

# Agricultural Economic Impact in the Devils Lake Area Flooding in 2011

This analysis quantifies the extent of lost agricultural production in the Devils Lake Basin due to rising water levels in Devils Lake and Stump Lake and the surrounding area. The potential production that will not be produced in 2011 represents lost income to area producers as well as the region's economy. The total impact of this loss to the region is further increased in the form of indirect losses as this money is not available to be spent in other economic sectors of the economy.

Production data for the most recent five-year period, as reported by North Dakota Agricultural Statistics Service, were used in this analysis. Lost income due to increased water levels in the Devils Lake basin was assumed to be the value of the crop production that could have been produced on this acreage if it had been available to plant in 2011. Therefore, this acreage will not contribute to the economic activity in the region in 2011.

Acreage and yield data for 14 major crops grown in Benson and Ramsey counties for the years 2005 through 2009 were summarized. Average yields for the region are shown in Table 1. These yields were weighted based on the production from each county. The average percentage of acreage devoted to each crop is shown in Table 2. This crop mix is based on the sum of all acres produced over this 5-year period.

**Table 1.** Weighted Average Yields for Benson and Ramsey Counties, 2005-2009.

Crop	Average Yield/Acre
Barley	59.4
Corn Grain	97.9
Alfalfa Hay	1.9
Other Hay	1.7
Winter Wheat	49.2
Durum	35.4
Spring Wheat	38.2
Canola	1408.5
Flaxseed	18.2
Soybeans	27.7
Oil Sunflowers	1403.9
Conf Sunflowers	1234.5
Edible Beans	14.1
Dry Edible Peas	18.0

**Table 2.** Major Crops Grown in Benson and Ramsey Counties, 2005-2009.

Crop	Percent of Total Acre
Barley	13.0%
Corn Grain	9.5%
Alfalfa Hay	2.1%
Other Hay	3.5%
Winter Wheat	3.3%
Durum	1.0%
Spring Wheat	28.1%
Canola	6.9%
Flaxseed	1.7%
Soybeans	17.2%
Oil Sunflowers	2.5%
Conf Sunflowers	1.8%
Edible Beans	8.5%
Dry Edible Peas	1.0%

These estimates were prepared by Dwight Aakre and Randal Coon, Department of Agribusiness and Applied Economics, and Bill Hodous Ramsey County Extension Agent, North Dakota State University. February 2011.

The current estimate of inundated area is 163,450 acres for 2011. This acreage data is from The Devils Lake Basin Joint Water Resources Board's website. The 163,450 acres represents the acreage inundated as the lake level has risen from 1422.9 feet in 1993 to a forecasted level of 1455.0 feet above sea level in 2011. Potential lost production per year is summarized in Table 3. This table includes the average acreage of each crop, the estimated market price, and the total value for each crop. The estimated value of production that could have been produced on this acreage for 2011 is \$52,757,993. This is an estimate of the direct loss that will incur in 2011.

**Table 3.** Potential Lost Production per Year in the Devils Lake Basin with 163,450 Acres of Cropland Inundated.

Crop	Average Yield	Average Acreage	Estimated Price	Value Per Year
Barley	59.4	21,321	4.50	5,696,335
Corn Grain	97.9	15,487	5.00	7,584,470
Alfalfa Hay	1.9	3,427	65.00	425,201
Other Hay	1.7	5,786	45.00	431,803
Winter Wheat	49.2	5,449	7.50	2,009,731
Durum	35.4	1,622	8.50	487,364
Spring Wheat	38.2	45,917	8.50	14,914,236
Canola	1408.5	11,235	0.220	3,481,445
Flaxseed	18.2	2,760	13.00	653,204
Soybeans	27.7	28,053	12.00	9,319,860
Oil Sunflowers	1403.9	4,041	0.240	1,361,571
Conf				
Sunflowers	1234.5	2,954	0.330	1,203,384
Edible Beans	14.1	13,823	25.00	4,877,513
Dry Edible Peas	18.0	1,575	11.00	311,875
<b>Market Value of Lost Production</b>				<b>\$52,757,993</b>

### Total Economic Loss

The market value of the potential production that will not be produced represents the direct loss to the region's economy. Additional losses accrue in the form of indirect loss throughout the economy. The indirect impact is the economic activity created by the spending and re-spending of the direct impacts.

**Total impact on business activity in the region from both direct and indirect losses is estimated at \$194,419,000. The major losses are \$57.6 million to the crop sector, \$50.9 million to the households sector (personal income), and \$42.9 million to the retail trade sector. The remainder of the \$194.4 million loss is distributed among several other sectors of the economy.**

**This loss of business activity ultimately is reflected in lost jobs in the region. Employment loss is estimated at 1,150 jobs for the region.**

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