

## January 2005 Purdue Crop Cost & Return Guide

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	Second-Year Beans	Wheat	DC Beans	Cont. Corn	Rot. Corn	Rot. Beans	Second-Year Beans	Wheat	DC Beans	Cont. Corn	Rot. Corn	Rot. Beans	Second-Year Beans	Wheat	DC Beans
Expected yield per acre <sup>2</sup>	104.0	115.5	37.1	33.4	61.5	21.0	128.7	143.0	46.0	41.4	68.6	25.7	158.3	175.9	56.6	50.9	75.8	31.7
Harvest price <sup>3</sup>	\$2.12	\$2.12	\$5.23	\$5.23	\$2.88	\$5.23	\$2.12	\$2.12	\$5.23	\$5.23	\$2.88	\$5.23	\$2.12	\$2.12	\$5.23	\$5.23	\$2.88	\$5.23
Market Revenue	\$220	\$245	\$194	\$175	\$177	\$110	\$273	\$303	\$241	\$217	\$198	\$134	\$336	\$373	\$296	\$266	\$218	\$166
Loan Deficiency Payment (LDP) <sup>4</sup>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total revenue	\$220	\$245	\$194	\$175	\$177	\$110	\$273	\$303	\$241	\$217	\$198	\$134	\$336	\$373	\$296	\$266	\$218	\$166
Less variable costs <sup>5</sup>																		
Fertilizer <sup>6</sup>	\$53	\$51	\$22	\$20	\$44	\$14	\$67	\$66	\$26	\$24	\$50	\$16	\$83	\$84	\$31	\$29	\$57	\$19
Seed <sup>7</sup>	29	29	36	36	21	42	34	34	36	36	21	42	34	34	36	36	21	42
Chemicals <sup>8</sup>	34	16	14	14	N/A	11	36	19	14	14	N/A	11	41	23	14	14	N/A	11
Dryer Fuel & Handling	16	14	1	1	N/A	3	20	17	1	1	N/A	3	24	21	1	1	N/A	3
Machinery Fuel @ \$1.55	11	11	11	11	6	5	12	12	12	12	6	5	14	14	14	14	6	5
Machinery Repairs <sup>9</sup>	9	9	9	9	4	4	10	10	10	10	5	4	11	11	11	11	5	4
Hauling	6	7	2	2	4	1	8	9	3	2	4	2	10	11	3	3	5	2
Interest <sup>10</sup>	6	5	4	4	3	4	7	6	4	4	4	4	8	7	5	4	4	4
Insurance/misc.	11	11	8	8	7	4	11	11	8	8	8	4	11	11	8	8	8	4
Total variable cost	\$175	\$153	\$107	\$105	\$89	\$88	\$205	\$184	\$114	\$111	\$98	\$91	\$236	\$216	\$123	\$120	\$106	\$94
Contribution margin <sup>11</sup>																		
(Revenue - variable costs)	\$45	\$92	\$87	\$70	\$88	\$22	\$68	\$119	\$127	\$106	\$100	\$43	\$100	\$157	\$173	\$146	\$112	\$72

<sup>1</sup>Estimated yields and costs are for yields with average management for three different soils representing low, average, and high productivity. On each soil, these estimated yields may vary  $\pm$  10% for management, and  $\pm$  10% for plant/harvest date. These yields assume average weather conditions.

<sup>2</sup>Average yield based on timely plant/harvest date, except soybean double crop yield, which is based on July 1 plant date. Continuous corn, soybean, and wheat yields are a percent of rotation corn yield: continuous corn 90%; drill soybeans 33.5% (second year drill beans or for 30-inch beans in central Indiana 30.2%); wheat 53% on low yield, 48% on average yield, and 43% on high yield soils; and double crop soybeans (South-central Indiana) 18% (Source:ID-152 "Estimating Potential Yield for Corn, Soybeans, and Wheat").

<sup>3</sup>Harvest corn price is December 2005 CBOT futures price less \$0.25 basis. Harvest soybean price is November 2005 CBOT futures price less \$0.30 basis. Harvest wheat price is July 2005 CBOT futures price less \$0.30 basis.

<sup>4</sup>Loan Deficiency Payment is paid on all bushels produced. The per bushel payment is the amount by which the loan rate exceeds the market price. Loan rates are \$2.01 for corn, \$5.12 for soybeans, and \$2.49 for wheat.

<sup>5</sup>Seed, fertilizer, chemical, and fuel prices are early January 2005 quotes.

<sup>6</sup>Fertilizer 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. Pounds of N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O-lime by crop and soil: continuous corn, 115-39-48-346, 149-48-55-447, 189-59-63-568; rotation corn, 101-43-51-303, 139-53-59-415, 183-65-68-550; rotation beans, 0-30-72-0, 0-37-84-0, 0-46-101-0; wheat, 60-39-43-180, 73-43-45-218, 85-48-48-256; double crop beans, 0-17-49-0, 0-21-57-0, 0-26-65-0. Fertilizer prices per lb.: NH<sub>3</sub> @ \$0.26; urea @ \$0.38; P205 @ \$0.30; K20 @ \$0.18; lime @ \$16/ton. 5-10% more nitrogen might be needed on both excessively and poorly drained soils. All soil tests for phosphorus and potassium are in the maintenance range, and the pH is in the recommended range. The potash recommendations are for a light color loam or silt loam soil with a Cation Exchange Capacity (CEC) of 10. This recommendation will vary with CEC.

<sup>7</sup>Add \$7 per acre for Bt corn seed. Soybean seed prices include Round-Up Ready® varieties

<sup>8</sup>Corn insecticide @ \$17.80 per acre is included for continuous corn and should be added to rotation corn in northern Indiana.

<sup>9</sup>Repairs are based on approximately five-year-old machinery. For older machinery, per acre repairs and downtime cost will be \$6-10 higher, and indirect machinery costs will be lower.

<sup>10</sup>Interest is based on 6.5% annual rate for 9 months for seed, fertilizer, and chemicals, and for 6 months for half the machinery fuel and repairs and all the insurance/misc.

<sup>11</sup>Contribution margin is the return to the unpaid operator labor/management, machinery services, and land resources.

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Table 2. Estimated per Farm Crop Budgets for Low, Average, and High Productivity Indiana Soils

Effect on Earnings for Each of Four Crop Rotations on Three Soil Types Using Similar Machinery and Labor When Farm Size Is Adjusted to Permit Timely Fieldwork<sup>1</sup>

Farm Acres Rotation	Low Productivity Soil				Average Productivity Soil				High Productivity Soil			
	900 c-c	1000 c-b	1200 c-b, c-w	1200 c-b, c-w, dc	900 c-c	1000 c-b	1200 c-b, c-w	1200 c-b, c-w, dc	900 c-c	1000 c-b	1200 c-b, c-w	1200 c-b, c-w, dc
Crop contribution margin <sup>2</sup>	\$40,500	\$89,500	\$107,600	\$112,000	\$61,200	\$123,000	\$142,200	\$150,800	\$90,000	\$165,000	\$185,800	\$200,200
Government payment <sup>3</sup>	30,168	22,690	32,450	32,450	35,919	26,875	38,016	38,016	44,325	33,190	45,852	45,852
Total contribution margin	\$70,668	\$112,190	\$140,050	\$144,450	\$97,119	\$149,875	\$180,216	\$188,816	\$134,325	\$198,190	\$231,652	\$246,052
Annual overhead costs:												
Machinery replacement <sup>4</sup>	45,000	48,500	48,500	49,000	48,600	52,100	52,100	52,600	54,000	57,500	57,500	58,000
Drying/handling	6,300	6,300	6,300	6,300	7,200	7,200	7,200	7,200	8,100	8,100	8,100	8,100
Family and hired labor <sup>5</sup>	39,000	39,000	39,000	39,000	39,000	39,000	39,000	39,000	39,000	39,000	39,000	39,000
Land <sup>6</sup>	\$94,500	\$105,000	\$126,000	\$126,000	\$116,100	\$129,000	\$154,800	\$154,800	\$113,400	\$160,000	\$192,000	\$192,000
Earnings or (losses)	-\$114,132	-\$86,610	-\$79,750	-\$75,850	-\$113,781	-\$77,425	-\$72,884	-\$64,784	-\$80,175	-\$66,410	-\$64,948	-\$51,048

<sup>1</sup>Rotations are as follows: c-c = 900 acres continuous corn; c-b = 500 acres rotation corn - 500 acres soybeans; c-b, c-w = 400 acres corn - 400 acres soybeans plus 200 acres corn - 200 acres wheat; c-b, c-w, dc = 400 acres corn - 400 acres soybeans plus 200 acres corn - 200 acres wheat, double crop beans (dc).

<sup>2</sup>Crops contribution margin is per acre contribution margin from Table 1 times number of acres.

<sup>3</sup>Government payment includes the direct payment and the counter cyclical payment. The per bushel direct payment rate is \$0.28 for corn, \$0.44 for soybeans, and \$0.52 for wheat. 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. Direct payment yields for wheat were 45.8, 49.3, 55.5 on low, average, and high soils. The counter cyclical payments were based on a target price of \$2.63 for corn, \$5.80 for soybeans, and \$3.92 for wheat. The average marketing year price assumed was \$2.23 for corn, \$5.66 for soybeans, and \$3.08 for wheat. The counter cyclical yields for corn were 108.1, 133.4, and 164.1 for low, average, and high soils. The counter cyclical yields for soybeans were 36.2, 44.7, and 55.0 for low, average and high soils. The counter cyclical yields for wheat were 59.5, 66.7, 73.8 for low, average, and high soils. A base acre of each acre of crop raised was assumed.

<sup>4</sup>The same basic machinery set, which is timely for each rotation, is used on all four farms of the same soil type. A no-till drill is added for beans, and a larger combine platform is added for double-crop beans. Average annual replacement costs were calculated using the Purdue Machinery Cost Calculator for timely set of fall plow or chisel tillage. Replacement costs for no-till are about 75% of fall chisel tillage. Seven-year trading policy 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.

<sup>5</sup>Labor expenses include a family living withdrawal of \$26,989 (\$52,908 of family living expenses less \$25,919 in net nonfarm income. Values are reported in *Farm Income & Production Costs for 2003*, University of Illinois Extension, AE-4566, April 2004) and \$12,000 for part-time hired labor.

<sup>6</sup>Based on cash rent at \$105 per acre on low yield soil, \$129 per acre on average yield soil, and \$160 per acre on high yield soil.

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