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What are the Break-Even Prices and Yields when Comparing Soybeans and Peanuts for 2009?

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With commodity prices fluctuating daily and input costs still near record levels, crop producers will be challenged to maintain profitability in 2009 as profit margins are shrinking. Currently, the major decision facing producers is determining the enterprise mix for 2009 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. 2009 Estimated Return over Variable Costs for Soybeans and Peanuts.

	Non-Irrigated Soybeans	Non-Irrigated Peanuts	Irrigated Soybeans	Irrigated Peanuts
Harvest Price [1/]	$9.01	$0.2050	$9.01	$0.2050
Yield	35	3000	50	4000
Total Variable Costs [2/]	$276.77	$575.10	$351.77	$730.23
Return over Variable Costs	$38.58	$39.90	$98.73	$89.77

[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 29, 2009. Peanut price is based on Economist's Forecast on January 29, 2009. Contract prices may differ from this estimate.
[2/] 2009 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 2009 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 2009 crop. For this comparison, the harvest cash price for soybeans and peanuts are $9.01/bu. and $0.2050/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 $38/acre while the Return for non-irrigated peanuts is $39/acre (Table 1). Similarly, the estimated Returns over Variable Costs for irrigated soybeans and irrigated peanuts are $98/acre and $89/acre, respectively (Table 1).

Break-Even Yields and Prices

Based on the assumptions listed in Table 1, non-irrigated peanuts provide a greater Return over Variable Costs than non-irrigated soybeans. However, irrigated soybeans provide a greater return than irrigated peanuts. 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 31 bu/acre (Table 2) at a price of $9.01 will just pay for the Total Variable Costs of $277 (Table 1). Similarly, irrigated peanuts yielding 3,562 lbs. (Table 2) at a price of $0.2050 will just pay for Total Variable Costs of $730 (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 $0.1917 (Table 2) yielding 3,000 lbs. will just pay for the Total Variable Costs of $575 (Table 1). Similarly, irrigated peanuts at a price of $0.1826 (Table 2) with a yield of 4,000 lbs. will just pay for the Total Variable Costs of $730 (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/]	31	2,805	39	3,562
Break-Even Price [2/]	$7.91	$0.1917	$7.04	$0.1826

[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, 31 bu. non-irrigated soybeans at a price of $9.01 will pay for the Total Variable Costs of $277/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 $7.91 will just pay for the Total Variable Costs of $277/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 $0.1917/lb and yields of 3,000 lbs/acre to be profitable at producing non-irrigated peanuts. Similarly, irrigated peanut producers that produce 3,562 lbs./acre or better will cover variable costs at a price of $0.2050/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 2,774 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 2,774 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 $8.25 for non-irrigated soybeans, non-irrigated peanuts must have a price of $0.1957 to have the same Return (Table 4). For this example, soybeans are more profitable when peanut prices are less than $0.1957 or soybean prices are greater than $8.25.

Managers can use Table 3 and Table 4 in guiding their enterprise selection for 2009. 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	1,675	5	2,066
10	1,895	10	2,286
15	2,115	15	2,505
20	2,334	20	2,725
25	2,554	25	2,945
30	2,774	30	3,165
35	2,994	35	3,384
40	3,213	40	3,604
45	3,433	45	3,824
50	3,653	50	4,044
55	3,873	55	4,263
60	4,092	60	4,483
65	4,312	65	4,703
70	4,532	70	4,923
75	4,752	75	5,143
80	4,971	80	5,362

[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, 2,774 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	Non-Irrigated Peanuts	Irrigated Soybeans	Irrigated Peanuts
$7.00	$0.1811	$7.00	$0.1821
$7.25	$0.1840	$7.25	$0.1852
$7.50	$0.1869	$7.50	$0.1884
$7.75	$0.1899	$7.75	$0.1915
$8.00	$0.1928	$8.00	$0.1946
$8.25	$0.1957	$8.25	$0.1977
$8.50	$0.1986	$8.50	$0.2009
$8.75	$0.2015	$8.75	$0.2040
$9.00	$0.2044	$9.00	$0.2071
$9.25	$0.2074	$9.25	$0.2102
$9.50	$0.2103	$9.50	$0.2134
$9.75	$0.2132	$9.75	$0.2165
$10.00	$0.2161	$10.00	$0.2196
$10.25	$0.2190	$10.25	$0.2227
$10.50	$0.2219	$10.50	$0.2259
$10.75	$0.2249	$10.75	$0.2290

[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 $0.1928/lb. have the same Return as non-irrigated soybeans at $8.00/bu.