

Presentation to Ag. Land Assessment Implementation and Oversight Advisory Task Force

July 25, 2013

SDSU Department of Economics wishes to acknowledge and thank the SD Department of Revenue and the SD Legislature for funding that made this research possible.

Changes in Land Values 2011-2012

South Dakota Agricultural Land Market Trends
1991–2013

The 2013 SDSU South Dakota Farm Real Estate Survey

<http://igrow.org/up/resources/03-7007-2013.pdf>

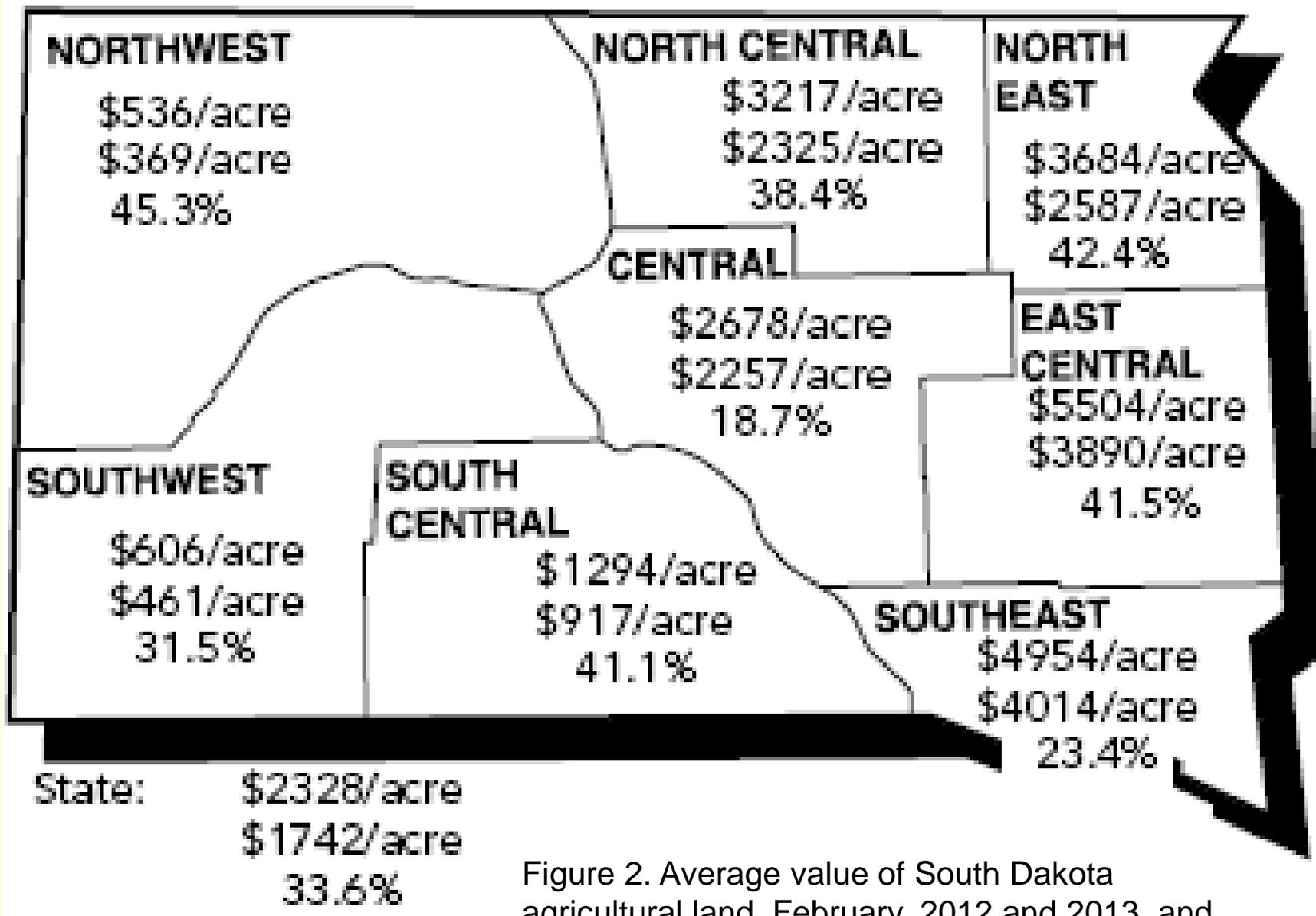


Figure 2. Average value of South Dakota agricultural land, February, 2012 and 2013, and percent change from one year ago.

2013 SDSU South Dakota Farm Real Estate Survey

- The most recent two years of annual increases for all agricultural land values are the highest annual rates of increase in the past 23 years of this survey.
- Cropland values increased at a higher rate than per acre value increases for other agricultural land uses.
- Cash rental rates also increased more during each of the past two years than in any other period in the past 23 years.

Data Issues

South Dakota Agricultural Land Taxation Assessment on a Land Productivity Basis

Where Does the Data Come From ?

First – What data is needed?

What Data Is Needed?

- Reliable, Replicable data for every county every year.
 - Not Farm Service Agency data (confidentiality)
 - South Dakota data from National Agricultural Statistics Service was chosen

First – What data is needed?

- What is the valuation formula?
 - For cropland:
 - $(\text{Gross Revenue Per Acre} * .35) / 6.6\%$
 - Why multiply by .35 ?
 - What is this factor and how was it derived [MORE LATER]
 - Why divide by 6.6%
 - What is this factor and how was it derived [MORE LATER]

First – What data is needed?

- What is the valuation formula?
 - For cropland:
 - $(\text{Gross Revenue Per Acre} * .35) / 6.6\%$
 - Gross Revenue Per Acre = The sum of gross Revenue per acre (*calculated by average yield for the county multiplied by the state level commodity price*) for all reported commodities divided by the sum of reported planted acres for reported commodities for the county for that year

South Dakota Agricultural Land Taxation Assessment on a Land Productivity Basis

Where Does the Data Come From ?

South Dakota Agricultural Land Taxation Assessment on a Land Productivity Basis

Crop Production Information



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Statistics by State

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South Dakota office of USDA's NASS

County Estimates

CATTLE(Includes All Cattle, Beef Cows & Milk Cows)

[2013](#), [2012](#), [2011](#), [2010](#), [2009](#), [2008](#), [2007](#), [2006](#), [2005](#), [2004](#), [2003](#), [2002](#), [2001](#)

CORN FOR GRAIN

[2012](#), [2011](#), [2010](#), [2009](#), [2008](#), [2007](#), [2006](#), [2005](#), [2004](#), [2003](#), [2002](#), [2001](#), [2000](#), [1999](#), [1998](#), [1997](#), [1996](#), [1995](#), [1994-1924](#)

SOYBEANS

[2012](#), [2011](#), [2010](#), [2009](#), [2008](#), [2007](#), [2006](#), [2005](#), [2004](#), [2003](#), [2002](#), [2001](#), [2000](#), [1999](#), [1998](#), [1997](#), [1996](#), [1995](#), [1994-1977](#)

SPRING WHEAT (Other Than Durum)

[2012](#), [2011](#), [2010](#), [2009](#), [2008](#), [2007](#), [2006](#), [2005](#), [2004](#), [2003](#), [2002](#), [2001](#), [2000](#), [1999](#), [1998](#), [1997](#), [1996](#), [1995](#), [1994-1926](#)

WINTER WHEAT

[2012](#), [2011](#), [2010](#), [2009](#), [2008](#), [2007](#), [2006](#), [2005](#), [2004](#), [2003](#), [2002](#), [2001](#), [2000](#), [1999](#), [1998](#), [1997](#), [1996](#), [1995](#), [1994-1924](#)

OIL SUNFLOWER

[2012](#), [2011](#), [2010](#), [2009](#), [2008](#), [2007](#), [2006](#), [2005](#), [2004](#), [2003](#).

South Dakota Agricultural Land Taxation Assessment on a Land Productivity Basis

Commodity Price Information

Quick Stats

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Navigation History:

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Status: 13 records

Selected items filter to 1 total records. Press Get below to retrieve records

sector->Group->Locale->State->Commodity->Category->Data Item->Year->Frequency->Reference Period

Select Commodity (one or more)

Program:

SURVEY

Sector:

ANIMALS & PRODUCTS
CROPS
DEMOGRAPHICS
ECONOMICS
ENVIRONMENTAL

Group:

CROP TOTALS
FIELD CROPS
FRUIT & TREE NUTS
HORTICULTURE
VEGETABLES

Commodity:

BARLEY
BEANS
BUCKWHEAT
CANOLA
CORN
COTTON
FIELD CROP TOTALS
FIELD CROPS, OTHER
FLAXSEED

Quick Stats

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[Recent Statistics](#)

 Navigation History: [Data](#)

Double click any cell below to filter the data by that item. Right click on column heading to pivot or hide columns.

[Save :: Spreadsheet :: Print](#)

Program	Year	Period	Geo Level	State	State ANSI	Commodity	Data Item	Domain	D
SURVEY	2012	MARKETING YEAR	STATE	SOUTH DAKOTA	48	BARLEY	BARLEY - PRICE RECEIVED, MEASURED IN \$ / BU	TOTAL	M
SURVEY	2012	MARKETING YEAR	STATE	SOUTH DAKOTA	48	CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN \$ / BU	TOTAL	M
SURVEY	2012	MARKETING YEAR	STATE	SOUTH DAKOTA	48	HAY	HAY, (EXCL ALFALFA) - PRICE RECEIVED, MEASURED IN \$ / TON	TOTAL	M
SURVEY	2012	MARKETING YEAR	STATE	SOUTH DAKOTA	48	HAY	HAY, ALFALFA - PRICE RECEIVED, MEASURED IN \$ / TON	TOTAL	M
SURVEY	2012	MARKETING YEAR	STATE	SOUTH DAKOTA	48	MILLET	MILLET, PROSO - PRICE RECEIVED, MEASURED IN \$ / BU	TOTAL	M
SURVEY	2012	MARKETING YEAR	STATE	SOUTH DAKOTA	48	OATS	OATS - PRICE RECEIVED, MEASURED IN \$ / BU	TOTAL	M
SURVEY	2012	MARKETING YEAR	STATE	SOUTH DAKOTA	48	SORGHUM	SORGHUM, GRAIN - PRICE RECEIVED, MEASURED IN \$ / CWT	TOTAL	M

South Dakota Agricultural Land Taxation Assessment on a Land Productivity Basis

Non-Crop Information

First – What data is needed?

- What is the valuation formula?
 - For non-cropland:
 - $(\text{Gross Revenue Per Acre} * 1.00) / 6.6\%$
 - Why multiply by 1.00 ?
 - What is this factor and how was it derived [MORE LATER]
 - Why divide by 6.6%
 - What is this factor and how was it derived [MORE LATER]

First – What data is needed?

- What is the valuation formula?
 - For non-cropland:
 - $(\text{Gross Revenue Per Acre} * 1.00) / 6.6\%$
 - Gross Revenue Per Acre = Reported Cash Rent for the county

South Dakota Agricultural Land Taxation Assessment on a Land Productivity Basis

Where Does the Data Come From ?

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SOUTH DAKOTA

DEPARTMENT OF
AGRICULTURE

USDA's NASS South Dakota Field Office is operated in cooperation with the [South Dakota Department of Agriculture](#) and [South Dakota State University](#).



South Dakota Statistics

Quick Stats (ag statistics by state and county)

The Quick Stats database application provides the most up-to-date statistics for the U.S., as well as all states and counties, including all revisions. Press "more" to continue.

More

- County Estimates
- South Dakota Agricultural Overview
- Census of Agriculture for South Dakota

South Dakota Publications

More

Cash Rents and Land Values



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- County Profiles
- Cropland Data Layer Maps by County
- Other South Dakota Links
- Crops Charts
- Livestock Charts
- Crop Reporting Districts

Data Users' Forum
October 17, 2011

For questions, comments and concerns, please email nass-sd@nass.usda.gov or call (605) 323-6500.



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South Dakota office of USDA's NASS

Cash Rents and Land Values

NOTE: These documents are in Adobe Acrobat's Portable Document Format (PDF). If you need the Acrobat Reader, it is available for free from the [Adobe web site](#).

County Cash Rents

[September 2012](#)

[September 2011](#)

[September 2010](#)

[April 2010](#)

[May 2009](#)

County Cash Rents and Land Value

[April 2008](#)

[April 2007](#)

[April 2006](#)

[April 2005](#)

COUNTY CASH RENTS, SOUTH DAKOTA, 2012

DISTRICT AND COUNTY	NON-IRRIGATED CROPLAND RENT	IRRIGATED CROPLAND RENT	PASTURELAND RENT
	Dollars/Acre	Dollars/Acre	Dollars/Acre
BUTTE	(D)	80.00	8.70
CORSON	27.50		10.00
DEWEY	24.50		7.50
HARDING	(D)		6.80
PERKINS	22.50		11.00
ZIEBACH	26.00		7.00
COMBINED COUNTIES	24.00		
<i>NORTHWEST</i>	25.00	80.00	8.40
BROWN	96.50	(D)	32.00
CAMPBELL	57.00	(D)	22.50

NASS Reporting Standards

NASS statistical standards for publishing county data

2.4.1 Minimum Reports, Minimum Coverage

Crops

In order to publish estimates for a given crop, the data must meet the two criteria below.

1. At least 3 reports with positive planted, harvested, and production data for the given county/district/practice, with no individual report accounting for 60% or more of the total.

AND

2. Supported by at least 30 reports with positive harvested acreage and yield OR the harvested acres from reports with positive yields must account for a minimum of 25 percent of the current year's harvested acreage estimate for that county or district. The data only needs to exceed one of these situations to be eligible.

- For crops which do not meet these standards, all pieces (planted, harvested, yield and production) **must be** suppressed. Also if one practice is suppressed, the other practice must be suppressed.

III. PRIMARY SUPPRESSION: Any value to be released that directly fails established disclosure rules is called a primary suppression. The rules are easily programmed and primary suppressions are quickly identified.

IV. COMPLEMENTARY SUPPRESSION: If a data cell is a primary suppression in a table that contains additive subtotals, it is possible to derive (infer) the value of that cell. In this case, other cells may need to be suppressed to prevent this. These are called complementary suppressions. Sometimes, more than one primary suppression occurs among additive items and they complement each other. However, there will be numerous instances when a value that passes the rules must be sacrificed to protect a primary suppression.

ALL CORN for GRAIN, SOUTH DAKOTA 2012 1/

	: Planted	: Harvested	: Yield	: Production
	: ----- Acres -----		: ----- Bushels -----	
Butte	12,200	9,000	111.3	1,002,000
Corson	45,600	32,100	64.1	2,059,000
Dewey	32,200	24,400	46.9	1,145,000
Harding				
Perkins				
Ziebach	15,200	12,100	41.7	504,000
Combined counties ..	25,300	16,900	61.8	1,044,000
Northwest	130,500	94,500	60.9	5,754,000

Data Issues

- NASS makes changes – dictated at Federal level
 - States must comply
 - We adjust to changes
 - Reporting Standards
 - Reporting Format
 - Report Availability

What Does Loss of Reporting Data Mean to Analysis

Based on 2012 Reporting

County	2012 Results	Minus 1 Crop	Minus 2 Crop
Brown	\$ 832.01	\$ 841.23	NA (C & SB)
Deuel	\$ 629.11	\$ 637.84	\$ 642.17
Gregory	\$ 202.96	\$ 202.49	\$ 206.08
Lincoln	\$ 339.15	\$ 339.85	NA (C & SB)
Meade	\$ 163.89	\$ 168.30	\$ 176.71
Potter	\$ 456.69	\$ 458.24	\$ 453.19
Stanley	\$ 132.42	\$ 137.75	NA (2 crop)
Union	\$ 482.64	\$ 484.36	\$ 485.54

How Acres Influence Calculations

Summer Fallow / Prevented Planting

Assume there are only two acres under
consideration

Assume Same Crop on Both Acres

Assume identical soils on both acres



Acre #1



Acre #2

Only two acres under consideration

Acre #1

- Planted
- Harvested

Acre #2

- Planted
- Harvested

- Both Acres Planted and Harvested
- Both acres count towards acres planted
- Gross Revenue Per Planted acres calculation
 - $(\text{Yield Acre \#1} + \text{Yield Acre \#2}) = \text{Total Yield}$
 - $\text{Total Yield} * \text{Price} = \text{Gross Revenue}$
 - $\text{Gross Revenue} / 2 = \text{Average Gross Revenue Per Planted Acre}$
 - Same Valuation for both acres

Only Two Acres Under Consideration

Assume Same Crop on Both Acres

Acre #1

- Planted
- Harvested

Acre #2

- Planted
- NOT**
Harvested

- Both Acres Planted; Only 1 Acre Harvested
- Both Acres Count Towards Acres Planted
- Gross Revenue Per Planted acres calculation
 - Yield Acre #1 = Total Yield
 - Total Yield * Price = Gross Revenue
 - Gross Revenue / 2 = Average Gross Revenue Per Planted Acre
 - Same valuation for both acres

Only Two Acres Under Consideration

Acre #1

- Planted
- Harvested

Acre #2

- NOT
Planted
- NOT
Harvested

- Only 1 Acre Planted and Harvested
- Only Acre #1 counts towards acres planted
- Gross Revenue Per Planted acres calculation
 - Yield Acres #1 = Total Yield
 - Total Yield * Price = Gross Revenue
 - Gross Revenue / 1 = Average Gross Revenue Per Planted Acre
 - Same Valuation for both acres

Assume there are only two acres
under consideration

Acre #1

- Planted
- NOT
Harvested

Acre #2

- NOT
Planted
- NOT
Harvested

- Only 1 Acre Planted; No harvested acres
- Only Acre #1 counts towards acres planted
- Gross Revenue Per Planted acres calculation
 - Total Yield = 0
 - Gross Revenue = 0
 - Average Gross Revenue Per Planted Acre cannot be calculated for this crop
 - Acre #1 is counted in planted acres and included in the denominator of planted acres along with all other planted acres. Gross Revenue is summed across all other crops.
 - Valuation determined from calculation of gross revenue per planted acres from all crops

Assume there are only two acres
under consideration

Acre #1

• NOT

Planted

• NOT

Harvested

Acre #2

• NOT

Planted

• NOT

Harvested

- Zero Acres Planted and Harvested
- No acres count towards acres planted
- Gross Revenue Per Planted acres calculation
 - Total Yield = 0
 - Gross Revenue = 0
 - Average Gross Revenue Per Planted Acre cannot be calculated for this crop
 - Neither acre is counted in planted acres. Denominator of planted acres from all other planted acres. Gross Revenue is summed across all other crops.
 - Valuation determined from calculation of gross revenue per planted acres from all crops

Agricultural Land Productivity Based Tax Assessment Calculation Factors

Dr. Burton Pflueger

July 30, 2012

Agricultural Land Productivity Based Tax
Assessment Oversight Committee

PRODUCTIVITY VALUATION INFORMATION STATE OF SOUTH DAKOTA

FOR THE 2010 ASSESSMENT YEAR
Prepared by Department of Revenue and Regulation
Property and Special Taxes Division

In a “pure” productivity valuation system, the landlord share percentages would be determined by examining contracts between landlords and tenants. The capitalization rate would be determined by analyzing the market for agricultural land and would change as market conditions change. For South Dakota’s productivity valuation system, these parts of the formula were calculated to produce a “revenue neutral” result.

HOWEVER, they are “good” numbers !

PRODUCTIVITY VALUATION INFORMATION

Landlord Share Rate

10-6-33.30. Factors used for percentage of annual earning capacity. The economics department of South Dakota State University shall submit recommendations to the Agricultural Land Assessment Implementation and Oversight Advisory Task Force by November 1, 2008, regarding factors to use for the **percentage of annual earning capacity** to be used to determine the agricultural income value of the land pursuant to § 10-6-33.28 and other provisions used to assess agricultural land that will provide the least amount of shift between cropland and noncropland on a statewide basis. Thereafter, the economics department shall submit such recommendations, if any, to the task force by September first of each year.

Source: SL 2008, ch 44, § 7.

PRODUCTIVITY VALUATION INFORMATION

- Landlord Share Rate (Index Factor / Baatz 4-28-11)
 - What could / should it be?
 - 2 approaches contained in this presentation
 - » Reported Share Rent Percentage
 - » Using Valuation Formula To Calculate Landlord Share Factor

Reported Share Rent

SDSU Agricultural Real Estate Market Survey

- The survey on share leasing was included with the 21st annual (2011) South Dakota Farm Real Estate Market Survey conducted by SDSU's Economics Department and was completed by 160 respondents.
 - weighted average of share crop rental agreements was calculated and is shown to equate to a **landlord share of 35.56%**.

South Dakota Center for Farm/Ranch Management
Mitchell Technical Institute
2011/2012 South Dakota Annual Report

- Two crops reported for Share Crop Arrangements – Corn, Soybeans
 - Data included from “average of all Fields” report

	Landlord 2011	Landlord 2012
Corn	37.38%	37.16%
Soybeans	35.46%	38.74%

Reported Share Rent

	Landlords share of yield %					
	OA 00-07	OA 01-08	OA 02-09	OA 03-10	OA 04-11	OA 05-12
MN CORN	42.720	42.818	42.818	42.663	42.852	42.99
MN SOYBEANS	42.627	42.717	42.708	42.830	43.087	43.57
ND CORN	32.000	31.328	30.800	30.320	30.973	31.70
ND SOYBEANS	33.930	33.960	33.705	33.723	34.168	34.86
NE CORN	38.637	38.813	38.648	38.933	39.145	39.86
NE SOYBEANS	37.918	38.063	37.982	38.145	38.333	39.09

Trend indicates that landlord share of yield is consistent over time. Data indicates that for those counties that border Minnesota and Nebraska, a 40% landlord share may be applicable.

Using Valuation Formula To Calculate Landlord Share Factor

Using Valuation Formula To Calculate Landlord Share Factor

- Using data from the valuation formula, a landlord share factor can be calculated using the approach of “solving” the equation for the landlord share factor instead of solving the equation for the valuation.

- Valuation formula:

$$((\text{Revenue per acre}) * \text{LSF}) / \text{Cap Rate} = \text{Value}$$

- Which is equal to:

$$((\text{Revenue per acre}) * \text{LSF}) = \text{Value} * \text{Cap Rate}$$

- Which is equal to:

Landlord Share Factor =

$$\mathbf{((\text{Value per Acre} * \text{Cap Rate}) / \text{Revenue Per Acre})}$$

Results of Using Valuation Formula To Calculate Landlord Share Factor

OA 00-07	OA 01-08	OA 02-09	OA 03-10	OA 04-11	OA 05-12
0.346894	0.35363	0.362094	0.352924	0.349191	0.359337

- Average over last three Olympic Average time periods = 35.38 %
- Average over last five Olympic Average time periods = 35.54 %

Landlord Share Information

SUMMARY:

2 analytic approaches considered

– Reported Share Rent Percentage

- Mitchell Technical Institute Farm Business Management Program

– Corn = 37.27 %

– Soybeans = 37.10 %

- North Dakota 32.62 % / Nebraska 38.92 % / Minnesota 43.00 %

– Using Valuation Formula To Calculate Landlord Share Factor

- 35.54 %

Landlord Share Information

SUMMARY:

- Several different approaches can be used to calculate landlord share percentage
- Some approaches may, arguably, indicate that the factor be higher than what is currently used in the formula.
- Recommendation would be to make no change in the landlord share factor at this time.

Agricultural Land Productivity Based Tax Assessment Calculation Factors

Capitalization Rate

Capitalization Rate

Capitalization Rate (Multiplier / Baatz 4-28-11) calculated to produce a “revenue neutral” result

What could / should it be?

Capitalization Rate

Capitalization Rate

– The Federal Reserve Bank

- Federal Reserve Bank of Minneapolis.
- <http://www.minneapolisfed.org/research/data/district/>

Agricultural Interest rates from the Federal Reserve Bank of Minneapolis, Quarterly Survey of Agricultural Credit

Real Estate Fixed

Q1-08	6.8
Q2-08	6.8
Q3-08	6.8
Q4-08	6.6
Q1-09	6.5



} **Data
Discovery
Period**

Capitalization Rate

Capitalization Rate

- **Rate in valuation formula “matches” what rate should have been when calculated !**

