Agricultural Advisory Committee
August 28, 2014

Montana Department of REVENUE

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Regional Wheat Pricing

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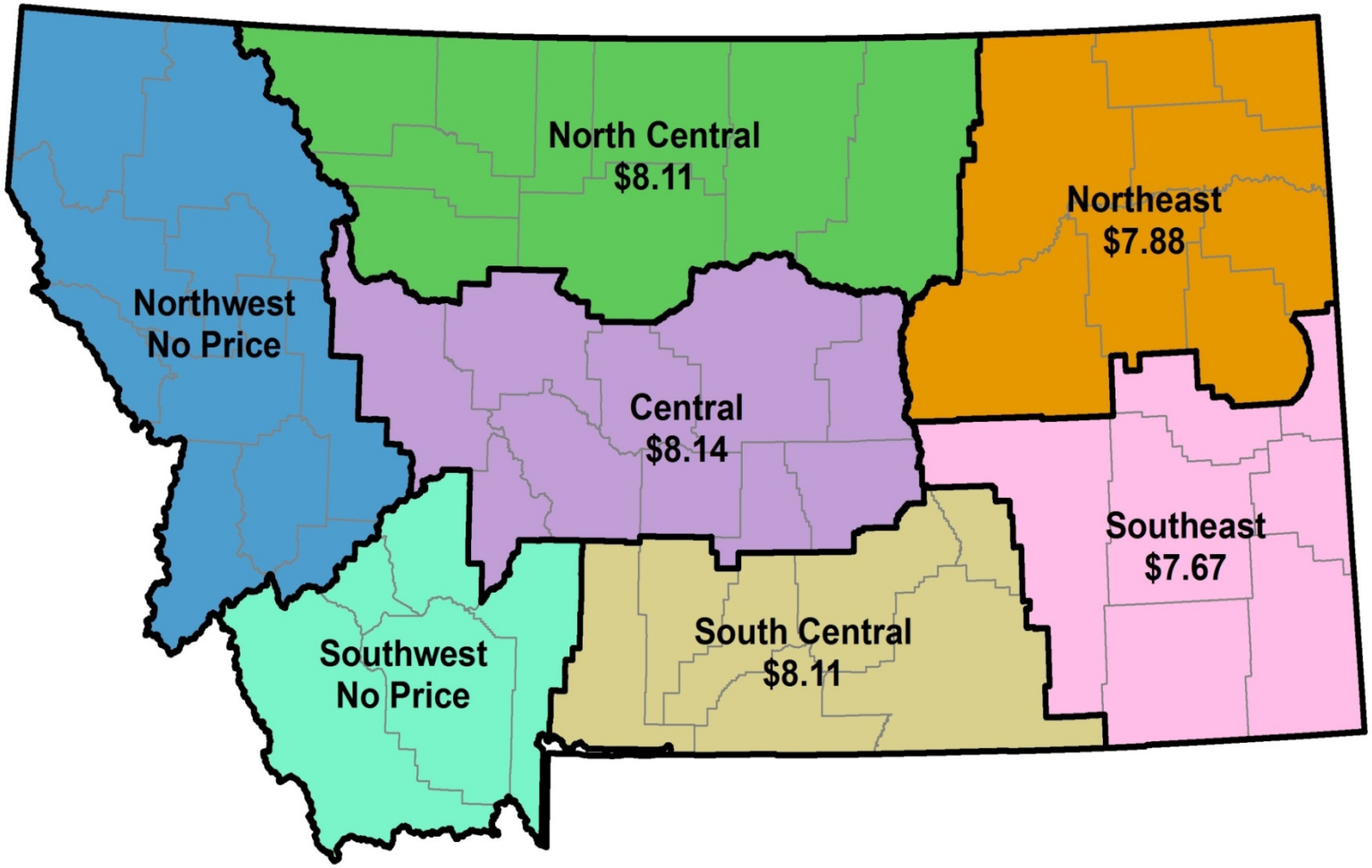
Regional Wheat Pricing

National Agricultural Statistics

- Collects prices from elevators and replicates the information to determine the proportion of total transactions in Montana that may have occurred at this price
- Weights the price information

Agricultural Marketing Service (AMS)

- Collect prices from elevators and reports quoted prices directly
- Do not weight the price information
- MSU College of Agriculture calculated an average of prices for 2007-2012



Agricultural Marketing Service Average Spring Wheat Price

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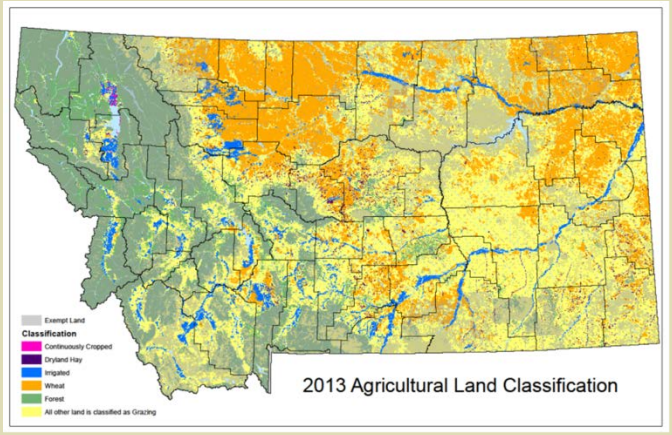
Regional Wheat Pricing

- What causes the price differences?
  - Shuttle loaders
  - Different needs
    - An elevator may have agreed to export higher protein wheat, so they put a higher premium on higher protein than their competition
  - Direction of grain flow
    - East to the Great Lakes region
    - West to Portland
  - Local crop conditions
    - Weather, disease, insects



Regional Wheat Pricing

Advantage

- Fairness

Disadvantage

- Regional prices higher than Ag Statistics price
- Prices not as readily available as those from Ag Statistics
- Different treatment of summerfallow land
  - We use a statewide price for alfalfa and grazing fee
- Northwest and Southwest regions have no price information
- Regional price would result in county line differences that may be difficult for the Department to defend
  - Example: summerfallow land with similar productivity in Phillips and Valley County, grain marketed to the same elevator, with a different value

Dryland Hay Commodity

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Dryland Hay Commodity

- Dryland hay commodity - 7 year Olympic average of alfalfa hay
  - $63.04 X 1.2 tons/acre X 25% = $18.91/.064 = $295.47
- Ag Statistics publishes prices for alfalfa, all hay, and all other hay
- All other hay includes wild, clover-timothy, grain hay, other hay and hay on CRP land
- All other hay had a lower price in **22 of 24 years** that prices are available (2013 price not available)
- After 20% statutory adjustment, alfalfa has a lower price **every** year
- DOR recommends *no change* from using an Olympic average of alfalfa hay adjusted by 80% as the commodity for valuing dryland hay

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Grazing Land Valuation

MSU Report

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Grazing Land Valuation

Dr. Jeffrey C. Mosley

Professor, Extension Range Management Specialist
Department of Animal & Range Sciences

MSU, College of Agriculture

Dr. Mosley recommends no change

1. DOR should continue its practice of using 25% of air dried herbage
2. DOR should continue using 915 pounds of forage required for an animal unit

Grazing Land Valuation

Dr. Jeffrey C. Mosley

Dr. Mosley recommends changes

1. DOR should use *unfavorable* grazing production to calculate carrying capacity (DOR currently uses the midpoint of normal and unfavorable)
2. DOR should calculate carrying capacity using a 1000 pound animal unit and multiply by .83 to adjust for a 1200 pound animal unit and refer to this as a DOR-Adjusted AUM *(MCA, 15-7-201 (5)(C) requires the department to calculate carrying capacity using a 1,200 pound cow with calf or its equivalent starting with the 2015 reappraisal)*
3. DOR should use *31 AUMs* as the minimum number of AUMs necessary to generate $1,500 of annual gross income (DOR currently uses 30 AUMs)

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Grazing Land Valuation

NRCS Web Soil Survey

Gallatin County Area, Montana				
Map unit symbol and soil name	Total dry-weight production			
	Favorable yr	Normal yr	Midpoint of normal yr and unfavorable yr	Unfavorable yr
	Lb/ac	Lb/ac	Lb/ac	Lb/ac
82E - Philipsburg loam, 8 to 25 percent slopes				
Philipsburg	3,000	2,400	2,100	1,800
Adel	3,000	2,400	2,100	1,800
Libeg, stony	3,000	2,400	2,100	1,800
Philpsburg	3,000	2,400	2,100	1,800

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Grazing Calculation	Midpoint of normal and unfavorable year production	Unfavorable production	% forage utilized	Pounds of forage utilized	Pounds of forage required by animal unit for 1 month	Estimated average carrying capacity
1,200 # animal unit and midpoint of normal and unfavorable year production	2,100 #		25%	525	1,098	.478 aums/acre
1,200 # animal unit and unfavorable year production		1,800 #	25%	450	1,098	.41 aums/acre

Grazing Calculations

.478 X $18.88 AUM = $9.02 X .75 (25% expense) = $6.77 / .064 = $105.78

.41 X $18.88 AUM = $7.74 X .75 (25% expense) = $5.81 / .064 = $90.78

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Grazing Land Valuation

- Options

1. Calculate using a 1,200 # animal unit and continue using the midpoint of normal and unfavorable production years
2. Calculate using a 1,200 # animal unit and use the unfavorable production year

	Option 1	Option 2
Current Cycle	1,200 # AU and Midpoint of Normal and Unfavorable Productivity	1,200 # AU and Unfavorable Productivity
.290 AUM/Acre	.244 AUM/Acre	.205 AUM/Acre
	16% decrease from current cycle	29% decrease from current cycle

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Grazing Land Valuation

1. DOR recommends using the *unfavorable* grazing production to calculate carrying capacity

2. DOR recommends using *31 AUMs* as the minimum number of AUMs necessary to generate $1,500 of annual gross income

Federal Direct Payments

Federal Direct Payments

- Direct payments have been included in the spring wheat price for the last 2 reappraisal cycles

- Current cycle direct payments = $.59/bushel
- $3.99/bushel + $0.59/bushel = $4.58/bushel

- 2014 Farm Bill
  - Ends direct payments and expands crop insurance

- DOR recommends *not* including direct government payments in the spring wheat price for the 2015 reappraisal cycle

Crop Share Survey

Crop Share Survey

- MCA 15-7-201 (5)(b)(ii) Crop share and

livestock share arrangements are based on typical agricultural business practices and average landowner costs

Summer fallow - 12.5% & 87.5%

Irrigated, dryland hay & continuous crop – 25% & 75%

Grazing – 25% expense to landowner

- DOR contracted with the Bureau of Business Economics (BBER) U of M and MSU, College of Agriculture
  - To collect and analyze crop share and cash lease information from a cross section of agricultural producers
  - To determine if the current crop share and grazing expenses are typical

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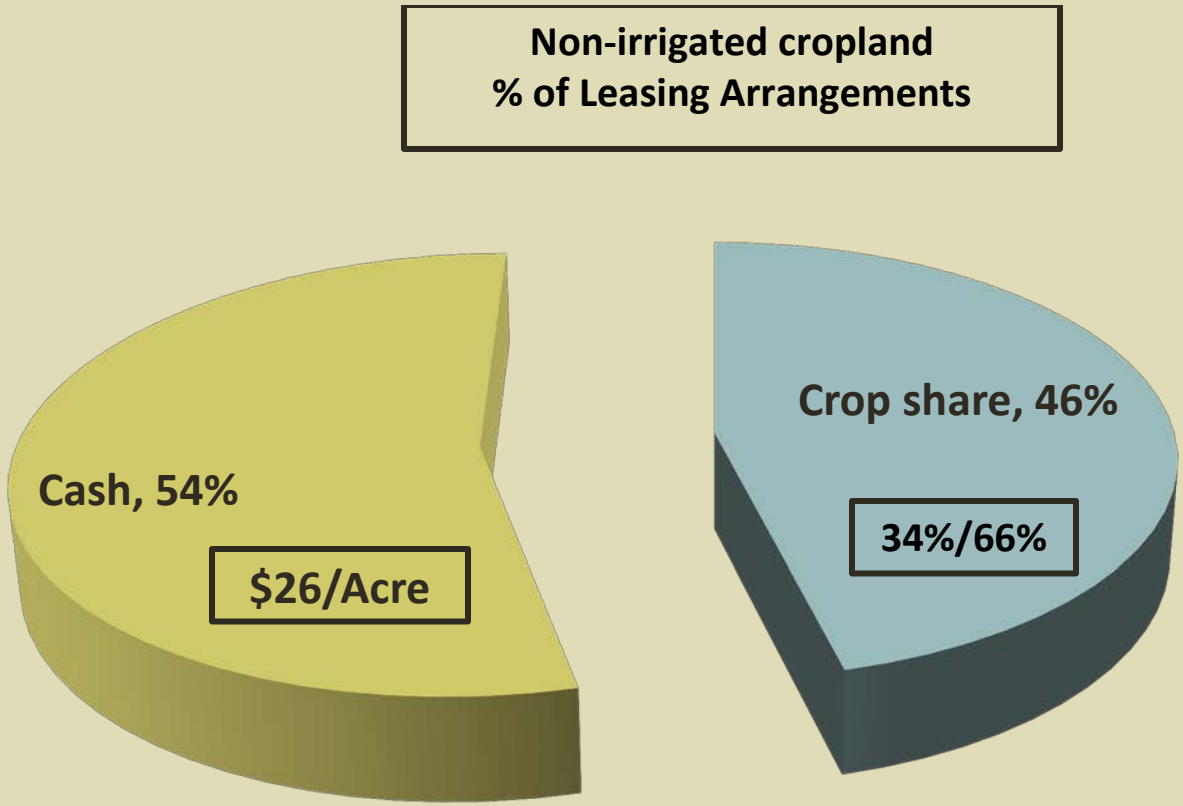
Crop Share Survey



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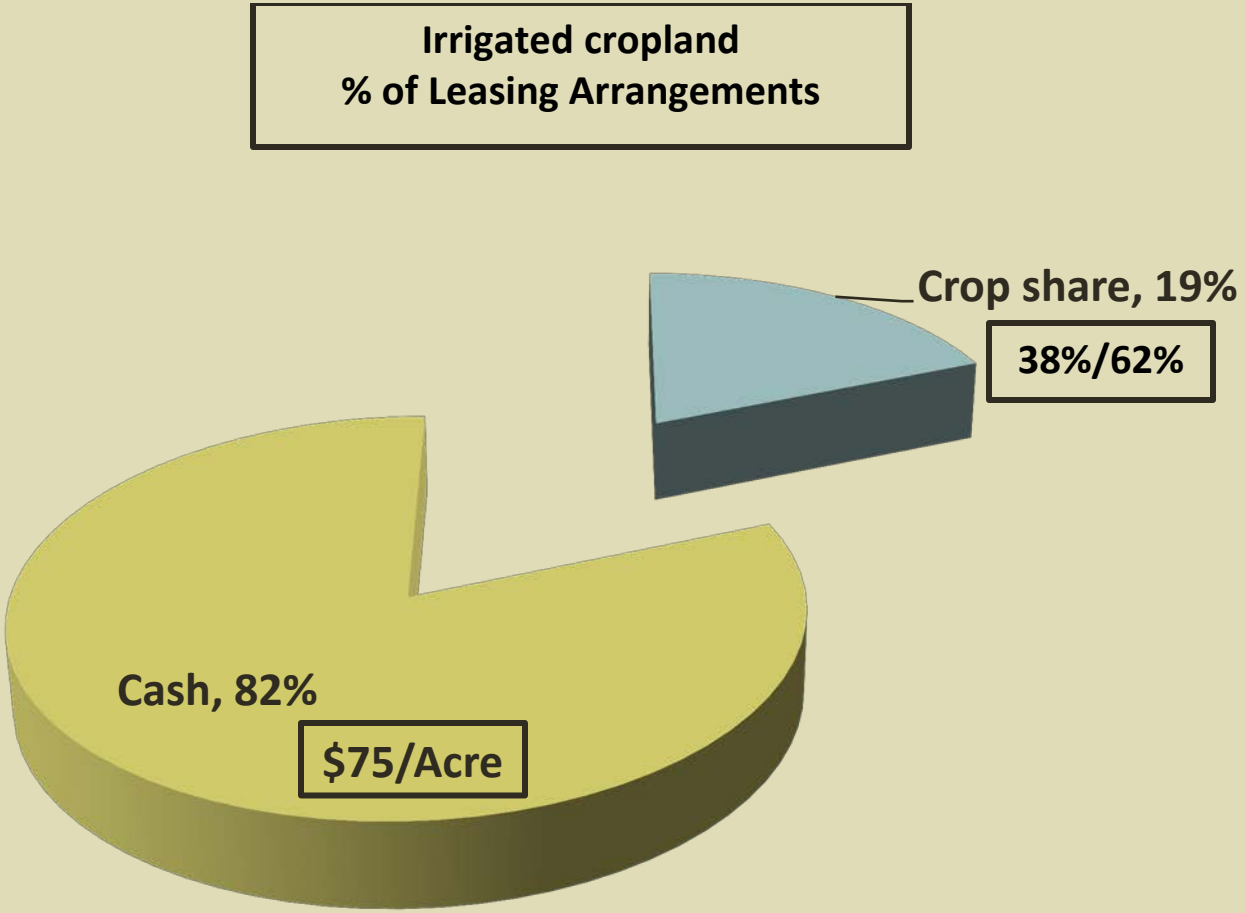

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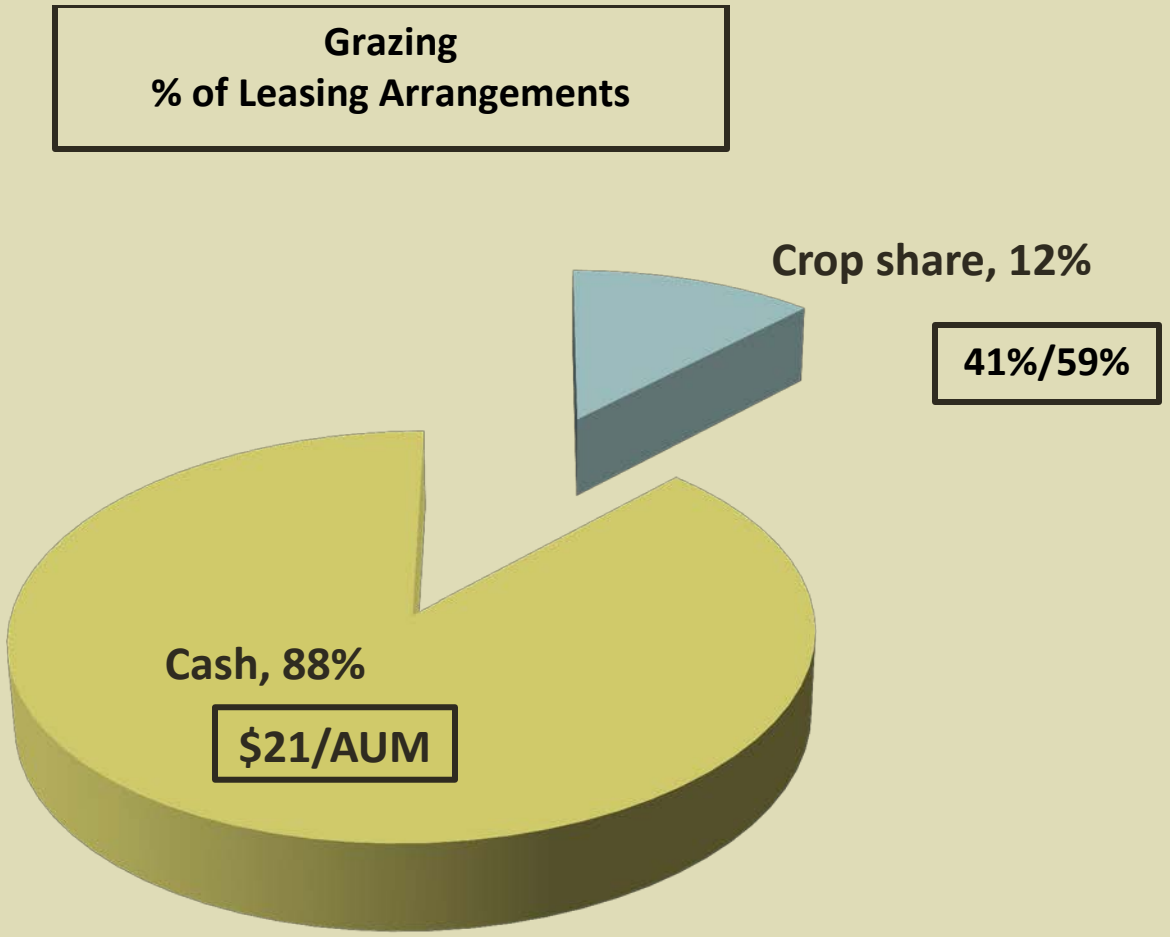
Crop Share Survey



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Crop Share Survey

- Results from the survey indicate higher landlord share percentages than currently used, but due to reluctance of participants to provide expense information these percentages include expenses.
- Limitations
  - The diversity of lease arrangements and the landlord's limited knowledge of these arrangements
  - The characteristics of the land owners interviewed were unknown and thus it is unlikely they represented a cross-section of the general population
  - Reluctance of land owners to reveal financial details of lease arrangements
- The accuracy and lack of sufficient data does not allow for a sound recommendation

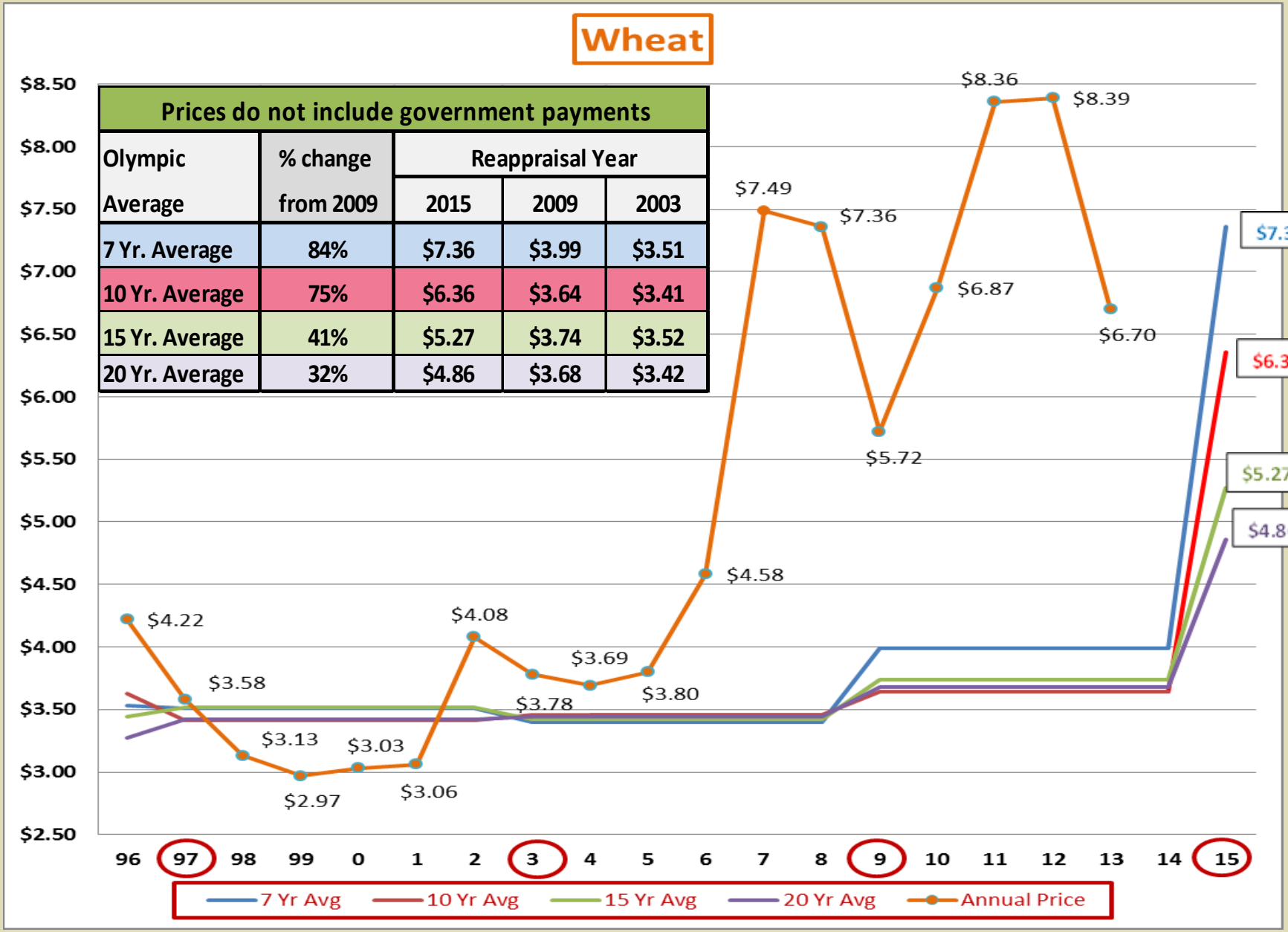
Crop Share Survey

- Professors George Haynes and Vincent Smith's Recommendations
- No change to the 12.5/87.5% crop share arrangement on summerfallow farmland
- No change to the 25/75% crop share arrangement used for irrigated land, dryland hay land and continuous cropped farmland
- No change to the 25% expense on grazing land
- DOR recommends no change to the crop share arrangements currently used for valuing agricultural land

Commodity Base Period

Wheat

Prices do not include government payments				
Olympic Average	% change from 2009	Reappraisal Year 2015	2009	2003
7 Yr. Average	84%	$7.36	$3.99	$3.51
10 Yr. Average	75%	$6.36	$3.64	$3.41
15 Yr. Average	41%	$5.27	$3.74	$3.52
20 Yr. Average	32%	$4.86	$3.68	$3.42



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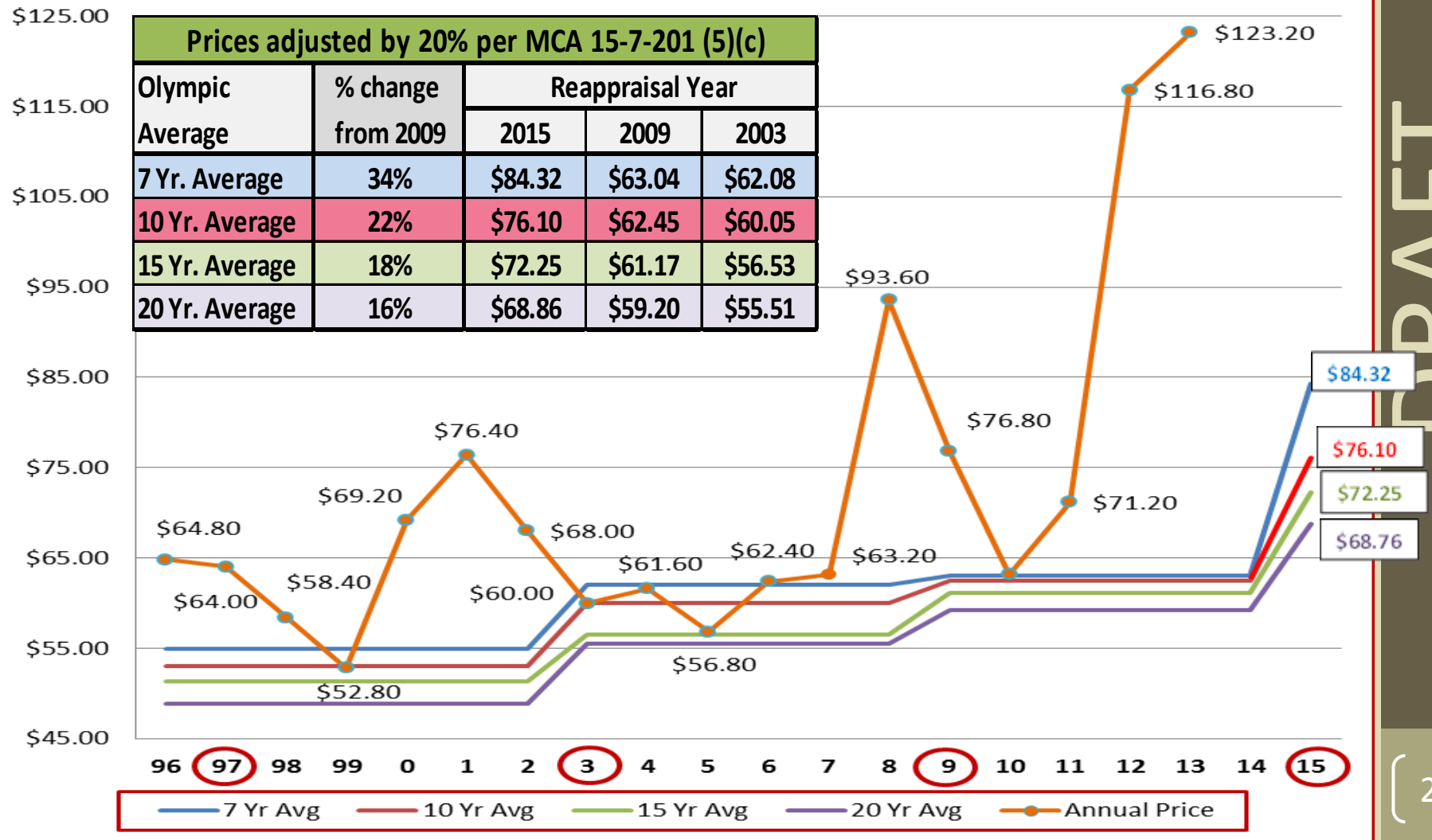
Alfalfa

Prices adjusted by 20% per MCA 15-7-201 (5)(c)				
Olympic Average	% change from 2009	Reappraisal Year		
		2015	2009	2003
7 Yr. Average	34%	$84.32	$63.04	$62.08
10 Yr. Average	22%	$76.10	$62.45	$60.05
15 Yr. Average	18%	$72.25	$61.17	$56.53
20 Yr. Average	16%	$68.86	$59.20	$55.51



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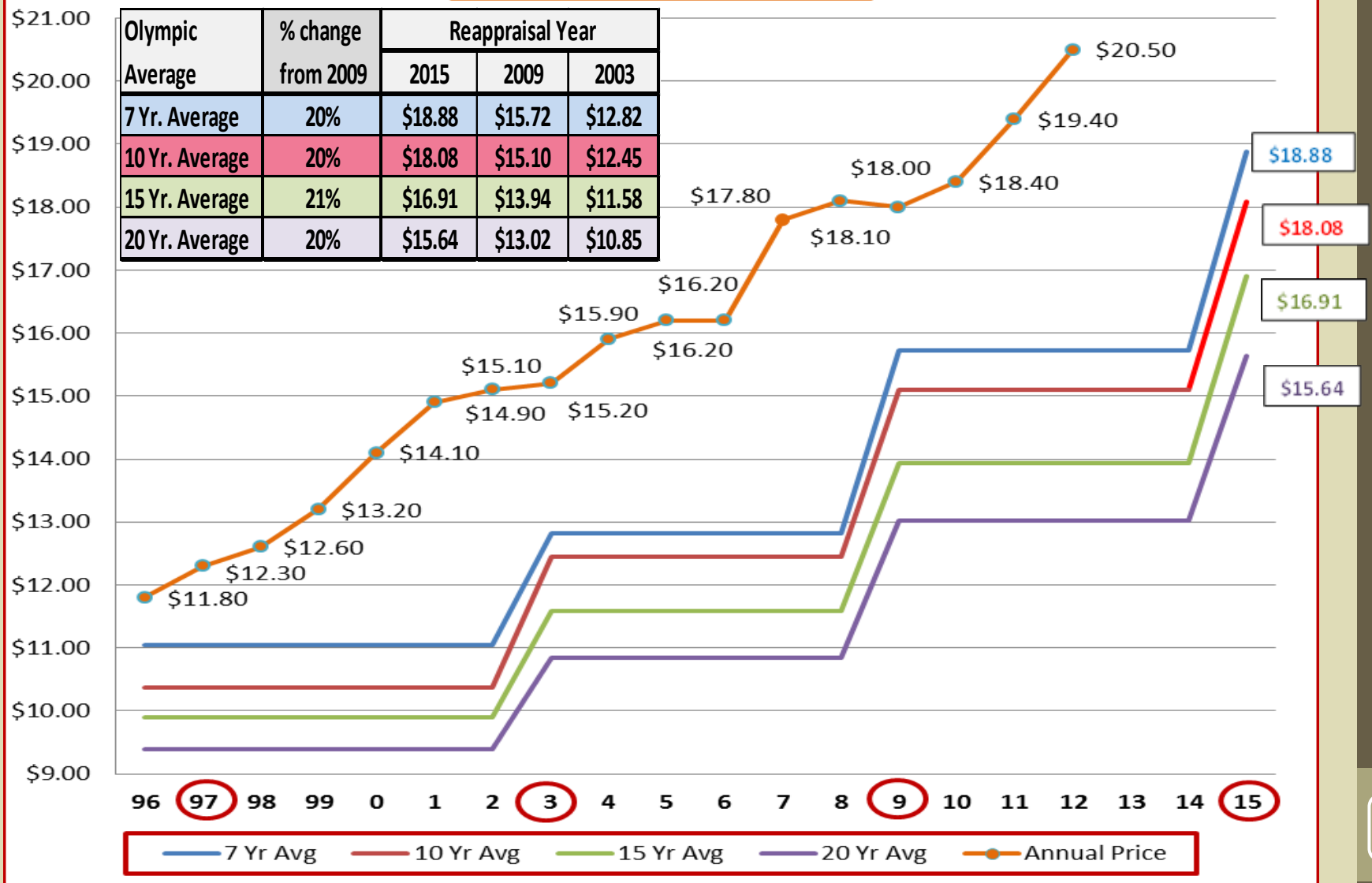
Private Grazing Fee

Olympic Average	% change from 2009	Reappraisal Year 2015	2009	2003
7 Yr. Average	20%	$18.88	$15.72	$12.82
10 Yr. Average	20%	$18.08	$15.10	$12.45
15 Yr. Average	21%	$16.91	$13.94	$11.58
20 Yr. Average	20%	$15.64	$13.02	$10.85



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2015 Estimate	Indicates price not included in Average (Olympic Average calculation)					
Years Averaged	**7 Years**	**10 Years**	**7 Years**	**10 Years**	**7 Years**	**10 Years**
Commodity	**Spring Wheat**	**Spring Wheat**	**Alfalfa**	**Alfalfa**	**Private Grazing Fee**	**Private Grazing Fee**
Year	**Price**	**Price**	**Price**	**Price**	**Price**	**Price**
2013 (9 months)	$6.70	$6.70	$154.00	$154.00		
2012	$8.39	$8.39	$146.00	$146.00	$20.50	$20.50
2011	$8.36	$8.36	$89.00	$89.00	$19.40	$19.40
2010	$6.87	$6.87	$79.00	$79.00	$18.40	$18.40
2009	$5.72	$5.72	$96.00	$96.00	$18.00	$18.00
2008	$7.36	$7.36	$117.00	$117.00	$18.10	$18.10
2007	$7.49	$7.49	$79.00	$79.00	$17.80	$17.80
2006		$4.58		$78.00		$16.20
2005		$3.80		$71.00		$16.20
2004		$3.69		$77.00		$15.90
Olympic Avg	**$7.36**	**$6.36**	**$105.40**	**$95.13**	**$18.88**	**$18.08**
Adjustments	***Gov't Payments not included***	***Gov't Payments not included***	***15-7-202 stipulates a 20% reduction in the alfalfa price***	***15-7-202 stipulates a 20% reduction in the alfalfa price***	**No adjustment**	**No adjustment**
Current Estimate	**$7.36**	**$6.36**	**$84.32**	**$76.10**	**$18.88**	**$18.08**
2009	**$4.58**	**$4.58**	**$63.04**	**$63.04**	**$15.72**	**$15.72**
% change from current cycle	**61%**	**39%**	**34%**	**21%**	**20%**	**15%**

Commodity Base Period

- MCA 15-7-201(5)(d)
- 7 year Olympic average unless the advisory committee recommends a different base period and the department adopts the recommended base period by rule
- DOR recommends a 10 year Olympic average

Capitalization rate

Capitalization Rate

- *<u>Current Law</u> 15-7-201 MCA*

- (c) R is the capitalization rate and, unless the advisory committee recommends a different rate and the department adopts the recommended capitalization rate by rule, is equal to 6.4%. This capitalization rate must remain in effect until the next revaluation cycle.

Cap Rate

Past Ag Advisory Committee's review of the Cap Rate

Prior to 1993 – Cap rate was calculated using an average interest rate plus an effective tax rate

1993 – Cap rate set at 6.4% to allow ag tax rate to match residential tax rate

1996 – Defined the cap rate as a stream of income from the land with an interest rate applied to calculate the mortgage the land could service; essentially a measure of the expected real rate of return. Reaffirmed the 6.4% cap rate

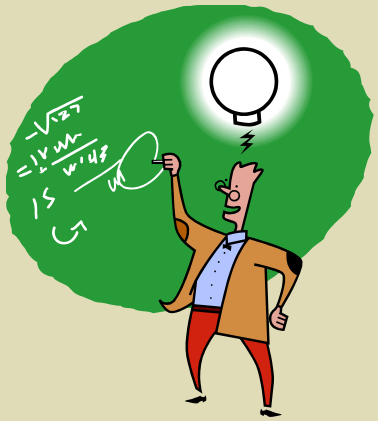
2002 – Defined cap rate as the rate at which individuals discount future income exclusive of any expectations they may have about inflation. Recommended rate be based on rent to value ratios

2006 - Rent-to-value ratios at the time were around 3.32%. Could see no overriding reason to change the rate, so reaffirmed the 6.4% cap rate

Surrounding State's Cap Rate

- **Wyoming-5.67%**
  - 5 year weighted average of interest rates charged by farm credit services of Omaha with an effective tax rate added
- **North Dakota-5.86%**
  - 10 year average of mortgage rates charged by farm credit service
- **Idaho - 7.43%**
  - 5 year average of interest rates charged by the Spokane offices of the Farm Credit Service plus a component for the local tax rate
- **South Dakota - 6.6%**
  - Statutorily set (SL 10-6-33.28, the annual earning capacity shall be capitalized at a rate of six and six-tenths percent to determine the agricultural income value)

Cap Rate



Calculate a cap rate:

Cap Rate =

Effective interest rate *(the average of the most recent 5 years of interest rates on new loans charged by Farm Credit Services)*

+

Effective tax rate *(total taxes levied ÷ total assessed value)*

Cap Rate

Effective Interest Rate

Average effective interest rates on new loans under Farm Credit Services

Year	Interest Rate
2009	6.17%
2010	6.07%
2011	5.78%
2012	5.15%
2013	4.56%
5 Year Average	**5.546%**

Retrieved from Internal revenue Service Bulletins at: http://www.irs.gov/irb/2009-30_IRB/ar06.html ; http://www.irs.gov/irb/2011-33_IRB/ar08.html ; http://www.irs.gov/pub/irs-irbs/irb12-39.pdf ; http://www.irs.gov/irb/2013-39_IRB/ar08.html

Cap Rate

Effective tax rate

= Total taxes levied ÷ total assessed value

Estimated 2015 Tax levied = 70,306,000

Estimated 2015 productive value of agricultural land =$6,996,383,000

$70,306,000 ÷ $6,996,383,000 = 1.00%

Capitalization Rate

Effective interest rate + Effective tax rate = Cap Rate

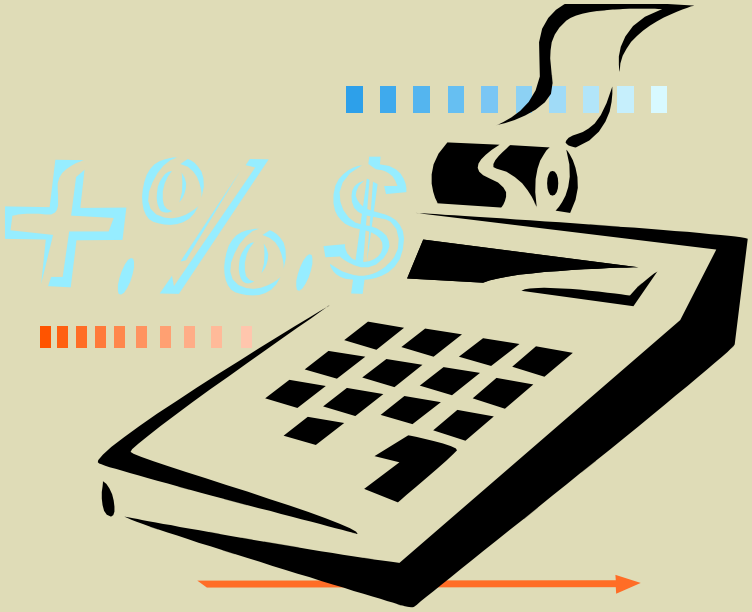
5.546%

\+ 1.00%

6.546%

Or

6.5%



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Capitalization Rate

- DOR recommends calculating the capitalization rate by adding the effective interest and the effective tax rate
  - Effective tax rate will be calculated by dividing the 2015 taxes paid by the 2015 estimated total productive value of agricultural land

Irrigated Energy Costs

Irrigated Energy Costs

- 2009 Legislative session (HB658)
  - Increased water costs
    - **Total** allowable costs - $40 to $50
    - Base cost - $5.50 to $15
    - Labor costs
      - $0 to $5 for pivot
      - $4.50 to $10 for sprinkler
      - $9 to $15 for flood

Irrigated Energy Costs

Tons/Acre X Commodity Price X Crop Share - Water Costs ÷ Cap Rate = Value

TILLABLE IRRIGATED LAND (I)						
Water Cost Deduction Class						
1	2	3	4	5	6 (new for 2009)	7 (new for 2009)
<$19.99 ($17.50 mdpt)	$20.00 - $24.99 ($22.50 mdpt)	$25.00 - $29.99 ($27.50 mdpt)	$30.00 - $34.99 ($32.50 mdpt)	$35.00 - $39.99 ($37.50 mdpt)	$40.00 - $44.99 ($42.50 mdpt)	> $45.00 ($47.50 mdpt)

Water cost deduction class 1 is no longer applicable

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Irrigated Energy Costs

Energy Base Year	Diesel fuel	Gasoline	Electricity
2007	$2.89	$2.77	$8.18
2013	$3.92	$3.44	$9.24
% change	36%	24%	13%

http://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm

Minimum Irrigated Value

Minimum Irrigated Value

- **Legislative intent -- value of agricultural property**
- MCA 15-7-201
- (7) The advisory committee shall: ----------
- (f) recommend agricultural land valuation schedules to the department.
- ***With respect to irrigated land, the recommended value of irrigated land may not be below the value that the land would have if it were not irrigated.***

Minimum Irrigated Value

- 2009-2014

- Minimum Value = $411.48
  - 23 bushel wheat and a continuous crop formula
    - 23 bu. X $4.58 = $105.34 gross income
    - $105.35 X .25 Crop Share = $26.34 net income
    - $26.34 X .064 Cap Rate = $411.48

- 3.1 tons - $22.50 water cost = $411.48
- 4.7 tons - $47.50 water cost = $411.48
  - About 88% of irrigated acres valued at $411.48
  - Average value/acre = About $450

Minimum Irrigated Value

2015-2020

*(Estimated Using **7** Year Olympic Average)*

- Minimum Value = $661.25

- 23 bushel spring wheat and a continuous crop formula
  - 23 bu. X $7.36 = $169.28 gross income
  - $169.28 X .25 Crop Share = $42.32 net income
  - $42.32 X .064 Cap Rate = $661.25

Approximately

- 3.02 Tons with a water cost of $22.50 = $661.25
- 4.2 Tons with a water cost of $47.50 = $661.25

Minimum Irrigated Value

2015-2020

*(Estimated Using **10** Year Olympic Average)*

- Minimum Value = $571.41

- 23 bushel spring wheat and a continuous crop formula
  - 23 bu. X $6.36 = $146.28 gross income
  - $146.28 X .25 Crop Share = $36.57 net income
  - $42.32 / .064 Cap Rate = $571.41

Approximately

- 2.8 Tons with a water cost of $22.50 = $571.41
- 4.0 Tons with a water cost of $47.50 = $571.41