2011 Agricultural Land Valuation Study

Introduction

The Agricultural Land Valuation Study determines the taxable value on agricultural lands and describes the methodology used. Authority, methodology and assessment techniques are prescribed under W.S. 39-11-102(b), Chapter 11 in the Department's Rules and in the Department's "Mapping and Agricultural Manual."

Wyoming agricultural land is valued according to its capability to produce forage or crops. For the purpose of this study all agricultural land use is categorized as irrigated crop land, dry crop land or range land. In each of the three agricultural categories, one commodity is used to measure productivity.

- **Irrigated Crop Land** valuation is based on the production of all hay. This commodity was chosen because hay is the most widely produced irrigated crop in the State.
- **Dry Crop Land** valuation is based on the production of all wheat. This commodity was chosen because wheat is the most widely produced dry crop in the State.
- **Range Land** valuation is based on grazing fees per animal unit month (AUM). AUM's is described as the amount of forage required to maintain a 1,000 lb. cow, with or without a calf, for one month.

The valuation of agricultural lands is based on the income approach to value. This appraisal approach involves capitalizing the net operating income the landowner receives from the three categories of agricultural use described above. The following list outlines the contents of this document and their purpose.

- **Pricing of Agricultural Commodities.** This step determines and weights the prices of agricultural products over a five-year period.
- **The Capitalization Rate Process.** Long-term portfolio interest rates are weighted and averaged over a five-year period.
- **Agricultural Valuation Procedure.** Calculation of the base unit for each land category and determine the net income.
- **Land Values by Use.** The net income is capitalized to determine ranges of land value for agricultural land categories.
- **Calculating the Tax Bill.** An example of a tax bill calculation for agricultural land.
- **Conclusion.** The percentage change from the previous year for each of the agricultural land categories.

The Department of Revenue's valuation model requires certain attributes to be present on the land for production to occur. When valuing irrigated crop land, a usable water right or irrigation wells must be present. A functional irrigation system of ditches, pipes, sprinklers or other irrigation improvements are required to achieve irrigated production and are considered part of the production value. When valuing range land, fences and stock water wells/facilities are required and are included in the production value. These assets are all included in the taxable productivity value of agricultural land and therefore are not valued separately.

Pricing of Agricultural Commodities

The commodity prices used in this study are based on data from the USDA/National Agricultural Statistics Service, (NASS) Wyoming Field Office. Annually, NASS makes estimates of the marketing year average prices received by farmers and ranchers for all hay, all wheat and the average cost for grazing on privately owned range land.

The market year for each commodity varies. The following table reflects time period in which data for each commodity was collected:

Market Year Table

Commodity	Year	Market Year
All Hay	2009	June 1, 2009 - May 31, 2010
All Wheat	2009	July 1, 2009 - June 30, 2010
AUM	2009	January 1, 2009 - December 31, 2009

The most current year's average prices for all hay and all wheat are used. Hay prices are based primarily on a monthly survey of a sample of buyers and sellers. Wheat prices are based in part on the same survey. Grazing fees are estimated from data NASS received on the January Cattle Survey conducted in Wyoming and other states.

The annual prices received from NASS are converted to a 5 year weighted average. The current year's prices are multiplied by a factor of 5. The previous years' prices are multiplied by factors of 4, 3, 2, and 1 respectively This total is divided by 15 to achieve the 5 year weighted average.

Commodity Prices

Year	Irrigated Crop Land $ Per Ton (All Hay) Avg. $/Ton	5yr.Wt.Avg.	Dry Crop Land $ Per Bushel (All Wheat) Avg. $/Bushel	5yr.Wt.Avg.	Range Land $ Rent Per AUM Avg. $/AUM	5yr.Wt.Avg.
2005	$74.50	$82.17	$3.48	$3.37	$14.80	$13.98
2006	$101.00	$86.10	$4.53	$3.78	$15.10	$14.45
2007	$109.00	$93.23	$6.68	$4.78	$15.40	$14.87
2008	$114.00	$102.10	$6.51	$5.53	$15.70	$15.26
2009	$108.00	$106.63	$4.70	$5.47	$16.00	$15.60

The Capitalization Rate

The capitalization rate used in valuation of the agricultural lands is the 5 year weighted average of the annual Farm Credit Services of Omaha long term loan portfolio interest rates. At the time of calculation, there are only 9 months of loan rates available for the most current year. Subsequently, the 9 month average is used as the 5th year. The average interest rates for the past 5 years are converted to a weighted average to establish the capitalization rate. This is calculated by multiplying the current year's interest rate by a factor of 5. The previous years' rates are multiplied by factors of 4, 3, 2 and 1 respectively. This total is divided by 15 to achieve the 5 year weighted average. This capitalization rate is used in the income approach for the valuation of all agricultural lands (irrigated crop land, dry crop land and range land).

Farm Credit Bank of Omaha 2010 Loan Rates

Month	Rate
January	5.420%
February	5.399%
March	5.371%
April	5.356%
May	5.349%
June	5.328%
July	5.271%
August	5.170%
September	5.084%
Average:	5.305%

Cap Rate Calculations

Year	Yearly Average Rate	5 Year Weighted Rate
2006	6.561%	5.983%
2007	6.768%	6.273%
2008	6.234%	6.344%
2009	5.554%	6.138%
2010	5.305%	5.836%

Agricultural Valuation Procedure

Introduction

The valuation of agricultural lands is based on the income approach to value. This approach involves capitalizing the net operating income from the three classifications of agricultural land to derive a value. This section illustrates the procedures used to determine the net operating income that can be expected from the three classifications of agricultural land use.

The net operating income from both irrigated and dry crop land is based on a tenant-landlord share relationship. The Landlord's income is extracted from the gross income. Expenses are then deducted from the landlord's share of gross income. Expenses are the costs that the landlord typically pays for such as water costs and irrigation system maintenance. Dry crop land expenses include herbicide, insecticide and nitrogen fertilizer. The expenses are subtracted from the landlord's share of the 5-year weighted commodity price resulting in the adjusted net operating income per ton/bushel.

An additional deduction is made from the adjusted gross income per ton/bushel. This deduction accounts for the loss in annual production due to necessary management practices. Irrigated crop land has loss in production during the seed year or the first year of the hay stand. This is assuming the stand is replanted every 6 years. Dry crop land has a loss in production due to 50% of the acreage being in summer fallow (non-production) each year. The production loss deduction is subtracted from the adjusted gross income per ton/bushel to reach a net income per ton/bushel.

Range land is valued basically the same way as irrigated and dry crop land, with a few minor differences. In the valuation of range land, there is not a tenant-landlord arrangement. All of the rental income charged for grazing is treated as cash rent paid to the landlord. Expenses are deducted from the gross rental income. Expenses are the costs that the owner typically pays for stock water and fence maintenance. The expenses subtracted from the gross income results in a net income per AUM.

Land Production Values

Irrigated Crop Land

5 Year Weighted Average Price of Hay Per Ton		106.63
Tenant-Landlord Share 60%-40%		40.00%
Percentage Used: Landlord Share @ 40%		$42.65
* Less Expenses: percentage of landlord share @ 50% (water costs and irrigation system maintenance)	-	$21.33
Value Per Ton of Hay		$21.32
Additional Deductions		
Seed Year: (including water costs and irrigation system maintenance @ 15%)	-	$3.20
Net Income Per Ton of Hay		**$18.12**

**Source: Department of Agricultural Economics, University of Wyoming*

Dry Crop Land

5 Year Weighted Average Price of Wheat Per Bushel		$5.47
Tenant-Landlord Share 66.67%-33.33%	x	33.33%
Percentage Used: Landlord Share @ 33.33%		$1.82
* Less Expenses: percentage of landlord share @ 32% (Herbicides, pesticides and maintenance nitrogen fertilizer	-	$0.58
Value Per Bushel of Wheat		$1.24
Additional Deductions		
Fallow (summer fallow or non-production @ 50%)	-	$0.62
Net Income Per Bushel of Wheat		**$0.62**

**Source: Wyoming Wheat Growers Association*

Range Land

5 Year Weighted Average Monthly Rent Per AUM		$15.60
* Less Expenses: (Stock water and fence maintenance @ 10%)	-	$1.56
Net Income Per AUM		**$14.04**

**Source: Department of Agricultural Economics, University of Wyoming*

Land Values by Use

Introduction

This section shows how net income for the three categories of agricultural use is capitalized to arrive at the value per acre of land. The yield per acre (in tons, bushels or AUM's per acre) is multiplied by the net income per ton, bushel or AUM. The resulting figure is then divided by the capitalization rate, resulting in a land value per acre. The values for Irrigated and Dry Crop Land are applied to the proper soil class and the proper Crop Land LRA. The values for Range Land are applied to the proper Range Land Grouping and the proper Range Land LRA. For more information regarding LRA's, please refer to the Department of Revenue "Mapping and Agricultural Manual."

Irrigated Crop Land Value Calculation

Formula:

$$\frac{\text{Yield Per Acre} \times \text{Net Income Per Ton of Hay}}{\text{Capitalization Rate}} = \text{Land Value Per Acre}$$

Example

$$\frac{\text{3 Tons Per Acre} \times \text{\$18.12 Per Ton}}{\text{5.836\% Captalization Rate}} = \text{\$931.00 Per Acre}$$

Note: The values have been rounded to the nearest dollar.

Irrigated Crop Land - Hay Tons Per Acre

LRA	Value Range	II	III	IV	V-VIII
1-2-3	HIGH	5.50	4.50	3.50	2.50
1-2-3	LOW	4.50	3.50	2.50	1.00
4-5	HIGH		4.00	3.00	2.00
4-5	LOW		3.00	2.00	1.00

Irrigated Crop Appraised Land Value

LRA	Value Range	II	III	IV	V-VIII
1-2-3	HIGH	$1,708	$1,397	$1,087	$776
1-2-3	LOW	$1,397	$1,087	$776	$310
4-5	HIGH		$1,242	$931	$621
4-5	LOW		$931	$621	$310

Note: The values have been rounded to the nearest dollar

Irrigated Crop Assessed Land Value

LRA	Value Range	II	III	IV	V-VIII
1-2-3	HIGH	$162	$133	$103	$74
1-2-3	LOW	$133	$103	$74	$30
4-5	HIGH		$118	$88	$59
4-5	LOW		$88	$59	$30

The assessed value is 9.5% of the Irrigated Crop Appraised Land Value. Note: The values have been rounded to the nearest dollar

Dry Crop Land Value Calculation

Formula:

$$\frac{\text{Yield Per Acre x Net Income Per Bushel of Wheat}}{\text{Capitalization Rate}} = \text{Land Value Per Acre}$$

Example

$$\frac{\text{28 Bushels Per Acre x \$ 0.62 Per Bushel}}{\text{5.836\% Captalization Rate}} = \$297.00 \text{ Per Acre}$$

Note: The values have been rounded to the nearest dollar.

Dry Crop Land - Bushel Per Acre

LRA	Value Range	III	IV	V-VIII
1-2-3	HIGH	34	28	22
1-2-3	LOW	28	22	13
4	HIGH	31	22	16
4	LOW	22	16	10
5	HIGH	46	34	22
5	LOW	34	22	16

Dry Crop Land Appraised Value

LRA	Value Range	III	IV	V-VIII
1-2-3	HIGH	$361	$297	$234
1-2-3	LOW	$297	$234	$138
4	HIGH	$329	$234	$170
4	LOW	$234	$170	$106
5	HIGH	$489	$361	$234
5	LOW	$361	$234	$170

Note: The values have been rounded to the nearest dollar

Dry Crop Land Assessed Value

LRA	Value Range	III	IV	V-VIII
1-2-3	HIGH	$34	$28	$22
1-2-3	LOW	$28	$22	$13
4	HIGH	$31	$22	$16
4	LOW	$22	$16	$10
5	HIGH	$46	$34	$22
5	LOW	$34	$22	$16

The assessed value is 9.5% of the Dry Crop Land Appraised Value. Note: The values have been rounded to the nearest dollar

Range Land Value Calculation

Formula:

$$\frac{\text{Yield Per Acre x Net Income Per AUM}}{\text{Capitalization Rate}} = \text{Land Value Per Acre}$$

Example

$$\frac{\text{0.3 AUM's Per Acre x \$14.04 Per AUM}}{\text{5.836\% Captalization Rate}} = \text{\$72.00 Per Acre}$$

Note: The values have been rounded to the nearest dollar.

Range Land AUM's per Acre

LRA	Value Range	R-1	R-2	R-3	R-4	R-5	Waste
1	HIGH	2.40	0.80	0.60	0.40	0.30	0.20
1	LOW	1.50	0.60	0.40	0.30	0.20	0.00
2	HIGH	2.35	0.60	0.40	0.30	0.20	0.10
2	LOW	1.15	0.40	0.30	0.20	0.10	0.00
3	HIGH	2.00	0.40	0.30	0.20	0.10	0.05
3	LOW	1.00	0.30	0.20	0.10	0.05	0.00
4	HIGH	2.00	0.40	0.30	0.20	0.10	0.05
4	LOW	1.00	0.30	0.20	0.10	0.05	0.00
5	HIGH	1.60	0.30	0.20	0.10	0.05	0.01
5	LOW	0.80	0.20	0.10	0.05	0.01	0.00

Note: Based on average condition/stock rate

Range Land Appraised Value

LRA	Value Range	R-1	R-2	R-3	R-4	R-5	Waste
1	HIGH	$577	$192	$144	$96	$72	$48
1	LOW	$361	$144	$96	$72	$48	$10
2	HIGH	$565	$144	$96	$72	$48	$24
2	LOW	$277	$96	$72	$48	$24	$10
3	HIGH	$481	$96	$72	$48	$24	$12
3	LOW	$241	$72	$48	$24	$12	$10
4	HIGH	$481	$96	$72	$48	$24	$12
4	LOW	$241	$72	$48	$24	$12	$10
5	HIGH	$385	$72	$48	$24	$12	$10
5	LOW	$192	$48	$24	$12	$10	$10

Note: Where the minimum values of range land and the maximum values of waste are less than $10, those values have been established at $10 for assessment purposes. The values have been rounded to the nearest dollar.

Range Land Assessed Value

LRA	Value Range	R-1	R-2	R-3	R-4	R-5	Waste
1	HIGH	$55	$18	$14	$9	$7	$5
1	LOW	$34	$14	$9	$7	$5	$1
2	HIGH	$54	$14	$9	$7	$5	$2
2	LOW	$26	$9	$7	$5	$2	$1
3	HIGH	$46	$9	$7	$5	$2	$1
3	LOW	$23	$7	$5	$2	$1	$1
4	HIGH	$46	$9	$7	$5	$2	$1
4	LOW	$23	$7	$5	$2	$1	$1
5	HIGH	$37	$7	$5	$2	$1	$1
5	LOW	$18	$5	$2	$1	$1	$1

The assessed value is 9.5% of the Range Land Appraised Value. Note: The values have been rounded to the nearest dollar.

Conservation Reserve Program Land (CRP)

Land enrolled in the Conservation Reserve Program (CRP) should be valued and assessed according to its use and class before it entered into the program. The prior use was most generally dry cropland, however, some irrigated land has also been placed in CRP. The capitalization of CRP rental payments would result in an increased value and tax assessment. If it is requested that CRP land be classified and valued as rangeland, evidence should be provided that the land has lost its crop acreage base (CAB) and will not be returned to a crop land status in the future or at the end of the 10 year CRP program. Written documentation of the loss of crop acreage base (CAB) can be obtained from the county Farm Service Agency (FSA) office.

Calculating the Tax Bill

Once the County Assessor has determined the assessed value of agricultural property and delivers the tax list, the County Treasurer mails the actual tax bill. Tax amounts are calculated by multiplying the assessed value by the appropriate tax district mill levy.

The following example reflects this year's assessed value multiplied by last year's average statewide mill levy for the highest producing lands in each category:

Land Use	Tax Due Per Acre	Tax on 300 Acres
Irrigated Crop Land	$11.07	$3,321.00
Dry Crop Land	$3.17	$951.00
Range Land	$3.74	$1,122.00

Subsequently, the illustration above reflects what a farmer/rancher, with 300 acres of the best land in each category, would pay per year in taxes. Please note, these figures reflect productivity lands only and does not include the homestead site.

Conclusion

A thanks is given to the USDA/NASS Wyoming Field Office and Farm Credit Services for the data that they contribute to this study. Appreciation is also given to the Wyoming agricultural industry and the Wyoming County Assessors' Association for their participation on the Agricultural Land Valuation Research Committee, whose recommendations are the basis of this study.

The following gives a summary of the different land valuation classes as compared to the 2010 Agricultural Land Valuation Study.

Irrigated Crop Land The current year's commodity price for All Hay (as shown on page 3) has decreased. Also, there has been an increase in the 5 year weighted average price of All Hay.

Dry Crop Land The current year's commodity price for All Wheat (as shown on page 3) has decreased. Also, there has been a decrease in the All Wheat 5 year weighted average price.

Range Land The current year commodity price for Grazing Fee (as shown on page 3) has increased. Also, there has been an increase in the 5 year weighted average for Grazing Fees.

This document plus other Property Tax Division information is available for downloading off the internet at http://revenue.state.wy.us. If you have any questions, please contact David Franck at (307) 777-5431 or write to:

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