

MANAGEMENT MARKETING MEMO

Department of Agricultural and Applied Economics, Clemson University, Clemson, SC, 29634-0355

MMM 441

January 25, 2007

What are the Break-Even Prices and Yields when Comparing Soybeans and Peanuts for 2007?

Todd D. Davis and Charles E. Curtis, Jr.
Extension Economists

The corn and soybean markets have been bidding for acreage due to a bullish final crop report for 2006. With bio-fuels creating new markets for corn and soybeans, this demand-driven market may continue to provide marketing opportunities. Currently, the major decision facing producers is determining the enterprise mix for 2007. This memo compares the Returns 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. 2007 Estimated Return over Variable Costs for Soybeans and Peanuts.

	Non-Irrigated Soybeans	Non-Irrigated Peanuts		Irrigated Soybeans	Irrigated Peanuts
Harvest Price ^{1/}	\$7.50	\$0.21		\$7.50	\$0.21
Yield	35	3000		50	4000
Variable Cost ^{2/}	<u>\$161</u>	<u>\$583</u>		<u>\$193</u>	<u>\$654</u>
Return over Variable Costs	\$102	\$47		\$182	\$186

^{1/} The harvest price for soybeans is based on the November Soybeans Futures Contract adjusted by harvest-time basis of -0.20. Peanut price is based on Economist's Forecast on January 18, 2007. Contract prices may differ from this estimate.

^{2/} 2007 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 2007 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 2007 crop. For this comparison, the harvest cash prices for soybeans and peanuts are \$7.50/bu. and \$0.21/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 Returns over Variable Costs for non-irrigated soybeans and non-irrigated peanuts are \$102/acre and \$47/acre, respectively (Table 1). Similarly, the estimated Returns over Variable Costs for irrigated soybeans and irrigated peanuts are \$182/acre and \$186/acre, respectively (Table 1).

Break-Even Yields and Prices

Based on the assumptions listed in Table 1, non-irrigated soybeans provide a greater Return over Variable Costs than non-irrigated peanuts. However, irrigated peanuts are slightly more profitable than irrigated 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 makes the two Returns over Variable Costs equal. For example, non-irrigated soybeans yielding 28 bu. (Table 2) at a price of \$7.50 and Variable Costs of \$161 (Table 1) will have the same Return as non-irrigated peanuts yielding 3,000 lbs. at a price of \$0.21 and Variable Costs of \$583 (Table 1). Similarly, irrigated peanuts yielding 3,981 lbs. (Table 2) at a price of \$0.21 and Variable Costs of \$654 (Table 1) will have the same Return as irrigated soybeans yielding 50 bu. at a price of \$7.50 and Variable Costs of \$193 (Table 1).

Similarly, the Break-Even Price in Table 2 is the price that makes the two Returns over Variable Costs equal. For example, non-irrigated peanuts with a price of \$0.2282 (Table 2) yielding 3,000 lbs. and Variable Costs of \$583 (Table 1) will have the same Return as non-irrigated soybeans yielding 35 bu. at a price of \$7.50 and Variable Costs of \$161 (Table 1). Similarly, irrigated soybeans at a price of \$7.58 (Table 2) with a yield of 50 bu and Variable Costs of \$193 (Table 1) will have the same Return as irrigated peanuts yielding 4,000 lbs. at a price of \$0.21 and Variable Costs of \$654 (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/}	28	3,260		51	3,981
Break-Even Price ^{2/}	\$5.94	\$0.2282		\$7.58	\$0.2090

^{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, 28 bu. non-irrigated soybeans at \$7.50 have the same Return as 3000 lb. non-irrigated peanuts at \$0.21.

^{2/} 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, 35 bu. non-irrigated soybeans at \$5.94 have the same Return as 3000 lb. non-irrigated peanuts at \$0.21.

The break-even price and yield information in Table 2 will help managers evaluate when soybeans are more profitable than peanuts. For example, non-irrigated soybeans at \$7.50 with yields greater than 28 bu. are more profitable than non-irrigated peanuts with a price of \$0.21 yielding 3,000 lbs. Similarly, irrigated soybeans yielding 50 bu. with prices greater than \$7.58 are more profitable than irrigated peanuts yielding 4,000 lbs. at a price of \$0.21 (Table 2).

Break-Even Yield and Price Sensitivity Analysis

How does yield or price risk affect this analysis? Table 3 lists the break-even yields for peanuts for a range of potential soybean 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 3,010 lbs. have the same Return as 28 bu. non-irrigated soybeans (Table 3). For this example, soybeans are more profitable when yields are greater than 28 bu. or peanuts yield less than 3,010 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 \$7.00 for non-irrigated soybeans, non-irrigated peanuts must have a price of \$0.2223 to have the same Return (Table 4). For this example, soybeans are more profitable when peanut prices are less than \$0.2223 or soybean prices are greater than \$7.00.

Managers can use Table 3 and Table 4 in guiding their enterprise selection for 2007. 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 Yield	Non-Irrigated Peanuts Yield ^{1/}		Irrigated Soybeans Yield	Irrigated Peanuts Yield
10	2,367		28	3,195
12	2,438		30	3,267
14	2,510		32	3,338
16	2,581		34	3,410
18	2,652		36	3,481
20	2,724		38	3,552
22	2,795		40	3,624
24	2,867		42	3,695
26	2,938		44	3,767
28	3,010		46	3,838
30	3,081		48	3,910
32	3,152		50	3,981
34	3,224		52	4,052
36	3,295		54	4,124
38	3,367		56	4,195
40	3,438		58	4,267
42	3,510		60	4,338
44	3,581		62	4,410
46	3,652		64	4,481

^{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, 3,081 lbs. non-irrigated peanuts have the same Return as 30 bu. non-irrigated soybeans.

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

Non-Irrigated Soybeans Price	Non-Irrigated Peanuts Price ^{1/}		Irrigated Soybeans Price	Irrigated Peanuts Price
\$5.50	\$0.2048		\$5.50	\$0.1840
\$5.75	\$0.2078		\$5.75	\$0.1871
\$6.00	\$0.2107		\$6.00	\$0.1903
\$6.25	\$0.2136		\$6.25	\$0.1934
\$6.50	\$0.2165		\$6.50	\$0.1965
\$6.75	\$0.2194		\$6.75	\$0.1996
\$7.00	\$0.2223		\$7.00	\$0.2028
\$7.25	\$0.2253		\$7.25	\$0.2059
\$7.50	\$0.2282		\$7.50	\$0.2090
\$7.75	\$0.2311		\$7.75	\$0.2121
\$8.00	\$0.2340		\$8.00	\$0.2153
\$8.25	\$0.2369		\$8.25	\$0.2184
\$8.50	\$0.2398		\$8.50	\$0.2215
\$8.75	\$0.2428		\$8.75	\$0.2246
\$9.00	\$0.2457		\$9.00	\$0.2278
\$9.25	\$0.2486		\$9.25	\$0.2309
\$9.50	\$0.2515		\$9.50	\$0.2340
\$9.75	\$0.2544		\$9.75	\$0.2371
\$10.00	\$0.2573		\$10.00	\$0.2403

^{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 \$0.2282/lb. have the same Return as non-irrigated soybeans at \$7.50/bu.