries blank, remained blank.
2. In 1974, the drainage section was located at the top of page 10 to which was affixed the return envelope and the instructions. Occasionally, the report form was returned with page 10 blank because it was shielded from the respondent's view by the affixed material when the questionnaire was completed. All of the inquiries on page 10 were affected by this problem to some degree.

Land Drained by Systems Installed in 1969 and 1974

Since the time span between drainage systems construction and reporting was a year or less, it is judged that memory bias has not significantly affected the accuracy of the reported data. Therefore, figures on newly drained land for 1974 and 1969 should accurately reflect current new drainage activity.

	Farms	Acres drained (1,000)
1974	31,143	1,693
1969	24,372	1,395

Drainage Data in Other Reports

Much of the drainage data in this chapter are repeated at the county level in volume I, chapter IV, table 13. Data for acreage of drained land and number of farms reporting drained land also appear in other parts of volume II: By size of farm in part 2; by tenure, age and principal occupation of farm operator, and type of organization in part 3; by value of agricultural products sold in part 7; and by standard industrial classification of farm in part 8.

Conclusions

In 1974, drained land in the United States on farms with sales of $2,500 and over totaled 43 million acres on 226,000 farms as measured in the census.

Drainage activity is concentrated in the North Central States and Lower Mississippi Valley. The five leading drainage States (Illinois, Iowa, Indiana, Minnesota, and Ohio) account for nearly three-fifths of the total drained land reported in the 1974 census. Other highly drained areas are the gulf coast areas of Texas, southern Florida, and the Sacramento and San Joaquin River areas of California. The number of farms reporting drained land and acreage of drained land by region in 1974 are shown in table 2.

Farms with artificial drainage averaged 433 acres in size and had an average of 189 acres drained. Average size of drained farm and acres drained per farm for 1974 by region are shown in table 3.

Farms with sales of $100,000 and over reported 19.1 million acres drained, or 44.7 percent of the U.S. total. Acres drained by farms classified by value of agricultural products sold are shown in table 4.

Land drained by systems installed during the 1974 census year total 1,693,000

Table 1. **Drainage on Farms: 1974, 1969, 1930, and 1920**

Farms With Sales of $2,500 and Over	Farms	Drained land (1,000 acres)
1974[1]	225,818	42,784
1969[1]	338,696	59,551
1930	651,172	44,524
1920	924,810	53,025

[1]Data are for farms with sales of $2,500 and over.

Table 2. **Drained Farms and Acres Drained: 1974**

Farms With Sales of $2,500 and Over	Farms	(1,000 acres)
United States, total	225,818	42,784
Northeast	15,274	929
North Central	163,355	30,214
South	32,983	8,957
West	14,206	2,685

Table 3. **Average Size of Drained Farms and Acres Drained Per Farm: 1974**

Farms With Sales of $2,500 and Over	Average size of farm (acres)	Average acres drained per farm
United States, total	433	189
Northeast	302	61
North Central	358	185
South	631	272
West	980	189

[1] Gain, Elmer W. "Land drainage for production of food and fiber crops," *International Conference on Water for Peace*, volume 7, pp 451-461, Washington, D.C., 1967

Table 4. Acres Drained by Value of Agricultural Products Sold: 1974

Farms With Sales of $2,500 and Over	Drained land (1,000 acres)	Percent
United States, total	42,784	100.0
Farms by value of agricultural products sold:		
$100,000 and over	19,125	44.7
$40,000 to $99,999	13,717	32.1
$20,000 to $39,999	5,757	13.5
$10,000 to $19,999	2,515	5.9
$5,000 to $9,999	1,118	2.6
$2,500 to $4,999	552	1.3

Table 5. Land Drained by Systems Installed During Census Years: 1974 and 1969

Farms With Sales of $2,500 and Over	1974		1969	
	Farms	Acres (1,000)	Farms	Acres (1,000)
United States, total	31,143	1,693	24,372	1,395
Northeast	3,649	73	2,675	53
North Central	21,306	1,034	15,841	786
South	4,506	447	4,320	457
West	1,682	139	1,536	100

acres or 298,000 acres more than the total land drained by systems installed during the 1969 census year. The leading State in acreage benefited by systems installed in 1974 is Minnesota followed by Illinois, Iowa, Indiana, and Ohio. The five leading States accounted for nearly half of the total acreage newly drained for the United States. Land drained by systems installed in 1974 and 1969 are shown by region in table 5.