



Break-even Soybean and Corn Harvesting Yields

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Most of North Carolina experienced severe drought during a large portion of the 2007 growing season. Some fields of corn and soybeans are in poor condition with expected yields that are much lower than normal. Because the drought had a severe effect on pasture growth, most beef producers have little or no feed for their livestock and are looking for alternative forages such as baled or grazed abandoned corn, baled or grazed corn stalks (stover) and soybean hay. Harvesting drought-stressed crops as forage is an alternative to harvesting the crop for corn or beans. The relative profitability of these options depends on harvesting and marketing costs, yields, crop prices, and alternative uses for the crop.

Harvesting costs for both corn and soybeans are similar if the same combine is used. Table 1 shows the estimated cost of harvesting and selling corn or beans, based on the most recent NCSU enterprise budget for corn. However, these costs will vary from farm to farm, so producers should develop their own cost estimates. The variable or operating cost of running the combine is estimated at \$11.63 per acre. This includes fuel, maintenance and labor.

Another cost to consider is the potential reduction in the value of the combine and other harvesting equipment because of the extra use if the acreage in question is actually harvested. If the harvested acreage is large, this extra cost could be quite significant and represents an additional economic depreciation charge¹. An estimate of this cost is shown in Table 1 as depreciation at \$ 13.47 per acre and is taken from the 2007 NCSU Corn Enterprise budget.

The cost of transporting the crop by farm truck from the combine to a pick up point for an over-the-road truck is broken down in a similar manner.

Custom harvesting is an option used by some crop producers. In this case the custom rate replaces the cost of owning and operating the harvesting equipment and should be used to calculate the breakeven yield. Custom rates are not readily available for North Carolina but, for comparison, published rates for 2007 for Georgia were \$32 an acre for harvesting corn and \$30 for soybeans. Anecdotal reports for North Carolina put custom harvest rates in the \$35 per acre range for normal yielding soybeans, on average.

Note that the pre-harvest expense of growing the crop is not a factor in the harvesting decision.

Breakeven yields will be affected by crop prices and marketing costs. North Carolina crop prices vary with national and local market conditions and the specific location within the state. Most crops are delivered to the elevator at harvest. The cost of trucking the crop to the elevator will vary from farm to farm and is typically figured on a cost per bushel per mile basis. The current commercial hauling cost is approximately \$2.50 per loaded mile for a truck that can hold, say, 875 bushels of corn or 925 bushels of soybeans. So, for a 100 miles trip the cost would be approximately \$ 0.285 per bushel for corn and \$0.27 per bushel for soybeans.

Table 2 shows breakeven yields for soybeans and corn based on four different prices for each. These examples assume the quality of the crop meets buyer requirements and the crop price is net of transportation costs from the farm to the buying station and any quality discounts. Based on the costs and prices in this example, the breakeven yields are quite low, at three to four bushels for

¹ There are three components of economic depreciation charges: use, time (age) and obsolescence. Commercial farming operations typically use harvesting equipment quite intensively and need to replace items fairly frequently, and the charge included in Table 1 reflects this view. Under this assumption it is appropriate to include an additional depreciation charge. However, if the equipment is not used intensively and "rusts out" before it "wears out," or if the acreage in question is small, then no additional economic costs may be incurred. Note also that interest on the equipment investment, property taxes (if any) and insurance are true fixed costs that do not vary with acreage harvested and these costs are omitted in Table 1.

soybeans and six to ten bushels for corn. Yields above these levels represent a net profit to harvesting the crop and the grower should decide the size of an acceptable level of net profit. Yields below these levels would not justify the harvesting expense.

Table 1. Estimated harvest cost for corn or soybeans, per acre.

Item	\$ per acre
Combine	
Operating cost	11.63
Depreciation (see footnote 1)	13.47
Total Combine Cost	25.10
Farm trucking	
Operating cost	1.79
Depreciation (see footnote 1)	1.79
Total Farm Trucking	3.58
Total cost	28.68

Table 2. Breakeven yields per acre to recover harvesting costs of \$28.68 per acre

Item	Breakeven Yield, Bushels per acre
Soybeans	
Soybeans at \$7.00 per bushel	4.1
Soybeans at \$8.00 per bushel	3.6
Soybeans at \$9.00 per bushel	3.2
Soybeans at \$10.00 per bushel	2.9
Corn	
Corn at \$3.00 per bushel	9.6
Corn at \$3.50 per bushel	8.2
Corn at \$4.00 per bushel	7.2
Corn at \$4.50 per bushel	6.4

Crop farmers considering the forage option for low yielding or abandoned crops should consider the specific costs involved and the prevailing prices being paid for these forage crops. There is some value to the nutrients and organic matter in the crops or crop residues removed from harvested or abandoned crops because these nutrients would otherwise be returned to the soil. For crops harvestable as soybeans or corn but used for forage, producers should consider the net income foregone because the crop is used for forage as well as the nutrient value of the crop residues removed and. If a crop farmer bales the crop or crop residue for sale there is the added cost of cutting or chopping, turning and baling the crop. NCSU enterprise budgets estimate the cost of making large round bales at \$54 per ton, or approximately \$18 per 650 to 700 pound bale and \$26 per 1,000 lb bale.

Even low yielding drought-stressed crops may be worth harvesting at current crop prices. Harvesting these crops or the crop residues as forages is another option this year.