LAND USE CHANGES IN THE FARGO-MOORHEAD FRINGE AREA, 1975-1980

VERNON DOBIS and JEROME E. JOHNSON

Farmland is an important and strategic natural resource in the United States. The nation's prime farmland is essential to abundant agricultural production. Farmland is a relatively limited resource that is being consumed when used for more intensive uses, such as shopping centers, housing developments, and industrial parks. Once converted, it is unlikely to be farmed again.

The 1977 U.S. Department of Agriculture Potential Cropland Study* estimated that 3 million acres of rural land were converted annually to urban and built-up uses from 1967 to 1975. About 30 percent of the land lost to urban and built-up uses each year comes from cropland, indicating an annual conversion of cropland of about 606,000 acres to urban use.

Farmland losses are not limited to urban areas. The influence of urban growth extends outward for miles to include relatively sparsely settled rural fringe areas. Two major patterns of population change have accelerated shifts of agricultural land to urban uses. First, the shift in residential demand toward larger tracts of land per residential housing unit increases consumption of land per capita. Lower costs of rural-urban fringe land relative to urban land allows residencies to be more dispersed. Second, substantial numbers of people are moving to less densely settled suburban locations with physical amenities (smaller towns and rural areas) but which are still accessible to urban employment.

Dobis is a former graduate research assistant and Johnson is professor, Department of Agricultural Economics.

*U.S. Department of Agriculture, Soil Conservation Service, **Potential Cropland Study,** Statistical Bulletin No. 578, Washington, D.C., October 1977. See also: Brewer, Michael F. and Robert Boxley, "Agricultural Land: Adequacy of Area, Concepts, and Information," pages 879-87; and Philip M. Raup, "Agricultural Land: Adequacy of Area, Concepts, and Information: Discussion," pages 891-3. Both in **American Journal of Agricultural Economics,** 63:5, December 1981.

Townships in the Fargo-Moorhead fringe area experienced substantial population growth from 1970 to 1980. Cass County population growth was 29.9 percent and Clay County grew 12.4 percent. Small cities (excluding Fargo, Moorhead and West Fargo) in the fringe area of Cass County experienced a 47.7 percent population growth from 1970 to 1980 and cities in Clay County a 17.6 percent increase. This study examined the shift of smaller (40 acres or less) agricultural land tracts to urban uses in the fringe area of Fargo-Moorhead.

Study objectives were to examine socioeconomic characteristics of buyers and sellers, reasons for buying or selling fringe area land and opinions on some land use policy statements. The value and type of land being converted to nonagricultural uses also were studied. Buyers and sellers of small land parcels (40 acres or less, outside of city limits) in 46 selected townships surrounding Fargo-Moorhead were surveyed during the summer of 1980 (Figure 1). Eight hundred buyers and sellers were contacted by a mail survey yielding information from 252 buyers and 87 land sellers.

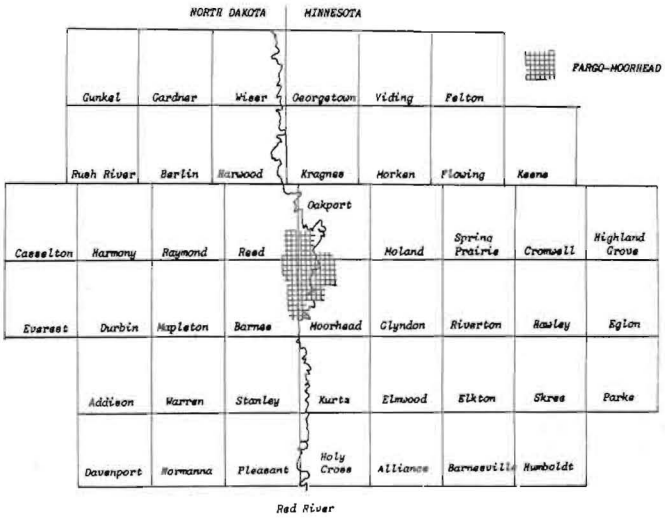

Figure 1. Fargo-Moorhead Fringe Area

Characteristics of Buyers and Sellers

Buyers and sellers were classified as males and females. The term "male" includes husbands and unmarried male buyers. The term "female" refers to wives and single female buyers. Only six females and 12 males of the 252 responding buyers were either single or living in a single parent household, while the other 234 lived in households that had both males and females. Average age of all male land buyers in 1980 was 37, ranging between 21 and 76 years of age. About one-half were either employed in a profession (physician, professor, lawyer, etc.) or were a business owner or manager. Most male land buyers (70 percent) had pursued their education beyond high school, with about 30 percent achieving a college or advanced degree. Female land buyers averaged 34 years old, with a range of 22 to 76 years. College and advanced degrees had been earned by 27 percent of the female buyers.

The typical land buyer had a 1979 average gross income of about $22,500. Just over 54 percent of male and 44 pecent of female buyers were raised on a farm or in a rural nonfarm environment. A small town or large city accounted for 46 percent of males and 56 percent of the female buyers. Most (90 percent) land buyers were married. They had an average of 1.8 children living at home with a range of 0 to 6 children. The average age of children was about 9 years.

Male land sellers averaged 53 years, with female sellers being three years younger. About 14 percent of male sellers and 16 percent of female sellers had a college or advanced degree. One-third of the male sellers and one-fifth of the females had less than 12 years of formal education. Farming was the occupation listed by 29 percent of the sellers, followed by business owners or managers with 22 percent and retired with 22 percent of responses. Average gross income of sellers in occupations other than farming was about $15,000.

Reasons For Buying Fringe Area Land

Just over 49 percent of female buyers and 59 percent of male buyers indicated that the most important reason for buying fringe area land was that they like to live in the country (Table 1). Privacy and quietness of living in fringe areas was the second most frequent reason reported by 31 percent of male buyers and 28 percent of female buyers. Higher quality of country living where there is more privacy and elbow room was third in importance. The economic gains of lower taxes and no special assessments were reported by 27 percent of the male buyers and one-fifth of the female buyers.

A general conclusion for why people bought fringe area land was their feeling on quality of country living. The quietness of country living with the added elbow room accounted for a majority of the responses. Economically related reasons appear less important when purchasing fringe area land.

Reasons For Selling

The most frequent reasons given for selling were (1) seller retiring from farming due to health or age and (2) to use the money to settle debts (Table 2). Chance to sell at a good price and the high cost of holding land may be viewed as opportunity costs of owning land in the fringe area. Twenty-one percent indicated these were their most important reasons for the sale. Family and personal considerations also were important to 14 percent of the sellers. The chance to sell at a good price was indicated as the most important secondary reason for selling (26 percent of the second reasons and 21 percent of the third reasons).

Table 1. Percentage Distribution of the Three Most Important Reasons Males and Females Reported for Buying Fringe Area Land

	Importance Of Reason For Purchase					
	Male			Female		
Reason for Purchase	First	Second	Third	First	Second	Third
	percent					
Liked Country Living	59.0	13.2	10.9	49.4	25.8	12.1
More Privacy and Quietness	11.0	31.1	22.9	20.9	28.3	21.5
More Elbow Room	6.0	21.1	18.9	8.7	18.9	19.4
Lower Taxes	4.5	9.3	16.4	3.5	7.5	14.0
Land is Not as Expensive	4.0	2.0	1.5	1.7	2.5	3.8
Investment	2.7	2.7	0.5	1.7	0.6	0.6
Wanted to Keep Animals	2.3	9.3	9.5	2.9	6.9	13.4
Lower Housing Costs	1.8	2.5	2.5	2.3	3.8	2.5
Next to Property	1.8	0.5	0.5	2.3	0.0	0.0
Less Regulations	1.5	2.5	3.0	1.2	1.3	1.3
Better Neighbors	0.9	2.0	1.0	0.6	1.3	2.5
No Special Assessments	0.0	3.8	10.4	0.6	2.5	6.4
Other*	4.5	0.0	2.0	4.2	0.6	2.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
Number of Responses	220	204	201	172	159	157

*Includes more room for children, gardening, and a place to build an earth home.

Table 2. Percentage Distribution of Most Important Reasons Given by Sellers for Selling Their Small Fringe Area Tracts of Land

Reason For Sale	Importance Of Reason		
	First	Second	Third
	percent		
Retirement from Farming Due to Health or Age	16.9	7.4	5.7
Use Money to Settle Debts	16.9	10.9	11.3
Chance to Sell at a Good Price	15.6	25.5	20.8
Use Money to Buy Other Land	14.1	12.7	7.4
Family or Personal Considerations	14.1	14.5	20.8
Speculation (profit)	5.6	9.1	3.8
Had Other Uses for Money	5.6	10.9	13.2
Farm Did Not Produce Enough Income	4.2	3.6	9.4
High Cost of Holding the Land (high interest rates or high taxes)	4.2	1.8	5.7
Reduction in Farm Size Due to Health, Age, or Other	2.8	3.6	1.9
TOTAL	100.0	100.0	100.0
Number of Responses	71	53	53

Characteristics And Value Of Land Parcels

Average price paid per fringe area land parcel was $16,380, ranging from a low of $350 to a high of $80,000. Typical parcel size was 3.5 acres and ranged from 0.25 to 40 acres. Buyers reported that over 60 percent of the 252 parcels bought contained less than 5 acres, 17 percent contained less than 1 acre, 31 percent were between 1.00 and 2.99 acres, and 12 percent had from 3.00 to 4.99 acres. Almost 40 percent were 5 acres or larger, with less than 1 in 10 purchases containing 20 or more acres.

Average price paid per acre was $4,680 and ranged from $1,455 to $7,224. Averge parcel size and price paid per acre by land-use category are given in Table 3. Average parcel size of cropland tracts was 7.02 acres at $3,987 per acre. The second largest average parcel size was wooded or pastureland with 6.43 acres and selling for $3,739 per acre. Developed land average parcel size was 2.14 acres and sold for $6,388 per acre. A fringe area parcel with a rural nonfarm home cost $7,224 per acre and contained 2.87 acres. Farmsteads had the lowest price per acre at $3,650 and averaged 5.09 acres.

Value of small parcels of fringe land can be examined in terms of buyer characteristics, use of the tract and tract features before purchase. A study of 147 tracts showed that both size of parcel and distance from Fargo-Moorhead area was inversely related to price paid per acre (the difference was statistically significant at the .01 level). Tracts of developed land (land that had a road, drainage, or was leveled) before sale showed substantially higher prices paid per acre. A rural nonfarm home increased the tract value per acre. Income of buyers was significantly and positively associated with price paid per acre.

Length of ownership for land sold varied from 1 year to 60 years with sellers having owned parcels an average of 15 years. Sixty-two percent of the 250 buyers indicated they purchased the tract of land directly from the owner, and 38 percent bought through a real estate agent. Thirty of the 155 bought their parcels directly from an owner or bought from a close relative (parent, grandparent, brother or sister), 20 buyers were a friend of the seller, and 105 of the buyers only knew the owner as a casual acquaintance. A study of how buyers learned that the parcel was for sale indicated that information networks between friends and relatives help facilitate transactions.

Table 3. Average Parcel Size and Price Paid Per Acre by Land Use for 147 Fringe Area Tracts

Category	Average		
	Value	Size	Use Before Purchase
	Dollars	Acres	Percent
Cropland	3,987	7.02	34.69
Wooded or Pasture	3,739	6.43	22.45
Developed Land (land with improvements but without buildings)	6,388	2.14	24.49
Land and Residence (rural nonfarm home)	7,224	2.87	10.20
Farmstead	3,650	5.09	7.48
Other	1,455	2.00	0.69
TOTAL			100.00

Land Use Opinions

Buyers' and sellers' opinions on selected land-use statements indicated that both groups favored preservation of high quality agricultural land by regulating urban growth. Both buyers and sellers felt that present regulations do not adequately protect agricultural land from urban and industrial growth in the Fargo-Moorhead fringe area. However, sellers also felt that farmers and potential buyers should be able to buy and sell land without any regulations, which means that sellers have conflicting feelings on regulating land use. Soil erosion by wind and water was reported as a problem by buyers and sellers. They felt strongly that farmland operators should be required to use good soil conservation practices.

Summary

Increased demand for small parcels of fringe area land for nonfarm residential sites has shifted agricultural land to urban-type uses. This trend partly reflects changing ownership patterns of land resources in fringe areas. Buyers were younger, better educated, had higher incomes, and a higher percentage were trained and experienced in professional and managerial occupations than were the sellers. The primary reason buyers moved to fringe areas was the desire to live in the country where there is more privacy and quiet. Transfer activity and price paid per acre were much greater for land "close-in" as compared to land farther out from Fargo-Moorhead. Current fringe area land uses reflect both agricultural and urban influences.

---

continued from 2

The College of Agriculture is addressing the future educational needs of our students in order to insure that they become competent and productive professionals. However, the citizens of North Dakota must encourage their sons and daughters to select careers in agriculture whether it be in agronomy, animal science, agricultural economics, veterinary medicine, soil science, agricultural education, bacteriology, entomology, plant pathology, cereal chemistry and technology, agricultural mechanization, horticulture, or agricultural extension. Expertise in all of these areas, including biochemistry, botany and home economics, is needed to continue and improve the agricultural industry.

The last 50 years have brought significant advances in production, processing and marketing of agricultural products. Twenty percent of the Gross National Product and 23 percent of the labor force (including 4 percent on farms) are involved in today's agricultural industry. Farm output has increased by two and one-half times during this period, utilizing 6 percent fewer acres than in the 1930s. Today's farmer creates employment for five non-farm workers and produces enough food and fiber for 78 people as compared to 50 years ago when a farmer could produce food and fiber for only 11 people. The importance of agriculture and its influence on the well-being of the nation should be obvious to all.

What will the next 50 years bring, and will the human resources in agriculture be available to meet the demands placed on this industry?