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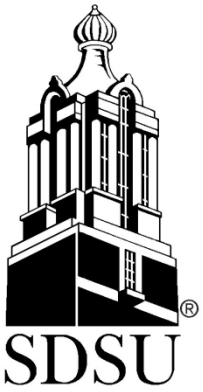
Staff Paper 2009-1 **July 2009**

Economics Staff Paper Series

Economic Analysis of SODSAVER Provisions
of the 2008 Farm Bill for South Dakota

by

Larry Janssen and Yonas Hamda



Department of Economics
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Economic Analysis of SODSAVER Provision of the 2008 Farm Bill for South Dakota

by
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and
Mr. Yonas Hamda

Economics Staff Paper 2009- 1[2]
July 2009

Abstract

The contents of this staff paper are based on the analysis of the Sodsaver provision prepared for the South Dakota Corn Utilization Council and the South Dakota Department of Agriculture, Dec. 2008. In addition this paper contains a summary of the policy discussion in January 2009 prior to South Dakota's decision to not participate in the "Sodsaver" provision. Finally, a copy of the professional poster formatted for this publication is shown in Appendix 1.

Keywords:

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Foreword

This Economics Staff Paper 2009-1 is the companion document to the professional poster "Analysis of the Sodsaver Provision for South Dakota" prepared by the authors for initial presentation at the 2009 Annual Meetings of the Agricultural & Applied Economics Association (AAEA) in Milwaukee, Wisconsin, July 26 – 28.

The contents of this staff paper are based on the analysis of the Sodsaver provision prepared for the South Dakota Corn Utilization Council and the South Dakota Department of Agriculture, Dec. 2008. In addition this paper contains a summary of the policy discussion in January 2009 prior to South Dakota's decision to not participate in the "Sodsaver" provision. Finally, a copy of the professional poster formatted for this publication is shown in Appendix 1.

We wish to thank the SDSU Agricultural Experiment Station and South Dakota Corn Utilization Council for providing funding and South Dakota Secretary of Agriculture, Mr. Bill Even, for providing information on the Sodsaver policy process.

An electronic copy of this staff paper is available at:
http://econ.sdstate.edu/Research/sodsaver.pdf

Economic Analysis of the SODSAVER Provision

of the 2008 Farm Bill for South Dakota

Executive Summary

The "Sodsaver" provision, which is a part of the 2008 Federal farm bill, is designed to lessen the conversion of native grass into cropland by limiting federal farm program payments on these converted acres within the Prairie Pothole National Priority Area (PPNPA) in the Northern Plains. Governors of five states in the PPNPA, including South Dakota, were required to make the decision to adopt or not adopt the "Sodsaver" provision.

This report includes information on: 1) South Dakota's experience with conversion of rangeland into cropland, 2) estimates of native grassland acres in the PPNPA of South Dakota, 3) potential change in net returns from a landowner or investor viewpoint, 4) an enterprise budget analysis to explore potential economic gain (loss) from conversion from cow-calf production to cropland, and (5) major factors influencing the policy decision of not participating in "Sodsaver".

In 2005 and 2006 over 100,000 acres of native grass land in South Dakota were converted to cropland, with most of the converted acres in the Prairie Pothole regions of central and north central South Dakota. Some of the contributing factors to conversion of native grass to cropland are: a) rapid adoption of economically efficient crop technologies including no till and chemical burn down; b) crop insurance products that reduce revenue risk in higher risk regions; c) availability of disaster assistance payments on cropland especially in the event of drought and; d) more recently, much higher crop prices and returns relative to long-term crop prices and returns.

Based on land use and land capability data examination of the PPNPA of South Dakota, 2.26 million acres of permanent pasture and rangeland may be suitable for conversion to cropland. Seventy percent of these acres are located in the North Central and Central Regions of South Dakota. A more liberal estimate of native grassland suitable for conversion stands at 3.57million aces.

Cash rental rates per acre in various agricultural land uses provide a useful starting point to examine the economic potential for land use conversion. The estimated increase in per acre cash rental rates from rangeland to low productivity cropland varies from $8.35 per acre in the Central Region to $27.85

per acre in East Central Region. If all 2.26 million acres of rangeland were converted to cropland, the total change in net return to land, as measured by increase in cash rental rates without accounting for conversion costs, is $34.55 million or 2.5% of total agricultural land net returns for PPNPA of South Dakota.

A partial budget analysis for conversion of a 200 acre rangeland tract to cropland in the North Central and Central regions of South Dakota was developed to examine land use conversion potential from a farm operator perspective. Results for the high crop price scenario ($4.00/bu corn etc.) show strong profit gain when converting native grassland to cropland. The added return in year two would be nearly $13,600 or $86 increased profit per acre. However, the lower crop price scenario ($3.00/bu corn etc.) results in an economic loss of nearly $1400 or -$7.00 per acre.

More detailed analysis of the crop budgets indicate a breakeven price of $3.05 / bushel of corn, $6.25 / bushel of wheat, or $7.70 / bushel of soybeans is needed before a land use conversion decision is economically feasible.

The policy discussion is contained in the final section of this paper, where key arguments in favor of and opposed to adopting “Sodsaver” are presented and discussed. As of spring 2009, no state has adopted the “Sodsaver” provision.

Introduction

Sodsaver is a new provision in the 2008 farm bill that is intended to reduce the conversion of native grass land into cropland by restricting federal farm program payments on these converted acres. The provision requires that native-sod acreage that has been tilled for production for an annual crop be ineligible for federal crop insurance and noninsured crop disaster assistance program payments for the five years of planting in the Prairie Pothole National Priority Areas (PPNPA) in the Northern Plains states of South Dakota, North Dakota, Minnesota, Iowa, and Montana (Figure 1).

In order for this provision to take affect within a state, approval is needed from the governor of that state. Sodsaver would not prohibit landowners from breaking grassland, but it denies federal payments that may be key factors to convert grassland into cropland. Landowners are exempt from this restriction if they convert less than five acres of native sod. The Sodsaver statutory language for the 2008 farm bill is located in Appendix 2.

Sodsaver is a potential expansion of previous Sodbuster and conservation compliance provisions found in federal farm legislation from 1985 to present. Sodbuster targets highly erodible lands (HEL) without previous cropping history, usually rangeland and pasture. Conversion of Sodbuster land to cropland requires a conservation program to prevent a substantial increase in soil erosion and hold soil erosion to a productivity sustaining rate. Otherwise, federal farm program benefits may be substantially reduced. Sodsaver would apply to conversion of all rangeland (both HEL and non-HEL rangeland) without past cropping history.

Both Sodbuster and Sodsaver provisions are linked to conservation compliance provisions that are targeted to highly erodible (HEL) cropland. Conservation compliance requires a conservation program on HEL cropland that provides substantial reduction in soil erosion or substantial improvement in soil conditions. Failure to meet conservation compliance could result in loss of federal commodity program payments. Converted cropland, from Sodbuster or Sodsaver, would need to meet conservation compliance requirements to maintain eligibility for current or future federal farm program benefits. An overview of Sodbuster and conversion compliance provisions is provided in Appendix 3.

However, Sodsaver is an optional program that is targeted to several conservation priority regions of the U.S., including the PPNPA of South Dakota, North Dakota, Montana, Minnesota, and Iowa (Figures 1 and 2). Counties within

the PPNPA are eligible for the Sodsaver provisions if the governor of the respective state requests to be included. This decision must be made within 60 days after USDA issues final rules concerning Sodsaver. The interim final rule was published on Nov. 24, 2008 and interim final rule comment date was closed on January 23, 2009. The USDA recommended decision deadline for opt-in was February 15, 2009.

The main purpose of this paper is to provide some basic land use and land economic information that could be useful in making the decision to opt in or opt out of the Sodsaver program. It is not intended to provide a comprehensive report on this issue as no estimates of wildlife benefits or ecological services are included.

This paper also includes a summary of the policy discussion related to the decision to not adopt the Sodsaver provision.

This report provides information on the following issues:

I. What has been the past (recent) experience of conversion of rangeland to cropland in South Dakota? What are factors that affect conversion?

II. What is the extent of native pasture / rangeland acres in the PPNPA of South Dakota? How many of these acres have some potential for conversion to cropland?

III. For potential converted lands, what is the projected change in net returns to land (landowner / investor viewpoint)

IV. For potential converted lands, what is the economic gain (loss) from conversion of rangeland from cow-calf production to cropland?

This information was sent in early December 2008 to the South Dakota Secretary of Agriculture and to the South Dakota Corn Utilization Council. This information was used in the policy discussion process during January 2009. This paper also includes a summary of the policy discussion related to the decision to not adopt the Sodsaver provision.

FIGURE1: MAP OF THE PRAIRIE POTHOLE NATIONAL PRIORITY AREA

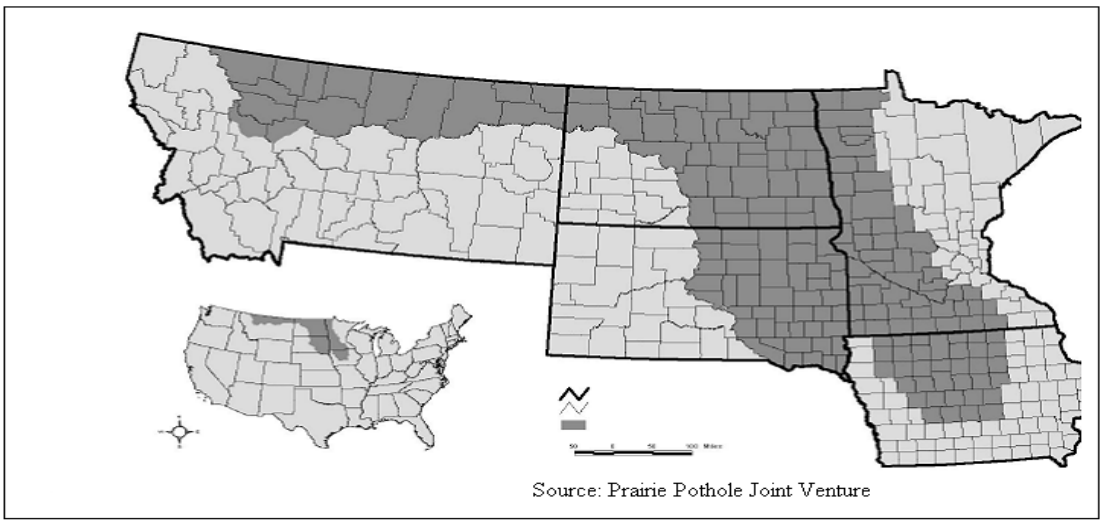
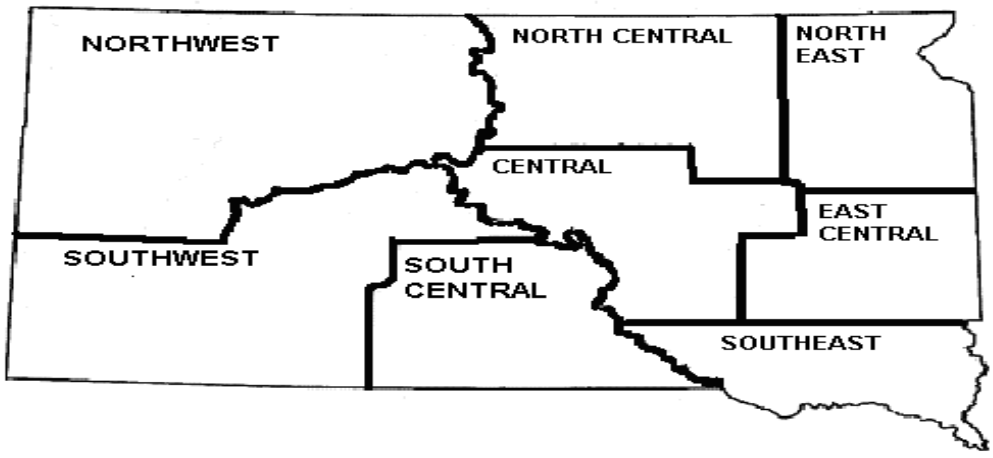


FIGURE 2: MAP OF THE AGRICULTURAL REGIONS OF SOUTH DAKOTA



I. Rangeland to cropland conversion in South Dakota and in the Prairie Pothole region.

South Dakota data was included and highlighted in a recent (Sept. 2007) U.S. General Accounting Office (GAO) report on Agricultural Conservation: Farm Program Payments are an Important Factor in Landowner's Decision to Convert Grassland to Cropland.

Although there is lack of comprehensive and up to date data on changes in land use, available data from various sources indicate a decrease in native grassland acres and an increase in conversion of native grassland to cropland.

For example, according to USDA's NRCS National Resource Inventory (NRI) data from 1982 to 2003, rangeland acres decreased by about 2.5% or 10.4million acres and pastureland decreased by 10.8% or 14.1 million acres in the 48 contiguous states.

The largest amount of grassland to cropland conversion was recorded in the Northern Plains Region (Kansas, Nebraska, North Dakota and South Dakota). An estimated 3.20 million acres, or about 4.3% of total rangeland, were converted to cropland from 1982 to 2003 in the Northern Plains region, with 590,000 of these acres converted 1997 to 2003.

Moreover, based on USDA's Farm Service Agency (FSA) county level data and GAO analysis on conversions of grassland that had no prior cropping history to cropland, 54,404 acres and 47,167 acres of native grassland in South Dakota were converted into cropland in 2005 and 2006 respectively. Most of this land use conversion activity occurred in 16 of the state's 66 counties.

Further analysis of South Dakota data in the GAO report indicated that the 16 counties with the highest rate of land use conversion had: (1) 48% of net crop insurance payments (indemnity payments less premiums paid) in the state from 1997 to 2006, and (2) 40% of crop disaster assistance payments in South Dakota from 1998 to 2004.

In summary, grassland conversion to cropland has been occurring in South Dakota and the Northern Plains due to:

a) Rapid adoption of crop technology (no-till and chemical burn down) that makes it cheaper to convert rangeland to cropland, compared to previous cropping systems. It also makes it easier to meet conservation compliance after converting grassland to cropland.

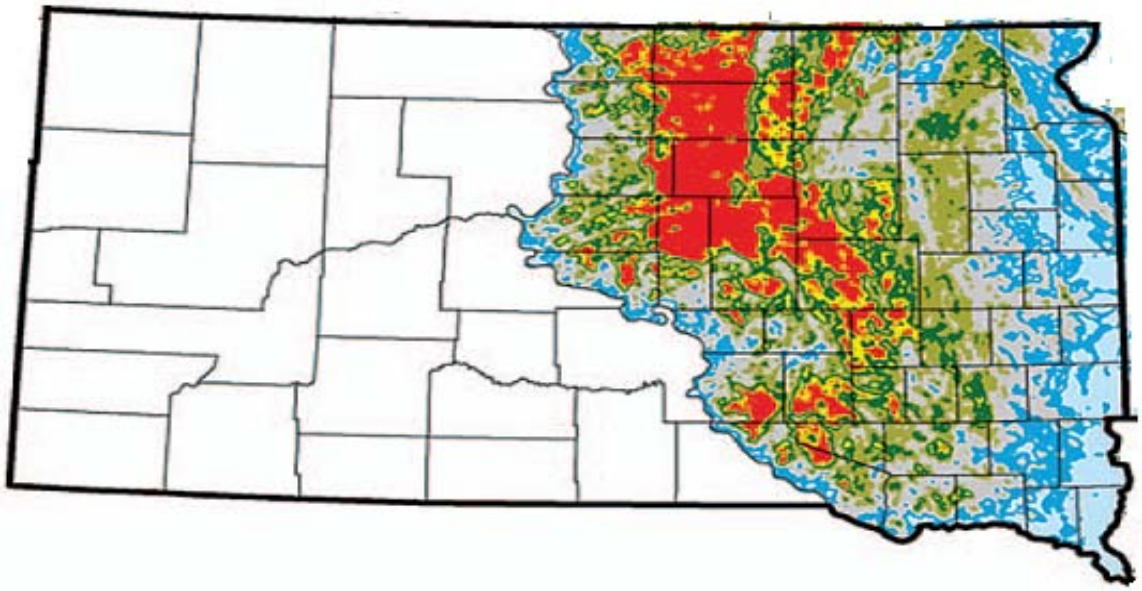
b) Crop insurance products that reduce revenue risk from crop production in higher risk regions.

c) Availability of disaster assistance payments on cropland (especially drought), and

d) More recently, much higher crop prices (and returns) relative to long-term crop prices and returns.

The Sodsaver provision of the 2008 farm bill suggests the greatest concerns about conversion of grassland to cropland are in the Prairie Pothole (PPNPA) region of the United States. This region encompasses about 25 million wetland depressions of varying sizes across a 300,000 square-mile area. According to the U.S. Fish and Wildlife Service, with an average of 83 wetlands per square mile, the Prairie Pothole Region contains the highest wetland density of any region in North America. Of the over 800 migratory bird species in the continent, more 300 or 37.5% rely on these wetlands for breeding, nesting, feeding and resting during spring and fall migrations. This region is the most productive breeding habitat for many birds and especially for ducks as more than half of the continent's ducks breed in the region (GAO 2007, Prairie Pothole Region.) Figure 3 shows duck pair densities in the PPNPA part of South Dakota.

FIGURE 3: DUCK PAIR DENSITIES IN THE PPNPA OF SOUTH DAKOTA



Note: Density (per square mile) increases in darker shaded areas. Adapted from GAO 2007.

II. Extent of native pasture / rangeland acres in the Prairie Pothole region of South Dakota

The Prairie Pothole National Priority Areas (PPNPA) of South Dakota consists of land located within the 44 counties east of the Missouri River. While data on pasture and rangeland can be obtained, we can only infer the extent of acres that have potential for conversion to cropland. The two major problems are: (1) using estimated data on rangeland or pasture as a proxy for non-cropped grasslands – which is reasonably close to definitions of "native sod", and (2) estimating the proportion of non-cropped grassland acres with agronomic potential for cropland conversion.

Selected land use data are summarized for the entire PPNRA of South Dakota and five agricultural regions (Central, North Central, Northeast, East Central, and Southeast) within the PPNRA of South Dakota (table 1). However, it is important to remember that land use data is only roughly consistent across different data sources.

A) Baseline estimates of native pasture/rangeland acres in South Dakota using Census of Agriculture and NRCS data

This 44 county PPNRA region of central and eastern South Dakota has a total land area of 21.68 million acres. Total land in farms (as of 2002) is reported as 19.61 million acres or 90.4% of the total land area (table 1a). Based on agricultural land use data from the 2002 Census of Agriculture, nearly 14 million acres is used as cropland, including 1.25 million acres of cropland used as pasture. Another 4.84 million acres (24.6% of land in farms) is used as "permanent pasture and rangeland" (see column E of table 1a) and the remaining 0.77 million acres is in farmstead, woodlands, and other uses.

The 4.84 million acres of "permanent pasture and rangeland" is the closest measure of non-cropland range and pasture available from the Census of Agriculture. Four-fifths of these acres of permanent pasture and rangeland (3.86 of 4.84 million acres) are located in the Central, North Central, and Northeast regions. The remaining acres are located in the most cropland intensive regions (East Central and Southeast) of the state.

The USDA-NRCS uses a land capability class and subclass system to denote potential suitability of land for annual crop production and for grass production. Land capability classes 1, 2, 3, and 4 are suitable for both crop and grass production, with crop production becoming more restrictive as land class increases from 1 to 4. Land capability classes 5, 6, and 7 are suitable for grass

production, but generally not suitable for crop production. Less than 7% of South Dakota acres in land capability classes 5-7 are in crop production and nearly 90% of acres are in grass production. Class 8 land is not suitable for crop production and is generally not used for agricultural purposes, even though it may be located on farms and ranches.

Combining land capability class data with rangeland use data at the county level, we estimated the amount of permanent pasture and rangeland that is generally not suitable for cropland conversion (rangeland in land classes 5 – 8). We assumed the remaining amount of rangeland and pasture may be suitable (from an agronomic perspective) for conversion to cropland, if economic and policy conditions are conducive.

Nearly 2.58 million acres of land in the PPNRA of South Dakota are in land classes 5 – 8 (see data in col. F of table 1a). We can assume most of this land is used for grass production and relatively little is suited for crop production. The remaining 2.26 million acres of permanent pasture and rangeland should be in land classes 1 - 4 (mostly class 4 and 3) and may be suitable for conversion to cropland.

The 2.26 million acre estimate should be viewed as a likely upper limit on potential conversion of rangeland to cropland use in the PPNPA of South Dakota. Almost 1.60 million of these acres (71%) are located in the North Central and Central regions, while the remaining 660,000 acres are located in the three eastern regions (table 1a).

B) Alternative estimate of rangeland acres in the Prairie Pothole Region of South Dakota

An alternative estimate of rangeland acres was obtained from an FSA county-level database of land use as interpreted by USDA - NRCS Geographic Information Specialist (GIS) Denise Miller, from the Rapid City office. The FSA "rangeland use type should be basically native prairie / non-cultivated land, but it may also have easements, CRP, etc. depending on the county and their records. Typically if it has been cropped at least once, FSA tends to call the land use of that parcel as cropland." (Source: e-mail communication from Ms. Denise Miller, USDA- NRCS GIS specialist, Nov. 24, 2008).

The FSA rangeland estimates for the 44 county region indicated 6.15 million acres (refer to column G of table 1b). Nearly 81% of the FSA rangeland acres (5.00 of 6.15 million) are located in the Central, North Central, and Northeast regions and the remaining 1.15 million acres are in the cropland intensive East Central and Southeast regions. The regional patterns of FSA rangeland

estimates of 6.15 million acres are very consistent with Census of Agriculture reports combining “cropland used for pasture” plus “permanent pasture and rangeland” that equals 6.11 million acres.

If one subtracts the acres in land classes 5 – 8 from the FSA rangeland estimates, the estimated amount of rangeland that may be suitable for conversion to cropland increases to 3.57 million acres (refer to column G of table 1b on FSA rangeland). Almost 2.34 million of these acres (66%) are located in the North Central and Central regions, while the remaining 1.23 million acres are in the three eastern regions.

C) Summary of rangeland use estimates in PPNPA of South Dakota

The amount of “native sod” in South Dakota counties that has never been cropped is not directly available from land use data base sources. We assumed that non-cropped “rangeland” or “permanent pasture and rangeland” were suitable proxies for making these estimates. Furthermore, we assumed that grassland in land capability classes 5 – 8 have no potential or very low potential for conversion to cropland, while grassland in land capability classes 1 - 4 may have conversion potential,

The estimated amount of non-cropped grassland in the 44 Prairie Pothole regions is 4.84 million acres based on Census of Agriculture data (2002) and 6.15 million acres based on FSA rangeland data. The potential amount of non-cropped grassland that may have agronomic potential for cropland conversion varies from 2.26 million acres to 3.57 million acres, depending on the data source (Census of Agriculture vs. FSA database) accepted as the more accurate estimate for non-cropped grassland.

Finally, 66% to 71% of the grassland with cropland conversion potential is located in the North Central and Central regions of South Dakota with the remaining acres located in the three eastern regions. The higher percentage estimate is from combining Census of Agriculture and NRCS data

TABLE 1A: LAND USE IN THE PRAIRIE POTHOLE REGION OF SOUTH DAKOTA

A	B	C	D	E	F	G
Region	2002 Census of Agriculture				Land Capability Class 5,6,7,8	Potential Rangeland Conversion to Cropland
	Total Land	Land in Farms	Cropland	Rangeland*		
	……Thousand Acres……					
Central	5,012	4,507	2,725	1,651	874	777
North Central	5,638	4,995	3,386	1,453	633	819
North East	4,113	3,546	2,564	760	511	249
East Central	3,402	3,092	2,474	483	251	233
South East	3,517	3,472	2,845	491	310	181
PPNPA of SD	**21,682**	**19,612**	**13,994**	**4,838**	**2,579**	**2,260**

Source: USDA-2002 Census of Agriculture and NRCS (formerly SCS) databases.
Notes: All land use data is summed from county-level data sources. Regional locations are shown in Figure 2. Rangeland* is defined as non-cropland permanent pasture and rangeland. Land capability class data is from past USDA-SCS county tables on number of acres by land capability class and subclass. Potential rangeland conversion is subtraction of land class acres in column F from rangeland acres in column E.

TABLE 1B: LAND USE IN THE PRAIRIE POTHOLE REGION OF SOUTH DAKOTA - CONTINUED

A2	B2	C2	D2	E2	F2	G2
Region	Total Land			FSA database rangeland	Land Capability Class 5,6,7,8	Potential FSA Rangeland Conversion to Cropland
	……Thousand Acres……					
Central	5,012			1,995	874	1,121
North Central	5,638			1,855	633	1,221
North East	4,113			1,144	511	633
East Central	3,402			598	251	348
South East	3,517			561	310	251
PPNPA of SD	**21,682**			**6,153**	**2,579**	**3,574**

Source: USDA-FSA and USDA-NRCS (formerly SCS) databases.
Note: The FSA database for rangeland is based on USDA Farm Service Agency inventory of rangeland. Land capability class data is summed from past USDA-SCS county tables on number of acres by land capability class and subclass. Potential rangeland conversion is subtraction of land class acres in column F from the FSA rangeland acres in column E.

III. Potential change in net returns based on cash rent approach

Cash rental rates per acre for various agricultural land uses provide a useful starting point to examine the economic potential for land use conversion. Cash rental rates represent the gross cash return that a landowner/ investor could expect from leasing their land to producers. Cash rental rates are often used by rural appraisers as a major component of determining current income potential of agricultural land and are also used to help determine the ratio of net return to land values in the market place. Furthermore, more than two-fifths of cropland acres in the PPNRA of South Dakota are rented to other producers using a cash lease or a share lease. A majority of the rented cropland acres are in annual cash leases (Janssen and Xu, 2003)

In the following analysis, we estimate the per acre change in cash rental rates that might be obtained from converting rangeland to cropland. For each of the five regions in South Dakota's PPNPA, we compare the average cash rental rate for pasture / rangeland to the cash rental rate for low productivity cropland in the same region. The low productivity cropland cash rental rate applies to the relative productivity of rangeland if it was converted to cropland. Next, we multiply the per acre difference in cash rental rates by the potential number of rangeland acres that could be converted to cropland.

Cash rental rate data for 2008 are available from the annual SDSU farmland market survey report and are averaged for each land use (Janssen and Pflueger, 2008). For illustration purposes we are using the lower estimate (2.26 million acres) of rangeland acres that could potentially be converted to cropland. Using this approach provides a maximum estimate of net return changes for the 2.26 million acres because it does not account for conversion costs or possible downward pressure (relative to rangeland) in cropland cash rental rates if substantial amounts of rangeland are converted.

The estimated increase in per acre cash rental rates from rangeland to low productivity cropland varies from $8.35 per acre in the Central region, to $13.30 per acre in the North Central region and from $24 to $27.85 per acre in the eastern regions. The average amount of increase in the PPNPA of South Dakota is $15.29 per acre or an average increase of 43% (table 2, col. E).

If all 2.26 million acres of rangeland was converted to cropland, the total change in net return, as measured by increase in cash rental rates, is $34.55 million. The north central region would have the greatest amount of increase in agricultural net returns (+$10.7 million), followed by the central and east central regions (+$6.5 million in each region).

If all 2.26 million acres were converted from rangeland to cropland, the projected increase in total agricultural net returns, using the cash rent approach, is about 2.5% for the 44 county Prairie Pothole region. The greatest impacts are in the north central region (+4.0%) and in the central region (+2.9%).

TABLE 2: PROJECTED CHANGES IN NET RETURN FROM CONVERTING NATIVE SOD INTO CROPLAND- CASH RENTAL APPROACH

A	B	C	D	E	F	G	H
Region	**Potential Rangeland Conversion**	**Average Rangeland Cash Rent in 2008**	**Low Productivity Cropland Rent in 2008**	**Change in Cash Rental Rate**	**Rangeland Cash Rent (B x C)**	**Cropland Cash Rent (B x D)**	**Change in Net Return (G - F)**
	Thou. Acres	……Dollars per acre……			……Thousand Dollars……		
Central	777	$32.25	$40.60	$8.35	$25,077	$31,570	$6,492
North Central	819	$31.30	$44.40	$13.10	$25,644	$36,377	$10,732
North East	249	$38.30	$62.30	$24.00	$9,540	$15,518	$5,978
East Central	232	$47.15	$75.00	$27.85	$10,972	$17,454	$6,481
South East	180	$45.60	$72.50	$26.90	$8,249	$13,116	$4,866
PPNRA of SD	**2,259**	**$35.18**	**$50.47**	**$15.29**	**$79,484**	**$114,036**	**$34,551**

Sources: Cash rental rate data from Janssen and Pflueger, 2008
Rangeland conversion acres from USDA-NRCS

IV. Economic incentives for conversion of native grassland to cropland

In this section, we examine economic incentives for conversion of native grassland to cropland in the Central and North Central regions of South Dakota from a farm operator perspective. The partial budget reported in table 3 is for conversion of a 200 acre rangeland tract used for cow-calf production to cropland raising corn, spring wheat, and soybeans. Detailed assumptions are reported in notes to table 3. The beef cow-calf budget and crop budgets used to construct table 3 are reported in appendices 4, 5, and 6 of the electronic version of this paper. Some key budget concepts are:

- The land use conversion budgets represent a farm operator that already raises corn, wheat, and soybeans and has a cow-calf enterprise. Land use decisions made on the 200 acre tract does not require major whole-farm adjustments in machinery and equipment.

- The native grassland tract currently has forage for 30 cows and would be converted to a cropland tract with lower than average productivity. Long term crop yields on this tract are 85% of regional average crop yields. This conservative assumption reflects the likelihood, in this region, that current rangeland with conversion potential has lower long-term yields than existing cropland or it would have already been converted.

- The first year budget reflects added costs (chemical burn down and disk tillage) of converting native pasture to cropland, planting all land to wheat in the initial year, and reduced wheat yields during the conversion year. However, added cash flow is gained from liquidation of the 30 cows.

- The second year budget assumes long-term crop mix and crop yields. The costs are based on no-till budgets adjusted for the assumed yields in this region. Direct operating costs (including crop insurance), machinery costs, and land ownership costs are included. The land costs are mostly opportunity costs for the owner with no land debt and may reflect some cash costs for owners with land mortgage payments. The land charge also includes real estate taxes paid.

- Two crop price scenarios are used to partly reflect the tremendous variation in crop prices from fall 2006 to present.
  The high crop price scenario assumes:
  corn = $4.00 /bu., wheat = $8.00/bu, and soybeans = $10.00/bu.
  The lower crop price scenario assumes crop prices are 25% lower or:
  corn = $3.00/bu, wheat= $6.00/bu, and soybeans = $7.50/bu.

- Federal commodity payments are not included because converted rangeland would not have a previous crop base and price assumptions used in either scenario would not trigger any LDP payments.

- Crop insurance premiums are included in the budget. Crop production costs per acre would be $20 - $25 lower if crop insurance was not available or permitted. However, lack of crop insurance would eliminate revenue insurance indemnity payments obtained during years of low price and/or low yields.

Results for the high crop price scenario ($4.00/bu corn etc.) shows strong profit gain from converting native grassland to cropland. The added return in year two would be nearly $13,600 or $68 increased profit per acre. However, the lower crop price scenario ($3.00/bu. corn etc) results in an economic loss of nearly $1,400 or -$7.00 per acres.

More detailed analysis of the crop budgets indicate a breakeven price of $3.05 / bushel of corn, $6.25 / bushel of wheat, or $7.70 / bushel of soybeans is needed before a land use conversion decision is economically feasible.

Additional incentives for conversion of grassland to cropland are indicated from further analysis of the beef cow-calf budget (appendix five). Recent feed costs of $26 per AUM and $105 per ton of alfalfa hay (or equivalent feedstock) indicate total feed costs of $369 per cow. Breakeven analysis indicates a calf price of $1.20 per pound is needed to cover all costs, including opportunity costs of grazing owned pasture.

This preliminary analysis should be used for guideline purposes only. Items not included in this brief analysis are:

- Impacts of lower yields / prices that would trigger revenue insurance payments

- Producer survey on land use conversion decisions for their own farm situation, with and without the option of purchasing revenue insurance

- Federal commodity program payment impacts (if any).

In other words, variability of outcomes under lower price / yield scenarios was not examined. We focused our analysis on the potential extent of cropland conversion and on the basic economic incentives for land use conversion.

TABLE 3: PARTIAL BUDGET FOR CONVERSION OF CROPLAND FROM RANGELAND, 200 ACRE TRACT IN THE NORTH CENTRAL/ CENTRAL REGIONS OF SOUTH DAKOTA

Partial Budget: 200 acres	High Prices		Low Prices	
	Year One	Year Two	Year One	Year Two
I. Additional Returns from Conversion to Crops:				
Corn	-	28,800	-	21,600
Spring Wheat	48,000	25,600	36,000	19,200
Soybeans	-	10,800	-	8,400
Liquidation of Cow Herd	18,000	-	18,000	-
Subtotal: Added Returns	**66,000**	**65,200**	**54,000**	**49,200**
II. Reduced costs from no cow-calf operation:	**18,106**	**18,106**	**18,106**	**18,106**
III. Added Costs from Conversion to Crops:				
Corn	-	22,365	-	21,965
Spring Wheat	54,273	20,409	54,723	20,009
Soybeans	-	8,820	-	8,620
Subtotal: Added Costs	**54,273**	**51,594**	**54,723**	**50,594**
IV. Reduced Returns from no sale of livestock:	**18,120**	**18,120**	**18,120**	**18,120**
Net Change in Returns (I + II - III - IV)	**$11,713**	**$13,592**	**$(737)**	**$(1,408)**

Notes to Table 3:

This partial budget is intended to represent conditions west of the James River Valley in the North-Central and Central regions of South Dakota. These are the regions where conversion of rangeland to cropland has been occurring with some frequency. A 200 acre rangeland tract is used for budget purposes, but is representative of tract sizes of 160 to 320 acre that have been converted. The budgets assume the farm operator already has a cow herd and a crop operation of corn, wheat, and soybeans. The land use conversion decision on a 200 acre tract does not require major whole-farm adjustments of machinery and equipment.

The 200 acre rangeland tract has production from 30 cows with annual sale of 22 calves @550 lb. and 6 cull cows @1200 lb. Calf price of $1.20 / lb and cull cow price of $0.50 /

lb are assumed. Feed costs (including $26/AUM value of pasture and $105/ton of alfalfa) of $369 per cow are used. The remaining non-feed costs, livestock depreciation, and interest on investment costs are obtained from the beef cow budget located in appendix 4. Total costs per cow are $603.54.

Conversion of the 200 acre rangeland tract to cropland assumes a long-term crop mix of 80 acres of corn, 80 acres of wheat, and 40 acres of soybeans. This crop mix closely approximates the 2004 – 2007 crop mix for corn, wheat, and soybeans in the North Central and Central regions. The long-term yields of 90 bushel corn, 40 bushel wheat, and 28 bushel soybeans are about 85% of recent (2004 – 2007) average crop yields in these regions. The lower yield assumptions reflect the combination of lower-productivity rangeland soils converted (relative to existing cropland) and the likelihood that a few converted acres would not be able to produce annual crops (waterways, sloughs etc.).

The first year budget reflects added costs (chemical burn down and disk tillage) of converting native pasture, planting all land to wheat, and reduced yield (75% of long-term yield) during the conversion year. However, added cash flow is gained from liquidation of the 30 cows.

The second year budget assumes long-term crop mix and crop yields. The costs are based on no-till budgets adjusted for the assumed yields in this region. The crop budgets in Appendix 5 and 6 contain direct costs (seed, fertilizer, chemicals, machinery operating costs, crop drying, operating interest, crop insurance, and other variable cost), machinery ownership costs, and land ownership costs (based on cash rents for lower productivity cropland).

Direct costs average $186 per acre for the first year conversion and $173 per acre for the long-term crop mix in subsequent years. Machinery ownership costs were $35 per acre and land charge was $50 per acre (for lower productivity cropland).

Two crop price scenarios are used to partly reflect the tremendous variation in crop prices from fall 2006 to present.

- High crop price scenario assumes:
  Corn = $4.00 /bu., wheat = $8.00/bu, and soybeans = $10.00/bu.

- Lower crop price scenario assumes crop prices are 25% lower or:
  Corn = $3.00/bu, wheat= $6.00/bu, and soybeans = $7.50/bu.

v. Sodsaver policy decision / arguments

This section of the paper is a verbatim summary from South Dakota Secretary of Agriculture, Mr. Bill Even, of the policy arguments that were presented and discussed concerning the Sodsaver provision in the 2008 farm bill. The section includes key dates, background information, arguments for adopting (opt-in) Sodsaver, and arguments for not adopting (opt-out) Sodsaver. The arguments for and against adoption of Sodsaver provisions are a synthesis of policy positions taken by various organizations and interest groups.

Key Dates

Interim Final Rule Published: November 24, 2008
Interim Final Rule Comment Date Closed: January 23, 2009
USDA Risk Management Agency recommended opt-in deadline:
February 15, 2009
Deadline for producers to purchase federal crop insurance: March 15, 2009
The deadline for issuance of the Final Rule from USDA is open-ended—no date has been set.

Background

The "Sodsaver" provision, enacted as a part of the 2008 farm bill, is designed to lessen the conversion of native grass into cropland by eliminating federal crop insurance eligibility for five years on these converted acres within the Prairie Pothole National Priority Area (PPNPA) in the Northern Plains (SD, ND, MN, IA, MT). This provision is retroactive to May 22, 2008.

If South Dakota opts-in, any sod broken after that date is ineligible for federal crop insurance for five years. If South Dakota initially opts-out, then opts-in during any future year, landowners and producers must repay all crop insurance indemnity payments and premium subsidies on broken native sod retroactive to this date. A state may opt-in or opt-out at any time, but the program start date remains May 22, 2008. This flexibility creates a multitude of problems for producers.

In 2005 and 2006 over 100,000 acres of native grassland in South Dakota were converted to cropland, most of it East River. Today, SDSU estimates that between 2.26 and 3.57 million acres of pasture and rangeland in South Dakota may be suitable for conversion to cropland.

Arguments for "Opt-In"

***Sodsaver will protect millions of acres of sod.**

The Sodsaver provision will protect millions of acres of South Dakota's native sod from erosion, maintain habitat for prairie fowl and migratory birds and save wetland and grazing areas from conversion to cropland.

***Sodsaver will prevent misuse of crop insurance premiums.**

Breaking native sod often brings marginal lands into cultivation. Proponents of Sodsaver argue that producers who choose to till this environmentally fragile land should assume the initial production risks on their own—if, after a five year test period, the land becomes productive cropland, then that individual can enroll those acres in federal crop insurance programs. This puts the financial risk for conversion on the individual, not the public.

***East River is the logical region for implementing Sodsaver.**

Proponents of Sodsaver argue that shifting this risk is a responsible effort, because producers remain eligible for other farm program benefits on the newly tilled sod. Producers can still purchase federal crop insurance as part of their risk management decisions—just not on any land broken after May 22, 2008. Further, since most "sod breaking" occurs East River, that region is the logical place for the implementation of these restrictions.

***Sodsaver helps young producers get started in livestock agriculture.**

This provision is beneficial for young farmers as well. Getting started in the livestock industry by renting grass pasture for cattle grazing is much cheaper than renting land and equipment for row crop production. Cash rent for pasture is far less than rent on cropland. Proponents argue that the Sodsaver provision will keep more grazing land open, and thus allow more opportunities for beginning producers.

Arguments for "Opt-Out"

***Producers will be ineligible for federal crop insurance on broken sod for five years.**

This takes away one of the main risk management strategies that producers rely on to stay competitive. Further, the Farm Service Agency (FSA) is responsible for determining whether the land is virgin ground or has been tilled. Much of South Dakota's land has been tilled for 100 years, but many FSA records only go back to the 1960s or 1970s. If FSA then issues a determination that a producer disagrees with, there is no appeals process in place.

***Sodsaver puts certain regions at a competitive disadvantage.**

Sodsaver would put East River South Dakota at a competitive disadvantage with the West River region and neighboring states. These areas outside the PPNPA would have the freedom to open new ground for production, while East River producers would not. This may cause a drop in land valuation, as tillable land is often worth more than pasture land. Sodsaver should be a national program, not a regional one, so that all states compete on a level playing field.

***Technology has made farming less harmful to the land.**

Opponents of Sodsaver argue that no-till technology has enabled producers to plant on marginal lands without plowing—and thus, with a minimum of erosion. This makes row crop farming less environmentally intrusive, negating the need for this provision. Further, producers currently operate under two federal "sod saving" programs, Sodbuster and Swampbuster. Sodbuster prevents the breaking of native sod without an approved conservation plan and Swampbuster prohibits draining or filling wetlands to ensure that the United States has no net loss of wetland areas. Sodsaver's opponents contend that both of these national programs are sufficient for protecting native sod.

***USDA currently has programs in place to save native sod.**

USDA and the U.S. Fish and Wildlife Service have several financial incentive programs available for native sod: the Wetland Reserve Program, Grassland Reserve Program, Environmental Quality Incentives Program, Farmland Protection Program, Grassland Easement Program and the Cost/Share Program for Grasslands. These programs allow producers to derive income from native sod, eliminating the need to till it for cropland.

Policy Decision

As of April 20, 2009, no state in the PPNPA has chosen to opt-in to the Sodsaver program.

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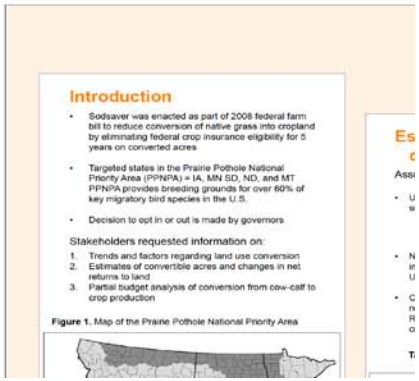
U.S. Department of Agriculture- Farm Service Agency Land Use database.

U.S. Department of Agriculture- Natural Resources Conservation Services (formerly Soil Conservation Services) database.

Appendices

Appendix 1: Analysis of Sodsaver Poster Presented at 2009 AAEA Meeting



Introduction

- Sodsaver was enacted as part of 2008 federal farm bill to reduce conversion of native grass into cropland by eliminating federal crop insurance eligibility for 5 years on converted acres
- Targeted states in the Prairie Pothole National Priority Area (PPNPA) = IA, MN SD, ND, and MT PPNPA provides breeding grounds for over 60% of key migratory bird species in the U.S.
- Decision to opt in or out is made by governors

Stakeholders requested information on:

1. Trends and factors regarding land use conversion
2. Estimates of convertible acres and changes in net returns to land
3. Partial budget analysis of conversion from cow-calf to crop production

Figure 1. Map of the Prairie Pothole National Priority Area

Appendix 2: Sod Saver Statutory Language

122 STAT. 2142 PUBLIC LAW 110–246—JUNE 18, 2008
SEC. 12020. CROP PRODUCTION ON NATIVE SOD.
(a) FEDERAL CROP INSURANCE.—Section 508 of the Federal Crop Insurance Act (7 U.S.C. 1508) is amended by adding at the end the following:
‘‘(o) CROP PRODUCTION ON NATIVE SOD.—
‘‘(1) DEFINITION OF NATIVE SOD.—In this subsection, the term ‘native sod’ means land—
‘‘(A) on which the plant cover is composed principally of native grasses, grasslike plants, forbs, or shrubs suitable for grazing and browsing; and ‘‘(B) that has never been tilled for the production of an annual crop as of the date of enactment of this subsection.
‘‘(2) INELIGIBILITY FOR BENEFITS.—
‘‘(A) IN GENERAL.—Subject to subparagraph (B) and paragraph (3), native sod acreage that has been tilled for the production of an annual crop after the date of enactment of this subsection shall be ineligible during the first 5 crop years of planting, as determined by the Secretary, for benefits under—
‘‘(i) this title; and
‘‘(ii) section 196 of the Federal Agriculture Improvement and Reform Act of 1996 (7 U.S.C. 7333).
‘‘(B) DE MINIMIS ACREAGE EXEMPTION.—The Secretary shall exempt areas of 5 acres or less from subparagraph (A).
‘‘(3) APPLICATION.—Paragraph (2) may apply to native sod acreage in the Prairie Pothole National Priority Area at the election of the Governor of the respective State.’’.
(b) NONINSURED CROP DISASTER ASSISTANCE.—Section 196(a) of the Federal Agriculture Improvement and Reform Act of 1996 (7 U.S.C. 7333(a)) is amended by adding at the end the following:
‘‘(4) PROGRAM INELIGIBILITY RELATING TO CROP PRODUCTION ON NATIVE SOD.—
‘‘(A) DEFINITION OF NATIVE SOD.—In this paragraph, the term ‘native sod’ means land—
‘‘(i) on which the plant cover is composed principally of native grasses, grasslike plants, forbs, or shrubs suitable for grazing and browsing; and ‘‘(ii) that has never been tilled for the production of an annual crop as of the date of enactment of this paragraph.
‘‘(B) INELIGIBILITY FOR BENEFITS.—
‘‘(i) IN GENERAL.—Subject to clause (ii) and subparagraph (C), native sod acreage that has been tilled for the production of an annual crop after the date of enactment of this paragraph shall be ineligible during the first 5 crop years of planting, as determined
by the Secretary, for benefits under—
‘‘(I) this section; and
‘‘(II) the Federal Crop Insurance Act (7 U.S.C.
1501 et seq.).
‘‘(ii) DE MINIMIS ACREAGE EXEMPTION.—The Secretary shall exempt areas of 5 acres or less from clause (i).
‘‘(C) APPLICATION.—Subparagraph (B) may apply to native sod acreage in the Prairie Pothole National Priority Area at the election of the Governor of the respective State.’’.

Appendix 3: Conservation Compliance and Sodbuster

What It Is: Conservation compliance required that farmers develop and file with USDA's Soil Conservation Service (SCS), now Natural Resources Conservation Service (NRCS), a conservation plan for farming on all highly erodible land by January 1, 1990, and have fully implemented that plan by January 1, 1995. Farmers who did not file and/or did not implement satisfactory conservation plans were ineligible for farm program benefits, including deficiency payments, price support loan provisions, and disaster payments. In addition, they were potentially not be eligible for new loans from Farmers Home Administration, now Farm Service Agency, or for participation in federal crop insurance, and they may have potentially lost their Conservation Reserve Program (CRP) payments. Sodbuster discourages bringing highly erodible land into production. If this land is brought into production, it must be covered by an approved conservation plan, or be subject to penalty.

Objective: To farm highly erodible cropland and reduce the level of soil erosion to T through appropriate conservation measures approved by SCS. T is a soil loss tolerance value indicating the maximum level of soil erosion that will permit crop productivity to be sustained indefinitely. The T requirement can be relaxed whenever local SCS/ASCS officials judge that it would cause severe economic hardship or be pragmatically impossible to achieve.

When Used: Enacted as a provision of the 1985 farm bill with the support of environmentalists and as a condition for enactment of the bill.

Experience: Conservation plans were developed in considerable haste after the enactment of the 1985 farm bill and delayed announcement of complex regulatory procedures. Conflict arose in some areas over the farming practices under which T could reasonably be achieved, and resulted in some relaxation of conservation plan provisions. Since the conservation plans were often developed with considerable haste, questions exist over whether their provisions are realistic. The 1990 farm bill provided for graduated losses in farm program benefits up to $5,000 for producers who violated the conservation compliance and sodbuster provisions but acted in good faith and had no prior violations.

Consequences:

- Reduces soil erosion and water runoff
- Improves water quality.
- Increases costs of production.
- Lowers producer returns.
- Encourages producers to consider long-term land retirement in the CRP.
- Reduces participation in farm programs. If price and income supports are eliminated, conservation compliance provisions could be implemented only with the assistance of Agriculture Conservation Program payments or overt regulation.
- Eliminates economic incentives for new highly erosive land being brought into production.

Source: Outlaw, et.al. 2008 Policy Tools for US Agriculture.

Appendix 4. Beef Cow / Calf Enterprise Budget

Herd Information			
Cow Herd Size			30
Replacement Female Value			$ 850.00
Number Culled Annually (@20%)			6
Value of Cull Cow			$ 600.00
Number of Bulls			1
Bull Value			$4,000
Salvage Bull Value			$ 855.00
Calf sale price	550#	at $1.20/lb	$660
Item		**Price/cow**	**Price/herd**
Revenue			
Calf sale	22 calves		$14,520
Cull Cow (20%)		600	3,600
Total Revenue			18,120
Operating Expenses			
Feed Costs		368.84	11,065.2
Veterinary and Health Expense		15	450.0
Supplies		1	30.0
Marketing		15.65	469.5
Shipping		4.5	135.0
Breeding Fees		-	-
Total Operating Expenses		404.99	12,149.7
Annual Capital Costs			
Depreciation			
Cow[0]		41.67	1,250.1
Bull[1]		31.61	948.3
Interest on Investment			
Cow		58	1,740.0
Bull		6.07	182.1
Equipment and Facilities Investment[2]		45	1,350.0
Operating Interest[3]		16.20	486.0
Annual Capital Costs		198.55	5,956.5
Total Cow Costs		603.4	18,106.2

DIRECT OPERATING COSTS			
Veterinary & Drug Expense:			
Supplies Purchased:			
Marketing Costs:		$ 15.00	
Breeding Fees:		$ 1.00	
		$ 15.65	
INDIRECT COSTS		$ -	
Interest Rate:			
Power & Utility Cost:			
Machinery and Facilities Investment:			8%
			1
Months on Winter Feed Ration			300
Months on Pasture			
			6months
FEEDING COST			6months
Limestone			
Min. & Salt	Total Fed		$/Unit
Corn-Raised	0.00	cwt @	$ 9.00
Corn-Purchased	0.25	cwt @	$ 22.00
Hay	0.00	bu. @	$ 3.10
Alfalfa	0.00	bu. @	$ 4.00
Silage	0.00	ton @	$ 90.00
Corn Stover	0.89	ton @	$ 105.00
Modified Distillers	0.00	ton @	$ 48.00
Pasture	1.50	ton @	$ 50.00
	0.37	ton @	$ 105.00
Total Feeding Cost	6.00	aum @	$ 26.00

Source: South Dakota State University, Economics Department – Extension

Note: [0]Based on 6-year useful life

[1]Based on 3 year useful life

[2]Depreciation, Interest, Insurance on Equipment and Facilities

[3]6 months interest on direct operating costs

Appendix 5: Spring Crops Enterprise Budget (high price scenario)

Spring Crops Budget High Price Scenario	Unit	Year One Conversion Budget SPRING WHEAT		Year Two CORN		SPRING WHEAT		SOYBEAN		Total Year two Farm estimate	
	Acres	1	200	1	80	1	80	1	40	1	200
Gross return											
Estimated Yield	bu/acre	30	6,000	90	7,200	40	3,200	28	1,120		
Estimated Selling price	$/bu	8.00	8.00	4.00	4.00	8.00	8.00	10.00	10.00		
Value per acre	$/acre	240	48,000	360	28,800	320	25,600	280	11,200		
Other income per acre	$/acre	0	-	0	-	0	-	0	0		
Gross Return per acre	$/acre	240	48,000	360	28,800	320	25,600	280	11,200	328	65,600
Direct costs per acre											
Seed		24	4,800	48	3,840	24	1,920	35	1,380	36	7,140
Fertilizer		48	9,619	50	3,980	48	3,848	9	362	41	8,190
Herbicide		16	3,240	14	1,080	16	1,296	18	718	15	3,094
Burndown chemical		14	2,700	0	0	7	540	0	0	3	540
Insecticide or inoculant								10	400		
Fungicide		7	1,400	0	0	7	560	0	0	3	560
Crop Insurance		25	5,000	25	2,000	25	2,000	25	1,000	25	5,000
Machinery Costs (Operating)		35	7,008	40	3,218	33	2,643	32	1,294	36	7,155
Custom hire		-	-	-	-	-	-	-	-		
Drying		-	-	7	576	-	-	-	-	3	576
Operating Interest		10	2,002	11	882	10	801	7	285	10	1,968
Other variable costs		8	1,500	-	-		-		-		
Total direct costs/acre	$/acre	186	37,269	195	15,576	170	13,608	136	5,439	173	34,623
Return over direct cost/acre	$/acre	54	10,731	165	13,224	150	11,992	144	5,761	155	30,977
Total direct costs/bu	$/bu	6.21	6.21	2.16	173.07	4.25	4.25	4.86	4.86		
Machinery (Ownership Costs)	$/acre	35	7,004	35	2,788	35	2,802	35	1,381	35	6,970
Land Charge	$/acre	50	10,000	50	4,000	50	4,000	50	2,000	50	10,000
Total and per acre costs	$/acre	271	54,273	280	22,364	255	20,409	220	8,820	258	51,593
Total cost/bu	$/bu	9.05	9.05	3.11	3.11	6.38	6.38	7.87	7.87		
Return to mgmt and labor, total and/acre	$/acre	-31	-6,273	80	6,436	65	5,191	60	2,380	70	14,007
Nonland costs/acre	$/acre	221	44,273	230	18,364	205	16,409	170	6,820	208	41,593
Nonland costs/bu	$/bu	7.38	7.38	2.55	2.55	5.13	5.13	6.09	6.09		
Nonland Return to land, labor, and Mgmt/acre	$/acre	19	3,727	130	10,436	115	9,191	110	4,380	120	24,007
Nonland Return to land, labor, and Mgmt/bushel	$/bu	0.62	0.62	1.45	1.45	2.87	2.87	3.91	3.91		

Appendix 6: Spring Crops Enterprise Budget (low price scenario)

Spring Crops Budget LOW Price Scenario (25% Decline)	Unit	Year One Conversion Budget SPRING WHEAT		Year Two CORN		SPRING WHEAT		SOYBEAN		Total Year two Farm estimate	
	Acres	1	200	1	80	1	80	1	40	1	200
Gross return											
Estimated Yield	bu/acre	30	6,000	90	7,200	40	3,200	28	1,120		
Estimated Selling price	$/bu	6.00	6.00	3.00	3.00	6.00	6.00	7.50	7.50		
Value per acre	$/acre	180	36,000	270	21,600	240	19,200	210	8,400		
Other income per acre	$/acre	0	-	0	-	0	-	0	0		
Gross Return per acre	$/acre	180	36,000	270	21,600	240	19,200	210	8,400	246	49,200
Direct costs per acre											
Seed		24	4,800	48	3,840	24	1,920	35	1,380	36	7,140
Fertilizer		48	9,619	50	3,980	48	3,848	9	362	41	8,190
Herbicide		16	3,240	14	1,080	16	1,296	18	718	15	3,094
Burndown chemical		14	2,700			7	540				
Insecticide or inoculant				0	0	0	0	10	400	2	400
Fungicide		7	1,400	0	0	7	560	0	0	3	560
Crop Insurance		20	4,000	20	1,600	20	1,600	20	800	20	4,000
Machinery Costs (Operating)		35	7,008	40	3,218	33	2,643	32	1,294	36	7,155
Custom hire		-	-	-	-	-	-	-	-		
Drying		-	-	7	576	-	-	-	-	3	576
Operating Interest		10	2,002	11	882	10	801	7	285	10	1,968
Other variable costs		8	1,500	-	-	-	-		-		
Total direct costs/acre	$/acre	181	36,269	190	15,176	165	13,208	131	5,239	168	33,623
Return over direct cost/acre	$/acre	-1.35	-269	170	6,424	75	5,992	79	3,161	78	15,577
Total direct costs/bu	$/bu	6.04	6.04	2.11	2.11	4.13	4.13	4.68	4.68		
Machinery (Ownership Costs)	$/acre	35	7,004	35	2,788	35	2,802	35	1,381	35	6,970
Land Charge	$/acre	50	10,000	50	4,000	50	4,000	50	2,000	50	10,000
Total and per acre costs	$/acre	266	53,273	275	21,964	250	20,009	215	8,620	253	50,593
Total cost/bu	$/bu	8.88	8.88	3.05	3.05	6.25	6.25	7.70	7.70		
Return to mgmt and labor, total and/acre	$/acre	-86	--(17,273)	-5	-364	-10.0	-809	-5.50	-220	-(6.97)	(1,393)
Nonland costs/acre	$/acre	216	43,273	225	17,964	200	16,009	165	6,620	203	40,593
Nonland costs/bu	$/bu	7.21	7.21	2.50	2.50	5.00	5.00	5.91	5.91		
Nonland Return to land, labor, and Mgmt/acre	$/acre	-36	-7,273	45	3,636	40	3,191	45	1,780	43	8,607
Nonland Return to land, labor, and Mgmt/bushel	$/bu	-1.21	-1.21	0.50	0.50	1.00	1.00	1.59	1.59		

Note: Other income includes government payments and any crop residue sales on a per acre basis. Line item estimates are listed below. Machinery operating costs include fuel, oil, and repairs. Machinery operations assume the use of a 155 hp tractor, 40 ft drill, 30 foot planter, combine, and 100 foot boom pull type sprayer. The cost estimates are calculated using a "Machinery Cost Calculator". Price estimates for diesel are $3.00 per gallon and an operating loan at 9%. Machinery ownership costs are depreciation, interest at 8%, insurance, and housing. Land is at rental rate.