

Production and Market Risk Management
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The profitability of soybeans is often directly related to how well the farmer manages his production and market risks. Decisions made in site selection, fertility, variety selection, pest management practice(s), tillage system, and row spacing impact costs, final yield, and profits. This guide provides details about how South Carolina farmers can make appropriate and informed decisions. The following is a discussion of production risk management in the context of enterprise budget analyses for both full-season and double-cropped soybeans.

2004 Enterprise Budgets for Soybeans

The 2004 enterprise budgets for full-season and double-cropped soybeans are listed in Table 1.

Table 1. Enterprise budgets (\$ costs and returns/acre) for SC conventional tillage full-season and double-cropped conservation tillage, Roundup Ready soybeans, 2004*

	Full-season (35bu)*	Double-cropped (65bu-W/30bu-S)*
I. Receipts		
Wheat (@ \$3.75)	N/A	\$244
Soybeans (@ \$7.50)	\$263	\$225
Total	\$263	\$469
II. Costs		
A.. Variable		
Seed	\$16	\$38
Fertilizer/lime	\$27	\$63
Herbicides	\$14	\$17
Fungicides		\$11
Insecticide + application	\$8	\$13
Tractors/machinery	\$24	\$42
Hauling	\$7	\$19
Labor	\$18	\$22
Interest (9%)	\$4	\$8
Total variable costs	\$118	\$233
Income above VC	\$145	\$236
B. Fixed and other costs		
Tractor/mach.	\$50	\$89
Land charge	\$25	\$25
Gen. overhead (8%)	\$10	\$19
Total fixed costs	\$85	\$133
Total costs	\$203	\$366
III. Net returns to mgt/risk	\$60	\$103

*Source: Clemson University Agricultural and Applied Economics Department 4/5/04; Assumes conventional tillage, wide rows (30 to 38 inches), and Roundup Ready soybean for full-season crop and conservation tillage, drilled rows, and Roundup Ready for double-cropped soybeans.

What Are Enterprise Budgets?

Enterprise budgets are prepared as a reference for the farmer and is a record of the anticipated costs and returns for a particular set of production practices for the crop(s) considered. Farmers, lenders, and others use these budgets as a means to evaluate the economics of production. Of course, a farmer will need to adjust the figures according to the cost inputs for their operation. Enterprise budgets are prepared by the Clemson University Department of Applied Economics & Statistics and are updated annually. Additional soybean budgets as well as those for other enterprises can be found at Clemson University Applied Economics & Statistics.

Variable costs are those that are incurred each year the crop is produced and are basically the out-of-pocket expenses for seed, chemicals, fertilizer, labor, machinery and interest. These may vary by year, field, and farm. This is why a particular farmer must be aware of his average expense figures for each cost component.

Fixed costs are those incurred even if a crop is not planted. Such things as depreciation and taxes on equipment are fixed costs. A particular farmer may choose to ignore the fixed cost component for a year or so when planning his farm's crop mix. However, over a period of several years, a farmer needs to be able to cover total costs to maintain an economically viable cropping system.

Farmers are urged to consider various market risk management scenarios to try to capture the highest profit possible. Table 2 is a yield-price matrix based on costs of producing full-season soybeans as found in Table 1. Clearly, tight control of input costs, use of preferred production methods, and rigorous market risk management are keys to enterprise success.

Table 2. Yield-price matrices of full-season soybean returns.

Full-season Soybeans: Returns Over Variable Costs

Yield	Price							
	\$5.00	\$5.50	\$6.00	\$6.50	\$7.00	\$7.50	\$8.00	\$8.50
10	(\$68)	(\$63)	(\$58)	(\$53)	(\$48)	(\$43)	(\$38)	(\$33)
15	(\$43)	(\$36)	(\$28)	(\$21)	(\$13)	(\$6)	\$2	\$10
20	(\$18)	(\$8)	\$2	\$12	\$22	\$32	\$42	\$52
25	\$7	\$20	\$32	\$45	\$57	\$70	\$82	\$95
30	\$32	\$47	\$62	\$77	\$92	\$107	\$122	\$137
35	\$57	\$75	\$92	\$110	\$127	\$145	\$162	\$180
40	\$82	\$102	\$122	\$142	\$162	\$182	\$202	\$222
45	\$107	\$130	\$152	\$175	\$197	\$220	\$242	\$265
50	\$132	\$157	\$182	\$207	\$232	\$257	\$282	\$307
55	\$157	\$185	\$212	\$240	\$267	\$295	\$322	\$350

Full-season Soybeans: Returns Over Total Costs

Yield	Price							
	\$5.00	\$5.50	\$6.00	\$6.50	\$7.00	\$7.50	\$8.00	\$8.50
10	(\$153)	(\$148)	(\$143)	(\$138)	(\$133)	(\$128)	(\$123)	(\$118)
15	(\$128)	(\$121)	(\$113)	(\$106)	(\$98)	(\$91)	(\$83)	(\$76)
20	(\$103)	(\$93)	(\$83)	(\$73)	(\$63)	(\$53)	(\$43)	(\$33)
25	(\$78)	(\$66)	(\$53)	(\$41)	(\$28)	(\$16)	(\$3)	\$10
30	(\$53)	(\$38)	(\$23)	(\$8)	\$7	\$22	\$37	\$52
35	(\$28)	(\$11)	\$7	\$25	\$42	\$60	\$77	\$95
40	(\$3)	\$17	\$37	\$57	\$77	\$97	\$117	\$137
45	\$22	\$45	\$67	\$90	\$112	\$135	\$157	\$180
50	\$47	\$72	\$97	\$122	\$147	\$172	\$197	\$222
55	\$72	\$100	\$127	\$155	\$182	\$210	\$237	\$265

CONTROLLING MARKET RISKS

The best means of controlling market risk is to have a proactive market plan. Specific marketing plan approaches will vary from farm to farm. There are, however, common components that will be included in virtually any viable plan. A comprehensive handbook on marketing southeastern grains, Southeastern Grain Marketing Handbook, is available which includes Soybean, Corn, and Wheat Prices & Basis for North Carolina, Georgia and South Carolina 1997-2002. (Piggott, Shumaker and Curtis, 2003) They are:

1. **Know what you need from the market to be “successful.”** This is accomplished by knowing the true production costs of the enterprise on your farm (Table I is merely a guide). Further, one must account for family living expenses and long-term financial goals. An assessment of "successful" is the key to this step. However, this important concept is one that varies substantially from farm to farm.

2. **Know where the market is now.** This requires access to and the ability to correctly interpret soybean price information. The best starting point is the current Chicago Board of Trade (CBOT) futures price for the month in which one plans to sell. Prior to harvest, the CBOT November futures price is typically the best gauge for what the market thinks next year's crop will be worth at harvest. SC Farm Bureau members have access to Farm Bureau's Acres which contains many useful market links and information.

This price should be further adjusted by your basis estimate that you expect to prevail at harvest. Regional extension collaboration has provided SC, NC & GA Soybean, Corn and Wheat Basis 97-02 historic basis levels observed in South Carolina for the 1997-2002 period. These historic bases should be compared against the current offerings which can be found in South Carolina Daily Grain Bids. If considering storage, one must further account for the physical and interest costs of storage. A current benchmark would be approximately 8.5 cents per bushel for each month stored.

3. **Know what the available marketing alternatives are.** While there are numerous cash markets and futures based marketing alternatives, each with their own risk management properties, the available alternatives fall into three broad categories:

a. **Do nothing now:** This clearly is the most often followed strategy. Whether through simply avoiding the marketing or pursuing this as an objective strategy, this assumes that the price captured later will be better than today. If this fails to materialize (i.e. prices fall) then there is no downside protection. Strategies that fall into this general category include

unpriced production, unpriced storage, and delayed payment contracts.

b. *Fix the price today*: If the market were currently offering a price at which one would be "successful" then one would be wise to accept it. However, prior to harvest when yields are unknown, it is not advisable to obligate for sale all of the expected crop. Contract penalties can occur if a producer over contracts a volume of beans and prices rise. Further, this approach carries the implicit assumption that the price captured now will be better than it will be in the future. Strategies that fall into this category include cash forward contracting, hedging (partial), Hedge-to-Arrive contracting (partial) and basis contracting (partial).

c. *Fix a price floor but leave the ceiling open*: This approach to market risk management allows for the best of both of the above while avoiding many of the potential drawbacks. Through the use of put option purchases, call option purchases in conjunction with cash forward contracting, buying call options instead of storing, or by seeking minimum price contracts, producers can protect their operational revenues from subsequent price declines while leaving open the possibility to benefit from future price rallies. Clearly, this approach is one worth exploring.

4. **Assess the risks and returns from the available marketing strategies**. Knowing the conditions set out above, combined with observation of current market fundamentals, is critical in selecting the best market approach. The above strategies have various risk abatement attributes, particularly with regards to how they handle futures price and basis risk. Do you expect the basis to improve later? Do you expect the price to improve later? How much of your crop can you comfortably sell now? These and other questions need to be explored.

5. **Seek the unbiased opinions of others**. Other farmers, agricultural lenders, and Extension personnel (among others) can often help you weigh the alternatives you are considering. It is important to stay grounded in the reality of market risk management and not move into the realm of speculation. Seeking opinions can help sort through the complexities but remember the final decision is yours!

6. **Make the decision and follow through**. The best-laid market plans avail us nothing if the "trigger isn't pulled" on placement of the strategy. This is easier said than done. But if the above steps are taken, then one should feel confident in the knowledge of risks to be transferred or retained.

7. **Review the plan and adjust as needed**. Because of the dynamic and ever-changing markets for soybeans (and other agronomic crops), it is important to review periodically the plan that is in place. For example, let's suppose at planting you observed a good price but only felt comfortable with pricing 10 bushels per acre. Suppose now it's late August and you're much more certain of your yields. You need to revisit your plan and review the necessity for leaving the remaining crop unpriced. The risk environment has changed, so your plan requires reviewing and updating.