

## 2009 Purdue Crop Cost & Return Guide

### January 2009 Estimates

*Both product prices and input prices may have significantly changed since these estimates were prepared.*

**Table 1. Estimated per Acre Crop Budgets for Low, Average, and High Productivity Indiana Soils**

	Crop Budgets for Three Yield Levels <sup>1</sup>														
	Low Productivity Soil					Average Productivity Soil					High Productivity Soil				
	Cont. Corn	Rot. Corn	Rot. Beans	Wheat	DC Beans	Cont. Corn	Rot. Corn	Rot. Beans	Wheat	DC Beans	Cont. Corn	Rot. Corn	Rot. Beans	Wheat	DC Beans
Expected yield per acre <sup>2</sup>	118	126	39	62	23	149	158	49	70	29	179	190	59	84	35
Harvest price <sup>3</sup>	\$4.00	\$4.00	\$8.70	\$5.20	\$8.70	\$4.00	\$4.00	\$8.70	\$5.20	\$8.70	\$4.00	\$4.00	\$8.70	\$5.20	\$8.70
Market revenue	\$472	\$504	\$339	\$322	\$200	\$596	\$632	\$426	\$364	\$252	\$716	\$760	\$513	\$437	\$305
Less variable costs <sup>4</sup>															
Fertilizer <sup>5</sup>	\$178	\$166	\$74	\$91	\$49	\$192	\$180	\$89	\$104	\$58	\$205	\$194	\$104	\$128	\$67
Seed <sup>6</sup>	75	75	52	43	60	89	89	52	43	60	89	89	52	43	60
Pesticides <sup>7</sup>	41	41	29	8	26	41	41	29	8	26	41	41	29	8	26
Dryer fuel <sup>8</sup>	24	19	N/A	N/A	4	30	24	N/A	N/A	5	37	29	N/A	N/A	6
Machinery fuel @ \$2.40	18	18	8	11	8	18	18	8	11	8	18	18	8	11	8
Machinery repairs <sup>9</sup>	12	12	9	9	9	12	12	9	9	9	12	12	9	9	9
Hauling <sup>10</sup>	13	14	4	7	3	16	17	5	8	3	20	21	6	9	4
Interest <sup>11</sup>	16	16	9	7	8	18	17	9	8	8	9	9	10	9	9
Insurance/misc. <sup>12</sup>	26	26	22	3	4	27	27	22	3	4	28	28	23	3	4
Total variable cost	\$403	\$387	\$207	\$179	\$171	\$443	\$425	\$223	\$194	\$181	\$459	\$441	\$241	\$220	\$193
Contribution margin <sup>13</sup> (Revenue - variable costs) per acre	\$69	\$117	\$132	\$143	\$29	\$153	\$207	\$203	\$170	\$71	\$257	\$319	\$272	\$217	\$112

<sup>1</sup>Estimated yields and costs are for yields with average management for three different soils representing low, average, and high productivity. The high productivity soils represent soils capable of producing corn and soybeans with yields about 20% higher than average soils. Low productivity soils represent soils capable of producing corn and soybeans with yields about 20% lower than the average soils.

<sup>2</sup>These yields assume average weather conditions and timely plant/harvest date, except soybean double-crop yield, which is based on a July 1 planting date. Continuous corn, soybean, and wheat yields are a percent of rotation corn yield: continuous corn 94%; rotation soybeans 31%; wheat 49% on low productivity soil and 44% on average and high productivity soils; and double-crop soybeans 18%. Continuous corn yields assume a chisel plow tillage system. Double-crop soybean yields apply to central and southern Indiana.

<sup>3</sup>Harvest corn price is December 2009 Chicago Board of Trade (CBOT) futures price less \$0.35 basis. Harvest soybean price is November 2009 CBOT futures price less \$0.60 basis. Harvest wheat price is July 2009 CBOT futures price less \$1.00 basis. The prices shown were estimated using closing prices on January 28, 2009. These prices will change.

<sup>4</sup>Seed, fertilizer, pesticide, and fuel prices are based on projections for 2009.

**Table 1 (Continued)**

<sup>5</sup> Phosphate, potash, and lime applications are based on Tri-State Fertilizer Recommendations (Source: Michigan Extension Bulletin E-2567, July 1995). Lime amounts represent the pounds of standard ag lime needed to neutralize the acidity from the nitrogen supplied from sources other than ammonium sulfate. Nitrogen application rate for corn is based on research from the Department of Agronomy, Purdue University. Anhydrous ammonia is used as the nitrogen source for corn. Urea is used as the nitrogen source for wheat. Pounds of N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O, and lime by crop and soil were as follows: continuous corn, 190-44-52-570, 190-55-60-570, 190-66-68-570; rotation corn, 160-47-54-480, 160-58-63-480, 160-70-71-480; rotation beans, 0-31-75-0, 0-39-89-0, 0-47-103-0; wheat, 61-39-43-183, 75-44-46-225, 99-53-51-299; double crop beans, 0-18-52-0, 0-23-61-0, 0-28-69-0. Fertilizer prices per lb.: NH<sub>3</sub> @ \$0.49; urea @ \$0.53; P<sub>2</sub>O<sub>5</sub> @ \$0.66; K<sub>2</sub>O @ \$0.71; lime @ \$24/ton spread on the field. 5-10% more nitrogen might be needed on poorly drained soils. All soil tests for phosphorus and potassium are assumed to be in the maintenance range, and the pH is in the recommended range.

<sup>6</sup> Corn seed prices assume a biotech variety with multiple traits. A 20%-refuge is planted with varieties that do not contain insect resistant traits. According to the USDA's Agricultural Prices report for April 2008, biotech corn seed prices averaged 60% more than non-biotech corn seed, which was up from 54% more a year earlier. Seeding rates for corn are 28,000 seeds per acre on low productivity soils and 33,000 seeds per acre on average and high productivity soils. Soybean seed prices include Round-Up Ready® varieties. Rotation soybeans are drilled with a seeding rate of 169,000 seeds per acre with a 90% germination rate. Double-crop soybeans are drilled with a seeding rate of 195,000 seeds per acre.

<sup>7</sup> Includes both insecticides and herbicides. For corn, rootworm insecticide is applied to the refuge acres. In some areas of Indiana, this may not be required. Herbicide costs can vary widely based on both the herbicides selected and the required rate of application.

<sup>8</sup> Fuel used to dry crop to a safe moisture level for storage. For double-crop soybeans, the drying charge represents the drying of wheat in order to allow an earlier planting of soybeans.

<sup>9</sup> Repairs are based on approximately 5-year-old machinery. For older machinery, per acre repairs and downtime cost will be higher.

<sup>10</sup> Hauling charge represents moving grain from field to storage. (Based on Machinery Cost Estimates: Harvesting, University of Illinois, Farm Business Management Handbook, May 2008.)

<sup>11</sup> Interest is based on 7% annual rate for 9 months for seed, fertilizer, and chemicals, and for 6 months for half the machinery fuel and repairs, and all miscellaneous expenses.

<sup>12</sup> The cost of crop insurance represents the premium for a Crop Revenue Coverage (CRC) policy at the 75% level. Since rates for the 2009 crop year are not available, estimates were based on rates in 2008. These rates are based on a base price of \$5.25 per bushel for corn and \$12.75 per bushel for soybeans. Rates will change based on the price guarantees and other parameters selected for the 2009 crop year. Crop insurance is included in budgets for corn and full-season soybeans, but is not included for wheat and double-crop soybeans.

<sup>13</sup> Contribution margin is the return to labor and management, machinery services, and land resources.

Table 2. Estimated per Acre Indirect Charges for Low, Average, and High Productivity Indiana Soils

Farm Acres Rotation <sup>1</sup>	Low Productivity Soil				Average Productivity Soil				High Productivity Soil			
	900 c-c	1000 c-b	2700 c-c	3000 c-b	900 c-c	1000 c-b	2700 c-c	3000 c-b	900 c-c	1000 c-b	2700 c-c	3000 c-b
Crop contribution margin <sup>2</sup>	\$69	\$125	\$69	\$125	\$153	\$205	\$153	\$205	\$257	\$296	\$257	\$296
Government payment <sup>3</sup>	\$17	\$17	\$17	\$17	\$20	\$20	\$20	\$20	\$25	\$25	\$25	\$25
Total contribution margin	\$86	\$142	\$86	\$142	\$173	\$225	\$173	\$225	\$282	\$321	\$282	\$321
Annual overhead costs:												
Machinery replacement <sup>4</sup>	\$74	\$66	\$55	\$49	\$74	\$66	\$59	\$53	\$81	\$73	\$60	\$54
Drying/handling	\$16	\$11	\$16	\$11	\$16	\$11	\$16	\$11	\$16	\$11	\$16	\$11
Family and hired labor <sup>5</sup>	\$60	\$52	\$36	\$32	\$60	\$52	\$36	\$32	\$60	\$52	\$36	\$32
Land <sup>6</sup>	\$135	\$135	\$135	\$135	\$169	\$169	\$169	\$169	\$203	\$203	\$203	\$203
Earnings or (losses)	-\$198	-\$122	-\$155	-\$85	-\$145	-\$73	-\$107	-\$39	-\$78	-\$18	-\$33	\$21

<sup>1</sup>Rotations are as follows: c-c = all of the farm acres in continuous corn; c-b = one-half of the farm acres in rotation corn and one-half in rotation soybeans.

<sup>2</sup>Crop's contribution margin is the per acre contribution margin from Table 1.

<sup>3</sup>Government payment includes only the direct payment. The per bushel direct payment rate is \$0.28 for corn and \$0.44 for soybeans. These are the payment rates for 2009. Direct payment yields for corn were 94.5, 110.5, 136.6 on low, average, and high soils. Direct payment yields for soybeans were 31.7, 37.0, and 45.8 for low, average, and high soils. Base acres for the farm are assumed half corn and half soybeans. It is assumed that the producer does not elect to enroll in the ACRE program. Direct payment rates are reduced 20% for producers who enroll in ACRE. Federal regulations pertaining to payment limits may limit this payment to a smaller amount than is shown here.

<sup>4</sup>The same basic machinery set, which is timely for each rotation, is used for both the c-c and c-b rotation. The larger farm size requires larger, more expensive machinery. Corn production utilizes a chisel plow tillage system, and soybeans utilize no-till. Average annual replacement costs for the larger farm size were calculated using the Purdue Machinery Cost Calculator for a timely machinery set. Seven-year trading policy is assumed for combine and planter, 10-year policy for other field machinery. On livestock farms where fewer hours each day are available for crops, or on small farms, machinery costs and/or labor costs will be higher. On well-drained soils where more days are suitable for spring field work, machinery costs could be lower. The machinery costs for the smaller farm size were estimated using a machinery complement and cost estimates adapted from budgets published by The Ohio State University. A 10-year trading policy was assumed for all machinery on the smaller acreages. Machinery ownership costs are likely to vary widely from farm to farm.

<sup>5</sup>For the larger acreages, labor expense includes a family living withdrawal of \$45,708 (\$66,412 of family living expenses less \$31,668 in net nonfarm income plus \$10,964 in income and self-employment taxes) and a full-time employee with total compensation of \$38,200. The balance is used for part-time hired labor. Family living withdrawal is from Farm Income & Production Costs for 2007, University of Illinois Extension, AE-4566, April 2008. Employee compensation is based on Wages and Benefits for Farm Employees, Iowa State University, University Extension FM 1862, July 2006 and adjusted for increases in wage rates. For the smaller acreages, labor expense includes the same operator costs plus part-time employee(s). The c-c rotation requires more total labor. Labor costs are likely to vary widely from farm to farm.

<sup>6</sup>Based on cash rent per bushel of corn yield reported in Indiana Farmland Values & Cash Rent Continue Sharp Upward Climb, *Purdue Agricultural Economics Report*, August, 2008.

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Date: 1/09

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