SDSU Extension

Agriculture Land Assessment Implementation and Oversight Advisory Task Force *November 2nd, 2015*

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SDSU Recommendations for Agriculture Income Value Assessments

Not Recommending Changes

- Landlord Share (35%)
- Formula for Revenue Capacity for Cropland (8 yr Olympic Avg wt. yield times SD prices received)
- Capitalization Rate (6.6%)
  - Equity and Debt

Recommending Incremental Changes/ Updates

- Productivity Factors for determination of Highest and Best Use
- Non-cropland Productivity Capacity (i.e. Pastureland Cash Rent)

Definition of Highest and Best Use (Evolving)

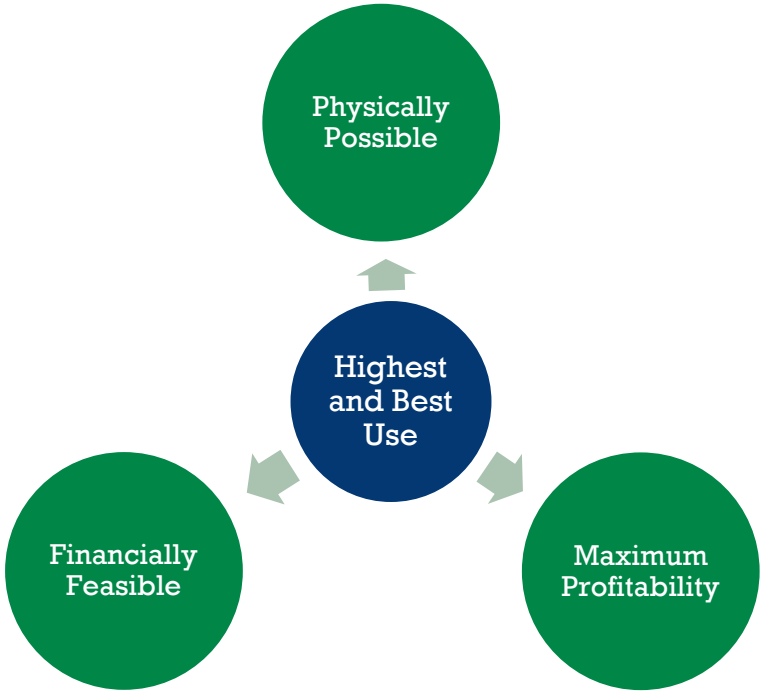
- *the **[most probable]** use of land or improved property that is legally possible, **physically possible**, **financially feasible** (and appropriately supportable) from the market, and which results in **maximum profitability**.*
- [reasonably likely]
- Sources: Real Estate Appraisers, 1987:42, Lennhoff and Elgie, 1995:275, Thair, 1988:190-191, Reed and Kleynhans, 2010.

Current Limitation with Highest and Best Use Determination in Table 1s and 2s

- **Physically Possible** Test being Applied to Strictly Determine Highest and Best Use (HBU)
- No test for **Financial Feasibility** or **Maximum Profitability**
- **No Measurement of Probability of Assessing HBU Correctly**
- **Recommend:** Incremental Improvement of **Criteria, Flexibility**, and **Transparency** of **HBU Determination**

Three Applicable Tests To Indicate Probable Highest and Best Use for Ag Land Property Tax Assessments

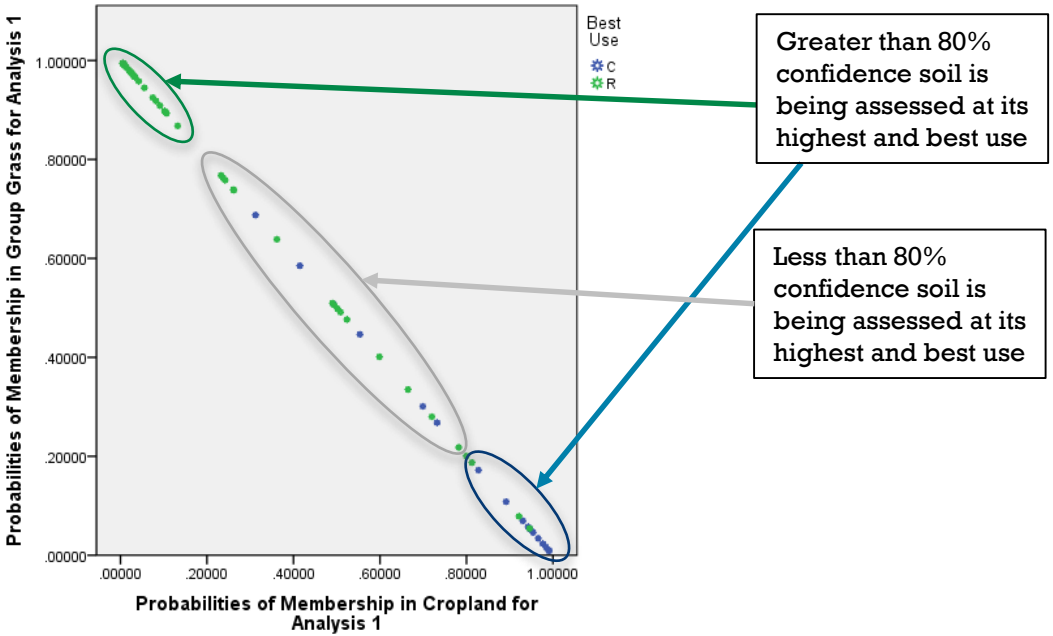
- **Physically Possible**
  - Soil Ratings
  - Range and Crop Yields under normal weather conditions
- **Financially Feasible**
  - Accessibility
  - Market Accessibility (infrastructure and basis values)
  - Marginal Productivity Equal or Greater to Opportunity Costs (Alternative uses of capital or labor)
  - Profitability Distributions (risk)
- **Maximum Profitability**
  - Long-term sustainability (e.g. crop rotations)
  - Internalized externalities (e.g. emissions, nitrate runoff)
  - Shelter Belts for Erosion control, buffer zones, etc.



Improve **Criteria** for Highest and Best Use Determination

- Two Research Components
  1. **Update Soil Physically Possible Test** (Dr. Malo, Plant Science)
     - New methods and transformations for contemporary yield values
  2. **Incorporate Financial Feasibility and Maximum Profitability Tests** (Dr. Elliott, Economics)
     - Simulation of Costs and Returns Data of Actual SD Farms, with capacity of land use, local prices, yields, etc.

Quantify Probability of Highest and Best Use Determination For Each Soil Type Using All Three Tests



Allow **Flexibility** for DOR, Task Force, Directors of Equalization to Exercise Value Judgments in HBU Determination

- We will quantify degree of uncertainty
- Knowing degree of uncertainty provides **Flexibility** to exercise value judgments, including social value judgments (e.g. preservation of grasslands when there is sufficient uncertainty in cropland HBU)

Improve **Transparency** of Highest and Best Use Determination

- Provide annual updates of the criteria and values for all three tests on iGrow.org for each county and soil type.
- Physically Possible Tests, Economic Feasibility Tests, and Maximum Profitability Tests

Research Deliverables: Target Date 2017

- Deliver Updated Table 1s and 2s and HBU values
- Assess Impact of Changes and shifts from current HBU methods to alternative implementation of HBU criteria
- Provide Table 1s and 2s on iGrow.org and detailed description of methodology
- Provide recommendations for incremental implementation to limit shifts if a phase in period is necessary

Request $175,000 (two years)

Plant Science Department

- $50,000 One MS Student (two years)
- $3,000 iGrow.org
- $5,000 for Travel Instate and Conference
- $2,000 Supplies
- $17,000 Indirect (27.6%)

Economics Department

- $25,000 One MS Student (one year)
- $25,000 Personnel (2-3 Faculty)
- $3,000 iGrow.org
- $8,000 for Travel Instate and Conference
- $2,000 Supplies
- $13,000 Data, Software, and Training
- $22,000 Indirect (27.6%)

Changes to Pastureland Cash Rent Data Collection

- Beginning 2015, USDA-NASS will only conduct Cash Rent Surveys every other year
- County level cash rent data will be published the 2nd week of September of the following year (e.g. 2015 Cash Rent data will be published September 2016).
- 2015 Productivity Formula Can Remain the Same with delayed schedule for calculations past September, but action necessary for 2016 assessments calculated in 2017.

3 Options Regarding Changes to Cash Rent Data and Non-Cropland Productivity Capacity Formula

1. Contract USDA-NASS to perform an annual county level cash rent survey for South Dakota (Cost for 7,000 observations >$200,000 and less than 2000 observations >$70,000) every other year
    1. Non-Reporting Bias, Reporting Bias, unknown computational costs

2. Forecast pastureland cash rents or estimate non-cropland productivity capacity. Use a model that incorporates lagged pastureland cash rent values, and cattle price index, to estimate non-cropland productivity capacity or forecast Changes in Pastureland Cash Rent Values.
    1. For example, pastureland non-cropland capacity could be determined by the annual feeder cattle price index, the pastureland cash rent of the previous year and or second year, and whether the county is in the west, central, or eastern areas of South Dakota. This model will produce results that are largely determined by the previous years pastureland cash rent for the county.

3. Estimate Non-cropland Productivity Capacity using updated values of AUMs for usable range yields in an area and cattle price indices.
    1. Follow a method that is similar to the determination of Cropland Productivity Capacity using usable range yield and revenue potential (e.g. Weighted Avg AUMs, Cattle Price Index, Landlord Share or Lagged Pastureland Cash Rent)

Pros and Cons of Cash Rent Options and Non-Cropland Productivity Capacity Formulas or Predicted Pastureland Cash Rent Formulas

Option 1: Nass Survey		Option 2: Forecast Model using lagged Pastureland Rents and indices		Option 3: AUM and Cattle Price Indices	
Pro	Con	Pro	Con	Pro	Con
• Consistent with previous methods and values • Transparent • Simple to understand	• Cost • Uncertainty of Availability • Timing? • Cash Rental Rates Reflective of Capacity? • Low Response Rates • Survey Variance	• Consistent, or can be consistent with previous methods • Transparent • Moderate Complexity • Low Cost	• Cash Rental Rates Reflective of Productivity Capacity? • Response Rates? • Survey Variance	• Timing • Low Cost • Includes other factors to estimating productivity capacity that may give a better estimate	• Lose some consistency with previous values (AUMs, Cattle Price, Landlord share vs. Cash Rent) • Complexity

Summary

- Recommend research to deliver incremental improvements to HBU Determination
- Ask guidance on how to adapt non-cropland capacity formula to changes in pastureland cash rent collection by NASS

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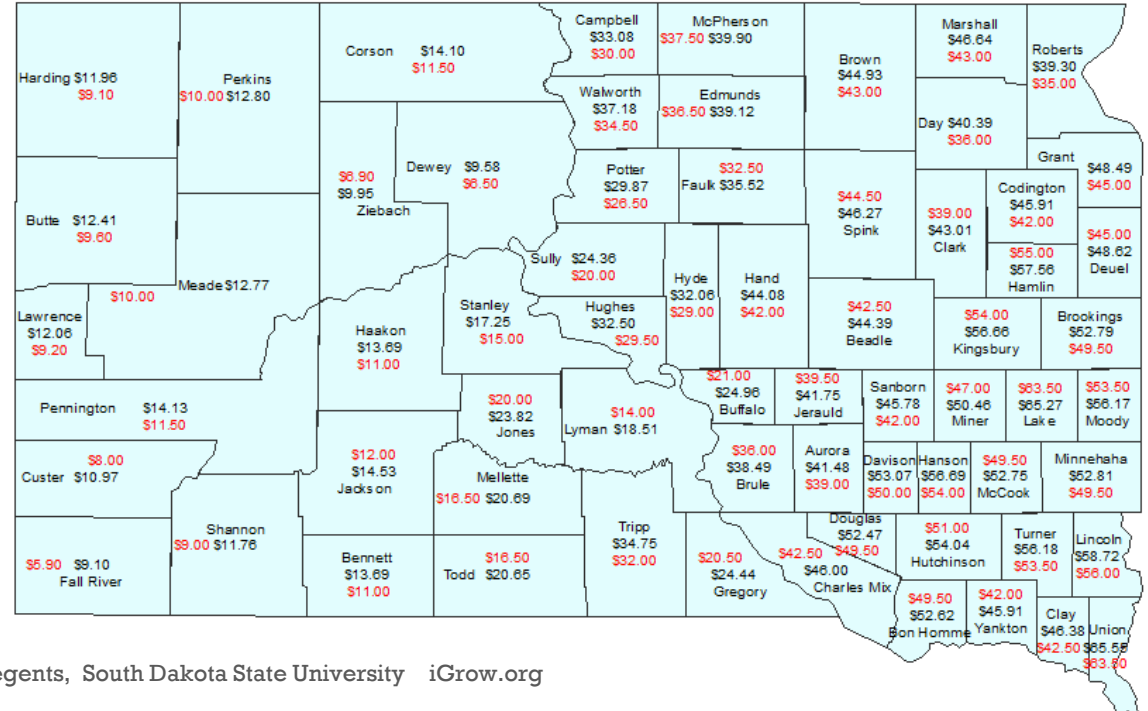
Appendix

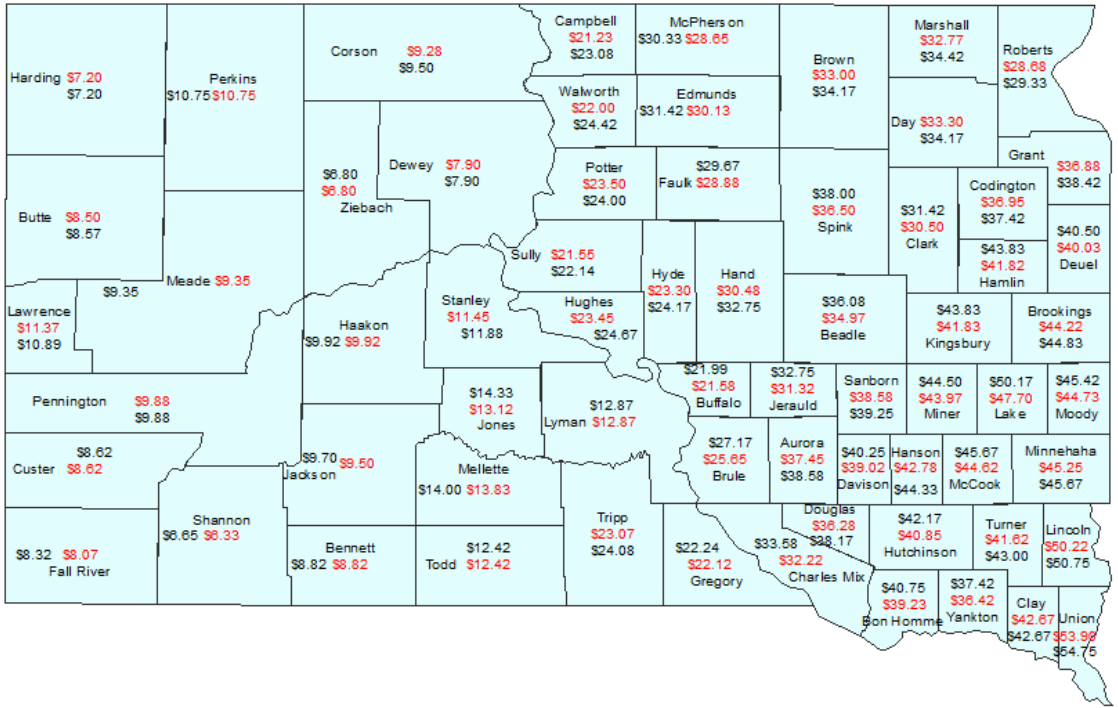
Model for Non-Cropland Productivity Capacity Annual Values

- 2015 Model
  - Productivity Capacity=1.37+.89(2014 Pastureland Cash Rent)+.028(2013 Pastureland Cash Rent)-3.722(West Ag District)-1.699(Central Ag District)+.036('15 USDA Feeder Cattle Index, 2011)
- 2016 Model
  - Productivity Capacity=1.37+.89(2015 Pastureland Cash Rent)+.028(2014 Pastureland Cash Rent)-3.722(West Ag District)-1.699(Central Ag District)+.036('16 USDA Feeder Cattle Index Value, 2011)
- 2017 Model
  - Productivity Capacity=12.28+.438(2015 Pastureland Cash Rent)+.037(2014 Pastureland Cash Rent)-18.169(West Ag Districts)-9.076(Central Ag Districts)+.102('17 USDA Feeder Cattle Index, 2011)

2015 Predicted Non-Cropland Productivity Capacity Values (Assuming an Annual 2015 USDA Feeder Index Value of 165) (Black Values)- Compared to 2014 Pastureland Cash Rent (Red Values)



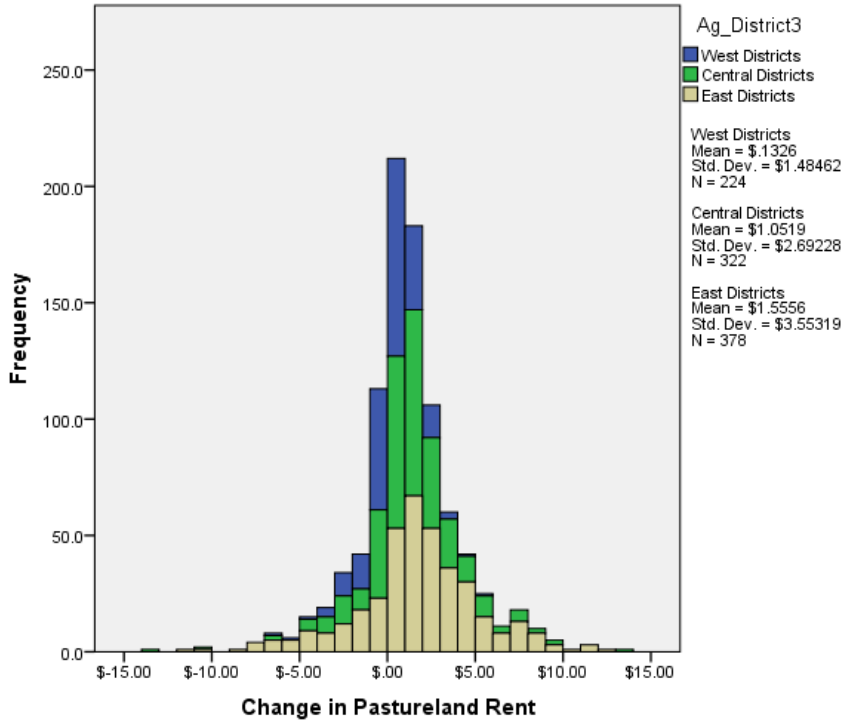
‘08-’15 Predicted Non-Cropland Productivity 8 yr Olympic Average- (Assuming an Annual 2015 USDA Feeder Index of 165) (Black Values)- Compared to ‘07-’14 Olympic Average (Red Values)



Alternative Model– Predict Differences in Pastureland Rents

- 2015, 2016, 2017 Change in Pastureland Rent model would be the same
  - Change in Pastureland Rent= -.753+.026*USDA Annual Feeder Cattle Index-1.423 (West Ag District)-.504(Central Ag District)
- Error-Correction Model (ECM)
  - Change in Pastureland Rent=2.54+.023*Difference in USDA Annual Feeder Cattle Index-4.109(West Ag Districts)-1.899(East Ag Districts)-.097(lag residual of Pastureland Cash Rent= *f*(Annual Feeder Cattle Index))

Alternative Model- Predict Changes in Pastureland Cash Rent for South Dakota



Comparison of '15 Pastureland Cash Rent Predictions (Assuming 165 Annual Feeder Cattle Index for '15). Black values are '14 Rents, Red is ECM Model for '15, Blue is Change in Pastureland Rent Model for '15