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Minnesota Crop Cost & Return Guide - 2009

by

William F. Lazarus

Department of Applied Economics

The estimated costs for corn grain, soybeans, and spring wheat in this report are based on data from several sources. The yields are based on USDA National Agricultural Statistics Service (NASS) yields averaged over the five years, 2003-07. The crop prices are based on futures prices for 2009 harvest-time futures contracts (Table 1). Government payments are based on 2007 payment rates with base yield assumed to be the same as the budget yield. The corn fertilization rates consider credits from a previous soybean crop.

Seeding rates and chemical applications are based on University of Minnesota Extension recommendations and/or judgments of Extension staff about typical producer practices in Minnesota. Fertilizer rates are based on 2007 FINBIN per-acre average expenses, NASS estimates of prices paid for fertilizer, Extension recommendations, and average P and K soil test levels from a commercial laboratory.

The corn and soybean seed prices are thought to be typical of a biotech hybrid, but the corn variety would not be rootworm resistant. Wheat seed prices are assumed to be \$5/bushel over the market price for wheat. Seeding rates per acre are corn - 34,000 kernels, soybeans - one bushel, and wheat - 113 pounds. Fertilizer prices are from a Minnesota cooperative. Nitrogen prices are based on NH<sub>3</sub>. P<sub>2</sub>O<sub>5</sub> prices are based on an 18-46-0 price with the N priced as NH<sub>3</sub>. K<sub>2</sub>O prices are based on 0-0-60. Chemical prices are estimated retail prices from a variety of sources.

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A related spreadsheet, CROPBUD.XLS, is available at:  
[http://www.apec.umn.edu/faculty/wlazarus/documents/cropbud\\_MN09.xls](http://www.apec.umn.edu/faculty/wlazarus/documents/cropbud_MN09.xls).

Machinery costs reflect new equipment, and are based on the Machinery Cost Estimates extension publication dated July, 2008. The farm diesel fuel price is \$3.50/gallon. Costs for preharvest and harvest operations are shown separately in the budgets. Fertilizer and chemicals are assumed to be custom-applied.

Land rent, crop insurance, and miscellaneous expenses for corn, soybeans, and wheat are from 2007 FINBIN state and regional crop enterprise cost and return data collected under the MnSCU Farm Business Management Program and the Southwestern Minnesota Farm Business Farm Management Association. One year's inflation was added to those 2007 averages using the Bureau of Labor Statistics producer price index and the USDA-NASS index of prices paid by farmers.

Labor hours and total labor costs are also from FINBIN. The FINBIN labor hours and cost are based on an allocation of total farm labor disappearance and usually exceed direct machinery operation labor. The difference is likely to be time spent in planning, crop marketing, and maintenance that may not be directly related to a particular crop and so this extra labor is treated as a fixed cost in the budgets.

#### State and Regional Budgets

The corn, soybeans, and wheat costs and returns for Minnesota are shown in Table 2. Budgets were also analyzed for different regions of Minnesota and are shown in Table 3. The regional boundaries used are those used by the MnSCU farm business management program and are shown in Figure 1. Yields are averages of the county NASS yields for 2003-07. Fertilizer amounts of P2O5 and K2O vary based on the crop yields, the commercial laboratory's soil test sample averages, and the University of Minnesota extension recommendations. The N amounts do not vary across regions because the recommendations are now based only on crop and N prices, not crop yields.

Seed, chemicals, and machinery costs other than for crop drying are assumed to be the same across regions. Land rent, government payments, crop insurance, crop drying, non-machinery labor, and miscellaneous expenses and income vary across the regions based on the FINBIN crop enterprise data.

Table 1. Prices Used in the Crop Enterprise Budgets

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<u>Crops</u>				
Corn	\$4.00	bu		
Soybeans	\$9.25	bu		
Wheat	\$6.50	bu		
 <u>Seed</u>				
Corn	\$ 250.00	bag		
Soybeans	\$40.00	bu		
Wheat	\$11.50	bu		
 <u>Fertilizer</u>				
NH3	\$850	ton	\$ 0.52	lb
				<u>Crop(s) used on</u>
P2O5 as DAP, 18-46-0, N netted out as NH3	\$900	ton	\$ 0.78	lb
				all
K2O	\$ 800	ton	\$ 0.67	lb
				all
 <u>Chemicals</u>				
Glyphosate 4.5L	\$50.00	gal	\$ 0.39	oz
				corn, soybeans
Ammonium sulfate	\$6.50	gal	\$ 1.63	qt
				corn , soybeans
Axial	\$ 160.00	gal	\$20.00	pt
				wheat
Headline	\$ 335.00	gal	\$ 2.62	oz
				wheat
Prosario	\$2.33	oz		
				wheat
Penncap	\$1.00	oz		
				wheat
 <u>Land rent</u>				
	2007 FINBIN + 37% (based on USDA Ag Prices U.S. September indices)			
 <u>Diesel fuel</u>				
	\$3.50	gal		

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Reference to commercial products and trade names is made with the understanding that no discrimination is intended and no endorsement by the University of Minnesota is implied.

<b>Table 2. Estimated Per Acre Crop Budgets, Minnesota*</b>			
	Corn Grain	Soybeans	Wheat
Crop yield per acre	158	39	50
Crop price per bu.	\$ 4.00	\$ 9.25	\$ 6.50
Crop revenue per acre	\$ 631	\$ 361	\$ 322
Gov't payments	38	15	22
Miscellaneous income	15	6	7
Gross return per acre	\$ 684	\$ 381	\$ 351
Fertilizer & lime (lbs N-P2O5-K2, tons lime)	(140-40-45, 0)	(0-20-0, 0)	(115-0-35, 0)
Preharvest machinery	\$ 50	\$ 40	\$ 59
Seed (for grasses, amortized stand establishment)	116	50	22
Fertilizer & lime	134	16	83
Crop chemicals	22	24	38
Crop insurance	20	15	13
Miscellaneous	11	8	6
Harvest machinery	60	37	26
Labor & mgmt	43	31	26
Total Cost/A w/o Rent or Interest	\$ 456	\$ 220	\$ 272
Rent	150	132	82
Interest on preharvest var. costs	13	6	8
Total Cost/A	\$ 619	\$ 357	\$ 362
Net Return/A	\$ 64	\$ 24	\$ (11)
Total cost per bushel or per ton	\$ 3.59	\$ 8.64	\$ 6.72
Fuel, gallons/A	4.11	3.47	3.04
Fuel expense, \$/A	\$ 15.84	\$ 13.35	\$ 11.72
Labor & management hours/acre	2.42	1.79	1.34
Labor & management \$/acre	\$ 42.62	\$ 31.15	\$ 25.50

\*Machinery costs are based on prices of new equipment in early 2008. Fertilizer costs are based on anhydrous at \$850/ton, DAP at \$900, and 0-0-60 potash at \$800.

<b>Table 3. Estimated Per Acre Crop Budgets by Region</b>									
	<b>Corn Grain</b>					<b>Soybeans</b>		<b>Wheat</b>	
	<b>South</b>	<b>Southwest</b>	<b>West Central</b>	<b>Northwest</b>	<b>NE/EC</b>	<b>Northwest</b>	<b>West Central</b>	<b>Northwest</b>	<b>West Central</b>
Crop yield per acre	169	163	146	114	91	29	37	50	51
Crop price per bu.	\$ 4.00	\$ 4.00	\$ 4.00	\$ 4.00	\$ 4.00	\$ 9.25	\$ 9.25	\$ 6.50	\$ 6.50
Crop revenue	\$ 675	\$ 653	\$ 584	\$ 457	\$ 366	\$ 271	\$ 339	\$ 328	\$ 330
Gov't payments per acre	\$ 40	\$ 39	\$ 35	\$ 27	\$ 22	\$ 11	\$ 14	\$ 22	\$ 22
Miscellaneous income per acre	\$ 10	\$ 5	\$ 26	\$ 3	\$ 10	\$ 4	\$ 7	\$ 5	\$ 12
Gross return per acre	\$ 725	\$ 697	\$ 645	\$ 487	\$ 398	\$ 287	\$ 360	\$ 355	\$ 364
Fertilizer & lime (lbs N-P2O5-K2, tons lime)	(140-25-50, 0)	(140-30-50, 0)	(140-35-30, 0)	(140-55-20, 0)	(140-20-35, 0)	(0-40-0, 0)	(0-20-0, 0)	(115-30-20, 0)	(115-0-25, 0)
Preharvest machinery	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 40	\$ 40	\$ 59	\$ 59
Seed (for grasses, amortized stand establishment)	116	116	116	116	116	50	50	22	22
Fertilizer & lime	126	130	120	129	112	31	16	97	77
Crop chemicals	22	22	22	22	22	24	24	38	38
Crop insurance	21	19	19	23	20	15	13	13	9
Miscellaneous	12	9	9	10	6	6	8	6	5
Harvest machinery	63	55	59	54	45	32	36	27	26
Labor & mgmt	45	46	36	43	46	26	30	26	22
Total Cost/A without rent or interest	\$ 468	\$ 461	\$ 445	\$ 460	\$ 430	\$ 223	\$ 216	\$ 287	\$ 256
Rent (2007 average + 37%)	175	165	128	91	56	81	121	79	104
Interest on preharvest var. costs	13	13	13	13	12	6	5	9	8
Total Cost/A	\$ 643	\$ 626	\$ 573	\$ 551	\$ 485	\$ 310	\$ 342	\$ 375	\$ 368
Net Return/A	\$ 81	\$ 71	\$ 72	\$ (64)	\$ (88)	\$ (23)	\$ 18	\$ (20)	\$ (4)
Total cost per bushel or per ton	\$ 3.52	\$ 3.57	\$ 3.51	\$ 4.56	\$ 4.96	\$ 10.04	\$ 8.76	\$ 6.89	\$ 6.59

Data item	Units	Price	Fixed	Variable	Total
Total product return per acre (bu.)					
Total product return per acre (bu.)		<b>158</b>	<b>\$4.00</b>		\$ 631.20
Government payments (vary with price & yield)					\$ <b>37.56</b>
Miscellaneous income per acre					\$ <b>14.94</b>
Gross return per acre					\$ 683.70
<b>Direct expenses:</b>					
Preharvest machinery inc. labor:					
Owned machinery	Tractor HP				
<b>Chisel Plow 37 Ft</b>	<b>310 4WD (270 PTO)</b>		\$ 2.26	\$ 5.68	
<b>Field Cultivator 60 Ft</b>	<b>310 4WD (270 PTO)</b>		\$ 1.22	\$ 4.74	
<b>Row Crop Planter 16 Row-30, 40 Ft</b>	<b>130 MFWD</b>		\$ 3.54	\$ 8.45	
<b>Row Cultivator 16 Row-30, 40 Ft</b>	<b>200 MFWD</b>		\$ 1.07	\$ 5.81	
Total preharvest machinery owned					\$ 32.78
Custom hired operations:					
Apply fertilizer, NH3 and dry P and K				\$ 10.00	
Spray				\$ 7.00	
Total preharvest machinery (owned & custom)					\$ 49.78
			Application units/purchase unit		
Seed	<b>34,000</b>	<b>250</b>	<b>80,000</b>	\$ 106.25	
Roundup Ready seed fee				\$ <b>10.00</b>	
Total seed					\$ 116.25
Fertilizer for crop:				1	
<b>Nitrogen, lbs.</b>	<b>140</b>	\$ <b>0.52</b>		\$ 72.80	
<b>P2O5 (dry), lbs.</b>	<b>40</b>	\$ <b>0.78</b>		\$ 31.20	
<b>K2O, lbs.</b>	<b>45</b>	\$ <b>0.67</b>		\$ 30.15	
<b>Lime</b>	<b>-</b>	\$ <b>-</b>		\$ <b>-</b>	
Total fertilizer & lime					\$ 134.15
Crop chemicals:					
	Rate applied	Purchase price	application units/purchase unit		
<b>Glyphosate, 4.5L, oz/A, 1" weeds</b>	<b>22</b>	\$ <b>50.00</b>	<b>128</b>	\$ <b>8.59</b>	
<b>Ammonium sulfate, qt/A, 1" weeds</b>	<b>1.5</b>	\$ <b>6.50</b>	<b>4</b>	\$ <b>2.44</b>	
<b>Glyphosate, 4.5L, oz/A, 4" regro</b>	<b>22</b>	\$ <b>50.00</b>	<b>128</b>	\$ <b>8.59</b>	
<b>Ammonium sulfate, qt/A, 4" regro</b>	<b>1.5</b>	\$ <b>6.50</b>	<b>4</b>	\$ <b>2.44</b>	
Total crop chemicals					\$ 22.06
Crop insurance				\$ 20.22	\$ 20.22
Miscellaneous			\$ 9.65	\$ 0.91	\$ 10.56
Land rent:			\$ 150.41		\$ 150.41
Interest on preharvest variable costs:				\$ 13.41	\$ 13.41
Harvest machinery (inc. labor):					
Owned machinery	Tractors HP				
<b>Combine Corn Hd 8 Row-30, 20 Ft</b>			\$ 8.42	\$ 42.12	
<b>Hauling and trucking - Crop</b>				\$ 1.06	
Drying, crop			\$ -	\$ 8.27	
Total harvest machinery					\$ 59.88
<b>Overhead expenses:</b>					
Labor & management	Hours	Labor Rate			
Total labor & management	<b>2.42</b>	<b>17.61</b>		\$ 42.62	\$ 42.62
Total cost per acre			\$ 176.58	\$ 442.76	\$ 619.34
<b>Net return per acre</b>					\$ <b>64.36</b>
Total cost per bushel					\$ 3.59

Data item	Units	Price	Fixed	Variable	Total
Total product return per acre (bu.)					
Total product return per acre (bu.)		<b>39</b>	<b>\$9.25</b>		\$ 360.75
Government payments (vary with price & yield)					\$ 14.59
Miscellaneous income per acre					\$ 5.95
Gross return per acre					\$ 381.29
<u>Direct expenses:</u>					
Preharvest machinery inc. labor:					
Owned machinery Tractor HP					
<b>Chisel Plow 37 Ft</b>	<b>310 4WD (270 PTO)</b>		\$ 2.26	\$ 5.68	
<b>Field Cultivator 60 Ft</b>	<b>310 4WD (270 PTO)</b>		\$ 1.22	\$ 4.74	
<b>Row Crop Planter 16 Row-30, 40 Ft</b>	<b>130 MFWD</b>		\$ 3.54	\$ 8.45	
	<b>0</b>		\$ -	\$ -	
Total preharvest machinery owned					\$ 25.90
Custom hired operations:					
Apply fertilizer, NH3 and dry P and K				\$ -	
Spray				\$ 14.00	
Total preharvest machinery (owned & custom)					\$ 39.90
Application units/purchase unit					
Seed	<b>1.00</b>	<b>40.00</b>	<b>1.00</b>	\$ 40.00	
Roundup Ready seed fee				\$ 10.00	
Total seed					\$ 50.00
Fertilizer for crop: 3					
<b>Nitrogen, lbs.</b>	-	\$ 0.52		\$ -	
<b>P2O5 (dry), lbs.</b>	20	\$ 0.78		\$ 15.60	
<b>K2O, lbs.</b>	-	\$ 0.67		\$ -	
<b>Lime</b>	-	\$ -		\$ -	
Total fertilizer & lime					\$ 15.60
Crop chemicals:					
	Rate applied	Purchase price	application units/purchase unit		
<b>Glyphosate, 4L, qt/A, 4" Weeds</b>	<b>24</b>	<b>\$ 50.00</b>	<b>128</b>	<b>\$ 9.38</b>	
<b>Ammonium sulfate, qt/A, 4" Weeds</b>	<b>1.5</b>	<b>\$ 6.50</b>	<b>4</b>	<b>\$ 2.44</b>	
<b>Glyphosate, 4L, qt/A, Canopy</b>	<b>24</b>	<b>\$ 50.00</b>	<b>128</b>	<b>\$ 9.38</b>	
<b>Ammonium sulfate, qt/A, Canopy</b>	<b>1.5</b>	<b>\$ 6.50</b>	<b>4</b>	<b>\$ 2.44</b>	
Total crop chemicals					\$ 23.63
Crop insurance				\$ 15.06	\$ 15.06
Miscellaneous			\$ 7.20	\$ 0.62	\$ 7.82
Land rent:			\$ 131.87		\$ 131.87
Interest on preharvest variable costs:				\$ 5.51	\$ 5.51
Harvest machinery (inc. labor):					
Owned machinery Tractor HP					
<b>Combine Soybean Hd 25 Ft</b>			\$ 5.06	\$ 31.83	
<b>Hauling and trucking - Crop</b>				\$ -	
Drying, crop			\$ -	\$ -	
Total harvest machinery					\$ 36.89
<u>Overhead expenses:</u>					
Labor & management					
	Hours	Labor Rate			
Total labor & management	<b>1.79</b>	<b>17.40</b>		\$ 31.15	\$ 31.15
Total cost per acre			\$ 151.15	\$ 206.27	\$ 357.43
<b>Net return per acre</b>					<b>\$ 23.86</b>
Total cost per bushel					\$ 8.64

Projected 2009 Crop Enterprise Budget, Wheat, Minnesota

Data item	Units	Price	Fixed	Variable	Total
Total product return per acre (bu.)					
Total product return per acre (bu.)		<b>50</b>	<b>\$6.50</b>		\$ 322.40
Stover (tons as harvested)		-	<b>\$0.00</b>		\$ -
Government payments (vary with price & yield)					<b>\$ 21.92</b>
Miscellaneous income per acre					<b>\$ 6.51</b>
Gross return per acre					\$ 350.83
<u>Direct expenses:</u>					
Preharvest machinery inc. labor:					
Owned machinery Tractor HP					
<b>Chisel Plow 37 Ft</b>	<b>310 4WD (270 PTO)</b>		<b>\$ 2.26</b>	<b>\$ 5.68</b>	
<b>Field Cultivator 60 Ft</b>	<b>310 4WD (270 PTO)</b>		<b>\$ 1.22</b>	<b>\$ 4.74</b>	
<b>Presswheel Drill 30 Ft</b>	<b>160 MFWD</b>		<b>\$ 3.14</b>	<b>\$ 11.00</b>	
Total preharvest machinery owned					\$ 28.05
Custom hired operations:					
Apply fertilizer, NH3 and dry P and K				<b>\$ 10.00</b>	
Spray				<b>\$ 21.00</b>	
Total preharvest machinery (owned & custom)					\$ 59.05
Application units/purchase unit					
Seed	<b>1.88</b>	<b>11.50</b>	<b>1.00</b>	\$	21.66
Total seed					\$ 21.66
Fertilizer for crop: 2					
<b>Nitrogen, lbs.</b>	<b>115</b>	<b>\$ 0.52</b>		\$	59.80
<b>K2O, lbs.</b>	<b>35</b>	<b>\$ 0.67</b>		\$	23.45
Total fertilizer & lime					\$ 83.25
Crop chemicals:					
application					
	Rate applied	Purchase price	units/purchase unit		
<b>Axial, OZ/A</b>	<b>16.4</b>	<b>\$ 103.00</b>	<b>128</b>	\$	13.20
<b>Headline, OZ/A</b>	<b>3</b>	<b>\$ 335.00</b>	<b>128</b>	\$	7.85
<b>Prosario, OZ/A</b>	<b>6</b>	<b>\$ 2.33</b>	<b>1</b>	\$	14.00
<b>Penncap, OZ/A</b>	<b>2.5</b>	<b>\$ 1.00</b>	<b>1</b>	\$	2.50
Total crop chemicals					\$ 37.55
Crop insurance				<b>\$ 12.59</b>	\$ 12.59
Miscellaneous			<b>\$ 6.09</b>	<b>\$ -</b>	\$ 6.09
Land rent:			<b>\$ 81.68</b>		\$ 81.68
Interest on preharvest variable costs:				<b>\$ 8.30</b>	\$ 8.30
Harvest machinery (inc. labor):					
Owned machinery Tractor HP					
<b>Combine Grain Head 30 Ft</b>			<b>\$ 3.71</b>	<b>\$ 22.27</b>	
Total harvest machinery					\$ 25.99
<u>Overhead expenses:</u>					
Labor & management					
	Hours	Labor Rate			
Total labor & management	<b>1.34</b>	<b>19.03</b>		\$	25.50
Total cost per acre			\$	98.10	\$ 263.55
<b>Net return per acre</b>					<b>\$ (10.82)</b>
Total cost per bushel					\$ 6.72

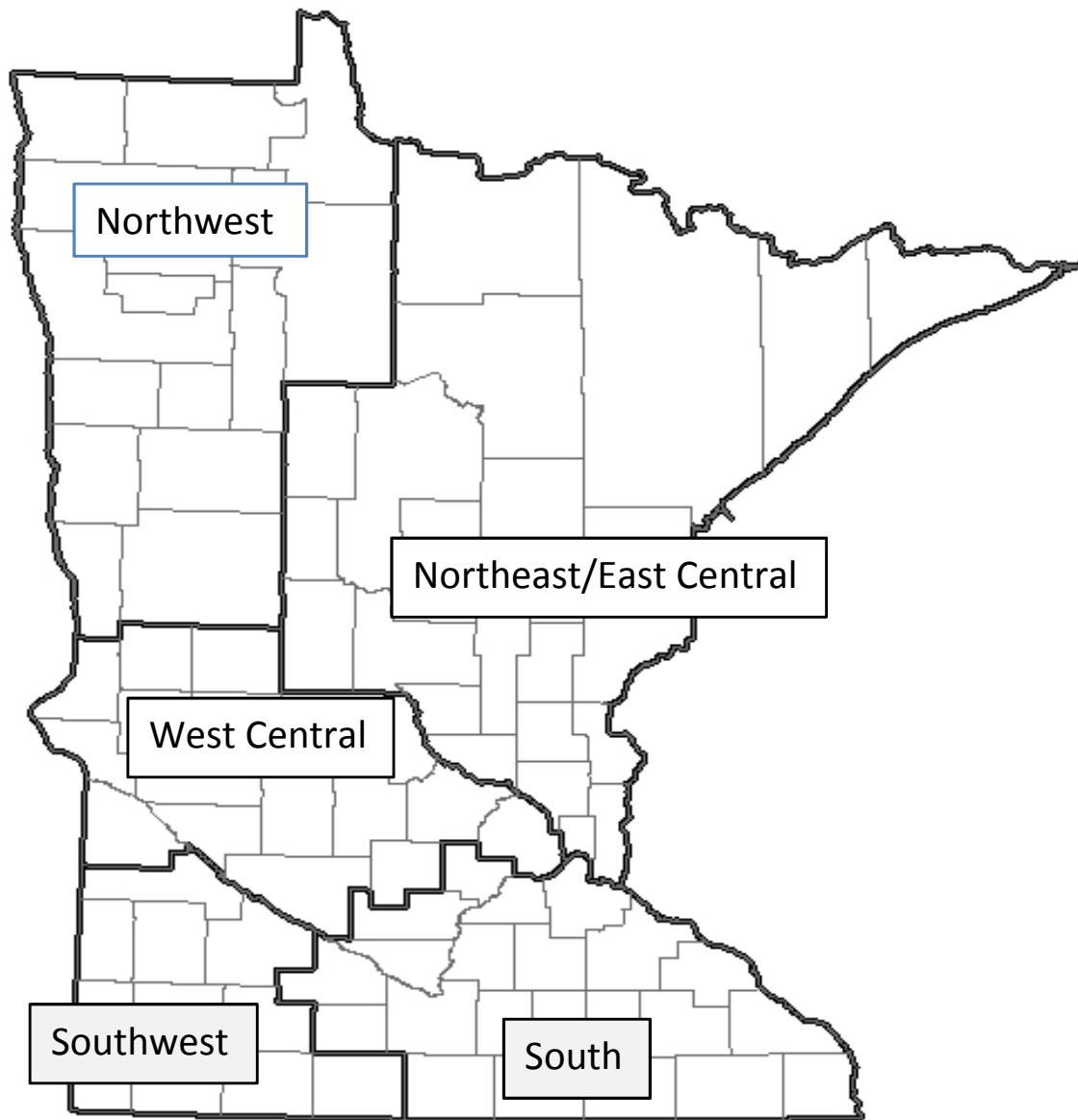


Figure 1. MnSCU Farm Business Management Program Regions Used for Regional Crop Enterprise Budgets