

Field Crop Budgets For 2017

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Introduction and Disclaimer

The 2017 Tennessee Row Crop Budgets were developed to assist producers and other agricultural decision makers to evaluate the returns of different row cropping alternatives. The budgets developed use production alternatives, management strategies, machinery, and inputs that are commonly utilized in row crop production in Tennessee. Given the diverse nature of row crop production in the state, it is impossible to account for all possible production scenarios and circumstances. As such, this guide should be utilized to assist decision makers in their annual planning efforts. To develop a custom budget for a specific field or operation, interested parties are strongly encouraged to use the University of Tennessee Extension's Excel-based spreadsheet available online at: <http://economics.ag.utk.edu/crop.html>. The spreadsheet uses the same format as the budgets contained in this document; however, it allows the user to change yields, input quantities, input prices, machinery costs, and add additional costs that are specific to a field or enterprise. This allows users to adjust for region- and site-specific production methodology and input selections.

This publication and the accompanying Excel spreadsheet contain short-term planning budgets for canola, corn, cotton, grain sorghum, soybean, and wheat enterprises. These budgets should be used for short-run or annual plans developed for 2017, as significant changes may occur from year to year in production methods and input and output prices.

The fertilizer recommendations in the crop budgets are generally for soils that have a medium soil test. Farmers should have their soils tested in order to get maximum return for money spent for fertilizer. As crop programs are planned, the fertilizer applications can be adjusted to the soil test recommendations.

Disclaimer: Significant variability in inputs, prices, and production methods exist in the production of row crops. The information contained in this document relies on estimates and assumptions that are specific to Tennessee row-crop production. These budgets should not be construed as a reflection of all circumstances across the state, as significant regional variability will occur. To improve the accuracy, users are encouraged to use inputs, prices, and processes that are utilized on their specific farms in budget calculations.

Trade Names, Herbicides, Insecticides, and Pesticide Caution

Use of trade or brand names in this publication is for clarity and information: It does not imply approval of the product to the exclusion of others that may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product.

The herbicide and insecticide programs used in these budgets are based on UT Extension publications titled "2017 Weed Control Manual for Tennessee" (PB1580) and "2016 Insect Control Recommendations for Field Crops" (PB1768). Pesticides recommended in the publication were registered for the prescribed uses when this manual was printed. Pesticide registrations are continuously being reviewed. Should registration of a recommended pesticide be canceled, it will no longer be recommended by The University of Tennessee.

In order to protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store, or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

No direct government program benefits are included in the budgets. Adjust the estimates as appropriate.

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2017 Corn, No-Till, Non-Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
Revenue					
			Gross Revenue (\$/Acre)		
Corn ¹	Bu	150	\$3.65	\$547.50	_____
			Total Revenue \$547.50		_____
Variable Expenses					
Seed ^{2,3}	Thous.	32	\$3.56	\$114.00	_____
Fertilizer & Lime (Table 1)	Acre	1	\$121.14	\$121.14	_____
Chemical (Table 2) ^{3,4}	Acre	1	\$38.93	\$38.93	_____
Crop Scout or Consultant	Acre	1	\$6.00	\$6.00	_____
Repair & Maintenance (Table 3)	Acre	1	\$21.18	\$21.18	_____
Fuel, Oil & Filter (Table 3)	Acre	1	\$9.25	\$9.25	_____
Operator Labor (Table 3)	Acre	1	\$5.20	\$5.20	_____
Machinery Rental	Acre	1	\$0.00	\$0.00	_____
Custom Work	Acre	1	\$0.00	\$0.00	_____
Drying (Fuel/Electric)	Bu	150	\$0.00	\$0.00	_____
Cash Rent ⁵	Acre	1	\$94.00	\$94.00	_____
Crop Insurance ⁶	Acre	1	\$12.85	\$12.85	_____
Operating Interest ⁷	%	\$422.53	6.00%	\$12.68	_____
Other Variable Costs	Acre	1	\$0.00	\$0.00	_____
			Total Variable Expenses \$435.21		_____
			Return above Variable Expenses \$112.29		_____
Fixed Expenses					
Machinery ⁸					
Capital Recovery (Table 3)	Acre	1	\$41.13	\$41.13	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$15.00	\$15.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
			Total Fixed Expenses \$56.13		_____
			Return Above All Specified Expenses \$56.16		_____

Breakeven Price for Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
100	\$4.35	\$4.91
110	\$3.96	\$4.47
120	\$3.63	\$4.09
130	\$3.35	\$3.78
140	\$3.11	\$3.51
150	\$2.90	\$3.28
160	\$2.72	\$3.07
170	\$2.56	\$2.89
180	\$2.42	\$2.73
190	\$2.29	\$2.59
200	\$2.18	\$2.46

Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$2.40	181	205
\$2.65	164	185
\$2.90	150	169
\$3.15	138	156
\$3.40	128	145
\$3.65	119	135
\$3.90	112	126
\$4.15	105	118
\$4.40	99	112
\$4.65	94	106
\$4.90	89	100

Table 1. Fertilizer & Lime

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	170	\$0.36	\$60.61	_____
Phosphorous	P ₂ O ₅	70	\$0.34	\$23.84	_____
Potassium	K ₂ O	70	\$0.26	\$18.43	_____
Lime	Limestone	1,000	\$36.50	\$18.25	_____
Other		0	\$0.00	\$0.00	_____
Total				\$121.14	_____

Table 2. Chemicals^{3,4}

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides ³	Burndown	Gramoxone SL	oz.	1	40	\$0.14	\$5.50	_____
		Surfactant	pt.	1	0.2	\$3.52	\$0.70	_____
	Pre-Emerge	Atrazine	qt.	1	1	\$3.33	\$3.33	_____
		Gramoxone SL	oz.	1	40	\$0.14	\$5.50	_____
		Halex GT	pt.	1	3.6	\$5.25	\$18.90	_____
	Post-Emerge	Atrazine	qt.	1	1.5	\$3.33	\$5.00	_____
						\$0.00	\$0.00	_____
Insecticides					\$0.00	\$0.00	_____	
Fungicides ⁴					\$0.00	\$0.00	_____	
Total							\$38.93	_____

Table 3. Machinery⁸

	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Plant	Tractor, 215 hp	Planter	16-row	\$6.46	\$3.71	\$1.07	\$0.79	\$12.03	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$1.65	\$2.03	\$1.13	\$0.84	\$5.66	_____
Harvest	Combine	Corn Head	8-row	\$13.30	\$13.13	\$4.60	\$1.64	\$32.67	_____
Haul	Tractor, 215 hp	Grain Cart		\$2.31	\$1.06	\$0.69	\$0.52	\$4.57	_____
Haul	Semi Tractor/Trailer		800 bu	\$4.83	\$0.52	\$1.16	\$0.93	\$7.44	_____
Other								\$0.00	_____
Other								\$0.00	_____
Total				\$41.13	\$21.18	\$9.25	\$5.20	\$76.75	_____

FOOTNOTES

- 1) Corn price was estimated using weighted average futures prices from September 2017 to July 2018 on December 30, 2016, adjusted by average monthly basis in Tennessee.
- 2) Assumes a bag of seed costs \$285 and contains 80,000 seeds (\$3.56/thousand seeds). Seeding rate of 32,000 seeds/acre. Seed treatment is included in the price.
- 3) Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
- 4) A foliar fungicide application may be used in some cropping systems at a cost of \$15/acre plus application cost. Cost will vary depending on the fungicide used and the application rate.
- 5) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
- 6) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premium paid per insured acre of corn in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
- 7) Operating interest is assumed to be charged on half of all variable expenses.
- 8) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.

2017 Corn, Conventional Tillage, Non-Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
Revenue					
Corn ¹	Bu	150	\$3.65	\$547.50	_____
			Gross Revenue (\$/Acre)		
			Total Revenue		_____
			\$547.50		_____
Variable Expenses					
Seed ^{2,3}	Thous.	32	\$3.56	\$114.00	_____
Fertilizer & Lime (Table 1)	Acre	1	\$121.14	\$121.14	_____
Chemical (Table 2) ^{3,4}	Acre	1	\$32.73	\$32.73	_____
Crop Scout or Consultant	Acre	1	\$6.00	\$6.00	_____
Repair & Maintenance (Table 3)	Acre	1	\$28.12	\$28.12	_____
Fuel, Oil, & Filter (Table 3)	Acre	1	\$13.15	\$13.15	_____
Operator Labor (Table 3)	Acre	1	\$8.09	\$8.09	_____
Machinery Rental	Acre	1	\$0.00	\$0.00	_____
Custom Work	Acre	1	\$0.00	\$0.00	_____
Drying (Fuel/Electric)	Bu	150	\$0.00	\$0.00	_____
Cash Rent ⁵	Acre	1	\$94.00	\$94.00	_____
Crop Insurance ⁶	Acre	1	\$12.85	\$12.85	_____
Operating Interest ⁷	%	\$430.07	6.00%	\$12.90	_____
Other Variable Costs	Acre	1	\$0.00	\$0.00	_____
			Total Variable Expenses		_____
			\$442.98		_____
			Return above Variable Expenses		_____
			\$104.52		_____
Fixed Expenses					
Machinery ⁸					
Capital Recovery (Table 3)	Acre	1	\$45.75	\$45.75	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$15.00	\$15.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
			Total Fixed Expenses		_____
			\$60.75		_____
			Return Above All Specified Expenses		_____
			\$43.77		_____

Breakeven Price for Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
100	\$4.43	\$5.04
110	\$4.03	\$4.58
120	\$3.69	\$4.20
130	\$3.41	\$3.87
140	\$3.16	\$3.60
150	\$2.95	\$3.36
160	\$2.77	\$3.15
170	\$2.61	\$2.96
180	\$2.46	\$2.80
190	\$2.33	\$2.65
200	\$2.21	\$2.52

Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$2.40	185	210
\$2.65	167	190
\$2.90	153	174
\$3.15	141	160
\$3.40	130	148
\$3.65	121	138
\$3.90	114	129
\$4.15	107	121
\$4.40	101	114
\$4.65	95	108
\$4.90	90	103

FOOTNOTES

- 1) Corn price was estimated using weighted average futures prices from September 2017 to July 2018 on December 30, 2016, adjusted by average monthly basis in Tennessee.
- 2) Assumes a bag of seed costs \$285 and contains 80,000 seeds (\$3.56/thousand seeds). Seeding rate of 32,000 seeds/acre. Seed treatment is included in the price.
- 3) Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
- 4) A foliar fungicide application may be used in some cropping systems at a cost of \$15/acre plus application cost. Cost will vary depending on the fungicide used and the application rate.
- 5) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
- 6) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premium paid per insured acre of corn in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
- 7) Operating interest is assumed to be charged on half of all variable expenses.
- 8) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.

2017 Corn, No-Till, Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
Revenue					
Corn ¹	Bu	225	\$3.65	\$821.25	_____
		Total Revenue		\$821.25	_____
Variable Expenses					
Seed ^{2,3}	Thous.	36	\$3.56	\$128.25	_____
Fertilizer & Lime (Table 1)	Acre	1	\$158.17	\$158.17	_____
Chemical (Table 2) ^{3,4}	Acre	1	\$38.93	\$38.93	_____
Crop Scout	Acre	1	\$6.00	\$6.00	_____
Repair & Maintenance (Table 3)	Acre	1	\$21.18	\$21.18	_____
Fuel, Oil & Filter (Table 3)	Acre	1	\$9.25	\$9.25	_____
Operator Labor (Table 3)	Acre	1	\$5.20	\$5.20	_____
Machinery Rental	Acre	0	\$0.00	\$0.00	_____
Custom Work	Acre	0	\$0.00	\$0.00	_____
Drying (Fuel/Electric)	Bu	225	\$0.00	\$0.00	_____
Irrigation Energy Cost (Diesel)	Ac-In	7	\$4.02	\$28.12	_____
Irrigation System R&M & Labor	Acre	1	\$15.09	\$15.09	_____
Other Irrigation Costs	Acre	1	\$0.00	\$0.00	_____
Cash Rent ⁵	Acre	1	\$165.00	\$165.00	_____
Crop Insurance ⁶	Acre	1	\$12.85	\$12.85	_____
Operating Interest ⁷	%	\$588.02	6.00%	\$17.64	_____
Other Variable Costs	Acre	1	\$0.00	\$0.00	_____
		Total Variable Expenses		\$605.66	_____
		Return Above Variable Expenses		\$215.59	_____
Fixed Expenses					
Machinery ⁸					
Capital Recovery (Table 3)	Acre	1	\$41.13	\$41.13	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Capital Recovery (Irrigation Equipment) ⁹	Acre	1	\$85.15	\$85.15	_____
Other Fixed Irrigation Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor ¹⁰	Acre	2	\$15.00	\$30.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
		Total Fixed Expenses		\$156.28	_____
		Return Above All Specified Expenses		\$59.30	_____

Breakeven Price For Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
175	\$3.46	\$4.35
185	\$3.27	\$4.12
195	\$3.11	\$3.91
205	\$2.95	\$3.72
215	\$2.82	\$3.54
225	\$2.69	\$3.39
235	\$2.58	\$3.24
245	\$2.47	\$3.11
255	\$2.38	\$2.99
265	\$2.29	\$2.88
275	\$2.20	\$2.77

Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$2.40	252	317
\$2.65	229	288
\$2.90	209	263
\$3.15	192	242
\$3.40	178	224
\$3.65	166	209
\$3.90	155	195
\$4.15	146	184
\$4.40	138	173
\$4.65	130	164
\$4.90	124	155

Table 1. Fertilizer & Lime

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	240	\$0.36	\$85.57	_____
Phosphorous	P ₂ O ₅	90	\$0.34	\$30.66	_____
Potassium	K ₂ O	90	\$0.26	\$23.70	_____
Lime	Limestone	1,000	\$36.50	\$18.25	_____
Other	0		\$0.00	\$0.00	_____
Total				\$158.17	_____

Table 2. Chemicals^{3,4}

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides ³	Burndown	Gramoxone SL	oz.	1	40	\$0.14	\$5.50	_____
	Pre-Emerge	Surfactant	pt.	1	0.2	\$3.52	\$0.70	_____
		Atrazine 4L	qt.	1	1	\$3.33	\$3.33	_____
	Post-Emerge	Gramoxone SL	oz.	1	40	\$0.14	\$5.50	_____
		Halex GT	pt.	1	3.6	\$5.25	\$18.90	_____
		Atrazine 4L	qt.	1	1.5	\$3.33	\$5.00	_____
Insecticides						\$0.00	\$0.00	_____
						\$0.00	\$0.00	_____
						\$0.00	\$0.00	_____
						\$0.00	\$0.00	_____
Fungicides ⁴						\$0.00	\$0.00	_____
Total						\$0.00	\$38.93	_____

Table 3. Machinery⁸

Plant	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Weed Control	Tractor, 215 hp	Planter	16-row	\$6.46	\$3.71	\$1.07	\$0.79	\$12.03	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$1.65	\$2.03	\$1.13	\$0.84	\$5.66	_____
Harvest	Combine	Corn Head	8-row	\$13.30	\$13.13	\$4.60	\$1.64	\$32.67	_____
Haul	Tractor, 215 hp	Grain Cart		\$2.31	\$1.06	\$0.69	\$0.52	\$4.57	_____
Haul	Semi Tractor/Trailer		800 bu	\$4.83	\$0.52	\$1.16	\$0.93	\$7.44	_____
Other									_____
Other									_____
Total				\$41.13	\$21.18	\$9.25	\$5.20	\$76.75	_____

FOOTNOTES

- 1) Corn price was estimated using weighted average futures prices from September 2017 to July 2018 on December 30, 2016, adjusted by average monthly basis in Tennessee.
- 2) Assumes a bag of seed costs \$285 and contains 80,000 seeds (\$3.56/thousand seeds). Seeding rate of 36,000 seeds/acre. Seed treatment is included in the price.
- 3) Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
- 4) A foliar fungicide application may be used in some cropping systems at a cost of \$15/acre plus application cost. Cost will vary depending on the fungicide used and the application rate.
- 5) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
- 6) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premium paid per insured acre of corn in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
- 7) Operating interest is assumed to be charged on half of all variable expenses.
- 8) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.
- 9) Center-pivot irrigation costs are estimated using the following assumptions: purchase price and installation cost of \$80,000; useful life of 20 years; and an irrigated acreage of 125 acres. Irrigation rates should be adjusted to meet commodity- and farm-specific applications.
- 10) Management labor for irrigated acreage is assumed to be double that of dryland acres.

2017 Soybean, No-Till, Non-Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
Revenue					
Soybeans ¹	Bu	45	\$9.80	\$441.00	_____
			Gross Revenue (\$/Acre)		
				Total Revenue	_____
				\$441.00	_____
Variable Expenses ²					
Seed ^{3*}	Thous.	140	\$0.43	\$60.00	_____
Fertilizer & Lime (Table 1) ⁴	Acre	1	\$38.26	\$38.26	_____
Chemical (Table 2) ^{5,6,7,8,9,10**}	Acre	1	\$96.50	\$96.50	_____
Crop Scout	Acre	1	\$6.00	\$6.00	_____
Repair & Maintenance (Table 3) ¹¹	Acre	1	\$18.33	\$18.33	_____
Fuel, Oil & Filter (Table 3) ¹¹	Acre	1	\$8.49	\$8.49	_____
Operator Labor (Table 3) ¹¹	Acre	1	\$5.10	\$5.10	_____
Machinery Rental	Acre	0	\$0.00	\$0.00	_____
Custom Work	Acre	0	\$0.00	\$0.00	_____
Drying (Fuel/Electric)	Bu	45	\$0.00	\$0.00	_____
Cash Rent ¹²	Acre	1	\$94.00	\$94.00	_____
Crop Insurance ¹³	Acre	1	\$7.94	\$7.94	_____
Operating Interest ¹⁴	%	\$334.63	6.00%	\$10.04	_____
Other Variable Costs	Acre	1	\$0.00	\$0.00	_____
				Total Variable Expenses	_____
				\$344.67	_____
				Return Above Variable Expenses	_____
				\$96.33	_____
Fixed Expenses					
Machinery ¹¹					_____
Capital Recovery (Table 3)	Acre	1	\$47.33	\$47.33	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$15.00	\$15.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
				Total Fixed Expenses	_____
				\$62.33	_____
				Return Above All Specified Expenses	_____
				\$33.99	_____

Breakeven Price For Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
25	\$13.79	\$16.28
30	\$11.49	\$13.57
35	\$9.85	\$11.63
40	\$8.62	\$10.18
45	\$7.66	\$9.04
50	\$6.89	\$8.14
55	\$6.27	\$7.40
60	\$5.74	\$6.78
65	\$5.30	\$6.26

Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$7.80	44	52
\$8.30	42	49
\$8.80	39	46
\$9.30	37	44
\$9.80	35	42
\$10.30	33	40
\$10.80	32	38
\$11.30	31	36
\$11.80	29	34

Table 1. Fertilizer & Lime ⁴

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	0	\$0.36	\$0.00	_____
Phosphorous	P ₂ O ₅	20	\$0.47	\$9.48	_____
Potassium	K ₂ O	40	\$0.26	\$10.53	_____
Lime ⁴	Limestone	1,000	\$36.50	\$18.25	_____
Other		0	\$0.00	\$0.00	_____
Total				\$38.26	_____

Table 2. Chemicals ^{5,6,7,8,9,10}**

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Burndown	Roundup Power Max	qt.	1	1	\$4.49	\$4.49	_____
		Clarity 4EC	pt.	1	1	\$11.48	\$11.48	_____
		Valor	oz.	1	2	\$6.11	\$12.22	_____
	Pre-Emerge	Gramoxone SL	oz.	1	40	\$0.14	\$5.50	_____
		Boundary	pt.	1	2	\$10.26	\$20.52	_____
	Post-Emerge	Flexstar GT	pt.	1	3	\$4.10	\$12.30	_____
		Roundup Power Max	qt.	1	1	\$4.49	\$4.49	_____
Insecticides		Foliar	acre	1	1	\$5.00	\$5.00	_____
Insecticide/Fungicides		Seed Treatment	acre	1	1	\$8.50	\$8.50	_____
Fungicides		Foliar	acre	1	1	\$12.00	\$12.00	_____
Total							\$96.50	_____

Table 3. Machinery ¹¹

Plant	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
	Tractor, 215 hp	Planter	16-row	\$6.46	\$3.71	\$1.07	\$0.79	\$12.03	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Fungicide	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$1.65	\$2.03	\$1.13	\$0.84	\$5.66	_____
Harvest	Combine	Grain Head	30 ft	\$11.11	\$9.80	\$3.45	\$1.23	\$25.59	_____
Haul	Tractor, 215 hp	Grain Cart		\$2.31	\$1.06	\$0.69	\$0.52	\$4.57	_____
Haul	Semi Tractor/Trailer		800 bu	\$4.83	\$0.52	\$1.16	\$0.93	\$7.44	_____
Total				\$47.33	\$18.33	\$8.49	\$5.10	\$79.26	_____

FOOTNOTES

- 1) Soybean price was estimated using weighted average futures prices from November 2017 to July 2018 on December 30, 2016, adjusted by average monthly basis in Tennessee.
 - 2) Assumes a normal crop rotation with minimal weed infestation. A continuous soybean system may require additional expenses for chemicals and/or land preparation.
 - 3) Seed price includes technology fee.
 - 4) Assumes 2 tons of lime applied every four years.
 - 5) Seed treatments, such as some nematicide treatments, are optional and costs vary depending on product used.
 - 6) Weed control chemicals should be selected for specific weed or grass problems that are present. Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
 - 7) The addition of Dicamba @ 8oz./acre is necessary to manage Glyphosate resistant horseweed. This adds an additional \$5.50/acre to the burndown spray cost.
 - 8) Due to prevalence of Glyphosate resistant weeds, if weeds are not controlled, hand chopping may be necessary.
 - 9) For an alternate control, use Gramoxone SL @1.25 quarts/acre plus a surfactant.
 - 10) Several other versions of Glyphosate, the active ingredient in Roundup Power Max, are available. Check label for concentration rates and registration on Roundup Ready Soybeans.
 - 11) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.
 - 12) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
 - 13) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premium paid per insured acre of soybeans in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
 - 14) Operating interest is assumed to be charged on half of all variable expenses.
- * For Xtend soybeans seed prices may be \$6-15 per unit higher.
- ** Xtend soybeans require alternative chemical applications and should be used according to product specifications. Additional costs for applicator training may be required. Cost estimate are provided in the Preliminary 2017 Soybean, Roundup Ready 2 Xtend, No-Till, Non-Irrigated Budget.

2017 Soybean, No-Till, Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
Revenue					
Soybeans ¹	Bu	60	\$9.80	\$588.00	_____
			Gross Revenue (\$/Acre)		
				Total Revenue \$588.00	_____
Variable Expenses ²					
Seed ^{3*}	Thous.	140	\$0.43	\$60.00	_____
Fertilizer & Lime (Table 1) ⁴	Acre	1	\$38.26	\$38.26	_____
Chemical (Table 2) ^{5,6,7,8,9,10**}	Acre	1	\$96.50	\$96.50	_____
Crop Scout	Acre	1	\$6.00	\$6.00	_____
Repair & Maintenance (Table 3) ¹¹	Acre	1	\$18.33	\$18.33	_____
Fuel, Oil & Filter (Table 3) ¹¹	Acre	1	\$8.49	\$8.49	_____
Operator Labor (Table 3) ¹¹	Acre	1	\$5.10	\$5.10	_____
Machinery Rental	Acre	0	\$0.00	\$0.00	_____
Custom Work	Acre	0	\$0.00	\$0.00	_____
Drying (Fuel/Electric)	Bu	60	\$0.00	\$0.00	_____
Irrigation Energy Cost (Diesel)	Ac-In	4.5	\$4.02	\$18.09	_____
Irrigation System R&M & Labor	Acre	1	\$15.09	\$15.09	_____
Other Irrigation Costs	Acre	1	\$0.00	\$0.00	_____
Cash Rent ¹²	Acre	1	\$165.00	\$165.00	_____
Crop Insurance ¹³	Acre	1	\$7.94	\$7.94	_____
Operating Interest ¹⁴	%	\$438.81	6.00%	\$13.16	_____
Other Variable Costs	Acre	1	\$0.00	\$0.00	_____
			Total Variable Expenses \$451.98		_____
			Return Above Variable Expenses \$136.02		_____
Fixed Expenses					
Machinery ¹¹					
Capital Recovery (Table 3)	Acre	1	\$47.33	\$47.33	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Capital Recovery (Irrigation Equipment) ¹⁵	Acre	1	\$85.15	\$85.15	_____
Other Irrigation Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor ¹⁶	Acre	2	\$15.00	\$30.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
			Total Fixed Expenses \$162.48		_____
			Return Above All Specified Expenses -\$26.46		_____

Breakeven Price For Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
40	\$11.30	\$15.36
45	\$10.04	\$13.65
50	\$9.04	\$12.29
55	\$8.22	\$11.17
60	\$7.53	\$10.24
65	\$6.95	\$9.45
70	\$6.46	\$8.78
75	\$6.03	\$8.19
80	\$5.65	\$7.68

Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$7.80	58	79
\$8.30	54	74
\$8.80	51	70
\$9.30	49	66
\$9.80	46	63
\$10.30	44	60
\$10.80	42	57
\$11.30	40	54
\$11.80	38	52

Table 1. Fertilizer & Lime ⁴

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	0	\$0.36	\$0.00	_____
Phosphorous	P ₂ O ₅	20	\$0.47	\$9.48	_____
Potassium	K ₂ O	40	\$0.26	\$10.53	_____
Lime ⁴	Limestone	1,000	\$36.50	\$18.25	_____
Other		0	\$0.00	\$0.00	_____
Total				\$38.26	_____

Table 2. Chemicals ^{5,6,7,8,9,10**}

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Burndown	Roundup Power Max	qt.	1	1	\$4.49	\$4.49	_____
	Pre-Emerge	Clarity 4EC	pt.	1	1	\$11.48	\$11.48	_____
		Valor	oz.	1	2	\$6.11	\$12.22	_____
	Post-Emerge	Gramoxone SL	oz.	1	40	\$0.14	\$5.50	_____
		Boundary	pt.	1	2	\$10.26	\$20.52	_____
		Flexstar GT	pt.	1	3	\$4.10	\$12.30	_____
		Roundup Power Max	qt.	1	1	\$4.49	\$4.49	_____
Insecticides			acre	1	1	\$5.00	\$5.00	_____
Insecticide/Fungicides		Seed Treatment	acre	1	1	\$8.50	\$8.50	_____
Fungicides			acre	1	1	\$12.00	\$12.00	_____
Total							\$96.50	_____

Table 3. Machinery ¹¹

Plant	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Burndown	Tractor, 215 hp	Planter	16-row	\$6.46	\$3.71	\$1.07	\$0.79	\$12.03	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Fungicide	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$1.65	\$2.03	\$1.13	\$0.84	\$5.66	_____
Harvest	Combine	Grain Head	30 ft	\$11.11	\$9.80	\$3.45	\$1.23	\$25.59	_____
Haul	Tractor, 215 hp	Grain Cart		\$2.31	\$1.06	\$0.69	\$0.52	\$4.57	_____
Haul	Semi Tractor/Trailer		800 bu	\$4.83	\$0.52	\$1.16	\$0.93	\$7.44	_____
Total				\$47.33	\$18.33	\$8.49	\$5.10	\$79.26	_____

FOOTNOTES

- 1) Soybean price was estimated using weighted average futures prices from November 2017 to July 2018 on December 30, 2016, adjusted by average monthly basis in Tennessee.
 - 2) Assumes a normal crop rotation with minimum weed infestation. A continuous soybean system may require additional expenses for chemicals and/or land preparation.
 - 3) Seed price includes technology fee.
 - 4) Assumes 2 tons of lime applied every four years.
 - 5) Seed treatments, such as some nematicide treatments, are optional and costs vary depending on product used.
 - 6) Weed control chemicals should be selected for specific weed or grass problems that are present. Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
 - 7) The addition of Dicamba @ 8oz./acre is necessary to manage Glyphosate resistant horseweed. This adds an additional \$5.50/acre to the burndown spray cost.
 - 8) Due to prevalence of Glyphosate resistant weeds, if weeds are not controlled, hand chopping may be necessary.
 - 9) For an alternate control, use Gramoxone SL @1.25 quarts/acre plus a surfactant.
 - 10) Several other versions of Glyphosate, the active ingredient in Roundup Power Max, are available. Check label for concentration rates and registration on Roundup Ready Soybeans.
 - 11) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.
 - 12) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
 - 13) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premium paid per insured acre of soybeans in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
 - 14) Operating interest is assumed to be charged on half of all variable expenses.
 - 15) Center-pivot irrigation costs are estimated using the following assumptions: purchase price and installation cost of \$80,000; useful life of 20 years; and an irrigated acreage of 125 acres. Irrigation rates should be adjusted to meet commodity- and farm-specific applications.
 - 16) Management labor for irrigated acreage is assumed to be double that of dryland acres.
- * For Xtend soybeans seed prices may be \$6-15 per unit higher.
- ** Xtend soybeans require alternative chemical applications and should be used according to product specifications. Additional costs for applicator training may be required. Cost estimate are provided in the Preliminary 2017 Soybean, Roundup Ready 2 Xtend, No-Till, Non-Irrigated Budget.

2017 Wheat/Soybean Double Cropped, Non-Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
Revenue					
				Gross Revenue (\$/Acre)	
Soybeans ¹	Bu	40	\$9.80	\$392.00	_____
Wheat ²	Bu	65	\$4.25	\$276.25	_____
				Total Revenue	_____
				\$668.25	_____
Variable Expenses ³					
Seed, Soybeans ^{4*}	Thous.	140	\$0.43	\$60.00	_____
Seed, Wheat ⁴	Bu	2	\$17.50	\$35.00	_____
Fertilizer & Lime (Table 1)	Acre	1	\$100.88	\$100.88	_____
Chemical (Table 2) ^{5,6,7,8,9,10**}	Acre	1	\$97.40	\$97.40	_____
Crop Scout	Acre	1	\$6.00	\$6.00	_____
Repair & Maintenance (Table 3) ¹¹	Acre	1	\$45.18	\$45.18	_____
Fuel, Oil & Filter (Table 3) ¹¹	Acre	1	\$20.50	\$20.50	_____
Operator Labor (Table 3) ¹¹	Acre	1	\$12.78	\$12.78	_____
Machinery Rental	Acre	0	\$0.00	\$0.00	_____
Custom Work	Acre	0	\$0.00	\$0.00	_____
Drying (Fuel/Electric)	Bu	40	\$0.00	\$0.00	_____
Cash Rent ¹²	Acre	1	\$94.00	\$94.00	_____
Crop Insurance ¹³	Acre	1	\$14.78	\$14.78	_____
Operating Interest ¹⁴	%	\$486.53	6.00%	\$14.60	_____
Other Variable Costs	Acre	1	\$0.00	\$0.00	_____
				Total Variable Expenses	_____
				\$501.12	_____
				Return Above Variable Expenses	_____
				\$167.13	_____
Fixed Expenses					
Machinery ¹¹					_____
Capital Recovery (Table 3)	Acre	1	\$83.58	\$83.58	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$15.00	\$15.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
				Total Fixed Expenses	_____
				\$98.58	_____
				Return Above All Specified Expenses	_____
				\$68.55	_____

Breakeven Price For Selected Soybean Yield ¹⁵

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
20	\$12.53	\$14.99
25	\$10.02	\$11.99
30	\$8.35	\$10.00
35	\$7.16	\$8.57
40	\$6.26	\$7.50
45	\$5.57	\$6.66
50	\$5.01	\$6.00
55	\$4.56	\$5.45
60	\$4.18	\$5.00

Breakeven Yield for Selected Soybean Price ¹⁵

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$7.80	32	38
\$8.30	30	36
\$8.80	28	34
\$9.30	27	32
\$9.80	26	31
\$10.30	24	29
\$10.80	23	28
\$11.30	22	27
\$11.80	21	25

Breakeven Price For Selected Wheat Yield ¹⁵

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
45	\$5.57	\$6.66
50	\$5.01	\$6.00
55	\$4.56	\$5.45
60	\$4.18	\$5.00
65	\$3.85	\$4.61
70	\$3.58	\$4.28
75	\$3.34	\$4.00
80	\$3.13	\$3.75
85	\$2.95	\$3.53

Breakeven Yield for Selected Wheat Price ¹⁵

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$2.25	111	133
\$2.75	91	109
\$3.25	77	92
\$3.75	67	80
\$4.25	59	71
\$4.75	53	63
\$5.25	48	57
\$5.75	44	52
\$6.25	40	48

Table 1. Fertilizer & Lime

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Ammonium Nitrate	80	\$0.48	\$38.40	_____
Phosphorous	P ₂ O ₅	60	\$0.47	\$28.43	_____
Potassium	K ₂ O	60	\$0.26	\$15.80	_____
Lime	Limestone	1,000	\$36.50	\$18.25	_____
Other		0	\$0.00	\$0.00	_____
Total				\$100.88	_____

Table 2. Chemicals 5,6,7,8,9,10**

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides-	Burndown	Gramoxone SL	oz.	1	40	\$0.14	\$5.50	_____
Soybeans		Metribuzin	oz.	1	4	\$0.86	\$3.44	_____
	Post-Emerge	Roundup Power Max	qt.	1	1	\$4.49	\$4.49	_____
		Flexstar GT	pt.	1	3	\$4.10	\$12.30	_____
Herbicides-		Harmony Extra	oz.	1	0.5	\$14.03	\$7.02	_____
Wheat		Axial XL	oz.	1	16.4	\$1.07	\$17.55	_____
		Surfactant	pt.	1	0.1	\$3.52	\$0.35	_____
Insecticides		Wheat-seed treatment	acre	1	1	\$11.00	\$11.00	_____
		Wheat-Foliar	acre	1	1	\$3.00	\$3.00	_____
		Soybeans	acre	1	1	\$5.00	\$5.00	_____
Fungicides		Soybeans	acre	1	1	\$12.00	\$12.00	_____
		Soybeans-seed treatment	acre	1	1	\$3.75	\$3.75	_____
		Wheat-foliar	acre	1	1	\$12.00	\$12.00	_____
Total							\$97.40	_____

Table 3. Machinery ¹¹

	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Chisel	Tractor, 215 hp	Chisel Plow	21'	\$1.90	\$2.38	\$1.55	\$1.16	\$6.98	_____
Disk	Tractor, 215 hp	Tandem Disk	29'	\$4.48	\$2.59	\$1.25	\$0.93	\$9.25	_____
Prepare Seedbed	Tractor, 215 hp	Cultimulcher	20'	\$2.73	\$3.00	\$1.73	\$1.29	\$8.75	_____
Plant	Tractor, 215 hp	Grain Drill	20 ft	\$4.69	\$7.26	\$1.98	\$1.47	\$15.40	_____
Topdress	Tractor, 215 hp	Fertilize Spreader	900#	\$1.65	\$2.03	\$1.13	\$0.84	\$5.66	_____
Fungicide	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Insect Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Harvest	Combine	Grain Head	30 ft	\$11.11	\$9.80	\$3.45	\$1.23	\$25.59	_____
Haul	Tractor, 215 hp	Grain Cart		\$2.31	\$1.06	\$0.69	\$0.52	\$4.57	_____
Haul	Semi Tractor/Trailer		800 bu	\$4.83	\$0.52	\$1.16	\$0.93	\$7.44	_____
Plant	Tractor, 215 hp	Planter	16-row	\$6.46	\$3.71	\$1.07	\$0.79	\$12.03	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Harvest	Combine	Grain Head	30 ft	\$11.11	\$9.80	\$3.45	\$1.23	\$25.59	_____
Haul	Tractor, 215 hp	Grain Cart		\$2.31	\$1.06	\$0.69	\$0.52	\$4.57	_____
Haul	Semi Tractor/Trailer		800 bu	\$4.83	\$0.52	\$1.16	\$0.93	\$7.44	_____
Total				\$83.58	\$45.18	\$20.50	\$12.78	\$162.04	_____

FOOTNOTES

- 1) Soybean price was estimated using weighted average futures prices from November 2017 to July 2018 on December 30, 2016, adjusted by average monthly basis in Tennessee.
 - 2) Wheat price was estimated using weighted average futures prices from July 2017 to May 2018 on December 30, 2016, adjusted by average monthly basis in Tennessee.
 - 3) Spraying for stinkbugs may add \$2.50/acre per spraying, plus application expenses.
 - 4) Seed price includes technology fee.
 - 5) Additional seed treatment is to protect against Barley Yellow Dwarf Virus.
 - 6) Seed treatments, such as some nematicide treatments, are optional and costs vary depending on product used. Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
 - 7) Several other versions of Glyphosate, the active ingredient in Roundup Original Max, are available. Check label for concentration rates and registration on Roundup Ready Soybeans.
 - 8) Due to prevalence of Glyphosate resistant weeds, if weeds are not controlled, hand chopping may be necessary.
 - 9) Cost may vary depending on fungicide used and application rate per acre.
 - 10) If using Liberty Link soybeans, replace Flexstar GT with Liberty herbicide.
 - 11) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.
 - 12) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
 - 13) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premiums paid per insured acre of soybeans and wheat in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
 - 14) Operating interest is assumed to be charged on half of all variable expenses.
 - 15) Estimated breakeven yields and prices assume that half of variable and total specified costs are incurred for each commodity. When estimating soybean breakeven, wheat yield/price are held constant at 60 bu/acre and \$4.21/bu. When estimating wheat breakeven, soybean yield and price are held constant at 40 bu/acre and \$10.04/bu.
- * For Xtend soybeans seed prices may be \$6-15 per unit higher.
- ** Xtend soybeans require alternative chemical applications and should be used according to product specifications. Additional costs for applicator training may be required. Cost estimate are provided in the Preliminary 2017 Soybean, Roundup Ready 2 Xtend, No-Till, Non-Irrigated Budget.

2017 Wheat, Conventional Tillage, Non-Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
Revenue					
Wheat ¹	Bu	65	\$4.25	\$276.25	_____
			Gross Revenue (\$/Acre)		
			Total Revenue		_____
			\$276.25		_____
Variable Expenses					
Seed ²	Bu	2	\$17.50	\$35.00	_____
Fertilizer & Lime (Table 1)	Acre	1	\$75.54	\$75.54	_____
Chemical (Table 2) ^{2,3}	Acre	1	\$70.41	\$70.41	_____
Crop Scout	Acre	1	\$6.00	\$6.00	_____
Repair & Maintenance (Table 3) ⁴	Acre	1	\$28.82	\$28.82	_____
Fuel, Oil & Filter (Table 3) ⁴	Acre	1	\$13.31	\$13.31	_____
Operator Labor (Table 3) ⁴	Acre	1	\$8.68	\$8.68	_____
Machinery Rental	Acre	0	\$0.00	\$0.00	_____
Custom Work	Acre	0	\$0.00	\$0.00	_____
Drying (Fuel/Electric)	Bu	65	\$0.00	\$0.00	_____
Cash Rent ⁵	Acre	1	\$94.00	\$94.00	_____
Crop Insurance ⁶	Acre	1	\$6.84	\$6.84	_____
Operating Interest ⁷	%	\$338.60	6.00%	\$10.16	_____
Other Variable Costs	Acre	1	\$0.00	\$0.00	_____
			Total Variable Expenses		_____
			\$348.76		_____
			Return Above Variable Expenses		_____
			-\$72.51		_____
Fixed Expenses					
Machinery ⁴					
Capital Recovery (Table 3)	Acre	1	\$50.17	\$50.17	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$15.00	\$15.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
			Total Fixed Expenses		_____
			\$65.17		_____
			Return Above All Specified Expenses		_____
			-\$137.68		_____

Breakeven Price For Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
45	\$7.75	\$9.20
50	\$6.98	\$8.28
55	\$6.34	\$7.53
60	\$5.81	\$6.90
65	\$5.37	\$6.37
70	\$4.98	\$5.91
75	\$4.65	\$5.52
80	\$4.36	\$5.17
85	\$4.10	\$4.87

Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$3.25	107	127
\$3.50	100	118
\$3.75	93	110
\$4.00	87	103
\$4.25	82	97
\$4.50	78	92
\$4.75	73	87
\$5.00	70	83
\$5.25	66	79

Table 1. Fertilizer & Lime

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Ammonium Nitrate	80	\$0.48	\$38.40	
Phosphorous	P ₂ O ₅	40	\$0.34	\$13.63	
Potassium	K ₂ O	20	\$0.26	\$5.27	
Lime	Limestone	1,000	\$36.500	\$18.25	
Other		0	\$0.00	\$0.00	
Total				\$75.54	

Table 2. Chemicals^{2,3}

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Burndown	Gramoxone SL	oz.	1	48	\$0.14	\$6.60	
	Pre-Emerge	Roundup Power Max	qt.	1	1	\$4.49	\$4.49	
	Post-Emerge	Harmony Extra	oz.	1	0.5	\$14.03	\$7.02	
		Axial XL	oz.	1	16.4	\$1.07	\$17.55	
		Surfactant	pt.	1	0.1	\$3.52	\$0.35	
							\$0.00	
Insecticides		Seed Treatment	acre	1	1	\$11.00	\$11.00	
Insecticides		Foliar	acre	1	1	\$3.00	\$3.00	
Fungicides		Seed Treatment	acre	1	1	\$8.40	\$8.40	
Fungicides		Foliar	acre	1	1	\$12.00	\$12.00	
Total							\$70.41	

Table 3. Machinery⁴

Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Burndown	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Chisel	Tractor, 215 hp	21'	\$1.90	\$2.38	\$1.55	\$1.16	\$6.98	
Disk	Tractor, 215 hp	29'	\$4.48	\$2.59	\$1.25	\$0.93	\$9.25	
Prepare Seedbed	Tractor, 215 hp	26.5'	\$2.43	\$2.21	\$1.31	\$0.97	\$6.92	
Plant	Tractor, 215 hp	20 ft	\$4.69	\$7.26	\$1.98	\$1.47	\$15.40	
Weed Control	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Weed Control	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Fungicide	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Fertilize	Tractor, 215 hp	900#	\$1.65	\$2.03	\$1.13	\$0.84	\$5.66	
Insecticide	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Harvest	Combine	30 ft	\$11.11	\$9.80	\$3.45	\$1.23	\$25.59	
Haul	Tractor, 215 hp		\$2.31	\$1.06	\$0.69	\$0.52	\$4.57	
Haul	Semi Tractor/Trailer	800 bu	\$4.83	\$0.52	\$1.16	\$0.93	\$7.44	
Total			\$50.17	\$28.82	\$13.31	\$8.68	\$100.99	

FOOTNOTES

- 1) Wheat price was estimated using weighted average futures prices from July 2017 to May 2018 on December 30, 2016, adjusted by average monthly basis in Tennessee. If a market for straw is available, add an appropriate amount to return to land, management, and risk, based on the expected yield and price of the straw, less harvest and marketing costs.
- 2) Additional seed treatment is to protect against Barley Yellow Dwarf virus.
- 3) Cost may vary depending on fungicide used and application rate per acre. Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
- 4) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.
- 5) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
- 6) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premium paid per insured acre of wheat in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
- 7) Operating interest is assumed to be charged on half of all variable expenses.

2017 Cotton, No-Till, Non-Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
Revenue					
Cotton ^{1,2,3}	lb	950	\$0.72	\$684.00	_____
			Gross Revenue (\$/Acre)		
			Total Revenue		_____
			\$684.00		_____
Variable Expenses					
Seed ^{4*}	Thous.	48.15	\$2.16	\$103.99	_____
Wrap ⁵	lb	950	\$0.02	\$19.00	_____
Fertilizer & Lime (Table 1)	Acre	1	\$97.07	\$97.07	_____
Chemical (Table 2) ^{6,7,8,9,10**}	Acre	1	\$135.62	\$135.62	_____
Crop Scout	Acre	1	\$9.50	\$9.50	_____
Repair & Maintenance (Table 3) ¹¹	Acre	1	\$24.11	\$24.11	_____
Fuel, Oil & Filter (Table 3) ¹¹	Acre	1	\$12.99	\$12.99	_____
Operator Labor (Table 3) ¹¹	Acre	1	\$7.04	\$7.04	_____
Machinery Rental	Acre	1	\$0.00	\$0.00	_____
Custom Work	Acre	1	\$0.00	\$0.00	_____
Other Transportation Costs	Acre	1	\$0.00	\$0.00	_____
Cash Rent ¹²	Acre	1	\$94.00	\$94.00	_____
Crop Insurance ¹³	Acre	1	\$9.05	\$9.05	_____
Operating Interest ¹⁴	%	\$512.37	6.00%	\$15.37	_____
Other Variable Costs	Acre	0	\$0.00	\$0.00	_____
			Total Variable Expenses		_____
			\$527.74		_____
			Return Above Variable Expenses		_____
			\$156.26		_____
Fixed Expenses					
Machinery ¹¹					
Capital Recovery (Table 3)	Acre	1	\$115.48	\$115.48	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$15.00	\$15.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
			Total Fixed Expenses		_____
			\$130.48		_____
			Return Above All Specified Expenses		_____
			\$25.78		_____

Breakeven Price For Selected Yield

Yield (lb)	Variable Cost (\$/lb)	Total Specified Cost (\$/lb)
700	\$0.75	\$0.94
750	\$0.70	\$0.88
800	\$0.66	\$0.82
850	\$0.62	\$0.77
900	\$0.59	\$0.73
950	\$0.56	\$0.69
1,000	\$0.53	\$0.66
1,050	\$0.50	\$0.63
1,100	\$0.48	\$0.60
1,150	\$0.46	\$0.57
1,200	\$0.44	\$0.55

Breakeven Yield for Selected Price

Price (\$/lb)	Variable Cost (lb)	Total Specified Cost (lb)
\$0.47	1,123	1,400
\$0.52	1,015	1,266
\$0.57	926	1,155
\$0.62	851	1,062
\$0.67	788	982
\$0.72	733	914
\$0.77	685	855
\$0.82	644	803
\$0.87	607	757
\$0.92	574	715
\$0.97	544	679

Table 1. Fertilizer & Lime

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	80	\$0.36	\$28.52	
Phosphorous	P ₂ O ₅	60	\$0.34	\$20.44	
Potassium	K ₂ O	90	\$0.26	\$23.70	
Sulfur ¹⁵	Elemental	10	\$0.35	\$3.50	
Boron		0.5	\$5.33	\$2.67	
Lime	Limestone	1,000	\$36.50	\$18.25	
Other		0	\$0.00	\$0.00	
Total				\$97.07	

Table 2. Chemicals^{6,7,8,9,10*}

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Burndown	Roundup Power Max	qt.	1	1	\$4.49	\$4.49	
		Clarity 4EC	pt.	1	0.5	\$11.48	\$5.74	
	Pre-Emerge	Liberty 280 SL	oz.	2	29	\$0.46	\$26.83	
		Cotoran 4L	pt.	1	2	\$4.99	\$9.98	
	Post-Emerge	Roundup Power Max	qt.	1	1	\$4.49	\$4.49	
		Dual Magnum	pt.	1	1	\$12.50	\$12.50	
	Hooded Sprayer	Surfactant	pt.	1	0.2	\$3.52	\$0.70	
		Valor	oz.	1	1	\$6.11	\$6.11	
Growth Regulator		Mepex (Mepiquat Chloride)	pt.	1	2	\$1.00	\$2.00	
Defoliant		Ethephon	oz.	1	12	\$0.46	\$5.52	
Boll Opener		Seed Treatment	oz.	1	32	\$0.18	\$5.76	
Insecticides		In-Season	acre	1	1	\$9.00	\$9.00	
Fungicides		Seed Treatment	acre	1	1	\$35.00	\$35.00	
Total						\$7.50	\$7.50	
							\$135.62	

Table 3. Machinery¹¹

Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Chop Stalks	Tractor, 215 hp	15'	\$3.50	\$3.68	\$1.65	\$1.23	\$10.06	
Burndown	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Plant	Tractor, 215 hp	12-row	\$7.25	\$3.76	\$1.42	\$1.06	\$13.50	
Weed Control	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Weed Control	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Weed Control	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Weed Control	Tractor, 215 hp	Hooded Sprayer	\$7.55	\$1.07	\$0.39	\$0.29	\$9.31	
Fertilize	Tractor, 215 hp	Fertilize Spreader	\$1.65	\$2.03	\$1.13	\$0.84	\$5.66	
Spray	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Spray	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Spray	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Spray	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Harvest	Picker/Module Builder (Round)	6-row	\$60.51	\$11.45	\$5.75	\$1.56	\$79.27	
Harvest	Tractor, 215 hp	Module Handler	\$1.46	\$0.17	\$1.05	\$0.78	\$3.46	
Other			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Total			\$115.48	\$24.11	\$12.99	\$7.04	\$159.61	

FOOTNOTES

- 1) Most ginning arrangements provide producers cottonseed revenue net ginning costs.
 - 2) A second harvest may add as much as \$25/acre to variable costs.
 - 3) Cotton price estimate includes the loan rate plus an estimated loan equity payment and seed and hauling allowance.
 - 4) Assumes 3.5 seeds per foot. Tech fees have been included in seed cost. Seed and tech fees can be separated at the users discretion. Seed cost varies per variety and seed size. Tech fees had not been set at time of printing and are estimates. Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
 - 5) Bale wrap is estimated at \$0.02 per lb of lint.
 - 6) Additional sprays may be necessary for specific insects.
 - 7) In-season per-acre cost includes boll weevil eradication fees and chemical expenses for control of plant bugs, bollworm, and other insect pests.
 - 8) Due to prevalence of Glyphosate resistant weeds, if weeds are not controlled, hand chopping may be necessary.
 - 9) Do not tank mix Dual Magnum and Liberty when applying on Widestrike cotton.
 - 10) Use alternative chemicals on non-Liberty tolerant cotton varieties.
 - 11) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.
 - 12) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
 - 13) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premium paid per insured acre of cotton in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
 - 14) Operating interest is assumed to be charged on half of all variable expenses.
 - 15) Current University of Tennessee recommendations do not include sulfur. However, in west Tennessee, sulfur is commonly applied at a rate of 10-15 lbs/acre.
- * For Xtend cotton seed prices may be \$6-15 per unit higher.
- ** Xtend Cotton require alternative chemical applications and should be used according to product specifications. Additional costs for applicator training may be required. Cost estimate are provided in the Preliminary 2017 Cotton, Roundup Ready 2 Xtend, No-Till, Non-Irrigated Budget.

2017 Cotton, Conventional Tillage, Non-Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
Revenue					
Cotton ^{1,2,3}	lb	950	\$0.72	\$684.00	_____
				Gross Revenue (\$/Acre)	
				Total Revenue	\$684.00
Variable Expenses					
Seed ^{4*}	Thous.	48.15	\$2.16	\$103.99	_____
Wrap ⁵	lb	950	\$0.02	\$19.00	_____
Fertilizer & Lime (Table 1)	Acre	1	\$97.07	\$97.07	_____
Chemical (Table 2) ^{6,7,8,9,10**}	Acre	1	\$125.39	\$125.39	_____
Crop Scout	Acre	1	\$9.50	\$9.50	_____
Repair & Maintenance (Table 3) ¹¹	Acre	1	\$34.43	\$34.43	_____
Fuel, Oil & Filter (Table 3) ¹¹	Acre	1	\$18.57	\$18.57	_____
Operator Labor (Table 3) ¹¹	Acre	1	\$11.18	\$11.18	_____
Machinery Rental	Acre	1	\$0.00	\$0.00	_____
Custom Work	Acre	1	\$0.00	\$0.00	_____
Other Transportation Costs	Acre	1	\$0.00	\$0.00	_____
Cash Rent ¹²	Acre	1	\$94.00	\$94.00	_____
Crop Insurance ¹³	Acre	1	\$9.05	\$9.05	_____
Operating Interest ¹⁴	%	\$522.19	6.00%	\$15.67	_____
Other Variable Costs	Acre	0	\$0.00	\$0.00	_____
				Total Variable Expenses	\$537.85
				Return Above Variable Expenses	\$146.15
Fixed Expenses					
Machinery ¹¹					
Capital Recovery (Table 3)	Acre	1	\$124.88	\$124.88	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$15.00	\$15.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
				Total Fixed Expenses	\$139.88
				Return Above All Specified Expenses	\$6.27

Breakeven Price For Selected Yield

Yield (lb)	Variable Cost (\$/lb)	Total Specified Cost (\$/lb)
700	\$0.77	\$0.97
750	\$0.72	\$0.90
800	\$0.67	\$0.85
850	\$0.63	\$0.80
900	\$0.60	\$0.75
950	\$0.57	\$0.71
1,000	\$0.54	\$0.68
1,050	\$0.51	\$0.65
1,100	\$0.49	\$0.62
1,150	\$0.47	\$0.59
1,200	\$0.45	\$0.56

Breakeven Yield for Selected Price

Price (\$/lb)	Variable Cost (lb)	Total Specified Cost (lb)
\$0.47	1,442	1,442
\$0.52	1,034	1,303
\$0.57	944	1,189
\$0.62	868	1,093
\$0.67	803	1,012
\$0.72	747	941
\$0.77	699	880
\$0.82	656	827
\$0.87	618	779
\$0.92	585	737
\$0.97	554	699

Table 1. Fertilizer & Lime

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	80	\$0.36	\$28.52	
Phosphorous	P ₂ O ₅	60	\$0.34	\$20.44	
Potassium	K ₂ O	90	\$0.26	\$23.70	
Sulfur ¹⁵	Elemental	10	\$0.35	\$3.50	
Boron		0.5	\$5.33	\$2.67	
Lime	Limestone	1,000	\$36.50	\$18.25	
Other		0	\$0.00	\$0.00	
Total				\$97.07	

Table 2. Chemicals^{6,7,8,9,10**}

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Pre-Emerge	Cotoran 4L	pt.	1	2	\$4.99	\$9.98	
		Liberty 280 SL	oz.	2	29	\$0.46	\$26.83	
	Post-Emerge	Roundup Power Max	qt.	1	1	\$4.49	\$4.49	
		Dual Magnum	pt.	1	1	\$12.50	\$12.50	
	Hooded Sprayer	Surfactant	pt.	1	0.2	\$3.52	\$0.70	
		Valor	oz.	1	1	\$6.11	\$6.11	
						\$0.00	\$0.00	
Growth Regulator		Mepex (Mepiquat Chloride)	pt.	1	2	\$1.00	\$2.00	
Defoliant			oz.	1	12	\$0.46	\$5.52	
Boll Opener		Ethephon	oz.	1	32	\$0.18	\$5.76	
Insecticides		Seed Treatment	acre	1	1	\$9.00	\$9.00	
		In-Season	acre	1	1	\$35.00	\$35.00	
Fungicides		Seed Treatment	acre	1	1	\$7.50	\$7.50	
Total							\$125.39	

Table 3. Machinery¹¹

	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Chop Stalks	Tractor, 215 hp	Rotary Mower	15'	\$3.50	\$3.68	\$1.65	\$1.23	\$10.06	
Chisel	Tractor, 215 hp	Chisel Plow	21'	\$1.90	\$2.38	\$1.55	\$1.16	\$6.98	
Disk	Tractor, 215 hp	Tandem Disk	29'	\$4.48	\$2.59	\$1.25	\$0.93	\$9.25	
Disk	Tractor, 215 hp	Tandem Disk	29'	\$4.48	\$2.59	\$1.25	\$0.93	\$9.25	
Prepare Seedbed	Tractor, 215 hp	Cultimulcher	20'	\$2.73	\$3.00	\$1.73	\$1.29	\$8.75	
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$1.65	\$2.03	\$1.13	\$0.84	\$5.66	
Plant	Tractor, 215 hp	Planter	12-row	\$7.25	\$3.76	\$1.42	\$1.06	\$13.50	
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Weed Control	Tractor, 215 hp	Hooded Sprayer		\$7.55	\$1.07	\$0.39	\$0.29	\$9.31	
Spray	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Spray	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Spray	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Spray	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Harvest	Picker/Module Builder (Round)		6-row	\$60.51	\$11.45	\$5.75	\$1.56	\$79.27	
Harvest	Tractor, 215 hp	Module Handler		\$1.46	\$0.17	\$1.05	\$0.78	\$3.46	
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Total				\$124.88	\$34.43	\$18.57	\$11.18	\$189.06	

FOOTNOTES

- 1) Most ginning arrangements provide producers cottonseed revenue net ginning costs.
 - 2) A second harvest may add as much as \$25/acre to variable costs.
 - 3) Cotton price estimate includes the loan rate plus an estimated loan equity payment and seed and hauling allowance.
 - 4) Assumes 3.5 seeds per foot. Tech fees have been included in seed cost. Seed and tech fees can be separated at the users discretion. Seed cost varies per variety and seed size. Tech fees had not been set at time of printing and are estimates. Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
 - 5) Bale wrap is estimated at \$0.02 per lb of lint.
 - 6) Additional sprays may be necessary for specific insects.
 - 7) In-season per-acre cost includes boll weevil eradication fees and chemical expenses for control of plant bugs, bollworm, and other insect pests.
 - 8) Due to prevalence of Glyphosate resistant weeds, if weeds are not controlled, hand chopping may be necessary.
 - 9) Do not tank mix Dual Magnum and Liberty when applying on Widestrike cotton.
 - 10) Use alternative chemicals on non-Liberty tolerant cotton varieties.
 - 11) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.
 - 12) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
 - 13) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premium paid per insured acre of wheat in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
 - 14) Operating interest is assumed to be charged on half of all variable expenses.
 - 15) Current University of Tennessee recommendations do not include sulfur. However, in west Tennessee, sulfur is commonly applied at a rate of 10-15 lbs/acre.
- * For Xtend cotton seed prices may be \$6-15 per unit higher.
- ** Xtend Cotton require alternative chemical applications and should be used according to product specifications. Additional costs for applicator training may be required. Cost estimate are provided in the Preliminary 2017 Cotton, Roundup Ready 2 Xtend, No-Till, Non-Irrigated Budget.

2017 Cotton, No-Till, Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
Revenue					
Cotton ^{1,2,3}	lb	1,100	\$0.72	\$792.00	_____
			Gross Revenue (\$/Acre)		
			Total Revenue	\$792.00	_____
Variable Expenses					
Seed ^{4*}	Thous.	48.15	\$2.16	\$103.99	_____
Wrap ⁵	lb	1,100	\$0.02	\$22.00	_____
Fertilizer & Lime (Table 1)	Acre	1	\$100.64	\$100.64	_____
Chemical (Table 2) ^{6,7,8,9,10**}	Acre	1	\$135.62	\$135.62	_____
Crop Scout	Acre	1	\$9.50	\$9.50	_____
Repair & Maintenance (Table 3) ¹¹	Acre	1	\$24.11	\$24.11	_____
Fuel, Oil & Filter (Table 3) ¹¹	Acre	1	\$12.99	\$12.99	_____
Operator Labor (Table 3) ¹¹	Acre	1	\$7.04	\$7.04	_____
Machinery Rental	Acre	1	\$0.00	\$0.00	_____
Custom Work	Acre	1	\$0.00	\$0.00	_____
Irrigation Energy Cost	Ac-In	6	\$4.02	\$24.12	_____
Irrigation System R&M	Acre	1	\$15.09	\$15.09	_____
Other Irrigation Costs	Acre	1	\$0.00	\$0.00	_____
Cash Rent ¹²	Acre	1	\$165.00	\$165.00	_____
Crop Insurance ¹³	Acre	1	\$9.05	\$9.05	_____
Operating Interest ¹⁴	%	\$629.15	6.00%	\$18.87	_____
Other Variable Costs	Acre	0	\$0.00	\$0.00	_____
			Total Variable Expenses	\$648.02	_____
			Return Above Variable Expenses	\$143.98	_____
Fixed Expenses					
Machinery ¹¹					
Capital Recovery (Table 3)	Acre	1	\$115.48	\$115.48	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Capital Recovery (Irrigation Equipment) ¹⁵	Acre	1	\$85.15	\$85.15	_____
Other Irrigation Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor ¹⁶	Acre	2	\$15.00	\$30.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
			Total Fixed Expenses	\$230.63	_____
			Return Above All Specified Expenses	-\$86.65	_____

Breakeven Price For Selected Yield

Yield (lb)	Variable Cost (\$/lb)	Total Specified Cost (\$/lb)
850	\$0.76	\$1.03
900	\$0.72	\$0.98
950	\$0.68	\$0.92
1,000	\$0.65	\$0.88
1,050	\$0.62	\$0.84
1,100	\$0.59	\$0.80
1,150	\$0.56	\$0.76
1,200	\$0.54	\$0.73
1,250	\$0.52	\$0.70
1,300	\$0.50	\$0.68
1,350	\$0.48	\$0.65

Breakeven Yield for Selected Price

Price (\$/lb)	Variable Cost (lb)	Total Specified Cost (lb)
\$0.47	1,379	1,869
\$0.52	1,246	1,690
\$0.57	1,137	1,541
\$0.62	1,045	1,417
\$0.67	967	1,311
\$0.72	900	1,220
\$0.77	842	1,141
\$0.82	790	1,072
\$0.87	745	1,010
\$0.92	704	955
\$0.97	668	906

Table 1. Fertilizer & Lime

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	90	\$0.36	\$32.09	
Phosphorous	P ₂ O ₅	60	\$0.34	\$20.44	
Potassium	K ₂ O	90	\$0.26	\$23.70	
Sulfur ¹⁷	Elemental	10	\$0.35	\$3.50	
Boron		0.5	\$5.33	\$2.67	
Lime	Limestone	1,000	\$36.50	\$18.25	
Other		0	\$0.00	\$0.00	
Total				\$100.64	

Table 2. Chemicals^{6,7,8,9,10**}

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Burndown	Roundup Power Max	qt.	1	1	\$4.49	\$4.49	
		Clarity EC	pt.	1	0.5	\$11.48	\$5.74	
	Pre-Emerge	Cotoran 4L	pt.	1	2	\$4.99	\$9.98	
		Liberty 280 SL	oz.	2	29	\$0.46	\$26.83	
	Post-Emerge	Dual Magnum	pt.	1	1	\$12.50	\$12.50	
		Roundup Power Max	qt.	1	1	\$4.49	\$4.49	
	Hooded Sprayer	Surfactant	pt.	1	0.2	\$3.52	\$0.70	
		Valor	oz.	1	1	\$6.11	\$6.11	
Growth Regulator		Mepex (Mepiquat Chloride)	pt.	1	2	\$1.00	\$2.00	
Defoliant			oz.	1	12	\$0.46	\$5.52	
Boll Opener		Ethephon	oz.	1	32	\$0.18	\$5.76	
Insecticides		Seed Treatment	acre	1	1	\$9.00	\$9.00	
		In-Season	acre	1	1	\$35.00	\$35.00	
Fungicides		Seed Treatment	acre	1	1	\$7.50	\$7.50	
Total							\$135.62	

Table 3. Machinery¹¹

Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Chop Stalks	Tractor, 215 hp	15'	\$3.50	\$3.68	\$1.65	\$1.23	\$10.06	
Burndown	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Plant	Tractor, 215 hp	12-row	\$7.25	\$3.76	\$1.42	\$1.06	\$13.50	
Weed Control	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Weed Control	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Weed Control	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Weed Control	Tractor, 215 hp	900#	\$7.55	\$1.07	\$0.39	\$0.29	\$9.31	
Fertilize	Tractor, 215 hp	900#	\$1.65	\$2.03	\$1.13	\$0.84	\$5.66	
Spray	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Spray	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Spray	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Spray	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Harvest	Picker/Module Builder (Round)	6-row	\$60.51	\$11.45	\$5.75	\$1.56	\$79.27	
Harvest	Tractor, 215 hp	Module Handler	\$1.46	\$0.17	\$1.05	\$0.78	\$3.46	
Other			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Total			\$115.48	\$24.11	\$12.99	\$7.04	\$159.61	

FOOTNOTES

- 1) Most ginning arrangements provide producers cottonseed revenue net ginning costs.
 - 2) A second harvest may add as much as \$25/acre to variable costs.
 - 3) Cotton price estimate includes the loan rate plus an estimated loan equity payment and seed and hauling allowance.
 - 4) Assumes 3.5 seeds per foot. Tech fees have been included in seed cost. Seed and tech fees can be separated at the users discretion. Seed cost varies per variety and seed size. Tech fees had not been set at time of printing and are estimates. Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
 - 5) Bale wrap is estimated at \$0.02 per lb of lint.
 - 6) Additional sprays may be necessary for specific insects.
 - 7) In-season per-acre cost includes boll weevil eradication fees and chemical expenses for control of plant bugs, bollworm, and other insect pests.
 - 8) Due to prevalence of Glyphosate resistant weeds, if weeds are not controlled, hand chopping may be necessary.
 - 9) Do not tank mix Dual Magnum and Liberty when applying on widestrike cotton.
 - 10) Use alternative chemicals on non-Liberty tolerant cotton varieties.
 - 11) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.
 - 12) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
 - 13) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premium paid per insured acre of wheat in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
 - 14) Operating interest is assumed to be charged on half of all variable expenses.
 - 15) Center-pivot irrigation costs are estimated using the following assumptions: purchase price and installation cost of \$80,000; useful life of 20 years; and an irrigated acreage of 125 acres. Irrigation rates should be adjusted to meet commodity- and farm-specific applications.
 - 16) Management labor for irrigated acreage is assumed to be double that of dryland acres.
 - 17) Current University of Tennessee recommendations do not include sulfur. However, in west Tennessee, sulfur is commonly applied at a rate of 10-15 lbs/acre.
- * For Xtend cotton seed prices may be \$6-15 per unit higher.
- ** Xtend Cotton require alternative chemical applications and should be used according to product specifications. Additional costs for applicator training may be required. Cost estimate are provided in the Preliminary 2017 Cotton, Roundup Ready 2 Xtend, No-Till, Non-Irrigated Budget.

2017 Grain Sorghum, Conventional Tillage, Non-Irrigated Budget

	Unit	Quantity	Price	Total	Your Farm
Revenue					
Grain Sorghum ¹	Bu	90	\$3.55	\$319.50	_____
				Gross Revenue (\$/Acre)	
				Total Revenue \$319.50	_____
Variable Expenses					
Seed ²	Thous.	85	\$0.24	\$20.19	_____
Fertilizer & Lime (Table 1)	Acre	1	\$86.57	\$86.57	_____
Chemical (Table 2) ³	Acre	1	\$62.16	\$62.16	_____
Crop Scout	Acre	1	\$6.00	\$6.00	_____
Repair & Maintenance (Table 3) ⁴	Acre	1	\$25.27	\$25.27	_____
Fuel, Oil & Filter (Table 3) ⁴	Acre	1	\$12.40	\$12.40	_____
Operator Labor (Table 3) ⁴	Acre	1	\$8.00	\$8.00	_____
Machinery Rental	Acre	1	\$0.00	\$0.00	_____
Custom Work	Acre	1	\$0.00	\$0.00	_____
Drying (Fuel/Electric)	Bu	90	\$0.00	\$0.00	_____
Cash Rent ⁵	Acre	1	\$94.00	\$94.00	_____
Crop Insurance ⁶	Acre	1	\$11.53	\$11.53	_____
Operating Interest ⁷	%	\$326.13	6.00%	\$9.78	_____
Other Variable Costs	Acre	1	\$0.00	\$0.00	_____
				Total Variable Expenses \$335.91	_____
				Return Above Variable Expenses -\$16.41	_____
Fixed Expenses					
Machinery ⁴					
Capital Recovery (Table 3)	Acre	1	\$51.95	\$51.95	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$15.00	\$15.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
				Total Fixed Expenses \$66.95	_____
				Return Above All Specified Expenses -\$83.36	_____

Breakeven Price For Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
70	\$4.80	\$5.76
75	\$4.48	\$5.37
80	\$4.20	\$5.04
85	\$3.95	\$4.74
90	\$3.73	\$4.48
95	\$3.54	\$4.24
100	\$3.36	\$4.03
105	\$3.20	\$3.84
110	\$3.05	\$3.66

Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$3.35	100	120
\$3.40	99	118
\$3.45	97	117
\$3.50	96	115
\$3.55	95	113
\$3.60	93	112
\$3.65	92	110
\$3.70	91	109
\$3.75	90	107

Table 1. Fertilizer & Lime

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	90	\$0.36	\$32.09	_____
Phosphorous	P ₂ O ₅	60	\$0.34	\$20.44	_____
Potassium	K ₂ O	60	\$0.26	\$15.80	_____
Lime	Limestone	1,000	\$36.50	\$18.25	_____
Other		0	\$0.00	\$0.00	_____
Total				\$86.57	_____

Table 2. Chemicals³

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Pre-Emerge	Bicep II Magnum	qt.	1	2.1	\$12.62	\$26.50	_____
	Post-Emerge	Atrazine	qt.	1	2	\$3.33	\$6.66	_____
Insecticides		Seed Treatment	acre	1	1	\$8.00	\$8.00	_____
		Foliar	acre	1	1	\$10.00	\$10.00	_____
		Foliar (Aphids)	acre	1	1	\$11.00	\$11.00	_____
Total							\$62.16	_____

Table 3. Machinery⁴

	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Chisel	Tractor, 215 hp	Chisel Plow	21'	\$1.90	\$2.38	\$1.55	\$1.16	\$6.98	_____
Disk	Tractor, 215 hp	Tandem Disk	29'	\$4.48	\$2.59	\$1.25	\$0.93	\$9.25	_____
Prepare Seedbed	Tractor, 215 hp	Do-All	26.5'	\$2.43	\$2.21	\$1.31	\$0.97	\$6.92	_____
Plant	Tractor, 215 hp	Planter	16-row	\$6.46	\$3.71	\$1.07	\$0.79	\$12.03	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$1.65	\$2.03	\$1.13	\$0.84	\$5.66	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Insect Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Insect Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Harvest	Combine	Grain Head	30'	\$11.11	\$9.80	\$3.45	\$1.23	\$25.59	_____
Haul	Tractor, 215 hp	Grain Cart		\$2.31	\$1.06	\$0.69	\$0.52	\$4.57	_____
Haul	Semi Tractor/Trailer		800 bu	\$4.83	\$0.52	\$1.16	\$0.93	\$7.44	_____
Total				\$51.95	\$25.27	\$12.40	\$8.00	\$97.62	_____

FOOTNOTES

- 1) Sorghum price is estimated at 10 cents under the price of corn.
- 2) Seed cost includes fungicide treatment. Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
- 3) Do not use Dual Mangum unless you plant seed that has been safened with Concep or Screen. Do not use Lariat, Bullet, or Lasso Pre unless you plant seed that has been safened with a seed safener containing the active ingredient Flurzole. Late-planted sorghum is susceptible to sorghum midge and must be scouted for possible treatment. An insecticide application for sugarcane aphids in addition to an insecticide application for other pests is assumed.
- 4) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.
- 5) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
- 6) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premium paid per insured acre of wheat in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
- 7) Operating interest is assumed to be charged on half of all variable expenses.

2017 Grain Sorghum, No-Till, Non-Irrigated Budget

	Unit	Quantity	Price	Total	Your Farm
Revenue					
Grain Sorghum ¹	Bu	90	\$3.55	\$319.50	_____
				Gross Revenue (\$/Acre)	
				Total Revenue \$319.50	_____
Variable Expenses					
Seed ²	Thous.	85	\$0.24	\$20.19	_____
Fertilizer & Lime (Table 1)	Acre	1	\$86.57	\$86.57	_____
Chemical (Table 2) ³	Acre	1	\$74.87	\$74.87	_____
Crop Scout	Acre	1	\$6.00	\$6.00	_____
Repair & Maintenance (Table 3) ⁴	Acre	1	\$18.33	\$18.33	_____
Fuel, Oil & Filter (Table 3) ⁴	Acre	1	\$8.49	\$8.49	_____
Operator Labor (Table 3) ⁴	Acre	1	\$5.10	\$5.10	_____
Machinery Rental	Acre	0	\$0.00	\$0.00	_____
Custom Work	Acre	0	\$0.00	\$0.00	_____
Drying (Fuel/Electric)	Bu	90	\$0.00	\$0.00	_____
Cash Rent ⁵	Acre	1	\$94.00	\$94.00	_____
Crop Insurance ⁶	Acre	1	\$11.53	\$11.53	_____
Operating Interest ⁷	%	\$325.08	6.00%	\$9.75	_____
Other Variable Costs	Acre	1	\$0.00	\$0.00	_____
				Total Variable Expenses \$334.84	_____
				Return Above Variable Expenses -\$15.34	_____
Fixed Expenses					
Machinery ⁴					
Capital Recovery (Table 3)	Acre	1	\$47.33	\$47.33	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$15.00	\$15.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
				Total Fixed Expenses \$62.33	_____
				Return Above All Specified Expenses -\$77.67	_____

Breakeven Price For Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
70	\$4.78	\$5.67
75	\$4.46	\$5.30
80	\$4.19	\$4.96
85	\$3.94	\$4.67
90	\$3.72	\$4.41
95	\$3.52	\$4.18
100	\$3.35	\$3.97
105	\$3.19	\$3.78
110	\$3.04	\$3.61

Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$3.35	100	119
\$3.40	98	117
\$3.45	97	115
\$3.50	96	113
\$3.55	94	112
\$3.60	93	110
\$3.65	92	109
\$3.70	90	107
\$3.75	89	106

Table 1. Fertilizer & Lime

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	90	\$0.36	\$32.09	_____
Phosphorous	P ₂ O ₅	60	\$0.34	\$20.44	_____
Potassium	K ₂ O	60	\$0.26	\$15.80	_____
Lime	Limestone	1,000	\$36.50	\$18.25	_____
Other		0	\$0.00	\$0.00	_____
Total				\$86.57	_____

Table 2. Chemicals³

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Burndown	Gramoxone SL	oz.	1	40	\$0.14	\$5.50	_____
		Surfactant	pt.	1	0.2	\$3.52	\$0.70	_____
	Pre-Emerge	Bicep II Magnum	qt.	1	2.1	\$12.62	\$26.50	_____
		Atrazine 4L	qt.	1	1	\$3.33	\$3.33	_____
		Crop Oil	pt.	1	2	\$3.25	\$6.50	_____
Insecticides	Post-Emerge	Atrazine 4L	qt.	1	1	\$3.33	\$3.33	_____
		Seed Treatment	acre	1	1	\$8.00	\$8.00	_____
	Foliar	Foliar	acre	1	1	\$10.00	\$10.00	_____
		Foliar (Aphids)	acre	1	1	\$11.00	\$11.00	_____
Total						\$74.87	_____	

Table 3. Machinery⁴

Plant	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Burndown	Tractor, 215 hp	Planter	16-row	\$6.46	\$3.71	\$1.07	\$0.79	\$12.03	_____
Weed Control	SP Boom Sprayer	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$1.65	\$2.03	\$1.13	\$0.84	\$5.66	_____
Weed Control	SP Boom Sprayer	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Insecticide	SP Boom Sprayer	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Harvest	Combine	Grain Head	30'	\$11.11	\$9.80	\$3.45	\$1.23	\$25.59	_____
Haul	Tractor, 215 hp	Grain Cart		\$2.31	\$1.06	\$0.69	\$0.52	\$4.57	_____
Haul	Semi Tractor/Trailer		800 bu	\$4.83	\$0.52	\$1.16	\$0.93	\$7.44	_____
Total				\$47.33	\$18.33	\$8.49	\$5.10	\$79.26	_____

FOOTNOTES

- 1) Sorghum price is estimated at 10 cents under the price of corn.
- 2) Seed cost includes fungicide treatment. Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
- 3) Do not use Dual Mangum unless you plant seed that has been safened with Concep or Screen. Do not use Lariat, Bullet, or Lasso Pre unless you plant seed that has been safened with a seed safener containing the active ingredient Flurzole. Late-planted sorghum is susceptible to sorghum midge and must be scouted for possible treatment. An insecticide application for sugarcane aphids in addition to an insecticide application for other pests is assumed.
- 4) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.
- 5) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
- 6) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premium paid per insured acre of grain sorghum in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
- 7) Operating interest is assumed to be charged on half of all variable expenses.

2017 Canola, Conventional Tillage, Non-Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
Revenue					
Canola ¹	Bu	50	\$8.05	\$402.50	_____
			Gross Revenue (\$/Acre)		
				Total Revenue \$402.50	_____
Variable Expenses					
Seed ²	lbs	5	\$6.30	\$31.50	_____
Fertilizer & Lime (Table 1)	Acre	1	\$146.44	\$146.44	_____
Chemical (Table 2) ³	Acre	1	\$59.00	\$59.00	_____
Crop Scout	Acre	1	\$6.00	\$6.00	_____
Repair & Maintenance (Table 3) ⁴	Acre	1	\$28.01	\$28.01	_____
Fuel, Oil & Filter (Table 3) ⁴	Acre	1	\$12.33	\$12.33	_____
Operator Labor (Table 3) ⁴	Acre	1	\$7.94	\$7.94	_____
Machinery Rental	Acre	1	\$0.00	\$0.00	_____
Custom Work	Acre	1	\$0.00	\$0.00	_____
Drying (Fuel/Electric)	Bu	50	\$0.00	\$0.00	_____
Cash Rent ⁵	Acre	1	\$94.00	\$94.00	_____
Crop Insurance ⁶	Acre	1	\$16.32	\$16.32	_____
Operating Interest ⁷	%	\$401.54	6.00%	\$12.05	_____
Other Variable Costs	Acre	1	\$0.00	\$0.00	_____
			Total Variable Expenses \$413.58		_____
			Return Above Variable Expenses -\$11.08		_____
Fixed Expenses					
Machinery ⁴					
Capital Recovery (Table 3)	Acre	1	\$45.40	\$45.40	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor ⁸	Acre	2	\$15.00	\$30.00	_____
Other Fixed Costs ⁹	Acre	1	\$0.00	\$0.00	_____
			Total Fixed Expenses \$75.40		_____
			Return Above All Specified Expenses -\$86.48		_____

Breakeven Price For Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
30	\$13.79	\$16.30
35	\$11.82	\$13.97
40	\$10.34	\$12.22
45	\$9.19	\$10.87
50	\$8.27	\$9.78
55	\$7.52	\$8.89
60	\$6.89	\$8.15
65	\$6.36	\$7.52
70	\$5.91	\$6.99

Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$7.05	59	69
\$7.30	57	67
\$7.55	55	65
\$7.80	53	63
\$8.05	51	61
\$8.30	50	59
\$8.55	48	57
\$8.80	47	56
\$9.05	46	54

Table 1. Fertilizer & Lime

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	160	\$0.36	\$57.04	_____
Phosphorous	P ₂ O ₅	80	\$0.34	\$27.25	_____
Potassium	K ₂ O	130	\$0.26	\$34.23	_____
Lime	Limestone	1,000	\$36.50	\$18.25	_____
Other	Sulfur	20	\$0.35	\$7.00	_____
Other	Boron	0.5	\$5.33	\$2.67	_____
Total				\$146.44	_____

Table 2. Chemicals³

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Pre-plant	Herbicide	pt.	1	1	\$27.50	\$27.50	_____
	Harvest	Desiccant	acre	1	1	\$17.50	\$17.50	_____
						\$0.00	\$0.00	_____
						\$0.00	\$0.00	_____
						\$0.00	\$0.00	_____
						\$0.00	\$0.00	_____
Insecticides		Seed Treatment	acre	1	1	\$5.00	\$5.00	_____
Fungicides		Foliar	acre	1	1	\$9.00	\$9.00	_____
Total							\$59.00	_____

Table 3. Machinery⁴

Chisel	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
	Tractor, 215 hp	Chisel Plow	21'	\$1.90	\$2.38	\$1.55	\$1.16	\$6.98	_____
Disk	Tractor, 215 hp	Tandem Disk	29'	\$4.48	\$2.59	\$1.25	\$0.93	\$9.25	_____
Plant	Tractor, 215 hp	Grain Drill	20 ft	\$4.69	\$7.26	\$1.98	\$1.47	\$15.40	_____
Weed Control	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Desiccant	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Fungicide	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Harvest	Combine	Grain Head	30 ft	\$11.11	\$9.80	\$3.45	\$1.23	\$25.59	_____
Haul	Tractor, 215 hp	Grain Cart		\$2.31	\$1.06	\$0.69	\$0.52	\$4.57	_____
Haul	Semi Tractor/Trailer		800 bu	\$4.83	\$0.52	\$1.16	\$0.93	\$7.44	_____
Chop Stalks	Tractor, 215 hp	Rotary Mower	15'	\$3.50	\$3.68	\$1.65	\$1.23	\$10.06	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Total				\$45.40	\$28.01	\$12.33	\$7.94	\$93.68	_____

FOOTNOTES

- 1) Includes seed treatment. Canola prices will vary across regions. Additionally, access to markets in Tennessee may be problematic. Should a producer consider adding canola to their rotation, a production contract and/or marketing strategy should be fully explored prior to the planting decision, as limited buyers are available.
- 2) Seed cost varies by variety and seeding rate. Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
- 3) Chemical application will vary by region: Check seed supplier or production specialist for best alternatives. Since only a few herbicides are available for weed control for canola in Tennessee, producers should follow crop production recommendations. Producers should be aware that many chemicals used in the production of other row-crops in Tennessee may have a detrimental impact on canola.
- 4) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.
- 5) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
- 6) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premium paid per insured acre of canola in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
- 7) Operating interest is assumed to be charged on half of all variable expenses.
- 8) Management labor is anticipated to be double what it is for conventional Tennessee row-crops.
- 9) Additional costs may be incurred due to specialized equipment required in the handling, hauling, and storage of canola.

Preliminary 2017 Soybean, Roundup Ready 2 Xtend, No-Till, Non-Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
Revenue					
Soybeans ¹	Bu	45	\$9.80	\$441.00	_____
Total Revenue				\$441.00	_____
Variable Expenses ²					
Seed ³	Thous.	140	\$0.49	\$68.00	_____
Fertilizer & Lime (Table 1) ⁴	Acre	1	\$38.26	\$38.26	_____
Chemical (Table 2) ^{5,6,7,8,9,10}	Acre	1	\$105.02	\$105.02	_____
Crop Scout	Acre	1	\$6.00	\$6.00	_____
Repair & Maintenance (Table 3) ¹¹	Acre	1	\$18.58	\$18.58	_____
Fuel, Oil & Filter (Table 3) ¹¹	Acre	1	\$8.69	\$8.69	_____
Operator Labor (Table 3) ¹¹	Acre	1	\$5.26	\$5.26	_____
Machinery Rental	Acre	0	\$0.00	\$0.00	_____
Custom Work	Acre	0	\$0.00	\$0.00	_____
Drying (Fuel/Electric)	Bu	45	\$0.00	\$0.00	_____
Cash Rent ¹²	Acre	1	\$94.00	\$94.00	_____
Crop Insurance ¹³	Acre	1	\$7.94	\$7.94	_____
Operating Interest ¹⁴	%	\$351.75	6.00%	\$10.55	_____
Other Variable Costs	Acre	1	\$0.00	\$0.00	_____
Total Variable Expenses				\$362.31	_____
Return Above Variable Expenses				\$78.69	_____
Fixed Expenses					
Machinery ¹¹					
Capital Recovery (Table 3)	Acre	1	\$51.52	\$51.52	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$15.00	\$15.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
Total Fixed Expenses				\$66.52	_____
Return Above All Specified Expenses				\$12.17	_____

Breakeven Price For Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
25	\$14.49	\$17.15
30	\$12.08	\$14.29
35	\$10.35	\$12.25
40	\$9.06	\$10.72
45	\$8.05	\$9.53
50	\$7.25	\$8.58
55	\$6.59	\$7.80
60	\$6.04	\$7.15
65	\$5.57	\$6.60

Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$7.80	46	55
\$8.30	44	52
\$8.80	41	49
\$9.30	39	46
\$9.80	37	44
\$10.30	35	42
\$10.80	34	40
\$11.30	32	38
\$11.80	31	36

Table 1. Fertilizer & Lime ⁴

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	0	\$0.36	\$0.00	_____
Phosphorous	P ₂ O ₅	20	\$0.47	\$9.48	_____
Potassium	K ₂ O	40	\$0.26	\$10.53	_____
Lime ⁴	Limestone	1,000	\$36.50	\$18.25	_____
Other		0	\$0.00	\$0.00	_____
Total				\$38.26	_____

Table 2. Chemicals ^{5,6,7,8,9,10}

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Burndown	Roundup Power Max	qt.	1	1	\$4.49	\$4.49	_____
		Valor	oz.	1	2	\$6.11	\$12.22	_____
	Pre Emerge	Xtendimax with VaporGrip	oz.	1	22	\$0.45	\$10.00	_____
		Gramoxone SL	oz.	1	40	\$0.14	\$5.50	_____
		Boundary	pt.	1	2	\$10.26	\$20.52	_____
	Post-Emerge	Xtendimax with VaporGrip	oz.	1	22	\$0.45	\$10.00	_____
		Flexstar GT	pt.	1	3	\$4.10	\$12.30	_____
		Roundup Power Max	qt.	1	1	\$4.49	\$4.49	_____
						\$0.00	\$0.00	_____
Insecticide/Fungicide		Seed Treatment	acre	1	1	\$8.50	\$8.50	_____
Insecticides	Foliar	Foliar	acre	1	1	\$5.00	\$5.00	_____
Fungicides	Foliar	Foliar	acre	1	1	\$12.00	\$12.00	_____
Other				0	0	\$0.00	\$0.00	_____
Total							\$105.02	_____

Table 3. Machinery ¹¹

Plant	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
	Tractor, 215 hp	Planter	16-row	\$6.46	\$3.71	\$1.07	\$0.79	\$12.03	_____
Burndown	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Pre-Emerge	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Pre-Emerge	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Post-Emerge	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Post-Emerge	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Fungicide	SP Boom Sprayer		90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$1.65	\$2.03	\$1.13	\$0.84	\$5.66	_____
Harvest	Combine	Grain Head	30 ft	\$11.11	\$9.80	\$3.45	\$1.23	\$25.59	_____
Haul	Tractor, 215 hp	Grain Cart		\$2.31	\$1.06	\$0.69	\$0.52	\$4.57	_____
Haul	Semi Tractor/Trailer		800 bu	\$4.83	\$0.52	\$1.16	\$0.93	\$7.44	_____
Total				\$51.52	\$18.58	\$8.69	\$5.26	\$84.06	_____

FOOTNOTES

- 1) Soybean price was estimated using weighted average futures prices from November 2017 to July 2018 on December 30, 2016, adjusted by average monthly basis in Tennessee.
- 2) Assumes a normal crop rotation with minimal weed infestation. A continuous soybean system may require additional expenses for chemicals and/or land preparation.
- 3) Seed price includes technology fee.
- 4) Assumes 2 tons of lime applied every four years.
- 5) Seed treatments, such as some nematicide treatments, are optional and costs vary depending on product used.
- 6) Weed control chemicals should be selected for specific weed or grass problems that are present. Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
- 7) Currently limited price information is available about the current technology. Maximum application rates for XtendiMax with VaporGrip are: Combined total per year for all applications of 88 fluid ounces per acre; Total of all pre-planting, at-planting, and pre-emerge applications of 44 fluid ounces per acre; and maximum in crop single application of 22 fluid ounces per acre. Alternatively, Engenia at 12.8 fl oz/acre per single application with a maximum of 2 pre-emerge applications, 4 post emerge applications, and a season total maximum of 4 applications. Always follow labels and consult a qualified herbicide professional.
- 8) Due to prevalence of herbicide resistant weeds, if weeds are not controlled, hand chopping may be necessary.
- 9) Alternative weed control options are available in the University of Tennessee 2017 Weed Control Manual for Tennessee.
- 10) Generic chemicals may be a cost effective option. Contact your chemical supplier, qualified consultant, or weed control specialist.
- 11) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.
- 12) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
- 13) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premium paid per insured acre of soybeans in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
- 14) Operating interest is assumed to be charged on half of all variable expenses.

Preliminary 2017 Cotton, Roundup Ready 2 Xtend, No-Till, Non-Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
Revenue					
Cotton ^{1,2,3}	lb	950	\$0.72	\$684.00	_____
				Total Revenue	\$684.00
Variable Expenses					
Seed ⁴	Thous.	48.15	\$2.35	\$113.14	_____
Fertilizer & Lime (Table 1)	Acre	1	\$96.91	\$96.91	_____
Chemical (Table 2) ^{6,7,8,9,10}	Acre	1	\$149.73	\$149.73	_____
Crop Scout	Acre	1	\$9.50	\$9.50	_____
Repair & Maintenance (Table 3) ¹¹	Acre	1	\$24.60	\$24.60	_____
Fuel, Oil & Filter (Table 3) ¹¹	Acre	1	\$13.38	\$13.38	_____
Operator Labor (Table 3) ¹¹	Acre	1	\$7.35	\$7.35	_____
Wrap ⁵	lb	950	\$0.02	\$19.00	_____
Machinery Rental	Acre	1	\$0.00	\$0.00	_____
Custom Work	Acre	1	\$0.00	\$0.00	_____
Other Transportation Costs	Acre	1	\$0.00	\$0.00	_____
Cash Rent ¹²	Acre	1	\$94.00	\$94.00	_____
Crop Insurance ¹³	Acre	1	\$9.05	\$9.05	_____
Operating Interest ¹⁴	%	\$536.67	6.00%	\$16.10	_____
Other Variable Costs	Acre	1	\$0.00	\$0.00	_____
				Total Variable Expenses	\$552.77
				Return Above Variable Expenses	\$131.23
Fixed Expenses					
Machinery ¹¹					
Capital Recovery (Table 3)	Acre	1	\$123.87	\$123.87	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$15.00	\$15.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
				Total Fixed Expenses	\$138.87
				Return Above All Specified Expenses	-\$7.64

Breakeven Price For Selected Yield

Yield (lb)	Variable Cost (\$/lb)	Total Specified Cost (\$/lb)
825	\$0.67	\$0.84
850	\$0.65	\$0.81
875	\$0.63	\$0.79
900	\$0.61	\$0.77
925	\$0.60	\$0.75
950	\$0.58	\$0.73
975	\$0.57	\$0.71
1,000	\$0.55	\$0.69
1,025	\$0.54	\$0.67
1,050	\$0.53	\$0.66
1,075	\$0.51	\$0.64

Breakeven Yield for Selected Price

Price (\$/lb)	Variable Cost (lb)	Total Specified Cost (lb)
\$0.47	1,176	1,472
\$0.52	1,063	1,330
\$0.57	970	1,213
\$0.62	892	1,116
\$0.67	825	1,032
\$0.72	768	961
\$0.77	718	898
\$0.82	674	843
\$0.87	635	795
\$0.92	601	752
\$0.97	570	713

Table 1. Fertilizer & Lime

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	80	\$0.36	\$28.52	
Phosphorous	P ₂ O ₅	60	\$0.34	\$20.44	
Potassium	K ₂ O	90	\$0.26	\$23.70	
Sulfur ¹⁵	Elemental	10	\$0.35	\$3.50	
Boron		0.5	\$5.00	\$2.50	
Lime	Limestone	1,000	\$36.50	\$18.25	
Other		0	\$0.00	\$0.00	
Total				\$96.91	

Table 2. Chemicals^{6,7,8,9,10}

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Burndown	Roundup Power Max	qt.	1	1	\$4.49	\$4.49	
	Pre-Emerge	Cotoran 4L	pt.	1	2	\$4.99	\$9.98	
		Liberty 280 SL	oz.	2	29	\$0.46	\$26.68	
	Post-Emerge	Xtendimax with VaporGrip	oz.	1	22	\$0.45	\$10.00	
		Dual Magnum	pt.	1	1	\$12.50	\$12.50	
		Roundup Power Max	qt.	1	1	\$4.49	\$4.49	
		Xtendimax with VaporGrip	oz.	1	22	\$0.45	\$10.00	
	Hooded Sprayer	Surfactant	pt.	1	0.2	\$3.52	\$0.70	
		Valor	oz.	1	1	\$6.11	\$6.11	
Growth Regulator		Mepex (Mepiquat Chloride)	pt.	1	2	\$1.00	\$2.00	
Defoliant			oz.	1	12	\$0.46	\$5.52	
Boll Opener		Ethephon	oz.	1	32	\$0.18	\$5.76	
Insecticides		Seed Treatment	acre	1	1	\$9.00	\$9.00	
		In-Season	acre	1	1	\$35.00	\$35.00	
Fungicides		Seed Treatment	acre	1	1	\$7.50	\$7.50	
Total							\$149.73	

Table 3. Machinery¹¹

Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Chop Stalks	Rotary Mower	15'	\$3.50	\$3.68	\$1.65	\$1.23	\$10.06	
Burndown	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Plant	Planter	12-row	\$7.25	\$3.76	\$1.42	\$1.06	\$13.50	
Weed Control	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Weed Control	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Weed Control	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Weed Control	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Fertilize	Hooded Sprayer	900#	\$7.55	\$1.07	\$0.39	\$0.29	\$9.31	
Weed Control	Fertilize Spreader	900#	\$1.65	\$2.03	\$1.13	\$0.84	\$5.66	
Spray	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Spray	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Spray	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Spray	SP Boom Sprayer	90'	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Harvest	Picker/Module Builder (Round)	6-row	\$4.19	\$0.24	\$0.20	\$0.16	\$4.79	
Harvest	Module Handler		\$60.51	\$11.45	\$5.75	\$1.56	\$79.27	
Other	Tractor, 215 hp		\$1.46	\$0.17	\$1.05	\$0.78	\$3.46	
Total			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
			\$123.87	\$24.60	\$13.38	\$7.35	\$169.20	

FOOTNOTES

- 1) Most ginning arrangements provide producers cottonseed revenue net ginning costs.
- 2) A second harvest may add as much as \$25/acre to variable costs.
- 3) Cotton price estimate includes the loan rate plus an estimated loan equity payment and seed and hauling allowance.
- 4) Assumes 3.5 seeds per foot. Tech fees have been included in seed cost. Seed and tech fees can be separated at the users discretion. Seed cost varies per variety and seed size. Tech fees had not been set at time of printing and are estimates. Check with farm suppliers for rebates, discounts, and incentives for seed and chemicals. Substantial cost savings may be available.
- 5) Bale wrap is estimated at \$0.02 per lb of lint.
- 6) Currently limited price information is available about the current technology. Maximum application rates for XtendiMax with VaporGrip are: Combined total per year for all applications of 88 fluid ounces per acre; Total of all pre-planting, at-planting, and pre-emerge applications of 44 fluid ounces per acre; and maximum in crop single application of 22 fluid ounces per acre. Alternatively, Engenia at 12.8 fl oz/acre per single application with a maximum of 2 pre-emerge applications, 4 post emerge applications, and a season total maximum of 4 applications. Always follow labels and consultate a qualified herbicide professional.
- 7) In-season per-acre cost includes boll weevil eradication fees and chemical expenses for control of plant bugs, bollworm, and other insect pests. Additional sprays may be necessary for specific insects.
- 8) Due to prevalence of Glyphosate resistant weeds, if weeds are not controlled, hand chopping may be necessary.
- 9) Do not tank mix Dual Magnum and Liberty when applying on widestrike cotton.
- 10) Use alternative chemicals on non-Liberty tolerant cotton varieties.
- 11) Machinery expenses will vary dramatically by operation, financial resources, and land base. The machinery cost estimates provided in Table 3 are provided as an estimate of cost of ownership and operation for specified pieces of machinery that would be available to a "representative" row-crop farm in Tennessee. To estimate machinery costs for a specific set of equipment, interested parties can utilize the Excel version of the budgets and modify the Machinery Assumptions Table.
- 12) Cash rental rates are the 2016 USDA-NASS reported cash rental rates for cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
- 13) Crop insurance is an estimate and will vary by policy, county, and coverage election. The estimate provided is the average premium paid per insured acre of cotton in Tennessee for the previous production year as reported by USDA RMA's Summary of Business Report.
- 14) Operating interest is assumed to be charged on half of all variable expenses.
- 15) Current University of Tennessee recommendations do not include sulfur. However, in west Tennessee, sulfur is commonly applied at a rate of 10-15 lbs/acre.

Commodity Prices Received by Producers

Corn	\$3.65	bu
Soybeans	\$9.80	bu
Wheat	\$4.25	bu
Cotton	\$0.72	lb
Cotton-Tech Fee	\$1.22	'000 Seeds
Grain Sorghum	\$3.55	bu
Canola	\$8.05	bu

Fuel, Interest Rates, Pumping, and Labor Costs

Diesel Fuel (\$/gal)	\$1.55	\$/gal
Electricity (\$/Kwh)	\$0.071	\$/Kwh
Operator Labor (\$/hr)	\$10.00	\$/hr
Management Labor (\$/hr)	\$15.00	\$/hr
Operating Interest (%)	6.00%	%
Fixed Capital Interest (%)	5.00%	%
Pump Lift Distance (Irrigation)	200	ft

Crop Scout, Consulting, Cash Rent, and Crop Insurance

Crop Scout / Consulting Fee	\$6.00	acre
Crop Scouting-Cotton	\$9.50	acre
Drying (\$/bu)	\$0.00	bu
Irrigated Crop Land Cash Rent	\$165.00	acre
Non-Irrigated Crop Land Cash Rent	\$94.00	acre
Crop Insurance-Corn	\$12.85	acre
Crop Insurance-Soybean	\$7.94	acre
Crop Insurance-Wheat	\$6.84	acre
Crop Insurance-Cotton	\$9.05	acre
Crop Insurance-Grain Sorghum	\$11.53	acre
Crop Insurance-Canola	\$16.32	acre

Property Taxes, Non-Machinery Insurance, and Management Labor

Property Taxes	\$0.00	\$/acre
Insurance (non-machinery and non-crop)	\$0.00	\$/acre
Management Labor	\$15.00	\$/acre

Seed

Corn	\$3.56	\$/Thousand Seeds
Soybean	\$0.43	\$/Thousand Seeds
Canola	\$6.30	\$/lb
Wheat	\$17.50	\$/bu
Cotton (Seed + Tech Fee)	\$2.16	\$/Thousand Seeds
Grain Sorghum	\$0.24	\$/Thousand Seeds

Fertilizer

Urea	\$0.36	\$/lb
Ammonium Nitrate	\$0.48	\$/lb
UAN 28%	\$0.39	\$/lb
UAN 32%	\$0.40	\$/lb
P ₂ O ₅	\$0.41	\$/lb
DAP (18-46-0) - Soybeans	\$0.47	\$/lb
DAP (18-46-0) - Corn	\$0.34	\$/lb
K ₂ O	\$0.26	\$/lb
Lime	\$36.50	\$/ton
Boron	\$5.33	\$/lb
Elemental Sulfur	\$0.35	\$/lb

Fungicide Treatments and Other Chemical Inputs

Tilt	\$5.00	\$/oz.
Soybean-Foliar	\$12.00	\$/acre
Soybean-Seed Treatment	\$3.75	\$/acre
Cotton-Seed Treatment	\$7.50	\$/acre
Wheat-Seed Treatment	\$8.40	\$/acre
Wheat-Foliar	\$12.00	\$/acre
Crop Oil Concentrate	\$3.25	\$/pint
Canola	\$9.00	\$/acre
Corn-Foliar	\$15.00	\$/acre
Surfactant	\$3.52	\$/pint

Insecticide Treatments

Soybean -Foliar	\$5.00	\$/acre
Grain Sorghum-Foliar	\$10.00	\$/acre
Grain Sorghum-Seed Treatment	\$8.00	\$/acre
Grain Sorghum (Sugar Cane Aphid)	\$11.00	\$/acre
Soybean-Seed Treatment	\$8.50	\$/acre
Cotton-Seed Treatment	\$9.00	\$/acre
Cotton-Foliar	\$35.00	\$/acre
Wheat-Seed Treatment	\$11.00	\$/acre
Wheat- Foliar	\$3.00	\$/acre
Maintenance Fee (Boll Weevil Eradication)	\$1.50	\$/acre
Canola	\$5.00	\$/acre

Herbicides

	<u>Price/Unit</u>	<u>Unit</u>
2, 4-D	\$2.22	\$/pt.
Accent Q	\$32.81	\$/oz.
Aim EQ	\$8.12	\$/oz.
Assure II	\$0.96	\$/oz.
Atrazine	\$3.33	\$/qt.
Authority First	\$5.37	\$/oz.
Authority MTZ	\$1.41	\$/oz.
Authority XL	\$3.89	\$/oz.
Axial XL	\$1.07	\$/oz.
Axiom	\$1.89	\$/oz.
Basagran	\$13.53	\$/pt.
Bicep II Magnum	\$12.62	\$/qt.
Boll Opener (Ethephon)	\$0.18	\$/oz.
Boundary	\$10.26	\$/pt.
Callisto	\$1.43	\$/oz.
Canopy DF	\$2.56	\$/oz.
Canopy EX	\$8.20	\$/oz.
Cinch ATZ	\$16.79	\$/pt.
Clarity 4EC	\$11.48	\$/pt.
Classic	\$17.00	\$/oz.
Cobra	\$1.57	\$/oz.
Command 3ME	\$19.45	\$/pt.
Cotoran 4L	\$4.99	\$/pt.
Defoliant	\$0.46	\$/oz.
Degree Xtra	\$11.52	\$/qt.
Desiccant	\$17.50	acre
Distinct DF	\$2.32	\$/oz.
Dual Magnum	\$12.50	\$/pt.
Dual II Magnum	\$16.98	\$/pt.
Envive	\$5.23	\$/oz.
Fierce	\$6.14	\$/oz.
Finesse	\$16.00	\$/oz.
Firstrate	\$41.82	\$/oz.
Flexstar GT	\$4.10	\$/pt.
Fusilade	\$1.27	\$/oz.
Gramoxone SL	\$0.14	\$/oz.
Guardman Max	\$14.80	\$/qt.
Halex GT	\$5.25	\$/pt.
Harmony Extra	\$14.03	\$/oz.
Harness	\$13.76	\$/qt.
Hornet	\$4.83	\$/oz.
Instigate	\$2.84	\$/oz.

Leadoff	\$8.50	\$/oz.
Liberty 280 SL	\$0.46	\$/oz.
Mepex (Mepiquat Chloride)	\$1.00	\$/pt.
Metribuzin	\$0.86	\$/oz.
Outlook	\$1.01	\$/oz.
Permit	\$20.67	\$/oz.
Poast/Poast Plus	\$12.54	\$/pt.
Prefix	\$14.64	\$/qt.
Prowl H20	\$4.53	\$/pt.
Pursuit	\$3.40	\$/oz.
Python WPG	\$14.12	\$/oz.
Raptor	\$4.28	\$/oz.
Realm Q	\$4.93	\$/oz.
Reflex	\$16.80	\$/pt.
Reglone	\$0.48	\$/pt.
Resource	\$1.79	\$/oz.
Roundup Power Max	\$4.49	\$/qt.
Scepter	\$4.80	\$/oz.
Select Max	\$0.83	\$/oz.
Sequence	\$5.99	\$/pt.
Sharpen	\$5.86	\$/oz.
Steadfast Q	\$12.07	\$/oz.
Storm	\$11.18	\$/pt.
Surfactant	\$3.52	\$/pt.
Treflan	\$3.38	\$/pt.
Ultra Blazer	\$9.85	\$/pt.
Valor	\$6.11	\$/oz.
Verdict	\$1.75	\$/oz.
Warrant	\$4.43	\$/pt.
