

MMM 470

January 8, 2008

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

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The commodity markets have been bidding for acreage due to increased corn and soybean demand for biofuels. Currently, the major decision facing producers is determining the enterprise mix for 2008 in the midst of higher commodity prices. This memo compares the Return over Variable Costs for soybeans 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 Soybeans and Peanuts.

	Non-Irrigated Soybeans	Non-Irrigated Peanuts	Irrigated Soybeans	Irrigated Peanuts
Harvest Price ^{1/}	\$11.30	\$0.2850	\$11.30	\$0.2850
Yield	35	3000	50	4000
Total Variable Costs ^{2/}	\$250.17	\$569.70	\$325.17	\$668.43
Return over Variable Costs	\$145.33	\$285.30	\$239.83	\$471.57

^{1/} The harvest price for soybeans is based on the November Soybeans Futures Contract adjusted by harvest-time basis of -\$0.30/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 soybeans and peanuts are reported in Table 1. The harvest cash price for soybeans is based on the November 2008 soybeans 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 soybeans and peanuts are \$11.30/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 soybeans is \$145/acre while the Return for non-irrigated peanuts is \$285/acre (Table 1). Similarly, the estimated Returns over Variable Costs for irrigated soybeans and irrigated peanuts are \$239/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 soybeans. Since prices, yields and costs will vary from these assumptions, managers need to understand the break-even yields and break-even prices when comparing soybeans and peanuts. Table 2 reports the Break-Even Yields and Break-Even Prices for soybeans 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 soybeans yielding 22 bu/acre (Table 2) at a price of \$11.30 will just pay for the Total Variable Costs of \$250 (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 peanuts at a price of \$0.1671 (Table 2) with a yield of 4,000 lbs. will just pay for the Total Variable Costs of \$668 (Table 1).

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

	Non-Irrigated Soybeans	Non-Irrigated Peanuts	Irrigated Soybeans	Irrigated Peanuts
Break-Even Yield ^{1/}	22	1,999	29	2,345
Break-Even Price ^{2/}	\$7.15	\$0.1899	\$6.50	\$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, 22 bu. non-irrigated soybeans at a price of \$11.30 will pay for the Total Variable Costs of \$250/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, 35 bu. non-irrigated soybeans at \$7.15 will just pay for the Total Variable Costs of \$250/acre.

The break-even price and yield information in Table 2 will help managers evaluate the feasibility of producing soybeans 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 peanut producers that produce 2,345 lbs./acre or better will cover variable costs at a price of \$0.285/lbs. (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 soybeans 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 soybeans. For example, non-irrigated peanuts yielding 2,311 lbs. have the same Return as 30 bu. non-irrigated soybeans (Table 3). For this example, soybeans are more profitable when yields are greater than 30 bu. or peanuts yield less than 2,311 lbs.

Similarly, Table 4 lists the break-even prices for peanuts for a range of potential soybean 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 soybeans. For example, at a price of \$11.50 for non-irrigated soybeans, non-irrigated peanuts must have a price of \$0.2407 to have the same Return (Table 4). For this example, soybeans are more profitable when peanut prices are less than \$0.2407 or soybean prices are greater than \$11.50.

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 soybeans 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 soybeans 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 Soybeans Yields for Non-Irrigated and Irrigated Production.

Non-Irrigated Soybeans	Non-Irrigated Peanuts	Irrigated Soybeans	Irrigated Peanuts
5	1,319	5	1,403
10	1,518	10	1,601
15	1,716	15	1,799
20	1,914	20	1,997
25	2,112	25	2,196
30	2,311	30	2,394
35	2,509	35	2,592
40	2,707	40	2,790
45	2,905	45	2,989
50	3,104	50	3,187
55	3,302	55	3,385
60	3,500	60	3,583
65	3,698	65	3,782
70	3,897	70	3,980
75	4,095	75	4,178
80	4,293	80	4,376

^{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, 3,104 lbs. non-irrigated peanuts have the same Return as 50 bu. non-irrigated soybeans.

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

Non-Irrigated Soybeans	Non-Irrigated Peanuts	Irrigated Soybeans	Irrigated Peanuts
\$7.75	\$0.1969	\$7.75	\$0.1827
\$8.00	\$0.1998	\$8.00	\$0.1858
\$8.25	\$0.2028	\$8.25	\$0.1889
\$8.50	\$0.2057	\$8.50	\$0.1921
\$8.75	\$0.2086	\$8.75	\$0.1952
\$9.00	\$0.2115	\$9.00	\$0.1983
\$9.25	\$0.2144	\$9.25	\$0.2014
\$9.50	\$0.2173	\$9.50	\$0.2046
\$9.75	\$0.2203	\$9.75	\$0.2077
\$10.00	\$0.2232	\$10.00	\$0.2108
\$10.25	\$0.2261	\$10.25	\$0.2139
\$10.50	\$0.2290	\$10.50	\$0.2171
\$10.75	\$0.2319	\$10.75	\$0.2202
\$11.00	\$0.2348	\$11.00	\$0.2233
\$11.25	\$0.2378	\$11.25	\$0.2264
\$11.50	\$0.2407	\$11.50	\$0.2296

^{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 \$0.2232/lb. have the same Return as non-irrigated soybeans at \$10.00/bu.