

NORTH DAKOTA ON-FARM GRAIN STORAGE CAPACITY

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On-farm grain storage is an important component of the overall production and marketing practices of North Dakota farmers. Grain producers view on-farm storage as critical for increasing revenue in view of dramatic fluctuations in grain prices, federal government farm programs, and harvest efficiency. Also, the success of government farm programs is often contingent upon on-farm storage capacity and carryover stocks. As farm numbers decrease and average farm size increases, storage capacity appears to show a trend of continued growth. Associated with the greater amounts of grain stored on-farm is the increased time farmers are spending on grain storage quality control and the marketing process itself.

This study estimates on-farm grain storage capacity of North Dakota producers based on data collected from a survey conducted in the fall of 1983. A random sample of 4,625 North Dakota farmers (12.3 percent) was surveyed to obtain information regarding farm location, crop acreages, number and size of storage facilities, stored grain amounts, and adequacy of current storage capacity. Survey results were analyzed by crop reporting district (CRD) (Figure 1).

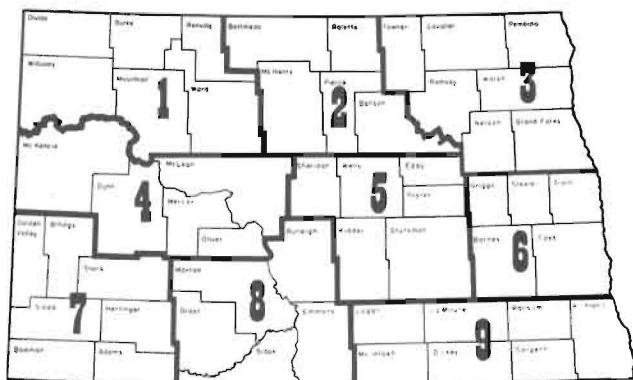


Figure 1. North Dakota Crop Reporting Districts

Two mailings of the survey instrument were conducted to insure an adequate response rate and to prevent sampling bias. The initial mailing was conducted

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September 16, 1983 with the follow-up mailing on October 31, 1983. A total of 704 of 4,625 (15.2 percent) surveys were returned from the first mailing, with 635 being usable. Of the 510 surveys returned from the second mailing, 397 were usable. Surveys returned totaled 1,224 (26.5 percent), while usable surveys numbered 1,032 (22.3 percent) (Table 1).

Table 1. On-Farm Grain Storage Capacity Surveys Mailed and Usable Surveys Returned, By Crop Reporting District, North Dakota, 1983

| Crop Reporting District | Surveys Mailed | Usable Surveys Returned | |
|-------------------------|----------------|-------------------------|---------|
| | | Number | Percent |
| 1 | 550 | 111 | 20 |
| 2 | 475 | 88 | 19 |
| 3 | 675 | 175 | 26 |
| 4 | 425 | 72 | 15 |
| 5 | 500 | 106 | 21 |
| 6 | 475 | 120 | 25 |
| 7 | 525 | 124 | 24 |
| 8 | 425 | 86 | 20 |
| 9 | 575 | 130 | 23 |
| State | 4,625 | 1,012 | 22 |

Responses to the two mailings were tested for homogeneity with respect to five key variables — total acreage, cropland acreage, total storage capacity, total grain stored on-farm, and number of years production storable. Analysis of the two mailings indicated respondents were statistically homogeneous with respect to the five key variables and were a subset of the same population.

Survey Results

Individual survey results were aggregated by CRD (Table 2). Average total acreage for survey respondents was 1,457 acres, ranging from a high of 2,031 acres to a low of 1,090 acres for respondents from CRDs 7 and 3, respectively. Average cropland acreage of 959 acres was nearly 500 acres below total acreage. CRD 2 respondents averaged 1,030 cropland acres, followed closely by those from CRD 5 with 1,028 acres.

Table 2. Average Acreage and Bin Characteristics, by Crop Reporting District, Survey Respondents, North Dakota, 1983^a

| Variable | Unit of Measurement | Crop Reporting District | | | | | | | | | State |
|--|---------------------|-------------------------|----------------|-----------------|----------------|-----------------|-----------------|-----------------|----------------|-----------------|-----------------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| Total Acreage | Acres | 1,323 (109) | 1,441 (86) | 1,090 (171) | 1,829 (70) | 1,463 (105) | 1,212 (114) | 2,031 (120) | 1,818 (84) | 1,303 (129) | 1,457 (996) |
| Cropland Acreage | Acres | 960 (109) | 1,030 (85) | 947 (173) | 944 (71) | 1,028 (104) | 1,051 (118) | 1,011 (120) | 658 (84) | 929 (127) | 959 (999) |
| Steel Bins Per Farm | Number | 6.8 (104) | 7.8 (84) | 7.1 (165) | 6.3 (63) | 6.0 (95) | 8.2 (109) | 5.3 (109) | 4.5 (76) | 6.0 (117) | 6.5 (942) |
| Average Capacity of Steel Bins | Bushels | 3,022 (104) | 2,986 (84) | 3,273 (165) | 3,306 (64) | 3,217 (95) | 4,211 (109) | 3,614 (109) | 3,073 (76) | 4,335 (117) | 3,504 (943) |
| Steel Quonsets Per Farm | Number | 1.3 (12) | 1.2 (20) | 1.2 (50) | 1.5 (16) | 1.3 (28) | 1.2 (27) | 1.4 (40) | 1.2 (18) | 1.1 (21) | 1.3 (242) |
| Average Capacity of Steel Quonsets | Bushels | 20,375 (12) | 32,000 (20) | 22,721 (50) | 20,471 (16) | 27,972 (28) | 23,281 (27) | 25,167 (40) | 18,295 (18) | 23,522 (21) | 24,026 (242) |
| Wooden Bins Per Farm | Number | 2.0 (75) | 2.2 (54) | 2.3 (100) | 2.2 (46) | 2.6 (65) | 2.8 (78) | 1.7 (63) | 2.0 (45) | 2.5 (94) | 2.3 (629) |
| Average Capacity of Wooden Bins | Bushels | 2,812 (75) | 2,646 (54) | 3,309 (100) | 2,515 (46) | 2,734 (65) | 4,765 (78) | 2,617 (63) | 1,886 (45) | 2,757 (94) | 3,062 (629) |
| Wooden Quonsets Per Farm | Number | 1.2 (b) | 1.3 (9) | 1.2 (35) | 1.0 (b) | 1.1 (13) | 1.3 (16) | 1.3 (b) | 1.5 (b) | 1.0 (22) | 1.2 (110) |
| Average Capacity of Wooden Quonsets | Bushels | 11,333 (b) | 12,083 (9) | 12,010 (35) | 13,000 (b) | 9,357 (13) | 11,950 (16) | 28,400 (b) | 4,667 (b) | 12,543 (22) | 12,199 (110) |
| Other Permanent Storage Facilities | Number | 1.8 (b) | 1.6 (8) | 2.1 (19) | 1.0 (b) | 1.6 (11) | 1.5 (13) | 1.6 (9) | 1.0 (b) | 1.5 (14) | 1.7 (83) |
| Average Capacity of Other Permanent Storage Facilities | Bushels | 5,357 (b) | 5,662 (b) | 8,194 (19) | 2,000 (b) | 7,486 (11) | 12,589 (13) | 2,536 (9) | 47,000 (b) | 14,562 (14) | 9,464 (83) |
| Number of Permanent Storage Facilities | Number | 8.2 (108) | 9.3 (88) | 9.1 (170) | 7.5 (70) | 7.8 (104) | 10.4 (113) | 6.8 (116) | 5.6 (82) | 8.0 (126) | 8.2 (997) |
| Total Capacity of Permanent Storage Facilities | Bushels | 27,567 (108) | 36,954 (88) | 40,130 (170) | 29,988 (70) | 34,340 (104) | 53,091 (113) | 33,813 (116) | 21,723 (82) | 38,285 (126) | 36,294 (997) |
| Number of Temporary Storage Facilities | Number | 1.2 (39) | 1.3 (30) | 1.4 (81) | 1.4 (27) | 1.3 (50) | 1.4 (50) | 1.3 (34) | 1.3 (29) | 1.4 (47) | 1.3 (389) |
| Total Capacity of Temporary Storage Facilities | Bushels | 18,983 (38) | 21,257 (30) | 19,296 (80) | 12,498 (25) | 22,202 (50) | 21,082 (49) | 17,726 (33) | 20,478 (29) | 19,581 (47) | 19,549 (383) |
| Respondents With No On-Farm Grain Storage | Percent | 3 (b) | 0 (b) | 3 (b) | 3 (b) | 2 (b) | 6 (7) | 6 (8) | 5 (b) | 3 (b) | 3 (35) |

^a Values in parentheses indicate number of observations.

^b Indicates 5 or fewer observations.

Steel bins were the most prevalent storage structure with farms averaging 6.5 steel bins and an average storage capacity of 3,504 bushels per bin (Table 2). Respondents in CRD 6 had the most steel bins per farm (7.8) and the second largest average bin size (4,211 bushels). CRD 8 respondents had the least number of steel bins (4.5 per farm), while CRD 2 respondents had the smallest average capacity steel bins (2,986 bushels), although they had the second largest number of steel bins per farm (7.8).

Respondents had an average of only 1.3 steel quonsets per farm, but these were a relatively important part of total storage with an average capacity of 24,026 bushels (Table 2). The number of steel quonsets per farm ranged from a low of 1.1 for CRD 9 respondents to a high of 1.5 in CRD 4. The average size of steel quonsets varied dramatically from a low capacity of 18,295 bushels in CRD 8 to a high of 32,000 bushels in CRD 2.

Wooden storage structures constituted a relatively small portion of total on-farm storage capacity. Wooden bins average 2.3 structures per farm with average storage capacity of 3,062 bushels, while wooden quonsets averaged 1.2 in number and 12,199 bushels capacity.

Respondents also included the type, number, and capacity of other permanent storage facilities. These facilities consisted of structures such as on-farm elevators, straight-walled structures, and silos. The number of other permanent storage facilities average 1.7 structures per farm and ranged from a high of 2.1 for CRD 3 respondents to a low of 1.0 in CRDs 4 and 8 (Table 2). Other permanent storage facilities varied dramatically in size from a low of 2,000 bushels in CRD 4 to a high of 47,000 bushels in CRD 8, with the statewide average being 9,464 bushels. Caution should be taken when interpreting these results due to the low number of observations obtained at the CRD level.

Survey respondents had an average of 8.2 total permanent storage facilities on-farm. CRD 6 respondents had the largest number of permanent storage structures (10.4), while CRD 8 had the fewest with 5.6 structures. Average total permanent on-farm grain storage capacity of survey respondents was 36,294 bushels. CRD 6 respondents had an average total permanent storage capacity of 53,091 bushels, significantly higher than the state average, while those in CRD 8 had an average total permanent storage capacity of 21,723 bushels which was below the state average.

The number of temporary storage facilities available to respondents varied little across the state with an average of 1.3 structures per farm, ranging from 1.2 to 1.4 structure by CRD. Temporary storage facilities had a total capacity of 19,549 bushels on a statewide basis, ranging from a low of 12,498 bushels in CRD 4 to a high of 22,202 bushels in CRD 5.

Only a small portion of the respondents owned no on-farm grain storage. Three percent of the respondents

owned no on-farm storage at the state level, ranging from a high of 6 percent of the respondents from CRDs 6 and 7 to all respondents owning storage in CRD 2.

Those surveyed were asked to indicate the amount of grain, by commodity, stored as of June 30, 1983 (Table 3). Wheat was the most commonly stored commodity with an average of 9,693 bushels stored. CRD 7 respondents stored more wheat (12,275 bushels) than any other group, while those from CRD 8 stored the least (7,743 bushels).

Durum was stored in greater volume (10,459 bushels) than was wheat, but considerably fewer respondents stored durum. Relatively small amounts of barley and oats were in on-farm storage. Considerable variation occurred in the amount of soybeans and sunflower stored on-farm with respondents in the eastern half of the state comprising higher volumes of these commodities stored on-farm. Comparatively, the amount of grain in on-farm storage for other than the six commodities shown appears to be relatively high when compared to commodities such as barley and oats. However, relatively few observations were available for this category and, therefore, results should be interpreted with caution.

Steel bins were the primary grain storage facility used on-farm. An average of 14,084 bushels of grain was stored in steel bins by 736 respondents as of June 30, 1983 (Table 3). CRD 6 respondents had the most grain in steel bin storage (20,694 bushels), while those in CRD 8 had the least (8,671 bushels).

Steel quonsets were the second most important type of storage facility, with 102 respondents storing an average of 14,216 bushels of grain. Although more farm operators (320) used wooden bins than steel quonsets, an average of only 3,692 bushels of grain was stored in wooden bins. Average grain stored in other permanent on-farm storage facilities was higher than for wooden bins or wooden quonsets, but relatively few respondents had any grain in these types of structures.

Grain producers were asked to indicate the amount of grain stored at local elevators. Nearly 10 percent (102 of 1,032) of those returning usable questionnaires indicated they had grain stored at local elevators, while 90 percent had no grain stored off-farm (Table 4). More respondents from CRDs 3, 5, and 6 stored grain at local elevators than did respondents from other CRDs, although the number was relatively low. An average of 5,817 bushels was stored at local elevators by those individuals. Only 17 respondents stored all their grain at the local elevator. Although the average amount of grain stored in commercial facilities by CRD is shown in Table 4, the number of observations is too low to use these estimates with statistical reliability.

Less than 9 percent of those participating in the survey indicated they rented on-farm grain storage space from other farmers, ranging from a low of 5 percent for CRD 5 respondents to a high of 11.4 percent for those in CRD 9 (Table 4). The average amount of on-

Table 3. Grain Stored On-Farm, By Commodity, Bin Type, and Crop Reporting District, Survey Respondents, North Dakota, June 30, 1983^a

| Item | Crop Reporting District | | | | | | | | | State |
|------------------------------------|---------------------------------------|----------------|-----------------|----------------|----------------|----------------|----------------|---------------|----------------|-----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| | ----- average number of bushels ----- | | | | | | | | | |
| Wheat | 8,938 (55) | 9,327 (33) | 10,297 (105) | 8,168 (39) | 8,802 (69) | 10,127 (72) | 12,275 (67) | 7,743 (49) | 8,633 (80) | 9,693 (581) |
| Durum | 11,236 (55) | 9,427 (43) | 13,562 (63) | 15,098 (22) | 8,860 (29) | 6,231 (18) | 11,447 (19) | 3,800 (6) | 5,931 (29) | 10,459 (291) |
| Barley | 5,533 (15) | 8,576 (20) | 10,529 (81) | 2,071 (12) | 6,928 (18) | 14,480 (48) | 3,184 (22) | 2,222 (18) | 8,774 (29) | 8,765 (268) |
| Oats | 2,171 (28) | 2,106 (28) | 2,727 (30) | 1,994 (36) | 2,214 (36) | 2,015 (18) | 2,416 (48) | 2,216 (54) | 2,663 (47) | 2,324 (329) |
| Soybeans | 0 (b) | 0 (b) | 893 (b) | 0 (b) | 0 (b) | 1,675 (b) | 0 (b) | 0 (b) | 3,082 (11) | 2,493 (17) |
| Sunflower | 13,533 (6) | 13,357 (7) | 8,862 (15) | 8,579 (8) | 10,427 (19) | 13,387 (13) | 4,933 (7) | 5,556 (b) | 6,598 (16) | 9,578 (98) |
| Other | 2,276 (b) | 2,527 (11) | 4,208 (6) | 5,267 (b) | 1,450 (6) | 21,182 (11) | 2,700 (b) | 16,338 (b) | 18,424 (33) | 12,269 (82) |
| Steel Bins | 13,106 (85) | 12,983 (60) | 16,087 (138) | 11,539 (54) | 10,355 (78) | 20,694 (75) | 10,467 (83) | 8,671 (60) | 18,038 (86) | 14,084 (736) |
| Steel Quonsets | 14,063 (8) | 14,715 (9) | 14,500 (23) | 16,472 (6) | 15,293 (15) | 15,358 (8) | 18,450 (16) | 7,850 (8) | 8,038 (7) | 14,216 (102) |
| Wooden Bins | 3,025 (38) | 2,895 (16) | 3,992 (53) | 3,305 (29) | 5,135 (34) | 5,924 (33) | 2,418 (33) | 1,654 (28) | 3,973 (53) | 3,692 (320) |
| Wooden Quonsets | 0 (b) | 12,457 (7) | 8,014 (21) | 0 (b) | 5,480 (b) | 6,933 (6) | 6,178 (b) | 1,500 (b) | 5,452 (9) | 7,569 (52) |
| Other Permanent Storage Facilities | 4,500 (b) | 10,000 (b) | 10,762 (9) | 7,000 (b) | 12,133 (b) | 8,263 (9) | 3,522 (b) | 13,000 (b) | 24,500 (b) | 11,671 (33) |

^a Values in parentheses indicate number of observations.

^b Indicates five or fewer observations.

farm storage space rented in the state was 8,685 bushels, with CRD 3 respondents renting the most storage space (14,910 bushels) and those from CRD 5 renting the least (4,366 bushels). Interpretation of these results must be viewed with caution because of the low number of observations.

Survey respondents were asked to indicate the number of years of crop production they could currently store with existing on-farm storage capacity. An average of 1.6 years worth of crop production could be stored, ranging from a low of 1.4 years in CRD 6 to a high of 1.8 years in CRD 7 (Table 4).

Nearly two-thirds of the cooperators indicated they currently had adequate on-farm grain storage space. Only 57 percent of the respondents from CRDs 4 and 6 believed their storage capacity was adequate while 69

percent of those from CRD 2 indicated their current storage capacity was adequate (Table 4). Of those indicating they would prefer more storage space, respondents currently could store approximately 1.3 years of production but would prefer to be able to store nearly twice that amount, or 2.4 years of production.

Total Grain Storage Capacity

Total on-farm storage capacity was estimated by CRD for North Dakota based on the survey data. Farm operators were categorized into four stratas based on total acreage: less than 500 acres; 500 to 999 acres; 1,000 to 1,999 acres; and 2,000 acres or more. Average total storage capacity was computed from respondent data for each strata by CRD so as to reduce the upward bias caused by the greater number of large farms represented in the sample (Table 5).

Table 4. Grain Stored at Local Elevator, Number and Amount of On-Farm Grain Storage Space Rented, and Adequacy of On-Farm Grain Storage Capacity, Survey Respondents, North Dakota, 1983^a

| Item | Unit of Measurement | Crop Reporting District | | | | | | | | | State |
|--|---------------------|-------------------------|---------------|----------------|--------------|--------------|----------------|---------------|--------------|---------------|---------------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| Grain Stored at Local Elevator | | | | | | | | | | | |
| Yes | Percent | 6.3 (7) | 6.8 (6) | 10.3 (18) | 8.3 (6) | 16.0 (17) | 13.3 (16) | 11.3 (14) | 9.3 (8) | 6.9 (9) | 9.9 (102) |
| No | Percent | 93.7 (104) | 93.2 (82) | 89.7 (157) | 91.7 (66) | 84.0 (89) | 86.7 (104) | 88.7 (110) | 90.7 (78) | 93.1 (121) | 90.1 (930) |
| Amount | Avg. Bushels | 2,300 (b) | 10,000 (b) | 6,011 (7) | 2,700 (b) | 3,922 (9) | 5,837 (10) | 13,057 (7) | 1,800 (b) | 1,867 (b) | 5,817 (45) |
| Rental of On-Farm Storage | | | | | | | | | | | |
| Yes | Percent | 8.1 (9) | 6.1 (b) | 9.4 (16) | 8.6 (6) | 5.0 (b) | 8.5 (10) | 9.4 (11) | 6.0 (b) | 11.4 (14) | 8.5 (84) |
| No | Percent | 91.9 (102) | 93.9 (77) | 90.6 (155) | 91.4 (64) | 95.0 (96) | 91.5 (107) | 90.6 (106) | 94.0 (78) | 88.6 (109) | 91.5 (910) |
| Amount | Avg. Bushels | 9,194 (9) | 6,600 (b) | 14,910 (15) | 5,667 (6) | 4,366 (b) | 11,290 (10) | 6,436 (11) | 7,000 (b) | 6,893 (14) | 8,685 (82) |
| Storable Crop Production | Years | 1.7 (102) | 1.5 (82) | 1.5 (164) | 1.6 (63) | 1.7 (96) | 1.4 (108) | 1.8 (108) | 1.7 (74) | 1.7 (120) | 1.6 (936) |
| Adequacy of Current On-Farm Storage Capacity | | | | | | | | | | | |
| Yes | Percent | 61 (66) | 69 (58) | 66 (114) | 57 (40) | 61 (63) | 57 (66) | 62 (74) | 58 (49) | 63 (80) | 62 (626) |
| No | Percent | 39 (42) | 31 (26) | 34 (59) | 43 (30) | 39 (41) | 43 (49) | 38 (45) | 42 (35) | 37 (47) | 38 (378) |
| Preferred Storage Space, If Inadequate | Avg. Years | 2.2 (42) | 2.6 (25) | 2.3 (58) | 2.6 (30) | 2.4 (40) | 2.1 (48) | 2.9 (41) | 2.7 (34) | 2.6 (47) | 2.4 (369) |
| Current Storage Space, If Inadequate | Avg. Years | 1.2 (37) | 1.3 (25) | 1.2 (54) | 1.3 (25) | 1.3 (37) | 1.2 (45) | 1.4 (38) | 1.3 (30) | 1.3 (41) | 1.3 (335) |

^a Values in parentheses indicate number of observations.

^b Indicates less than five observations.

Table 5. Average Total Permanent On-Farm Grain Storage, Per Farm, By Size and Crop Reporting District, Adjusted for Respondents with No Storage, North Dakota, 1983

| Crop Reporting District | Total Acreage (in Acres) | | | | Average |
|-------------------------|---------------------------------------|---------|-------------|---------------|---------|
| | 1-499 | 500-999 | 1,000-1,999 | 2,000 or more | |
| | ----- average number of bushels ----- | | | | |
| 1 | 8,769 | 23,348 | 25,300 | 53,310 | 26,822 |
| 2 | 6,652 | 22,453 | 30,739 | 86,172 | 36,954 |
| 3 | 13,424 | 28,738 | 50,865 | 80,470 | 38,983 |
| 4 | 2,378 | 11,084 | 29,379 | 50,702 | 29,155 |
| 5 | 10,546 | 19,465 | 34,007 | 61,252 | 33,692 |
| 6 | 8,683 | 29,820 | 52,980 | 139,338 | 49,994 |
| 7 | 7,527 | 20,128 | 27,141 | 52,502 | 31,632 |
| 8 | 3,500 | 7,106 | 23,423 | 36,226 | 20,713 |
| 9 | 10,662 | 22,450 | 38,139 | 90,627 | 37,107 |
| State | 9,156 | 22,256 | 36,377 | 67,789 | 35,063 |

The average adjusted permanent on-farm grain storage capacity per farm for the state was 35,063 bushels, ranging from a low of 20,713 bushels for farms in CRD 8 to a high of 49,994 bushels for farms in CRD 6. Farms with 2,000 or more acres had nearly 7.5 times as much storage (67,789 bushels) as did those with less than 500 acres (9,156 bushels).

An estimated 37,500 North Dakota farms were in existence in 1983.¹ Since number of farms by size and CRD distribution were unknown for 1983, the number of farms by size and CRD from the **1978 Census of Agriculture** was used to estimate current distributions. Farm numbers by size and CRD in 1978 were adjusted

¹ North Dakota Crop and Livestock Reporting Service, **North Dakota Agricultural Statistics 1984**, Ag. Statistics No. 53, Statistical Reporting Service, USDA, Fargo, North Dakota, June 1984.

to account for declining farm numbers from 1978 to 1983. This distribution (Table 6) was used to estimate total on-farm storage capacity by CRD in 1983.

The number of farms in each strata by CRD (Table 6) was applied to the mean total on-farm grain storage capacity estimates for each respective group (Table 5), resulting in total on-farm grain storage estimates for each strata by CRD (Table 7). Total permanent on-farm grain storage capacity for the state was estimated as 947.5 million bushels (Table 7). CRD 3 accounted for the largest proportion of that storage with nearly 187 million bushels, or nearly 20 percent of the state total. Although the largest farmers numbered less than 10 percent of the total, they accounted for nearly 26 percent (244 million bushels) of the total on-farm storage capacity. The number of farms of less than 500 acres in size accounted for nearly 34 percent of the North Dakota total but had less than 12 percent of the state's total on-farm storage.

Table 6. Estimated Number of North Dakota Farms, By Farm Size and Crop Reporting District, 1983

| Crop Reporting District | Total Acreage (in Acres) | | | | Total |
|-------------------------|-----------------------------|---------|-------------|---------------|--------|
| | 1-499 | 500-999 | 1,000-1,999 | 2,000 or more | |
| | ----- number of farms ----- | | | | |
| 1 | 1,474 | 1,372 | 1,517 | 547 | 4,910 |
| 2 | 1,311 | 1,194 | 1,132 | 323 | 3,960 |
| 3 | 2,275 | 1,917 | 1,403 | 371 | 5,966 |
| 4 | 1,020 | 1,022 | 1,012 | 460 | 3,514 |
| 5 | 1,028 | 1,008 | 1,138 | 428 | 3,602 |
| 6 | 1,647 | 1,275 | 926 | 235 | 4,083 |
| 7 | 817 | 637 | 927 | 560 | 2,941 |
| 8 | 1,091 | 846 | 1,066 | 488 | 3,491 |
| 9 | 2,019 | 1,572 | 1,140 | 302 | 5,033 |
| State | 12,682 | 10,843 | 10,261 | 3,714 | 37,500 |

Table 7. Estimated Total Permanent On-Farm Grain Storage Capacity, By Farm Size and Crop Reporting District, North Dakota, 1983

| Crop Reporting District | Total Acreage (in Acres) | | | | Total |
|-------------------------|--------------------------|-----------|-------------|---------------|-----------|
| | 1-499 | 500-999 | 1,000-1,999 | 2,000 or more | |
| | 000 bushels | | | | |
| 1 | 12,924.8 | 32,033.3 | 38,380.1 | 29,160.6 | 112,498.8 |
| 2 | 8,720.8 | 26,808.9 | 34,796.5 | 27,833.6 | 98,159.8 |
| 3 | 30,538.7 | 55,090.7 | 71,363.6 | 29,854.4 | 186,847.4 |
| 4 | 2,425.2 | 11,327.8 | 29,731.5 | 23,322.9 | 66,807.4 |
| 5 | 10,841.3 | 19,620.4 | 38,700.0 | 26,215.8 | 95,377.5 |
| 6 | 14,300.8 | 38,020.5 | 49,059.5 | 32,744.4 | 134,125.2 |
| 7 | 6,149.7 | 12,821.2 | 25,159.7 | 29,401.2 | 73,531.8 |
| 8 | 3,818.2 | 6,011.7 | 24,968.9 | 17,678.5 | 52,477.3 |
| 9 | 21,526.1 | 35,292.1 | 43,478.5 | 27,369.4 | 127,666.1 |
| State | 111,245.6 | 237,026.6 | 355,638.3 | 243,580.8 | 947,491.3 |