WHEAT ECONOMICS

Estimating net income from wheat production is a process of considering all of the sources of revenue and subtracting all of the expenses. The onerous part of estimating net income comes from determining what yields, prices and other items to include in the estimates of revenue and expense.

The following wheat budget is given for a typical Missouri wheat-production system. Yield and prices will vary from year to year and farm to farm. The items included in the budget are not the same for every farm but are typical of many. The format allows for individual producers to substitute their own estimates to arrive at costs and returns that they believe are more in line with their situation.

Income per acre

Returns per acre are highly dependent on yield per acre. The budget provides three columns for three different yield levels. The 50-bushel yield is the five-year average yield for Missouri wheat harvested. The 30-bushel column indicates a poorer yield that would receive a crop insurance indemnity payment only if the producer purchased greater than 60 percent yield coverage. The 70-bushel yield column is attainable in Missouri.

Price per bushel varies with time and is influenced by farm policy. Figure 76 presents average annual market prices for Missouri winter wheat for the last 10 years. The average price has fluctuated from just over $2.00/bu to just over $4.00/bu. Wheat producers can plan on receiving whichever is higher, the market price or 85 percent of the target price established by the U.S. Department of Agriculture.

The budget at the end of this section assumes a market price of $2.73/bu, the national wheat price estimated by the Food and Agriculture Policy Research Institute less $.30 for a soft red winter wheat price differential. This cash price would produce an estimated government countercyclical payment of $.67/bu of program yield (assumed to be 85 percent of average, 50 bushel, yield in the table). Miscellaneous income would be income from such things as straw sales.

The target price is multiplied by 85 percent because the Farm Bill pays only on a percentage of program yield. When the market price is below the target price, the government will pay wheat farmers a countercyclical payment approximately equal to the difference between the market price and the target price times 85 percent of the farmer's established program yield. The 2002 Farm Bill specified that the target price at $3.86 for the 2002 through 2003 marketing years, and at $3.92 for the 2004 through 2007 marketing years.

In addition to the countercyclical payment, farmers receive a direct payment for wheat acres. The direct payment has been set at $.52/bu for 85 percent of program yields. Although the direct payments are for wheat base acres, the farmer is not obligated to grow wheat on those base acres. The direct payment is paid regardless of what mix of crops is grown on the land. The budget does not include direct payments for wheat acres.

The 2002 Farm Bill differentiates between classes of wheat in determining loan rates. Soft red winter wheat no longer has the same loan rate as the other four classes of wheat (hard amber durum, hard red spring, hard red winter and soft white wheat). The average loan rate in Missouri for soft red winter wheat is $2.57/bu; for hard red winter wheat the loan rate is $2.90. The loan rate affects the counter cyclical payment that farmers receive so that soft red winter wheat producers can expect to get about $.33/bu less than the national target price.

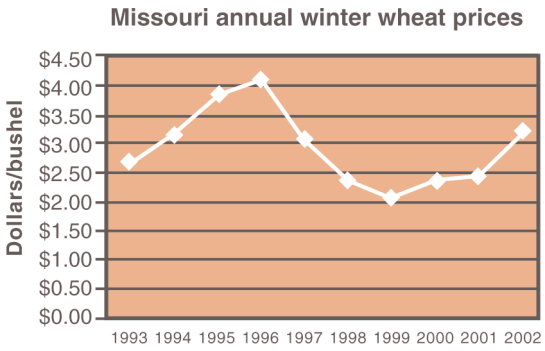

Figure 76. Historical winter wheat annual prices (1993-2002).

Costs

Cost of production will vary with assorted choices of the farmer. Whether bin-run seed or new seed is purchased, whether no-till or conventional tillage is used, and whether the seed is harvested dry or dried in storage join to affect the cost of production.

Seed expense is estimated at $10, assuming that 100 pounds of wheat seed costing $5.00 per 50-pound bag are used. Fertilizer cost includes nitrogen, phosphorus, potassium and sulfur product costs. Fertilizer application charges are listed under machinery expense. Lime cost includes the annualized price of the product delivered.

Herbicide costs are variable depending on the herbicides used. The budgeted herbicide cost of $7.25 approximates a standard herbicide program for wheat in Missouri. Again, spraying charges are included under machinery expense. No insecticide or fungicide is included in the budget, though it may be necessary depending on the pest pressure on the crop.

Custom hire and machinery expense approximates the cost of owning and operating (including labor) machinery for fieldwork and hiring services such as crop spraying. This estimate will vary depending on whether old or new equipment is used and on how many acres owned equipment is used.

Nonmachinery labor is an estimate of all labor expense not directly associated with operating equipment. It takes into account that work outside the field is important to efficient production. Miscellaneous costs include overhead and other small costs such as utilities and phone.

Land charge is reported as the average cash rental rate for dryland wheat cropland reported in 2003. Rental rates are expected to be close to the value of the land multiplied by a reasonable return on investment. The rental rate is consistent for all yield levels because the yield differences are expected to be due to growing conditions rather than land quality.

Interest in nonland costs approximates the interest that would be paid on a line of credit for purchased inputs. The interest reported is nonland costs times an interest rate of 8 percent times a half year for the term of the line of credit.

Total costs range from $193 to $206 because of the effect that yield has on fertilizer and equipment costs. Total cost/bu varies from $6.44 to $2.95 depending on the yield. This shows the influence of yield on per bushel cost of production. Time spent on marketing may profit a farmer $.10/bu, but a single bushel increase in yield will return more than twice that. Yield is the major determinant of wheat production profitability. Returns over all costs are negative for the average yield in Missouri. Farmers planning to profit from growing wheat need to manage their production to maximize yield.

DOUBLE CROP WHEAT-SOYBEAN

About half of Missouri wheat acres are double cropped with soybean in any one year. While the number of acres of wheat has been decreasing over the last decade, the percentage of acres double cropped has been increasing. Southeast Missouri has the highest percentage of double-cropped acres in the state. The number of acres put into double-crop soybean varies with year, due presumably to field conditions at wheat harvest.

Soybean double cropping permits the harvest of a second cash crop in a single year and saves on land, liming and machinery costs, which already have been either partially or fully charged to wheat.

Income per acre

Double-crop soybean typically yields less than single-crop soybean. The yield average for northern Missouri double-crop soybean is used in the budget (Table 7) along with a minimum and maximum. The soybean loan rate is used as a price estimate.

If there is a historical record of double-cropping on the farm between 1998 and 2001, both wheat and soybean bases may be established. Payments may be earned on both crops. The calculation of government payments is cumbersome. Readers are encouraged to use the "Base and Yield Analyzer" provided by the USDA at http://www.fsa.usda.gov/pas/farmbill/tools.asp to estimate government payments on double-crop soybean. No government payment is included in the budget at the end of this chapter for soybean.

Costs per acre

Seed expense is estimated as 1.5 bags of Roundup Ready® seed at $26.00 per bag. The

seeding rate is held constant regardless of the yield shown on the budget because the yield variations are assumed due to growing conditions rather than management factors.

Fertilizer cost includes only the phosphorus and potassium removed due to harvest of seed. It does not include fertilizer application charges. No lime expense is attributed to the soybean plants grown on this ground.

Herbicide costs are variable depending on the herbicides used. The budgeted herbicide cost of $17.00 provides for a glyphosate burndown at planting followed by a second application to clean up late-emerging weeds. It does not include application charges. No insecticide or fungicide is included in the budget, though it may be necessary depending on the pest pressure on the crop.

Custom hire and machinery expense approximates the cost of owning and operating (including labor) machinery for fieldwork and hiring services such as crop spraying. This estimate will vary depending on whether old or new equipment is used and on how many acres the owned equipment is used on. Given that the machinery is used on two crops on the same acre, machinery costs might decrease if owned equipment is used rather than custom harvest and spraying.

Nonmachinery, labor and miscellaneous costs and interest in nonland costs are explained in the section on wheat.

No land charge is reported since the wheat budget was charged this cost. Double-crop soybean can use the same land without additional land charge.

Total costs range from $115 to $122 because of the impact of yield on fertilizer costs. Total cost per bushel varies from $7.72 to $3.81 depending on the yield. At average yield, double-crop soybean does not have a positive net income. An additional 2 bu/acre yield causes income to exceed expenses — so growing conditions that indicate a successful crop are important before planting double-crop soybean.

Table 7. Budget for wheat and double-crop soybean production.

	Wheat			Double-crop soybean		
Income						
Yield, bu/acre	30	50	70	15	22	32
Price/bushel	$2.73	$2.73	$2.73	$5.00	$5.00	$5.00
Government deficiency payments/acre	33.50	33.50	33.50	—	—	—
Miscellaneous income/acre	—	—	—	—	—	—
Income/acre	115.40	170.00	224.60	75.00	110.00	$160.00
Income/bushel	3.85	3.40	3.21	5.00	5.00	5.00
Costs/acre						
Seed	$10.00	$10.00	$10.00	$39.00	$39.00	$39.00
Fertilizer	38.00	41.60	44.80	5.40	7.70	11.30
Lime	5.00	5.00	5.00	—	—	—
Herbicide, insecticide and fungicide	7.25	7.25	7.25	17.00	17.00	17.00
Custom hire and machinery expenses	49.00	52.00	55.00	40.00	40.00	40.00
Nonmachinery labor	10.00	10.00	10.00	5.00	5.00	5.00
Miscellaneous	8.00	8.00	8.00	5.00	5.00	5.00
Land charge/rent	62.00	62.00	62.00	—	—	—
Interest on nonland costs	5.09	5.35	5.60	4.46	4.55	4.69
Total costs	$194.34	$201.20	$207.65	$115.86	$118.25	$121.99
Total cost/bushel	$6.48	$4.02	$2.97	$7.72	$5.38	$3.81
Returns over costs	$(78.94)	$(31.20)	$16.95	$(40.86)	$(8.25)	$38.01

Note: No government direct payment is included in this budget.