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RESULTS OF THE NORTH DAKOTA LAND VALUATION MODEL FOR THE 2001 AGRICULTURAL REAL ESTATE ASSESSMENT

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ABSTRACT

This report summarizes the results of the North Dakota Land Valuation Model. This model is used annually to estimate average land values by county, based on the value of production produced on that land. The county land values developed from this procedure form the basis for the 2001 valuation of agricultural land for assessment of real estate taxes. The average all land value from this analysis is multiplied by the total acres of agricultural land on the county abstract to determine each county's total agricultural land value. The State Board of Equalization compares this value with the total value assessed to agricultural property in each county. Each county is required by state statute to assess a total value of agricultural property within 5 percent of this value.

Key Words: assessment, capitalization rate, land, taxes, valuation

ALL LAND VALUATION

Valuation of all agricultural land in North Dakota, for the year 2001 assessment, increased by 3.2 percent or $7.92 per acre over the previous year. All counties showed increases with Emmons County having the greatest increase of 8.5 percent followed by Hettinger County at 6.7 percent. The smallest increase was in Richland County at 0.7 percent followed by Ramsey County at 1.1 percent increase.

State statute mandates that the Department of Agricultural Economics, now the Department of Agribusiness and Applied Economics, at NDSU annually compute an estimate of 1) the average value per acre of agricultural lands on a statewide and countywide basis, and 2) the average value per acre for cropland and non-cropland. These estimates are provided to the State Tax Department.

The model calculates agricultural land values as the landowner share of gross returns divided by the capitalization rate. *Landowner share of gross returns* is the portion of revenue generated from agricultural land that is assumed to be received by the landowner, and is expected to reflect current rental rates. The Legislature has specified that the landowner share of gross returns is 30 percent of gross returns, except for non-cropland (25 percent), sugarbeets and potatoes (20 percent), and irrigated land (50 percent of the dryland rate).

CAPITALIZATION RATE

The capitalization rate is an interest rate that reflects the general market rate of interest adjusted for the risk associated with a particular investment or asset (in this case, agricultural land in North Dakota). The Legislature has specified the gross Federal Land Bank (AgriBank, FCB) mortgage rate of interest for North Dakota be used as the basis for computing the capitalization rate. The capitalization rate used in the North Dakota Land Valuation model is a twelve-year rolling average with the high and low rates dropped.

The capitalization rate used for the 2001 assessment was 9.18 percent, down from 9.45 percent in 2000. This represents a 2.85 percent reduction in this rate. As the capitalization rate declines, this results in an upward movement in calculated land values. If the landowner share of gross returns remained unchanged from the previous year, the decline in the capitalization rate alone would have resulted in an average

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increase in land values of 2.85 percent. With the average statewide increase being 3.2 percent, the capitalization rate was a major factor in the change in calculated land values.

COST OF PRODUCTION INDEX

Beginning with the analysis for the 1999 assessment, a cost of production index was added to the model. This was included in the model to account for the increasing proportion of the total cost of production represented by variable costs. The source of data for this index is the *Items Used For Production* from the *Prices Paid Index* published by the National Agricultural Statistics Service, Washington, DC. The index developed for this analysis was determined by averaging the latest ten years values after dropping the high and low value; and dividing this value by the base index. The base index was developed by averaging the index values from the years 1989 through 1995 after dropping the high and low values. This base index value is 102. The resulting index value used in the 2001 analysis is 105.2, which is used to reduce the landowner share of gross returns.

CROPLAND VALUE

The average value of cropland in North Dakota increased $11.25 per acre or 3.52 percent. Individual county values varied greatly. Largest increases were in Emmons County at 10.4 percent, followed by Sioux at 8.0 percent, Hettinger County at 7.7 percent, and Grant at 7.1 percent. The smallest increase occurred in Ramsey County at 1.4 percent. Fourteen counties had an increase of 1.7 percent: Benson, Bottineau, Burke, Foster, Grand Forks, LaMoure, McHenry, Mountrail, Nelson, Pierce, Renville, Rolette, Stutsman, and Ward.

Twelve of the fifteen counties with the smallest increase in cropland value are along or north of U.S. Highway 2. This is an area of the state that has experienced several short crops in the past five years due to excessive moisture. Part of the shortfall has been replaced with crop insurance indemnity payments, however, these payments are not included in the model.

The increased moisture in recent years that has hurt crop yields and quality in the northern part of the state has been a benefit to the more arid west and southwestern region of the state. Nearly all of the counties with the largest increases in cropland value are in this area of the state

Changes in the capitalization rate and cost of production index impact all counties equally. The net impact of the changes in the capitalization rate and the cost of production index nearly offset each other resulting in little change in value. Therefore, nearly all of the change in value for cropland is due to an increase in the landowner share of gross returns. For some counties, much of the cause of increased landowner share of gross returns is attributed to increased yield per acre. For the 2001 assessment,1989 data is no longer included in the ten year average. Most counties in the state experienced very low crop production in 1989 due to a continuation of the drought that spread across the state in 1988.

NONCROPLAND VALUE

The value of noncropland (grazing land) changed very little from the values calculated for the year 2000 assessments. The value of noncropland is derived by calculating the value of the beef produced from grazing. The carrying capacity and the production per cow are constant in the model. As a result, all change in noncropland value is due to changes in the price of calves and cull cows as well as the changes in the capitalization rate and the cost of production index.

The price of calves and cull cows are used to determine the value of an animal unit month (AUM) of grazing. AUM is used as the measure of productivity of grazing land. Based on the price of calves and cull cows, an AUM had a value of $55.25 for the 2001 assessment. This was up from $49.97 the previous year. These prices are increasing due to the stage of the cattle cycle.

Two tables are provided comparing county values for 2000 and 2001. Table 1 shows North Dakota capitalized average annual values per acre by county for 2001. Table 2 shows North Dakota capitalized average annual values per acre by county for 2000.

Table 1

North Dakota Capitalized Average Annual Values Per Acre by County for 2001 Assessment

County	Cropland	Noncropland	All Agricultural Land
Adams	203.7[illegible]	78.71	156.39
Barnes	409.45	109.34	330.86
Benson	297.37	96.81	253.85
Billings	181.07	73.68	106.88
Bottineau	302.31	93.69	266.08
Bowman	203.57	65.02	134.37
Burke	250.40	86.15	200.74
Burleigh	238.08	86.41	169.48
Cass	523.21	111.18	510.32
Cavalier	375.46	95.01	335.32
Dickey	389.73	109.08	300.57
Divide	243.07	85.66	201.45
Dunn	206.49	78.50	127.68
Eddy	291.16	97.22	233.15
Emmons	267.42	85.58	189.53
Foster	354.43	93.58	306.71
Golden Valley	228.66	64.49	144.18
Grand Forks	500.19	109.13	466.88
Grant	211.24	78.91	137.61
Griggs	366.44	95.36	310.37
Hettinger	254.42	78.31	210.59
Kidder	238.74	87.27	165.45
LaMoure	381.49	112.81	343.70
Logan	256.26	86.11	174.14
McHenry	247.15	93.07	201.13
McIntosh	245.70	85.63	181.19
McKenzie	248.69	78.63	147.04
McLean	289.20	85.86	253.82
Mercer	232.87	78.47	166.01
Morton	239.36	78.65	145.60
Mountrail	259.90	85.54	187.08
Nelson	340.15	94.84	293.98
Oliver	266.91	78.69	156.00
Pembina	603.45	113.62	543.38
Pierce	287.89	93.08	230.66
Ramsey	319.90	97.52	281.18
Ransom	439.99	107.44	363.20
Renville	312.44	93.35	295.40
Richland	574.48	110.39	501.70
Rolette	282.17	94.63	249.92
Sargent	461.20	110.17	385.30
Sheridan	257.45	95.62	192.68
Sioux	194.94	78.72	101.37
Slope	222.99	71.73	156.17
Stark	228.85	79.07	173.25
Steele	452.36	96.89	403.31
Stutsman	323.65	107.76	255.24
Towner	308.69	97.25	299.27
Traill	572.77	110.17	537.30
Walsh	553.40	101.67	504.55
Ward	304.66	85.53	253.34
Wells	341.60	93.93	294.29
Williams	219.16	85.77	172.33
State	330.04	84.31	253.35

Table 2

North Dakota Capitalized Average Annual Values Per Acre by County For 2000 Assessment

County	Cropland	Noncropland	All Agricultural Land
Adams	197.87	78.21	152.45
Barnes	395.85	108.66	315.63
Benson	292.49	96.20	249.85
Billings	177.05	73.21	105.29
Bottineau	297.35	93.10	262.87
Bowman	195.82	64.61	130.91
Burke	246.29	85.60	197.71
Burleigh	226.87	85.87	183.06
Cass	497.64	110.48	485.52
Cavalier	353.07	94.41	316.05
Dickey	373.86	108.39	289.52
Divide	233.87	85.12	194.55
Dunn	197.60	78.01	124.12
Eddy	276.83	96.61	223.94
Emmons	242.30	85.04	174.63
Foster	348.61	92.99	301.85
Golden Valley	221.32	64.09	140.40
Grand Forks	491.97	108.44	459.30
Grant	197.21	78.41	131.11
Griggs	350.10	94.76	297.32
Hettinger	236.30	77.82	197.33
Kidder	233.57	86.72	162.20
LaMoure	375.23	112.10	327.15
Logan	246.56	85.57	168.73
McHenry	243.10	92.48	198.11
McIntosh	233.73	85.09	174.02
McKenzie	238.25	78.33	142.56
McLean	277.37	85.32	243.97
Mercer	222.99	77.97	180.19
Morton	224.24	78.16	139.14
Mountrail	255.63	85.00	184.34
Nelson	334.56	94.25	289.31
Oliver	250.20	78.39	148.85
Pembina	571.89	112.90	515.60
Pierce	263.50	92.50	227.13
Ramsey	315.45	96.91	276.12
Ransom	425.84	106.76	352.17
Renville	307.31	92.77	290.75
Richland	551.41	109.69	498.05
Rolette	277.54	94.09	246.87
Sargent	440.60	109.48	372.37
Sheridan	243.08	85.08	194.29
Sioux	180.58	78.22	98.17
Slope	211.10	71.28	149.33
Stark	215.30	78.57	164.54
Steele	438.28	96.28	391.09
Stutsman	318.34	107.08	251.60
Towner	299.81	96.64	290.76
Traill	551.76	109.46	517.85
Walsh	530.73	101.03	484.42
Ward	299.68	85.00	249.36
Wells	326.17	93.34	281.51
Williams	207.52	85.23	164.56
State	318.79	83.78	245.44

NOTICE:

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