

# Crop and Forage Budget Assumptions

*Melvin Brees & Brent Carpenter*  
*Economists, Food & Ag Policy Research Institute*

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Projections in the following crop and forage budgets are estimates of both cash outlay requirements for 2011 crops and economic costs of production given a set of assumptions. Some costs are highly sensitive to these assumptions. These estimates reflect typical results for a particular set of farms, not a state average. Adjustments will be necessary to estimate any individual farm enterprise for differences in productivity, acres farmed, machinery size, and production practices. For more details on underlying methods, download the budget calculator spreadsheets from the FAPRI website. This site also shows expanded versions of the budgets with details for each machinery activity. <http://www.fapri.missouri.edu>.

Prices and production parameters are developed from a number of sources, including Missouri producers, University extension specialists, dealers, suppliers, company announcements, USDA data, FAPRI econometrics, and others. All prices in the budgets should be viewed as midpoints within an expected range.

## **Crop Farm Descriptions**

For the crop budgets, the representative farm harvests about 2,000 acres of corn, soybeans, and wheat. We believe the reported costs have application for farms of this size in all farming regions of the state, with the exception of the Bootheel. Selected yields are higher than state averages. Costs are developed as appropriate for the assumed yields. Acres planted are in proportion to the majority of Missouri crop acres – that is, heavy on soybeans. Thus, the soybean budget is charged with more fixed cost and the corn budget assumes soybeans as the prior crop. A corn-after-corn enterprise would use different practices and have different costs.

## **Forage Farm Descriptions**

Underlying the forage budgets is a commercial sized, diversified farm with a beef or dairy herd. The budgeted crop is a major enterprise of the farm, harvested from substantial acreage. We attempt to capture north-south regional differences that typically exist due to the influence of row cropping enterprises. Hay costs for South Missouri are estimated with smaller equipment than a North Missouri farm where it is assumed more horsepower (excess) is available for forage activities. Many of the forage budgets are for crops adapted only to southern Missouri.

## **Production Practices**

Costs are developed by individual activity with an attempt to capture the most prevalent practices and technologies for the farms depicted. These selections can account for big differences. For example, corn, soybean, and milo budgets incorporate one or two tillage passes while wheat and double-cropped soybeans are no-tilled.

All nitrogen for corn is priced as anhydrous ammonia, all nitrogen for sorghum is priced as urea. Forage nitrogen is variably priced as ammonium nitrate, urea, and/or manure. Nutrients for all budgets are estimated using crop removal rates for row and hay crops. Pasture budgets assume nutrient recycling and no application of P or K.

The use of custom hire rates – which experience has taught are often unrealistic – are held to a minimum. The budget farms own the machinery and equipment necessary to raise the crops through harvest. Notable exceptions are the rental of specialized forage seeding equipment and dealer applied dry fertilizer for some crops.

### **Post-harvest Costs Excluded**

Costs are estimated for hauling to nearby storage, but no costs are estimated for activities beyond harvest such as marketing, hedging, long hauls, long-term storage, feeding to livestock, etc. Sale prices are a harvest-time price for grain and when consumed or sold in the case of forages.

### **Labor**

Missouri budgets treat labor as an operating cost. The value of owner labor (not management) is lumped with any hired labor. Wage rates are differentiated between skilled operations like planting, spraying, and combining and unskilled labor such as tillage and mowing. The rates budgeted for skilled labor reflect a full-time wage with benefits.

### **Machinery Related Costs**

Machinery costs are estimated using economic engineering coefficients to account for specific implement and power unit combinations. Costs are a function of horsepower, purchase values, travel speed, implement width, field efficiency, and other factors. This approach yields cost estimates for labor, fuel, lube, repairs, maintenance, depreciation, interest on operating costs, and overhead (property taxes, insurance, and housing) for each activity. Depreciation and repairs are annualized over the life of machinery and converted to a per acre basis. In general, fuel consumption is estimated at a flat rate per horsepower hour.

Depreciation gets special handling because it is both use-related (hours), and non-use-related (age). The traditional method of separating costs into operating (variable) and ownership (fixed) is retained, but machinery depreciation is itemized in the budgets to allow planning for the portion of operating costs due to depreciation, like estimating custom charges. We have found that the use-related portion of depreciation for a particular activity can often be approximated by using one-half of total depreciation costs. For example, with double-crop soybeans, usage depreciation is estimated but age depreciation is not.

### **Real Estate**

Land and buildings are capitalized rent returns on estimated market values for agriculture. These budgets are based on values for mid-to-high productivity land. Landlord costs (taxes, insurance, etc.) along with return on investment are covered by the real estate charge.

### **Crop Prices**

Budgets assume Central Missouri crop prices. Crop prices are suggested for different regions of Missouri in the adjoining table. Of course, markets can surprise and actual prices paid or received in 2011 can turn out to be higher or lower than those used in these budgets.

## Projected Prices and Costs Used in 2011 Crop and Forage Budgets

<u>Projected Prices</u>	<u>Used in Budgets</u>	<u>Estimates for Regional Basis Adjustment</u>				
		Central	NE Mo.	NW Mo.	SW Mo.	SE Mo.
Corn	\$ 4.30/bu.	\$4.30	\$4.09	\$4.16	\$4.40	\$4.45
Soybeans	\$ 10.00/bu.	\$10.00	\$9.79	\$9.97	\$9.74	\$10.37
Wheat	\$ 5.50/bu.	\$5.50	\$5.35	\$5.55	\$5.55	\$5.55
Grain sorghum	\$ 4.00/bu.	\$4.00	\$3.90	\$4.00	\$4.30	\$4.10
Corn silage	\$ 32.00/ton					
Alfalfa, lg rnd bale	\$140.00/ton					
Cool season grass, lg rnd bale	\$ 60.00/ton					
Bermudagrass, lg rnd bale	\$125.00/ ton					
Pasture, common	\$ 8.00/AUM					
Pasture, improved	\$ 17.00/AUM					

### Projected Costs

#### **Fuel and Fertilizer**

Diesel fuel, farm delivered	\$2.70/gal.
Gasoline	\$2.85/gal.
L.P./propane	\$1.80/gal.
Electricity	\$0.08/kwh
N: from ammonia (82-0-0)	\$690/ton
from urea (45-0-0)	\$460/ton
ammonium nitrate (33.5-0-0)	\$380/ton
liquid (UAN) (32-0-0)	\$326/ton
P <sub>2</sub> O <sub>5</sub> from DAP (18-46-0)	\$620/ton
K <sub>2</sub> O from MOP (0-0-60)	\$510/ton
Lime, applied	\$8 to \$16/ton

**Operating interest rate**                      6.5%

#### **Labor**

    High skilled                                      \$17.15/hour