

MMM 468

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What are the Break-Even Prices and Yields when Comparing Corn and Peanuts for 2008?

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The commodity markets have been bidding for acreage due to bio-fuels creating new markets for corn and soybeans. This demand-driven market may continue to provide marketing opportunities for 2008-2010. Currently, the major decision facing producers is determining the enterprise mix for 2008. This memo compares the Returns over Variable Costs for corn and peanuts and analyzes the break-even yields and prices for non-irrigated and irrigated production.

Return over Variable Costs

Table 1. 2008 Estimated Return over Variable Costs for Corn and Peanuts.

	Non-Irrigated Corn	Non-Irrigated Peanut	Irrigated Corn	Irrigated Peanut
Harvest Price ^{1/}	\$4.76	\$0.2850	\$4.76	\$0.2850
Yield	120	3000	160	4000
Total Variable Costs ^{2/}	\$305.69	\$569.70	\$440.73	\$668.43
Return over Variable Costs	\$265.51	\$285.30	\$320.87	\$471.57

^{1/} The harvest price for corn is based on the December Corn Futures Contract adjusted by harvest-time basis of -\$0.10/bu. on January 4, 2008. Peanut price is based on Economist's Forecast on January 4, 2008. Contract prices may differ from this estimate.

^{2/} 2008 Clemson University Crop Enterprise Budgets (<http://cherokee.agecon.clemson.edu/budgets.htm>).

The estimated Returns over Variable Costs for corn and peanuts are reported in Table 1. The harvest cash price for corn is based on the December 2008 corn futures contract and is adjusted by the estimated harvest-time basis. Similarly, the cash price for peanuts is based on economist's forecast for the 2008 crop. For this comparison, the harvest cash price for corn and peanuts are \$4.76/bu. and \$0.2850/lb., respectively (Table 1). The variable costs are based on Clemson University Extension crop enterprise budgets. Based on the assumptions listed in Table 1, the estimated Return over Variable Costs for non-irrigated corn is \$265/acre while the Return for non-irrigated peanuts is \$285/acre (Table 1). Similarly, the estimated Returns over Variable Costs for irrigated corn and irrigated peanuts are \$320/acre and \$471/acre, respectively (Table 1).

Break-Even Yields and Prices

Based on the assumptions listed in Table 1, peanuts provide a greater Return over Variable Costs than corn. Since prices, yields and costs will vary from these assumptions, managers need to understand the break-even yields and break-even prices when comparing corn and peanut production. Table 2 reports the Break-Even Yields and Break-Even Prices for corn and peanuts produced with and without irrigation.

The Break-Even Yield in Table 2 is the yield that will pay for all of the Total Variable Costs. For example, non-irrigated corn yielding 64 bu. (Table 2) at a price of \$4.76 will just pay for the Total Variable Costs of \$306 (Table 1). Similarly, irrigated peanuts yielding 2,345 lbs. (Table 2) at a price of \$0.2850 will just pay for Total Variable Costs of \$668 (Table 1).

Similarly, the Break-Even Price in Table 2 is the price that will pay for all of the Total Variable Costs. For example, non-irrigated peanuts with a price of \$0.1899 (Table 2) yielding 3,000 lbs. will just pay for the Total Variable Costs of \$570 (Table 1). Similarly, irrigated corn at a price of \$2.75 (Table 2) with a yield of 160 bu will just pay for the Total Variable Costs of \$440 (Table 1).

Table 2. Break-Even Yields and Prices for Non-Irrigated and Irrigated Corn and Peanuts

	Non-Irrigated Corn	Non-Irrigated Peanut	Irrigated Corn	Irrigated Peanut
Break-Even Yield ^{1/}	64	1,999	93	2,345
Break-Even Price ^{2/}	\$2.55	\$0.1899	\$2.75	\$0.1671

^{1/}The Break-Even Yield is the yield that will cover Total Variable Costs at the prices and costs listed in Table 1. For example, 64 bu. non-irrigated corn at a price of \$4.76 will pay for the Total Variable Costs of \$306/acre.

^{2/}The Break-Even Price is the price that will cover Total Variable Costs at the yields and costs listed in Table 1. For example, 120 bu. non-irrigated corn at \$2.55 will just pay for the Total Variable Costs of \$306/acre.

The break-even price and yield information in Table 2 will help managers evaluate the feasibility of producing corn or peanuts. For example, managers know that they will need at least \$0.1899/lb and yields of 3,000 lbs/acre to be profitable at producing non-irrigated peanuts. Similarly, irrigated corn producers that produce 93 bu/acre or better will cover variable costs at a price of \$4.76/bu. (Table 2).

Break-Even Yield and Price Sensitivity Analysis

How does yield or price risk affect the analysis of which crop is more profitable? Table 3 lists the break-even yields for peanuts for a range of potential corn yields at the prices and costs listed in Table 1. Managers can use Table 3 to understand the yields necessary for peanuts to be competitive with corn. For example, non-irrigated peanuts yielding 2,931 lbs. have the same Return as 120 bu. non-irrigated corn (Table 3). For this example, corn is more profitable when yields are greater than 120 bu. or peanuts yield less than 2,931 lbs.

Similarly, Table 4 lists the break-even prices for peanuts for a range of potential corn prices at the yields and costs listed in Table 1. This table tells managers what price is needed from the market for peanuts to be competitive with corn. For example, at a price of \$4.20 for non-irrigated corn, non-irrigated peanuts must have a price of \$0.2560 to have the same Return (Table 4). For this example, corn is more profitable when peanut prices are less than \$0.2560 or corn prices are greater than \$4.20.

Managers can use Table 3 and Table 4 in guiding their enterprise selection for 2008. By using their own price and yield expectations, managers will have a better idea of the relative profitability of corn and peanuts for both production systems.

Where do I go for Help in Making this Decision?

Clemson University Extension has developed budgets for the major agronomic crops to help you evaluate their profitability for your farm business. There is also a decision spreadsheet available that can be used to compare the Returns over Variable Costs for corn and peanuts. The budgets and decision spreadsheet are available at <http://cherokee.agecon.clemson.edu/budgets.htm>. Your local extension office will be able to help you download these budgets and the decision spreadsheet and can help you understand how to use this information in making this comparison.

Table 3. Break-Even Yields for Peanuts for Varying Corn Yields for Non-Irrigated and Irrigated Production.

Non-Irrigated Corn	Non-Irrigated Peanuts	Irrigated Corn	Irrigated Peanuts
30	1,427	70	1,968
40	1,594	80	2,135
50	1,761	90	2,302
60	1,928	100	2,469
70	2,095	110	2,636
80	2,262	120	2,803
90	2,429	130	2,970
100	2,596	140	3,137
110	2,764	150	3,304
120	2,931	160	3,471
130	3,098	170	3,638
140	3,265	180	3,805
150	3,432	190	3,972
160	3,599	200	4,139
170	3,766	210	4,306
180	3,933	220	4,473

^{1/} The Break-Even Yield is the yield that equates the Returns over Variable Costs for the two commodities at the prices and costs listed in Table 1. For example, 3,098 lb. non-irrigated peanuts have the same Return as 130 bu. non-irrigated corn.

Table 4. Break-Even Prices for Peanuts for Varying Corn Prices for Non-Irrigated and Irrigated Production.

Non-Irrigated Corn	Non-Irrigated Peanuts	Irrigated Corn	Irrigated Peanuts
\$3.50	\$0.2280	\$3.50	\$0.1969
\$3.60	\$0.2320	\$3.60	\$0.2009
\$3.70	\$0.2360	\$3.70	\$0.2049
\$3.80	\$0.2400	\$3.80	\$0.2089
\$3.90	\$0.2440	\$3.90	\$0.2129
\$4.00	\$0.2480	\$4.00	\$0.2169
\$4.10	\$0.2520	\$4.10	\$0.2209
\$4.20	\$0.2560	\$4.20	\$0.2249
\$4.30	\$0.2600	\$4.30	\$0.2289
\$4.40	\$0.2640	\$4.40	\$0.2329
\$4.50	\$0.2680	\$4.50	\$0.2369
\$4.60	\$0.2720	\$4.60	\$0.2409
\$4.70	\$0.2760	\$4.70	\$0.2449
\$4.80	\$0.2800	\$4.80	\$0.2489
\$4.90	\$0.2840	\$4.90	\$0.2529
\$5.00	\$0.2880	\$5.00	\$0.2569

^{1/} The Break-Even Price is the price that equates the Returns over Variable Costs for the two commodities at the yields and costs listed in Table 1. For example, non-irrigated peanuts at \$0.2600/lb. have the same Return as non-irrigated corn at \$4.30/bu.