

Agricultural Land Productivity Based Tax Assessment Calculation Factors

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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

PRODUCTIVITY VALUATION INFORMATION

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

Cost of Production

Cost of Production

- What is the relationship between an operator's (tenant's) cost of production and the amount of rent received by the landlord?
 - Landlord receives a payment for the use of his land
 - Payment (rent) should be bounded by what a tenant can afford to pay and what a landlord needs to receive to achieve the return on his investment
 - Tenant's cost of production effects his bid price. However current land market and the landlord's alternative investment opportunities may have more influence on landlord's required rate of return

Cost of Production

- 3 Data Sources for year-by-year cost of production information on a “state-wide” basis
 - Bureau of Economic Analysis (2 data sets)
 - 2011 data not available yet – (data lag)
 - Economic Research Service
 - 2011 data is forecasted
 - MTI Farm Business Management program
 - Not state-wide clientele, but source of South Dakota farm level farm cost and return information



Home

National

International

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Industry

Interactive Data

National Data

GDP & Personal Income Fixed Assets

Industry Data

GDP-by-industry & Input-Output

Regional Data

GDP & Personal Income

Regional Data

GDP & Personal Income

Table



Table

Select a table to display, or go directly to our [Download Section](#).

+ GROSS DOMESTIC PRODUCT BY STATE

+ GROSS DOMESTIC PRODUCT BY METRO AREA

+ QUARTERLY STATE PERSONAL INCOME

+ ANNUAL STATE PERSONAL INCOME AND EMPLOYMENT

+ LOCAL AREA PERSONAL INCOME AND EMPLOYMENT





Farm Income and Wealth Statistics

Overview

Documentation

Related Topics

[Farm Household Well-being](#)

[Beginning & Disadvantaged Farmers](#)

[Farm Structure & Organization](#)

[Farm Sector Income & Finances](#)

[Federal Tax Issues](#)



Overview

U.S. and State Farm Income and Wealth Statistics

These are the latest data concerning the farm income forecast, national and State net value added, net cash receipts, government payments, the balance sheet, production expenses, capital replacement costs, farms, land in farms, and real estate values.

Data are updated three times a year as new information becomes available. The February release provides a forecast for the current year and a revision of the prior year's forecast. The August release converts the prior year's income and balance sheet forecasts to estimates, adds farm income State-level estimates, and updates the current year's forecast. The November release revises the current year's forecast.

The following data are as of February 13, 2012. The next release will be August 28, 2012.

- [U.S. Farm Income and Wealth Statistics \(includes the U.S. Farm Income Forecast, 2012\)](#)
- [Historical and State-Level Data—U.S. Farm Income and Wealth Statistics](#)

Summary BEA / ERS

- Examined the contribution of crop inputs towards crop revenue

Direct Crop Expenses as % of Crop Receipts

	OA 00-07	OA 01-08	OA 02-09	OA 03-10
BEA #1	48.74%	48.27%	46.47%	44.63%
BEA #2	49.04%	48.65%	46.89%	44.96%
ERS	50.55%	49.10%	46.71%	41.99%



**2011 South Dakota
Annual Report
April 2012**

**Published by the Mitchell Technical Institute
Farm Business Management Program**

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

- Analytic Process Changed in 2010 / 2011
 - 2011 data reported in different format than previous years
 - Whole Farm Data may still be comparable across years

Table 200

<u>Cash Statement of Operator's Farm Profit or Loss</u>		<u>Average* of all Farms</u>		<u>High* Return Farms</u>	
		% Cash Oper Inc		% Cash Oper Inc	
1	Cash Farm Operating Income				
2	Beef Breeding Cattle & Calves	2.2%	17,700	0.7%	10,002
3	Beef Finishing Cattle	24.9%	204,104	17.3%	266,145
4	Stockers & Feeders	6.7%	55,211	3.3%	50,854
5	Dairy Products & Young Livestock	4.7%	38,659	6.5%	99,882
6	Complete Hogs - Young Animals	0.4%	3,586		
7	Hogs-Finishing Hogs	9.9%	80,990	15.2%	233,079
8	Hogs-Feeder Pigs				
9	Horses	0.0%	36		
10	Sheep	0.2%	1,512	0.0%	35
11	Other Livestock Enterprises				
12	Total Market Livestock Sales	49.1%	401,798	42.9%	659,997
13	Sales of Crops				
14	Oats	0.1%	907		
15	Wheat	1.5%	11,925	0.6%	8,953
16	Other Small Grains	0.1%	886		
17	Milo	0.0%	110		
18	Soybeans	16.1%	132,077	19.8%	304,670
19	Sunflowers	0.0%	256		
20	Alfalfa Hay	1.0%	8,209	0.9%	13,150
21	Corn	20.3%	166,257	26.0%	399,774
22	Other Crops	0.2%	1,853	0.0%	469
23	Sales of Purchases/Resale	1.1%	9,079	0.8%	11,857
24	Total Crop Sales	40.5%	331,559	48.0%	738,873
25	Other Income				
26	Government Payments	2.8%	22,998	7.7%	42,053
27	Tax Refund	0.0%	39		30
28	Home/Work Off Farm	0.7%	5,538		5,150
29	Custom Enterprise Income	1.7%	14,281	0.1%	11,092
30	Patronage Refund (Cash)	0.7%	5,371	0.6%	8,535
31	Misc. Farm Income	3.9%	31,966	4.6%	70,043
32	Capital Lease Income	0.6%	4,728	0.2%	2,548
33	Total Other Income	10.4%	84,921	9.1%	139,451
34	(A) Cash Operating Income	100.0%	818,278	100.0%	1,538,321

* The columns headed 'Average', 'High', and 'Low' for Tables 200 through 260 show the average, high, and low for all the farms in that group. The groupings are based on Line 42 of Table 200, on page 10.

Table 200

Cash Farm Operating Expenses		Average of all Farms	
	% Cash Oper Inc		% C
1	Purchase of MKT LVSTK & Lvstk Expenses		
2	Beef Breeding Cattle & Calves	0.6%	4,957
3	Beef Finishing Cattle	10.4%	84,958
4	Stockers & Feeders	2.8%	23,023
5	Poultry, All Fowl & Eggs		
6	Dairy Products & Young Livestock	0.0%	269
7	Complete Hogs - Young Animals		
8	Hogs-Finishing Hogs	2.8%	23,071
9	Hogs-Feeder Pigs		
10	Horses	0.0%	224
11	Sheep , Goats, Wool: Mkt Lambs	0.0%	214
12	Vet & Misc Lvstk Expense	2.5%	20,860
13	Feed Bought	11.1%	90,966
14	Total Livestock Expenses	30.4%	248,542
15	Crop Expenses		
16	Fertilizer	6.0%	49,198
17	Crop Chemicals	2.9%	23,593
18	Seed	6.4%	52,774
19	Drying	0.1%	479
20	Irrigation operation	0.0%	203
21	Other Crop Expenses	2.4%	19,301
22	Purchase for Resale	0.8%	6,573
23	Total Crop Expenses	18.6%	152,121
24	Fuel/Repair Expenses		
25	Fuel	3.5%	28,600
26	Repair: Livstk Equip	0.4%	3,036
27	Repair: Farm Real Estate	0.6%	4,931
28	Repair: Machinery & Vehicles	3.5%	28,274
29	Repair: Irrigation Equip	0.0%	268
30	Total Fuel/Repair Expense	8.0%	65,147
31	Other Farm Expenses		
32	Custom Work Hired	1.6%	13,211
33	Custom Enterprise Oper Costs	0.8%	6,672
34	Hired Labor	2.6%	21,174
35	Pers Prop & RE Taxes	1.1%	8,779
36	General Farm Expenses	1.9%	15,283
37	Utilities	1.1%	8,836
38	Capital Lease Payment	9.2%	75,479
39	Interest Actually paid	4.9%	40,407
40	Total Other Expenses	23.2%	189,841
41	(B) Cash Operating Expense	80.1%	655,651
42	(C) Net Cash Income (A - B)	19.9%	162,627

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

- Whole Farm Data – Average of All Farms
 - Total Crop Sales
 - Total Crop Expenses

	2005	2006	2007	2008	2009	2010	2011
Total Crop Sales	135968	153651	217875	300389	307398	331559	333067
Total Crop Expenses	103543	95820	112168	148914	146202	152121	172801
Crop Expenses as % of Crop Sales	76.15%	62.36%	51.48%	49.57%	47.56%	45.88%	51.88%

5 year rolling average	Avg 05-09	Avg 06-10	Avg 07-11
Average	57.43%	51.37%	49.28%

Cost of Production

- 4 Data Sources Examined
 - Crop Production costs are increasing
 - Direct Crop Expenses as % of crop revenue is shown as declining trend
 - Land may be contributing more towards crop revenue
 - Landlord compensation maybe should be increased

Return to Land Ownership

Return To Land Ownership

- Landlord receives a payment for the use of his land
- Payment influenced by what a landlord needs to receive to achieve the return on his investment
- Current land market and the landlord's alternative investment opportunities influence on landlord's required rate of return

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

- **Analytic Process Changed in 2010 / 2011**
 - 2011 data reported in different format than previous years
 - Values for some data categories in 2011 were combined to approximate previous year categories

- 3 Acres
- 4 Yield Per Acre (bushels)
- 5 Value per Bushel
- 6 Crop Product Return
- 7 Other Crop Income*
- 8 Total Crop Return



Divide Value from Line 37 by Value from Line 6 to show Land Cost as Percent of Crop Product Return

- Direct Costs
- 10 Fertilizer
- 11 Chemicals
- 12 Seed Expense
- 13 Crop Drying
- 14 Crop Insurance
- 15 Other Expenses
- 16 Special Hired Labor
- 17 Custom Work Hired & Lease Expense
- 18 Irrigation Operation
- 19 Assigned Interest
- 20 Total Direct Costs
- 21 Return Over Direct Costs



- Allocated Costs (Variable & Fixed)
- 31 Farm Power & Machinery - Ownership
- 32 Farm Power & Machinery - Operation
- 33 Building & Fence Cost
- 34 Irrigation Ownership Cost
- 37 Actual Land Ownership or Rental Costs
- 38 Utilities & General Farm Expense
- 39 Hired Labor
- 41 Actual Non-Real Estate Int. Allocated
- 42 Total Allocated Costs
- 43 Total Listed Costs
- 44 Return Over Listed Costs

South Dakota Center for Farm/Ranch Management
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 2011 South Dakota Annual Report

Land Ownership / Crop Product Return

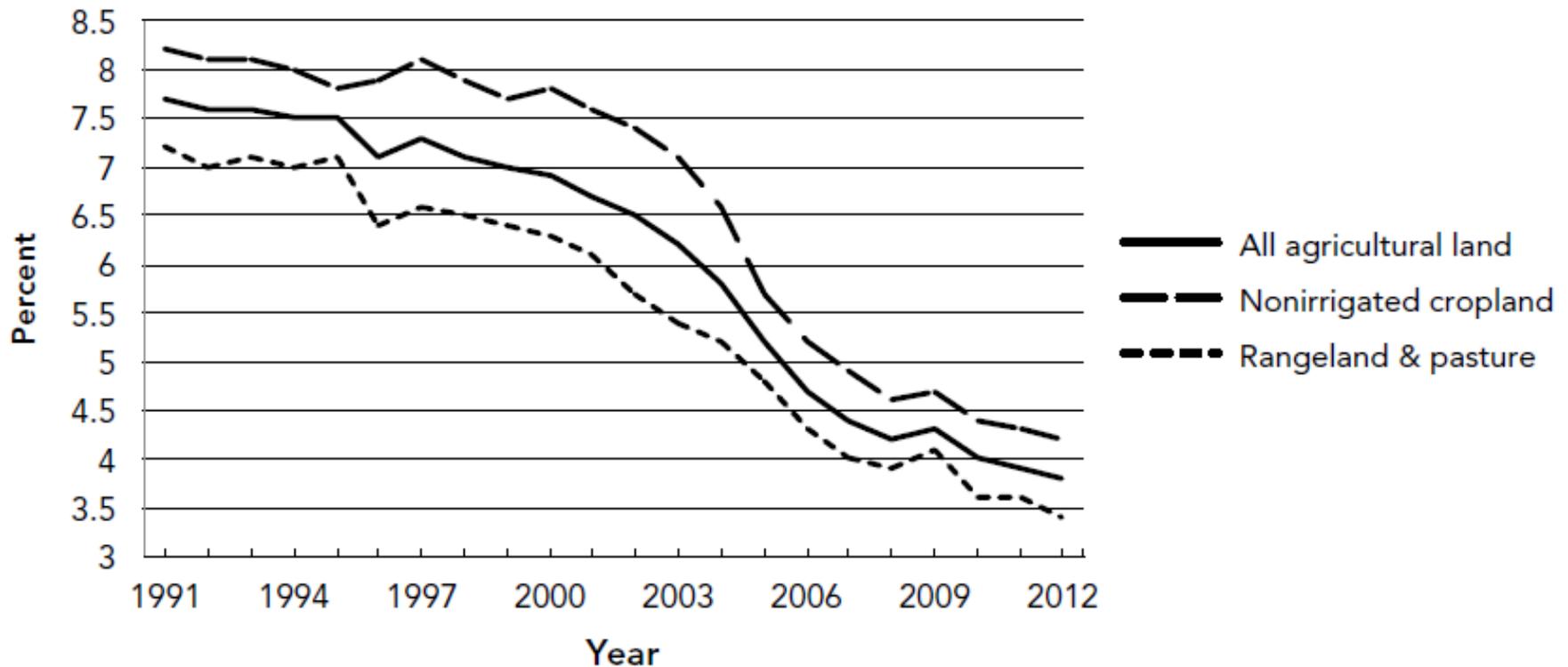
	OA 00-07	OA 01-08	OA 02-09	OA 03-10	OA 04-11
Winter Wheat	21.18%	19.90%	19.90%	20.21%	18.68%
Corn	22.95%	22.40%	21.63%	19.57%	18.49%
Soybeans	26.81%	26.79%	25.78%	24.32%	23.08%
Alfalfa Hay	22.32%	20.97%	20.24%	19.21%	18.53%

Land Ownership / Crop Product Return

- Data Show a Declining Trend!
 - “Return” to Land Investment declining
 - Supported by SDSU Research
 - **Current average rates of cash return on agricultural land in South Dakota are lower in 2012 than in any of the past 22 years.**
 - For 2012 the average ratio of gross cash rent to current land value for all agricultural land was 3.8%, for non-irrigated cropland was 4.2%, and for rangeland was 3.4%. During the 1990s, the same ratios were 7.4% for all agricultural land, 8.0% for cropland, and 6.8% for rangeland.

Return to Land Investment

Fig 8. Gross rent-to-value ratio by land use, 1991–2012



Source: 2012 SDSU Farm Real Estate Market Survey and earlier publications.

Return to Land Investment

Findings from SDSU Agricultural Real Estate Market Survey

- Cash rates of return (gross cash rent to land value ratio) to agricultural land were relatively stable from 1991 to 2000 and declined substantially from 2001 to 2012. These findings indicate that increased land values during the 1990's were supported by comparable rates of increase in cash rental rates.
- **However**, from 2001 to 2012, cash rental rates usually increased at a slower rate than land values. This finding illustrates the much greater impact of reduced interest rates on land values compared to its impacts on cash rental rates.

Return To Land Ownership

- Cash rental rates increasing at a slower rate than land values
- Rates of cash return on agricultural land in South Dakota are lower in 2012 than in any of the past 22 years.
- May have led to some landlords adopting Flexible Rental Agreements.
 - Landowners that adapt flexible cash farm leases receive a guaranteed base cash rent amount, in addition to a flex payment that was likely triggered by higher gross revenue (yields and/or price).
 - The use of a flexible cash farm lease will likely be fairer to both the landowner and tenant.

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%**.



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

	Operator	Landlord
Corn	62.62 %	37.38 %
Soybeans	64.54 %	35.46%

Reported Share Rent

- South Dakota Center for Farm/Ranch Management approach in 2011 Annual Report parallel to data collection and analysis supporting the national, publicly available farm financial management database to support improved farm management.
- Data in FINBIN is contributed by farm management associations that use [FINPACK](#) as their farm business analysis and summary program.



FINBIN

Farm Financial Database

GENERATE A SUMMARY REPORT

[WHOLE FARM](#)

[CROP](#)

[LIVESTOCK](#)

GENERATE A BENCHMARK REPORT

[DAIRY](#)

[CROP](#)

ABOUT FINBIN

Welcome to FINBIN, the [FINPACK](#) farm financial database. This site provides benchmark financial information for farm producers, educators, lenders, and other agricultural professionals.

The database summarizes actual farm data from thousands of agricultural producers who use [FINPACK](#) for farm business analysis. [FINPACK](#) is a comprehensive farm financial planning and analysis software system developed and supported by the Center for Farm Financial Management at the University of Minnesota.

Data in FINBIN is contributed by farm management associations that use [FINPACK](#) as their farm business analysis and summary program. Farm business management associations that currently contribute data to FINBIN include:

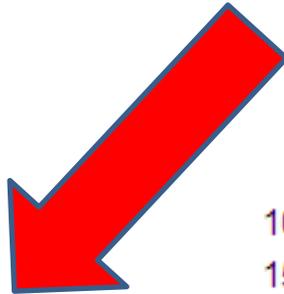
- [Minnesota State Colleges and University Farm Business Management Education](#)
- University of Minnesota Farm Business Management Associations
- [North Dakota Vocational and Technical Education Adult Farm Business Management](#)
- Nebraska Farm Business, Inc. and Nebraskaland Farm and Ranch Management Education Program
- The Ohio State University Extension & Ohio Farm Business Planning and Analysis

Reported Share Rent

Crop Enterprise Analysis
(Farms Sorted By Years)

Corn on Share Rent

	2011	2010	2009	2008	2007	2006	2005
Number of fields	169	163	173	188	178	182	187
Number of farms	127	129	137	140	139	139	146
Acres	104.29	107.02	108.38	96.52	114.52	107.31	107.64
Yield per acre (bu.)	156.22	178.83	178.56	164.03	157.02	163.60	178.15
Operators share of yield %	54.30	54.68	53.49	55.32	54.61	55.01	55.44
Value per bu.	5.75	4.62	3.65	3.89	3.69	2.85	1.97
Other product return per acre	-	-	-	-	-	0.07	-
Total product return per acre	488.08	451.79	348.61	353.27	316.74	256.53	194.77



Reported Share Rent

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

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:

$$\text{Landlord Share Factor} = ((\text{Value per Acre} * \text{Cap Rate}) / \text{Revenue Per Acre})$$

Results of Using Valuation Formula To Calculate Landlord Share Factor

		SDSU					
		Ag Land, Cropland		Gross Revenue		LANDLORD	
		Non-Irrigated - Asset Value	Capitalization	Per Planted Acre		SHARE	
Year	State	Measured In \$ / Acre	Rate	MEASURED IN \$ / ACRE		FACTOR	
1997	SOUTH DAKOTA	486	0.0660	146.3361876	=	0.219193902	21.92%
1998	SOUTH DAKOTA	534	0.0660	128.2192101	=	0.274873008	27.49%
1999	SOUTH DAKOTA	534	0.0660	116.9883911	=	0.301260661	30.13%
2000	SOUTH DAKOTA	567	0.0660	128.1221396	=	0.292080667	29.21%
2001	SOUTH DAKOTA	626	0.0660	123.1691335	=	0.335441184	33.54%
2002	SOUTH DAKOTA	684	0.0660	114.3336581	=	0.394844359	39.48%
2003	SOUTH DAKOTA	743	0.0660	155.0890181	=	0.316192601	31.62%
2004	SOUTH DAKOTA	882	0.0660	158.4382937	=	0.367411177	36.74%
2005	SOUTH DAKOTA	1064	0.0660	156.4054634	=	0.448986874	44.90%
2006	SOUTH DAKOTA	1,211	0.0660	153.3059754	=	0.521349541	52.13%
2007	SOUTH DAKOTA	1,375	0.0660	323.1691097	=	0.28081273	28.08%
2008	SOUTH DAKOTA	1,733	0.0660	326.2146583	=	0.35062189	35.06%
2009	SOUTH DAKOTA	1,900	0.0660	308.8337183	=	0.406043746	40.60%
2010	SOUTH DAKOTA	2,030	0.0660	383.7875437	=	0.349099397	34.91%
2011	SOUTH DAKOTA	2,389	0.0660	467.6839276	=	0.337137949	33.71%

Results of Using Valuation Formula To Calculate Landlord Share Factor

	SDSU LAND VALUE							
	OA 97-04	OA 98-05	OA 99-06	OA 00-07	OA 01-08	OA 02-09	OA 03-10	OA 04-11
LSF	0.31454	0.33454	0.36069	0.35916	0.36892	0.38068	0.37306	0.37655

- Average over last five Olympic Average time periods equals 37.17%

Landlord Share Information SUMMARY:

4 analytic approaches considered

- Cost of Production
 - Indication that landlords should be receiving higher percentage of crop revenue
- Return to Land Ownership
 - Indication that landlords not receiving adequate return from cash rent
 - May contribute to explaining emergence of flex rent agreements
- Reported Share Rent Percentage
 - Mitchell Technical Institute Farm Business Management Program
36.42 %
 - North Dakota 32.57 % / Nebraska 38.74 % / Minnesota 42.97 %
- Using Valuation Formula To Calculate Landlord Share Factor
 - 37.17%

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.

