

# Department of Agricultural and Resource Economics

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## FIELD CROP BUDGETS FOR 2020

January 2020

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## Introduction and Disclaimer

The 2020 Tennessee Field Crop Budgets were developed to assist producers and other agricultural decision-makers in evaluating 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 University of Tennessee Extension's Excel-based spreadsheet available online at [ag.tennessee.edu/arec/Pages/budgets.aspx](http://ag.tennessee.edu/arec/Pages/budgets.aspx). 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 methods and input selections.

This publication and the accompanying Excel spreadsheet contain short-term planning budgets for corn, cotton, soybean and wheat enterprises. These budgets should be used for short-run or annual plans developed for 2020, 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 "2019 Weed Control Manual for Tennessee" (PB1580) and "2018 Insect and Plant Disease Control Manual" (PB1690). 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 payment estimates as appropriate for your enterprise.

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## 2020 Corn, No-Till, Non-Irrigated Budget

	Unit	Quantity	Price	Total	Your Farm
<b>Revenue <sup>1</sup></b>			<b>Gross Revenue (\$/Acre)</b>		
Corn	Bu/acre	161	\$4.00	\$644.00	_____
Government Payments	\$/acre	1	\$0.00	\$0.00	_____
Other Revenue	\$/acre	1	\$0.00	\$0.00	_____
			<b>Total Revenue</b>	<b>\$644.00</b>	_____
<b>Variable Expenses</b>					
Seed <sup>2</sup>	Thous.	32	\$3.20	\$102.40	_____
Fertilizer & Lime (Table 1) <sup>3</sup>	Acre	1	\$141.76	\$141.76	_____
Chemical (Table 2) <sup>4</sup>	Acre	1	\$41.53	\$41.53	_____
Crop Scout or Consultant	Acre	1	\$9.00	\$9.00	_____
Repair & Maintenance (Table 3) <sup>5</sup>	Acre	1	\$39.89	\$39.89	_____
Fuel, Oil & Filter (Table 3) <sup>5</sup>	Acre	1	\$15.75	\$15.75	_____
Operator Labor (Table 3) <sup>5</sup>	Acre	1	\$9.93	\$9.93	_____
Crop Insurance <sup>6</sup>	Acre	1	\$12.12	\$12.12	_____
Machinery Rental	Acre	1	\$0.00	\$0.00	_____
Custom Work	Acre	1	\$0.00	\$0.00	_____
Drying (Fuel/Electric)	Bu	161	\$0.00	\$0.00	_____
Other	Acre	1	\$0.00	\$0.00	_____
Other	Acre	1	\$0.00	\$0.00	_____
Operating Interest <sup>7</sup>	%	\$372.38	6.10%	\$11.36	_____
			<b>Total Variable Expenses</b>	<b>\$383.74</b>	_____
			<b>Return Above Variable Expenses</b>	<b>\$260.26</b>	_____
<b>Fixed Expenses</b>					
Machinery <sup>5</sup>					
Capital Recovery (Table 3)	Acre	1	\$97.83	\$97.83	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Cash Rent <sup>8</sup>	Acre	1	\$99.00	\$99.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$18.00	\$18.00	_____
Other	Acre	1	\$0.00	\$0.00	_____
			<b>Total Fixed Expenses</b>	<b>\$214.83</b>	_____
			<b>Total Expenses</b>	<b>\$598.57</b>	_____
			<b>Return Above Specified Expenses</b>	<b>\$45.43</b>	_____

### Breakeven Price for Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
111	\$3.46	\$5.39
121	\$3.17	\$4.95
131	\$2.93	\$4.57
141	\$2.72	\$4.25
151	\$2.54	\$3.96
<b>161</b>	<b>\$2.38</b>	<b>\$3.72</b>
171	\$2.24	\$3.50
181	\$2.12	\$3.31
191	\$2.01	\$3.13
201	\$1.91	\$2.98
211	\$1.82	\$2.84

### Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$2.75	140	218
\$3.00	128	200
\$3.25	118	184
\$3.50	110	171
\$3.75	102	160
<b>\$4.00</b>	<b>96</b>	<b>150</b>
\$4.25	90	141
\$4.50	85	133
\$4.75	81	126
\$5.00	77	120
\$5.25	73	114

Table 1. Fertilizer & Lime<sup>3</sup>

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea - Planting	60	\$0.42	\$25.17	_____
	UAN 32 - Side dress	120	\$0.44	\$52.69	_____
Phosphorous	P <sub>2</sub> O <sub>5</sub>	70	\$0.33	\$23.19	_____
	K <sub>2</sub> O	70	\$0.32	\$22.21	_____
Sulfur	Limestone	10	\$0.60	\$6.00	_____
		1,000	\$25.00	\$12.50	_____
Other		0	\$0.00	\$0.00	_____
Other		0	\$0.00	\$0.00	_____
Other		0	\$0.00	\$0.00	_____
Total				\$141.76	_____

Table 2. Chemicals<sup>4</sup>

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Burndown	Gramoxone SL	oz.	1	40	\$0.15	\$5.88	_____
		Atrazine	qt.	1	1	\$2.98	\$2.98	_____
	Pre-Emerge	Gramoxone SL	oz.	1	40	\$0.15	\$5.88	_____
		Halex GT	pt.	1	3.6	\$4.95	\$17.82	_____
	Post-Emerge	Atrazine	qt.	1	1.5	\$2.98	\$4.47	_____
		Surfactant	\$/acre	3	1.0	\$1.50	\$4.50	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
	Insecticides	Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
Fungicides		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
Total							\$41.53	_____

Table 3. Machinery<sup>5</sup>

	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Burndown	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Plant	Tractor, 215 hp	Planter	16-row	\$15.41	\$2.82	\$1.88	\$1.27	\$21.37	_____
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$4.73	\$1.53	\$1.99	\$1.35	\$9.60	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$4.73	\$1.53	\$1.99	\$1.35	\$9.60	_____
Harvest	Combine	Corn Head	8-row	\$33.42	\$31.18	\$6.98	\$2.62	\$74.19	_____
Haul	Tractor, 215 hp	Grain Cart	800 bu	\$6.30	\$0.76	\$1.22	\$0.83	\$9.11	_____
Haul	Semi Tractor/Trailer			\$7.68	\$1.25	\$0.79	\$1.76	\$11.48	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Total				\$97.83	\$39.89	\$15.75	\$9.93	\$163.40	_____

## **FOOTNOTES**

- 1) Corn price was estimated using weighted average futures prices from September 2020 to July 2021, adjusted by average monthly basis in Tennessee. Corn yield is the predicted 2020 linear trend line yield for corn in Tennessee, using state average yields from 1980-2019.
- 2) Assumes a bag of seed costs \$263 and contains 80,000 seeds (\$3.20/thousand seeds). Seeding rate of 32,000 seeds/acre. Seed treatment is included in the price.
- 3) Lime is assumed to be applied once every four years at a rate of 2 tons per acre. Includes the cost of application. Fertilizer quantities and prices are shown in elemental lb. Check with farm suppliers for rebates, discounts, and incentives for fertilizers, seed, and chemicals. Substantial cost savings may be available. Substantial variation in prices for seed, chemical and fertilizer exist based on quantity purchased, product purchased and location of purchase.
- 4) A foliar fungicide application may be used in some cropping systems at a cost of \$15 to \$20 per acre. Cost will vary depending on the fungicide used, the application rate and method of application.
- 5) 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.
- 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) Cash rental rates are the 2019 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.

## 2020 Corn, Conventional Tillage, Non-Irrigated Budget

	Unit	Quantity	Price	Total	Your Farm
<b>Revenue <sup>1</sup></b>				<b>Gross Revenue (\$/Acre)</b>	
Corn	Bu/acre	161	\$4.00	\$644.00	_____
Government Payments	\$/acre	1	\$0.00	\$0.00	_____
Other Revenue	\$/acre	1	\$0.00	\$0.00	_____
			<b>Total Revenue</b>	<b>\$644.00</b>	_____
<b>Variable Expenses</b>					
Seed <sup>2</sup>	Thous.	32	\$3.20	\$102.40	_____
Fertilizer & Lime (Table 1) <sup>3</sup>	Acre	1	\$141.76	\$141.76	_____
Chemical (Table 2) <sup>4</sup>	Acre	1	\$35.65	\$35.65	_____
Crop Scout or Consultant	Acre	1	\$9.00	\$9.00	_____
Repair & Maintenance (Table 3) <sup>5</sup>	Acre	1	\$44.91	\$44.91	_____
Fuel, Oil & Filter (Table 3) <sup>5</sup>	Acre	1	\$22.69	\$22.69	_____
Operator Labor (Table 3) <sup>5</sup>	Acre	1	\$14.57	\$14.57	_____
Crop Insurance <sup>6</sup>	Acre	1	\$12.12	\$12.12	_____
Machinery Rental	Acre	1	\$0.00	\$0.00	_____
Custom Work	Acre	1	\$0.00	\$0.00	_____
Drying (Fuel/Electric)	Bu	161	\$0.00	\$0.00	_____
Other	Acre	1	\$0.00	\$0.00	_____
Other	Acre	1	\$0.00	\$0.00	_____
Operating Interest <sup>7</sup>	%	\$383.10	6.10%	\$11.68	_____
			<b>Total Variable Expenses</b>	<b>\$394.78</b>	_____
			<b>Return Above Variable Expenses</b>	<b>\$249.22</b>	_____
<b>Fixed Expenses</b>					
Machinery <sup>5</sup>					
Capital Recovery (Table 3)	Acre	1	\$112.63	\$112.63	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Cash Rent <sup>8</sup>	Acre	1	\$99.00	\$99.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$18.00	\$18.00	_____
Other	Acre	1	\$0.00	\$0.00	_____
			<b>Total Fixed Expenses</b>	<b>\$229.63</b>	_____
			<b>Total Expenses</b>	<b>\$624.41</b>	_____
			<b>Return Above Specified Expenses</b>	<b>\$19.59</b>	_____

### Breakeven Price for Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
111	\$3.56	\$5.63
121	\$3.26	\$5.16
131	\$3.01	\$4.77
141	\$2.80	\$4.43
151	\$2.61	\$4.14
<b>161</b>	<b>\$2.45</b>	<b>\$3.88</b>
171	\$2.31	\$3.65
181	\$2.18	\$3.45
191	\$2.07	\$3.27
201	\$1.96	\$3.11
211	\$1.87	\$2.96

### Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$2.75	144	227
\$3.00	132	208
\$3.25	121	192
\$3.50	113	178
\$3.75	105	167
<b>\$4.00</b>	<b>99</b>	<b>156</b>
\$4.25	93	147
\$4.50	88	139
\$4.75	83	131
\$5.00	79	125
\$5.25	75	119



Table 1. Fertilizer & Lime<sup>3</sup>

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea - Planting	60	\$0.42	\$25.17	_____
	UAN 32 - Side dress	120	\$0.44	\$52.69	_____
Phosphorous	P <sub>2</sub> O <sub>5</sub>	70	\$0.33	\$23.19	_____
	K <sub>2</sub> O	70	\$0.32	\$22.21	_____
Sulfur		10	\$0.60	\$6.00	_____
	Limestone	1,000	\$25.00	\$12.50	_____
Other		0	\$0.00	\$0.00	_____
Other		0	\$0.00	\$0.00	_____
Other		0	\$0.00	\$0.00	_____
Total				\$141.76	_____

Table 2. Chemicals<sup>4</sup>

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Pre-Emerge	Atrazine	qt.	1	1	\$2.98	\$2.98	_____
		Gramoxone SL	oz.	1	40	\$0.15	\$5.88	_____
	Post-Emerge	Hallex GT	pt.	1	3.6	\$4.95	\$17.82	_____
		Atrazine	qt.	1	1.5	\$2.98	\$4.47	_____
		Surfactant	\$/acre	3	1.0	\$1.50	\$4.50	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
Insecticides		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
Fungicides		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
Total							\$35.65	_____

Table 3. Machinery<sup>5</sup>

	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Chisel	Tractor, 215 hp	Chisel Plow	21'	\$6.14	\$1.81	\$2.74	\$1.85	\$12.54	_____
Disk	Tractor, 215 hp	Tandem Disk	29'	\$10.30	\$1.82	\$2.20	\$1.49	\$15.81	_____
Prepare Seedbed	Tractor, 215 hp	Do-All	26.5'	\$6.87	\$1.66	\$2.30	\$1.56	\$12.40	_____
Plant	Tractor, 215 hp	Planter	16-row	\$15.41	\$2.82	\$1.88	\$1.27	\$21.37	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$4.73	\$1.53	\$1.99	\$1.35	\$9.60	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$4.73	\$1.53	\$1.99	\$1.35	\$9.60	_____
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Harvest	Combine	Corn Head	8-row	\$33.42	\$31.18	\$6.98	\$2.62	\$74.19	_____
Haul	Tractor, 215 hp	Grain Cart	800 bu	\$6.30	\$0.76	\$1.22	\$0.83	\$9.11	_____
Haul	Semi Tractor/Trailer			\$7.68	\$1.25	\$0.79	\$1.76	\$11.48	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Total				\$112.63	\$44.91	\$22.69	\$14.57	\$194.80	_____

**FOOTNOTES**

- 1) Corn price was estimated using weighted average futures prices from September 2020 to July 2021, adjusted by average monthly basis in Tennessee. Corn yield is the predicted 2020 linear trend line yield for corn in Tennessee, using state average yields from 1980-2019.
- 2) Assumes a bag of seed costs \$263 and contains 80,000 seeds (\$3.20/thousand seeds). Seeding rate of 32,000 seeds/acre. Seed treatment is included in the price.
- 3) Lime is assumed to be applied once every four years at a rate of 2 tons per acre. Includes the cost of application. Fertilizer quantities and prices are shown in elemental lb. Check with farm suppliers for rebates, discounts and incentives for fertilizers, seed and chemicals. Substantial cost savings may be available. Substantial variation in prices for seed, chemical and fertilizer exist based on quantity purchased, product purchased and location of purchase.
- 4) A foliar fungicide application may be used in some cropping systems at a cost of \$15 to \$20 per acre. Cost will vary depending on the fungicide used, the application rate and method of application.
- 5) 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.
- 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) Cash rental rates are the 2019 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.

## 2020 Corn, No-Till, Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
<b>Revenue <sup>1</sup></b>				<b>Gross Revenue (\$/Acre)</b>	
Corn	Bu/acre	225	\$4.00	\$900.00	_____
Government Payments	\$/acre	1	\$0.00	\$0.00	_____
Other Revenue	\$/acre	1	\$0.00	\$0.00	_____
			<b>Total Revenue</b>	<b>\$900.00</b>	_____
<b>Variable Expenses</b>					
Seed <sup>2</sup>	Thous.	32	\$3.20	\$102.40	_____
Fertilizer & Lime (Table 1) <sup>3</sup>	Acre	1	\$180.69	\$180.69	_____
Chemical (Table 2) <sup>4</sup>	Acre	1	\$41.53	\$41.53	_____
Crop Scout or Consultant	Acre	1	\$9.00	\$9.00	_____
Repair & Maintenance (Table 3) <sup>5</sup>	Acre	1	\$40.38	\$40.38	_____
Fuel, Oil & Filter (Table 3) <sup>5</sup>	Acre	1	\$16.07	\$16.07	_____
Operator Labor (Table 3) <sup>5</sup>	Acre	1	\$10.63	\$10.63	_____
Crop Insurance <sup>6</sup>	Acre	1	\$12.12	\$12.12	_____
Machinery Rental	Acre	1	\$0.00	\$0.00	_____
Custom Work	Acre	1	\$0.00	\$0.00	_____
Drying (Fuel/Electric)	Bu	225	\$0.00	\$0.00	_____
Irrigation Energy Cost <sup>7</sup>	Ac-in	7	\$4.86	\$34.02	_____
Irrigation System R&M & Labor <sup>7</sup>	Ac-in	7	\$2.22	\$15.54	_____
Other Irrigation Costs	Acre	1	\$0.00	\$0.00	_____
Other	Acre	1	\$0.00	\$0.00	_____
Other	Acre	1	\$0.00	\$0.00	_____
Operating Interest <sup>8</sup>	%	\$462.38	6.10%	\$14.10	_____
			<b>Total Variable Expenses</b>	<b>\$476.48</b>	_____
			<b>Return Above Variable Expenses</b>	<b>\$423.52</b>	_____
<b>Fixed Expenses</b>					
Machinery <sup>5</sup>					
Capital Recovery (Table 3)	Acre	1	\$100.89	\$100.89	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Capital Recovery (Irrigation Equipment) <sup>7</sup>	Acre	1	\$96.31	\$96.31	_____
Other Fixed Irrigation Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Cash Rent <sup>9</sup>	Acre	1	\$180.00	\$180.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor <sup>10</sup>	Acre	1	\$18.00	\$36.00	_____
Other	Acre	1	\$0.00	\$0.00	_____
			<b>Total Fixed Expenses</b>	<b>\$413.20</b>	_____
			<b>Total Expenses</b>	<b>\$889.68</b>	_____
			<b>Return Above Specified Expenses</b>	<b>\$10.32</b>	_____

### Breakeven Price for Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
175	\$2.72	\$5.08
185	\$2.58	\$4.81
195	\$2.44	\$4.56
205	\$2.32	\$4.34
215	\$2.22	\$4.14
<b>225</b>	<b>\$2.12</b>	<b>\$3.95</b>
235	\$2.03	\$3.79
245	\$1.94	\$3.63
255	\$1.87	\$3.49
265	\$1.80	\$3.36
275	\$1.73	\$3.24

### Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$2.75	173	324
\$3.00	159	297
\$3.25	147	274
\$3.50	136	254
\$3.75	127	237
<b>\$4.00</b>	<b>119</b>	<b>222</b>
\$4.25	112	209
\$4.50	106	198
\$4.75	100	187
\$5.00	95	178
\$5.25	91	169

Table 1. Fertilizer & Lime<sup>3</sup>

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea - Planting	80	\$0.42	\$33.57	_____
	UAN 32 - Side dress	160	\$0.44	\$70.25	_____
Phosphorous	P <sub>2</sub> O <sub>5</sub>	90	\$0.33	\$29.82	_____
	K <sub>2</sub> O	90	\$0.32	\$28.55	_____
Sulfur	Limestone	10	\$0.60	\$6.00	_____
		1,000	\$25.00	\$12.50	_____
Other		0	\$0.00	\$0.00	_____
Other		0	\$0.00	\$0.00	_____
Other		0	\$0.00	\$0.00	_____
Total				\$180.69	_____

Table 2. Chemicals<sup>4</sup>

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Burndown	Gramoxone SL	oz.	1	40	\$0.15	\$5.88	_____
		Atrazine	qt.	1	1	\$2.98	\$2.98	_____
	Pre-Emerge	Gramoxone SL	oz.	1	40	\$0.15	\$5.88	_____
		Halex GT	pt.	1	3.6	\$4.95	\$17.82	_____
	Post-Emerge	Atrazine	qt.	1	1.5	\$2.98	\$4.47	_____
		Surfactant	\$/acre	3	1.0	\$1.50	\$4.50	_____
		Other		0	0	\$0.00	\$0.00	_____
	Insecticides	Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
Fungicides	Other	Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
Total							\$41.53	_____

Table 3. Machinery<sup>5</sup>

Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Burndown	SP Boom Sprayer	90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Plant	Tractor, 215 hp	16-row	\$15.41	\$2.82	\$1.88	\$1.27	\$21.37	_____
Weed Control	SP Boom Sprayer	90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Weed Control	SP Boom Sprayer	90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	\$4.73	\$1.53	\$1.99	\$1.35	\$9.60	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	\$4.73	\$1.53	\$1.99	\$1.35	\$9.60	_____
Harvest	Combine	Corn Head	\$33.42	\$31.18	\$6.98	\$2.62	\$74.19	_____
Haul	Tractor, 215 hp	Grain Cart	\$6.30	\$0.76	\$1.22	\$0.83	\$9.11	_____
Haul	Semi Tractor/Trailer		\$10.73	\$1.75	\$1.10	\$2.46	\$16.04	_____
Other			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Other			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Other			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Total			\$100.89	\$40.38	\$16.07	\$10.63	\$167.97	_____

## **FOOTNOTES**

- 1) Corn price was estimated using weighted average futures prices from September 2020 to July 2021, adjusted by average monthly basis in Tennessee. Corn yield is the predicted 2020 linear trend line yield for corn in Tennessee, adjusted for irrigation practices, using state average yields from 1980-2019.
- 2) Assumes a bag of seed costs \$263 and contains 80,000 seeds (\$3.20/thousand seeds). Seeding rate of 32,000 seeds/acre. Seed treatment is included in the price.
- 3) Lime is assumed to be applied once every four years at a rate of 2 tons per acre. Includes the cost of application. Fertilizer quantities and prices are shown in elemental lb. Check with farm suppliers for rebates, discounts and incentives for fertilizers, seed and chemicals. Substantial cost savings may be available. Substantial variation in prices for seed, chemical and fertilizer exist based on quantity purchased, product purchased and location of purchase.
- 4) A foliar fungicide application may be used in some cropping systems at a cost of \$15 to \$20 per acre. Cost will vary depending on the fungicide used, the application rate and method of application.
- 5) 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.
- 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) Center-pivot irrigation costs are estimated using the following assumptions: purchase price and installation cost of \$85,000; useful life of 20 years; and an irrigated acreage of 125 acres. Well depth and energy source will dramatically impact irrigation costs. Irrigation rates should be adjusted to meet commodity- and farm-specific applications.
- 8) Operating interest is assumed to be charged on half of all variable expenses.
- 9) Cash rental rates are the 2019 USDA-NASS reported cash rental rates for irrigated cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
- 10) Management labor for irrigated acreage is assumed to be double that of dryland acres.

## 2020 Soybean, No-Till, Non-Irrigated Budget

	Unit	Quantity	Price	Total	Your Farm
<b>Revenue <sup>1</sup></b>				<b>Gross Revenue (\$/Acre)</b>	
Soybeans	Bu/acre	46	\$9.60	\$441.60	
Government Payments	\$/acre	1	\$0.00	\$0.00	
Other Revenue	\$/acre	1	\$0.00	\$0.00	
			<b>Total Revenue</b>	<b>\$441.60</b>	
<b>Variable Expenses</b>					
Seed	Thous.	140	\$0.39	\$55.00	
Fertilizer & Lime (Table 1) <sup>2</sup>	Acre	1	\$41.47	\$41.47	
Chemical (Table 2) <sup>3</sup>	Acre	1	\$75.67	\$75.67	
Crop Scout or Consultant	Acre	1	\$9.00	\$9.00	
Repair & Maintenance (Table 3) <sup>4</sup>	Acre	1	\$29.92	\$29.92	
Fuel, Oil & Filter (Table 3) <sup>4</sup>	Acre	1	\$12.08	\$12.08	
Operator Labor (Table 3) <sup>4</sup>	Acre	1	\$7.23	\$7.23	
Crop Insurance <sup>5</sup>	Acre	1	\$7.24	\$7.24	
Machinery Rental	Acre	0	\$0.00	\$0.00	
Custom Work	Acre	0	\$0.00	\$0.00	
Drying (Fuel/Electric)	Bu	46	\$0.00	\$0.00	
Other	Acre	1	\$0.00	\$0.00	
Other	Acre	1	\$0.00	\$0.00	
Operating Interest <sup>6</sup>	%	\$237.61	6.10%	\$7.25	
			<b>Total Variable Expenses</b>	<b>\$244.85</b>	
			<b>Return Above Variable Expenses</b>	<b>\$196.75</b>	
<b>Fixed Expenses</b>					
Machinery <sup>4</sup>					
Capital Recovery (Table 3)	Acre	1	\$99.59	\$99.59	
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	
Property Taxes	Acre	1	\$0.00	\$0.00	
Cash Rent <sup>7</sup>	Acre	1	\$99.00	\$99.00	
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	
Management Labor	Acre	1	\$18.00	\$18.00	
Other	Acre	1	\$0.00	\$0.00	
			<b>Total Fixed Expenses</b>	<b>\$216.59</b>	
			<b>Total Expenses</b>	<b>\$461.44</b>	
			<b>Return Above Specified Expenses</b>	<b>-\$19.84</b>	

### Breakeven Price for Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
26	\$9.42	\$17.75
31	\$7.90	\$14.89
36	\$6.80	\$12.82
41	\$5.97	\$11.25
<b>46</b>	<b>\$5.32</b>	<b>\$10.03</b>
51	\$4.80	\$9.05
56	\$4.37	\$8.24
61	\$4.01	\$7.56
66	\$3.71	\$6.99

### Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$7.60	32	61
\$8.10	30	57
\$8.60	28	54
\$9.10	27	51
<b>\$9.60</b>	<b>26</b>	<b>48</b>
\$10.10	24	46
\$10.60	23	44
\$11.10	22	42
\$11.60	21	40

Table 1. Fertilizer & Lime<sup>2</sup>

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen		0	\$0.00	\$0.00	_____
Phosphorous	P <sub>2</sub> O <sub>5</sub>	30	\$0.33	\$9.94	_____
Potassium	K <sub>2</sub> O	60	\$0.32	\$19.03	_____
Lime	Limestone	1,000	\$25.00	\$12.50	_____
Other		0	\$0.00	\$0.00	_____
Other		0	\$0.00	\$0.00	_____
Other		0	\$0.00	\$0.00	_____
Total				\$41.47	_____

Table 2. Chemicals<sup>3</sup>

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Burndown	Roundup	qt.	1	1	\$4.88	\$4.88	_____
		Valor	oz.	1	2	\$3.76	\$7.52	_____
Pre-Emerge		Gramoxone SL	oz.	1	40	\$0.15	\$5.88	_____
		Prefix	qt.	1	1	\$9.27	\$9.27	_____
Post-Emerge		Engenia	oz	1	12	\$0.69	\$8.24	_____
		Flexstar	pt.	1	1	\$3.48	\$3.48	_____
		Surfactant	\$/acre	3	1	\$1.50	\$4.50	_____
		Other		0	0	\$0.00	\$0.00	_____
Insecticide/Fungicide		Other		0	0	\$0.00	\$0.00	_____
		Seed Treatment	acre	1	1	\$10.00	\$10.00	_____
Insecticides	Foliar	Foliar	acre	1	1	\$7.50	\$7.50	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
Fungicides		Foliar	acre	1	1	\$14.40	\$14.40	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
Total							\$75.67	_____

Table 3. Machinery<sup>4</sup>

	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$4.73	\$1.53	\$1.99	\$1.35	\$9.60	_____
Burndown	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Plant	Tractor, 215 hp	Planter	16-row	\$15.41	\$2.82	\$1.88	\$1.27	\$21.37	_____
Pre-Emerge	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Post-Emerge	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Post-Emerge	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Fungicide	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Harvest	Combine	Grain Head	30 ft	\$24.62	\$23.14	\$5.23	\$1.96	\$54.96	_____
Haul	Tractor, 215 hp	Grain Cart	8-row	\$6.30	\$0.76	\$1.22	\$0.83	\$9.11	_____
Haul	Semi Tractor/Trailer			\$5.91	\$0.32	\$0.25	\$0.55	\$7.03	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Total				\$99.59	\$29.92	\$12.08	\$7.23	\$148.82	_____

## **FOOTNOTES**

- 1) Soybean price was estimated using weighted average futures prices from November 2020 to August 2021, adjusted by average monthly basis in Tennessee. Soybean yield is the predicted 2020 linear trend line yield for soybeans in Tennessee, using state average yields from 1980-2019.
- 2) Lime is assumed to be applied once every four years at a rate of 2 tons per acre. Includes the cost of application. Fertilizer quantities and prices are shown in elemental lb. Check with farm suppliers for rebates, discounts and incentives for fertilizers, seed and chemicals. Substantial cost savings may be available. Substantial variation in prices for seed, chemical and fertilizer exist based on quantity purchased, product purchased and location of purchase.
- 3) Assumes a normal crop rotation with minimal weed infestation. A continuous soybean system may require additional expenses for chemicals and/or land preparation. Weed control chemicals should be selected for specific weed or grass problems that are present. Generic chemicals may be a cost-effective option, contact your chemical supplier, qualified consultant or weed control specialist. Alternative weed control options are available in the University of Tennessee Weed Control Manual for Tennessee. Follow all labels, state and national regulations when using all chemicals. Check with farm suppliers for rebates, discounts and incentives for seed and chemicals. Substantial cost savings may be available. Seed treatments, such as some nematicide treatments, are optional and costs vary depending on product used.
- 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) 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 soybean in Tennessee for the previous production year, as reported by USDA RMA's Summary of Business Report.
- 6) Operating interest is assumed to be charged on half of all variable expenses.
- 7) Cash rental rates are the 2019 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.



## 2020 Soybean, No-Till, Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
<b>Revenue <sup>1</sup></b>				<b>Gross Revenue (\$/Acre)</b>	
Soybeans	Bu/acre	65	\$9.60	\$624.00	_____
Government Payments	\$/acre	1	\$0.00	\$0.00	_____
Other Revenue	\$/acre	1	\$0.00	\$0.00	_____
				<b>Total Revenue</b>	<b>\$624.00</b>
<b>Variable Expenses</b>					
Seed	Thous.	140	\$0.39	\$55.00	_____
Fertilizer & Lime (Table 1) <sup>2</sup>	Acre	1	\$51.13	\$51.13	_____
Chemical (Table 2) <sup>3</sup>	Acre	1	\$75.67	\$75.67	_____
Crop Scout or Consultant	Acre	1	\$9.00	\$9.00	_____
Repair & Maintenance (Table 3) <sup>4</sup>	Acre	1	\$30.05	\$30.05	_____
Fuel, Oil & Filter (Table 3) <sup>4</sup>	Acre	1	\$12.18	\$12.18	_____
Operator Labor (Table 3) <sup>4</sup>	Acre	1	\$7.46	\$7.46	_____
Crop Insurance <sup>5</sup>	Acre	1	\$7.24	\$7.24	_____
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	_____
Irrigation Energy Cost <sup>6</sup>	Ac-In	4.5	\$4.86	\$21.87	_____
Irrigation System R&M & Labor <sup>6</sup>	Ac-In	4.5	\$2.22	\$9.99	_____
Other Irrigation Costs	Acre	1	\$0.00	\$0.00	_____
Other	Acre	1	\$0.00	\$0.00	_____
Other	Acre	1	\$0.00	\$0.00	_____
Operating Interest <sup>7</sup>	%	\$279.59	6.10%	\$8.53	_____
				<b>Total Variable Expenses</b>	<b>\$288.11</b>
				<b>Return Above Variable Expenses</b>	<b>\$335.89</b>
<b>Fixed Expenses</b>					
Machinery <sup>4</sup>					
Capital Recovery (Table 3)	Acre	1	\$102.03	\$102.03	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Capital Recovery (Irrigation Equipment) <sup>6</sup>	Acre	1	\$96.31	\$96.31	_____
Other Irrigation Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Cash Rent <sup>8</sup>	Acre	1	\$180.00	\$180.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor <sup>9</sup>	Acre	1	\$18.00	\$36.00	_____
Other	Acre	1	\$0.00	\$0.00	_____
				<b>Total Fixed Expenses</b>	<b>\$414.34</b>
				<b>Total Expenses</b>	<b>\$702.46</b>
				<b>Return Above Specified Expenses</b>	<b>-\$78.46</b>

### Breakeven Price for Selected Yield

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
45	\$6.40	\$15.61
50	\$5.76	\$14.05
55	\$5.24	\$12.77
60	\$4.80	\$11.71
<b>65</b>	<b>\$4.43</b>	<b>\$10.81</b>
70	\$4.12	\$10.04
75	\$3.84	\$9.37
80	\$3.60	\$8.78
85	\$3.39	\$8.26

### Breakeven Yield for Selected Price

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$7.60	38	92
\$8.10	36	87
\$8.60	34	82
\$9.10	32	77
<b>\$9.60</b>	<b>30</b>	<b>73</b>
\$10.10	29	70
\$10.60	27	66
\$11.10	26	63
\$11.60	25	61

Table 1. Fertilizer & Lime <sup>2</sup>

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	0	\$0.42	\$0.00	_____
Phosphorous	P <sub>2</sub> O <sub>5</sub>	40	\$0.33	\$13.25	_____
Potassium	K <sub>2</sub> O	80	\$0.32	\$25.38	_____
Lime	Limestone	1,000	\$25.00	\$12.50	_____
Other		0	\$0.00	\$0.00	_____
Other		0	\$0.00	\$0.00	_____
Other		0	\$0.00	\$0.00	_____
Total				\$51.13	_____

Table 2. Chemicals <sup>3</sup>

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Burndown	Roundup	qt.	1	1	\$4.88	\$4.88	_____
		Valor	oz.	1	2	\$3.76	\$7.52	_____
	Pre-Emerge	Gramoxone SL	oz.	1	40	\$0.15	\$5.88	_____
		Prefix	qt.	1	1	\$9.27	\$9.27	_____
Post-Emerge		Engenia	oz	1	12	\$0.69	\$8.24	_____
		Flexstar	pt.	1	1	\$3.48	\$3.48	_____
		Surfactant	\$/acre	3	1	\$1.50	\$4.50	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
Insecticide/Fungicide	Foliar	Seed Treatment	acre	0	0	\$0.00	\$0.00	_____
		Foliar	acre	1	1	\$10.00	\$10.00	_____
		Other		1	1	\$7.50	\$7.50	_____
Fungicides		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Foliar	acre	1	1	\$14.40	\$14.40	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
Total				0	0	\$0.00	\$75.67	_____

Table 3. Machinery <sup>4</sup>

	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$4.73	\$1.53	\$1.99	\$1.35	\$9.60	_____
Burndown	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Plant	Tractor, 215 hp	Planter	16-row	\$15.41	\$2.82	\$1.88	\$1.27	\$21.37	_____
Pre-Emerge	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Post-Emerge	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Post-Emerge	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Fungicide	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Harvest	Combine	Grain Head	30 ft	\$24.62	\$23.14	\$5.23	\$1.96	\$54.96	_____
Haul	Tractor, 215 hp	Grain Cart	800 bu	\$6.30	\$0.76	\$1.22	\$0.83	\$9.11	_____
Haul	Semi Tractor/Trailer			\$8.35	\$0.45	\$0.35	\$0.78	\$9.93	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Total				\$102.03	\$30.05	\$12.18	\$7.46	\$151.72	_____

## **FOOTNOTES**

- 1) Soybean price was estimated using weighted average futures prices from November 2020 to August 2021, adjusted by average monthly basis in Tennessee. Soybean yield is the predicted 2020 linear trend line yield for soybeans in Tennessee, adjusted for irrigation practices, using state average yields from 1980-2019.
- 2) Lime is assumed to be applied once every four years at a rate of 2 tons per acre. Includes the cost of application. Fertilizer quantities and prices are shown in elemental lb. Check with farm suppliers for rebates, discounts and incentives for fertilizers, seed and chemicals. Substantial cost savings may be available. Substantial variation in prices for seed, chemical and fertilizer exist based on quantity purchased, product purchased and location of purchase.
- 3) Assumes a normal crop rotation with minimal weed infestation. A continuous soybean system may require additional expenses for chemicals and/or land preparation. Weed control chemicals should be selected for specific weed or grass problems that are present. Generic chemicals may be a cost-effective option, contact your chemical supplier, qualified consultant or weed control specialist. Alternative weed control options are available in the University of Tennessee Weed Control Manual for Tennessee. Follow all labels, state and national regulations when using all chemicals. Check with farm suppliers for rebates, discounts and incentives for seed and chemicals. Substantial cost savings may be available. Seed treatments, such as some nematicide treatments, are optional and costs vary depending on product used.
- 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) 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 soybean in Tennessee for the previous production year, as reported by USDA RMA's Summary of Business Report.
- 6) Center-pivot irrigation costs are estimated using the following assumptions: purchase price and installation cost of \$85,000; useful life of 20 years; and an irrigated acreage of 125 acres. Well depth and energy source will dramatically impact irrigation costs. Irrigation rates should be adjusted to meet commodity- and farm-specific applications.
- 7) Operating interest is assumed to be charged on half of all variable expenses.
- 8) Cash rental rates are the 2019 USDA-NASS reported cash rental rates for irrigated cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
- 9) Management labor for irrigated acreage is assumed to be double that of dryland acres.

## 2020 Wheat/Soybean Double Cropped, Non-Irrigated Budget

	Unit	Quantity	Price	Total	Your Farm
<b>Revenue <sup>1</sup></b>			<b>Gross Revenue (\$/Acre)</b>		
Soybeans	Bu/acre	40	\$9.60	\$384.00	
Wheat	Bu/acre	69	\$5.40	\$372.60	
Government Payments	\$/acre	1	\$0.00	\$0.00	
Other Revenue	\$/acre	1	\$0.00	\$0.00	
			<b>Total Revenue</b>	<b>\$756.60</b>	
<b>Variable Expenses</b>					
Seed, Soybeans	Thous.	140	\$0.39	\$55.00	
Seed, Wheat	Bu	2.5	\$15.50	\$38.75	
Fertilizer & Lime (Table 1) <sup>2</sup>	Acre	1	\$94.73	\$94.73	
Chemical (Table 2) <sup>3</sup>	Acre	1	\$113.61	\$113.61	
Crop Scout or Consultant	Acre	1	\$9.00	\$9.00	
Repair & Maintenance (Table 3) <sup>4</sup>	Acre	1	\$63.86	\$63.86	
Fuel, Oil & Filter (Table 3) <sup>4</sup>	Acre	1	\$27.77	\$27.77	
Operator Labor (Table 3) <sup>4</sup>	Acre	1	\$17.00	\$17.00	
Crop Insurance <sup>5</sup>	Acre	1	\$15.78	\$15.78	
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	
Other	Acre	1	\$0.00	\$0.00	
Other	Acre	1	\$0.00	\$0.00	
Other	Acre	1	\$0.00	\$0.00	
Operating Interest <sup>6</sup>	%	\$435.50	6.10%	\$13.28	
			<b>Total Variable Expenses</b>	<b>\$448.78</b>	
			<b>Return Above Variable Expenses</b>	<b>\$307.82</b>	
<b>Fixed Expenses</b>					
Machinery <sup>4</sup>					
Capital Recovery (Table 3)	Acre	1	\$197.58	\$197.58	
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	
Property Taxes	Acre	1	\$0.00	\$0.00	
Cash Rent <sup>7</sup>	Acre	1	\$99.00	\$99.00	
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	
Management Labor	Acre	1	\$18.00	\$18.00	
Other	Acre	1	\$0.00	\$0.00	
			<b>Total Fixed Expenses</b>	<b>\$314.58</b>	
			<b>Total Expenses</b>	<b>\$763.36</b>	
			<b>Return Above Specified Expenses</b>	<b>-\$6.76</b>	

### Breakeven Price for Selected Soybean Yield<sup>8</sup>

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
20	\$11.22	\$19.08
25	\$8.98	\$15.27
30	\$7.48	\$12.72
35	\$6.41	\$10.91
<b>40</b>	<b>\$5.61</b>	<b>\$9.54</b>
45	\$4.99	\$8.48
50	\$4.49	\$7.63
55	\$4.08	\$6.94
60	\$3.74	\$6.36

### Breakeven Yield for Selected Soybean Price<sup>8</sup>

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$7.60	30	50
\$8.10	28	47
\$8.60	26	44
\$9.10	25	42
<b>\$9.60</b>	<b>23</b>	<b>40</b>
\$10.10	22	38
\$10.60	21	36
\$11.10	20	34
\$11.60	19	33

### Breakeven Price for Selected Wheat Yield<sup>8</sup>

Yield (bu)	Variable Cost (\$/bu)	Total Specified Cost (\$/bu)
49	\$4.58	\$7.79
54	\$4.16	\$7.07
59	\$3.80	\$6.47
64	\$3.51	\$5.96
<b>69</b>	<b>\$3.25</b>	<b>\$5.53</b>
74	\$3.03	\$5.16
79	\$2.84	\$4.83
84	\$2.67	\$4.54
89	\$2.52	\$4.29

### Breakeven Yield for Selected Wheat Price<sup>8</sup>

Price (\$/bu)	Variable Cost (bu)	Total Specified Cost (bu)
\$3.40	66	112
\$3.90	58	98
\$4.40	51	87
\$4.90	46	78
<b>\$5.40</b>	<b>42</b>	<b>71</b>
\$5.90	38	65
\$6.40	35	60
\$6.90	33	55
\$7.40	30	52

Table 1. Fertilizer & Lime<sup>2</sup>

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea - Planting/Fall	30	\$0.42	\$12.59	
	UAN 32 - Post-Emerge/Spring	70	\$0.44	\$30.73	
Phosphorous	P <sub>2</sub> O <sub>5</sub>	60	\$0.33	\$19.88	
Potassium	K <sub>2</sub> O	60	\$0.32	\$19.03	
Lime	Limestone	1,000	\$25.00	\$12.50	
Other		0	\$0.00	\$0.00	
Other		0	\$0.00	\$0.00	
Other		0	\$0.00	\$0.00	
Total				\$94.73	

Table 2. Chemicals<sup>3</sup>

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides- Wheat	Burndown	Gramoxone SL	oz.	1	40	\$0.15	\$5.88	
		Roundup	qt.	1	1	\$4.88	\$4.88	
	Post-Emerge	Harmony	oz.	1	0.75	\$9.51	\$7.13	
		Metribuzin	oz.	1	3	\$0.98	\$2.95	
		Surfactant	\$/acre	2	1	\$1.50	\$3.00	
Herbicides- Soybeans	Pre-Emerge	Gramoxone SL	oz.	1	40	\$0.15	\$5.88	
		Prefix	qt.	1	1	\$9.27	\$9.27	
	Post-Emerge	Engenia	oz	1	12	\$0.69	\$8.24	
		Flexstar	pt.	1	1	\$3.48	\$3.48	
		Surfactant	\$/acre	2	1	\$1.50	\$3.00	
Other				0	0	\$0.00	\$0.00	
Other				0	0	\$0.00	\$0.00	
Seed Treatment		Wheat-seed treatment	acre	1	1	\$12.00	\$12.00	
		Soybeans-seed treatment	acre	1	1	\$10.00	\$10.00	
Other				0	0	\$0.00	\$0.00	
Insecticides		Wheat-Foliar	acre	1	1	\$3.50	\$3.50	
		Soybeans-Foliar	acre	1	1	\$7.50	\$7.50	
Other				0	0	\$0.00	\$0.00	
Fungicides		Soybeans-Foliar	acre	1	1	\$14.40	\$14.40	
		Wheat-foliar	acre	1	1	\$12.50	\$12.50	
Other				0	0	\$0.00	\$0.00	
Total							\$113.61	

Table 3. Machinery<sup>4</sup>

	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Disk	Tractor, 215 hp	Tandem Disk	29'	\$10.30	\$1.82	\$2.20	\$1.49	\$15.81	
Burndown	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$4.73	\$1.53	\$1.99	\$1.35	\$9.60	
Plant	Tractor, 215 hp	Grain Drill	20 ft	\$11.76	\$5.18	\$3.49	\$2.36	\$22.79	
Fertilize	SP Boom Sprayer		900#	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Fungicide	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Insect Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Harvest	Combine	Grain Head	30 ft	\$24.62	\$23.14	\$5.23	\$1.96	\$54.96	
Haul	Tractor, 215 hp	Grain Cart		\$6.30	\$0.76	\$1.22	\$0.83	\$9.11	
Haul	Semi Tractor/Trailer			\$6.17	\$0.43	\$0.35	\$0.77	\$7.72	
Plant	Tractor, 215 hp	Planter	16-row	\$15.41	\$2.82	\$1.88	\$1.27	\$21.37	
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$4.73	\$1.53	\$1.99	\$1.35	\$9.60	
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Fungicide	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Harvest	Combine	Grain Head	30 ft	\$24.62	\$23.14	\$5.23	\$1.96	\$54.96	
Haul	Tractor, 215 hp	Grain Cart	800 bu	\$6.30	\$0.76	\$1.22	\$0.83	\$9.11	
Haul	Semi Tractor/Trailer			\$5.91	\$0.32	\$0.25	\$0.55	\$7.03	
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Total				\$197.58	\$63.86	\$27.77	\$17.00	\$306.21	

## FOOTNOTES

- 1) Soybean price was estimated using weighted average futures prices from November 2020 to August 2021, adjusted by average monthly basis in Tennessee. Soybean yield is the predicted 2020 linear trend line yield for soybeans in Tennessee, adjusted for double cropping systems, using state average yields from 1980-2019. Wheat price was estimated using weighted average futures prices from July 2020 to May 2021, adjusted by average monthly basis in Tennessee. Wheat yield is the predicted 2020 linear trend line yield for wheat in Tennessee, using state average yields from 1980-2019. If a market for straw is available, add an appropriate amount to other revenue (\$/acre) based on the expected yield and price of the straw, less harvest and marketing costs.
- 2) Lime is assumed to be applied once every four years at a rate of 2 tons per acre. Includes the cost of application. Fertilizer quantities and prices are shown in elemental lb. Check with farm suppliers for rebates, discounts and incentives for fertilizers, seed and chemicals. Substantial cost savings may be available. Substantial variation in prices for seed, chemical and fertilizer exist based on quantity purchased, product purchased and location of purchase.
- 3) Assumes a normal crop rotation with minimal weed infestation. Weed control chemicals should be selected for specific weed or grass problems that are present. Generic chemicals may be a cost-effective option, contact your chemical supplier, qualified consultant or weed control specialist. Alternative weed control options are available in the University of Tennessee Weed Control Manual for Tennessee. Follow all labels, state and national regulations when using all chemicals. Check with farm suppliers for rebates, discounts and incentives for seed and chemicals. Substantial cost savings may be available. Seed treatments, such as some nematicide treatments, are optional and costs vary depending on product used. Additional seed treatment is to protect against Barley Yellow Dwarf Virus. Cost may vary depending on fungicide used and application rate per acre.
- 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) 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 soybean and wheat in Tennessee for the previous production year, as reported by USDA RMA's Summary of Business Report.
- 6) Operating interest is assumed to be charged on half of all variable expenses.
- 7) Cash rental rates are the 2019 USDA-NASS reported cash rental rates for irrigated cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
- 8) 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 69 bu/acre and \$5.40/bu. When estimating wheat breakeven, soybean yield and price are held constant at 40 bu/acre and \$9.60/bu.

## 2020 Cotton, No-Till, Non-Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
<b>Revenue<sup>1</sup></b>				<b>Gross Revenue (\$/Acre)</b>	
Cotton	lb	1,033	\$0.72	\$746.34	_____
Government Payments	\$/acre	1	\$0.00	\$0.00	_____
Other Revenue	\$/acre	1	\$0.00	\$0.00	_____
			<b>Total Revenue</b>	<b>\$746.34</b>	_____
<b>Variable Expenses</b>					
Seed <sup>2</sup>	Thous.	45	\$2.24	\$100.58	_____
Wrap <sup>3</sup>	lb	1,033	\$0.02	\$20.66	_____
Fertilizer & Lime (Table 1) <sup>4</sup>	Acre	1	\$111.76	\$111.76	_____
Chemical (Table 2) <sup>5</sup>	Acre	1	\$142.20	\$142.20	_____
Crop Scout or Consultant	Acre	1	\$10.00	\$10.00	_____
Repair & Maintenance (Table 3) <sup>6</sup>	Acre	1	\$29.44	\$29.44	_____
Fuel, Oil & Filter (Table 3) <sup>6</sup>	Acre	1	\$21.08	\$21.08	_____
Operator Labor (Table 3) <sup>6</sup>	Acre	1	\$11.26	\$11.26	_____
Crop Insurance <sup>7</sup>	Acre	1	\$9.36	\$9.36	_____
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	_____
Other	Acre	0	\$0.00	\$0.00	_____
Other	Acre	0	\$0.00	\$0.00	_____
Operating Interest <sup>8</sup>	%	\$456.35	6.10%	\$13.92	_____
			<b>Total Variable Expenses</b>	<b>\$470.27</b>	_____
			<b>Return Above Variable Expenses</b>	<b>\$276.07</b>	_____
<b>Fixed Expenses</b>					
Machinery <sup>6</sup>					
Capital Recovery (Table 3)	Acre	1	\$163.61	\$163.61	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Cash Rent <sup>9</sup>	Acre	1	\$99.00	\$99.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$18.00	\$18.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
			<b>Total Fixed Expenses</b>	<b>\$280.61</b>	_____
			<b>Total Expenses</b>	<b>\$750.89</b>	_____
			<b>Return Above Specified Expenses</b>	<b>-\$4.54</b>	_____

### Breakeven Price for Selected Yield

<u>Yield (lb)</u>	<u>Variable Cost (\$/lb)</u>	<u>Total Specified Cost (\$/lb)</u>
783	\$0.60	\$0.96
833	\$0.56	\$0.90
883	\$0.53	\$0.85
933	\$0.50	\$0.80
983	\$0.48	\$0.76
<b>1,033</b>	<b>\$0.46</b>	<b>\$0.73</b>
1,083	\$0.43	\$0.69
1,133	\$0.42	\$0.66
1,183	\$0.40	\$0.63
1,233	\$0.38	\$0.61
1,283	\$0.37	\$0.59

### Breakeven Yield for Selected Price

<u>Price (\$/lb)</u>	<u>Variable Cost (lb)</u>	<u>Total Specified Cost (lb)</u>
\$0.47	995	1,589
\$0.52	900	1,437
\$0.57	821	1,312
\$0.62	755	1,206
\$0.67	699	1,117
<b>\$0.72</b>	<b>651</b>	<b>1,039</b>
\$0.77	609	972
\$0.82	572	913
\$0.87	539	861
\$0.92	510	814
\$0.97	484	772

Table 1. Fertilizer & Lime<sup>4</sup>

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	80	\$0.42	\$33.57	_____
Phosphorous	P <sub>2</sub> O <sub>5</sub>	60	\$0.49	\$29.55	_____
Potassium	K <sub>2</sub> O	90	\$0.33	\$29.82	_____
Sulfur		10	\$0.60	\$6.00	_____
Boron		0.5	\$0.65	\$0.33	_____
Lime	Limestone	1,000	\$25.00	\$12.50	_____
Other		0	\$0.00	\$0.00	_____
Other		0	\$0.00	\$0.00	_____
Other		0	\$0.00	\$0.00	_____
Total				\$111.76	_____

Table 2. Chemicals<sup>5</sup>

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Burndown	Roundup	qt.	1	1	\$4.88	\$4.88	_____
		Engenia	oz.	1	12	\$0.69	\$8.24	_____
	Pre-Emerge	Cotoran	pt.	1	2	\$5.60	\$11.20	_____
		Caparol	pt.	1	2	\$3.90	\$7.80	_____
		Gramaxone SL	oz.	1	32	\$0.15	\$4.70	_____
	Post-Emerge	Liberty	oz.	1	26	\$0.47	\$12.33	_____
		Roundup	qt.	1	1	\$4.88	\$4.88	_____
		Sequence	pt.	1	2.5	\$4.50	\$11.25	_____
		Surfactant	\$/acre	3	1	\$1.50	\$4.50	_____
		Other		0	0	\$0.00	\$0.00	_____
Growth Regulator	Defoliant	Mepex (Mepiquat Chloride)	pt.	1	2	\$1.00	\$2.00	_____
		Defoliant	oz.	1	12	\$0.15	\$1.80	_____
	Boll Opener	Ethephon	oz.	1	32	\$0.16	\$5.12	_____
		Seed Treatment	acre	1	1	\$10.00	\$10.00	_____
	Insecticides	In-Season	acre	1	1	\$45.00	\$45.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
	Fungicides	Seed Treatment	acre	1	1	\$8.50	\$8.50	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
Total							\$142.20	_____

Table 3. Machinery<sup>6</sup>

	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Chop Stalks	Tractor, 215 hp	Rotary Mower	15'	\$7.23	\$3.84	\$2.91	\$1.96	\$15.94	_____
Burndown	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Plant	Tractor, 215 hp	Planter	12-row	\$12.07	\$4.64	\$2.50	\$1.69	\$20.91	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$4.73	\$1.53	\$1.99	\$1.35	\$9.60	_____
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Spray	Tractor, 215 hp	Hooded Sprayer	90'	\$1.83	\$0.32	\$0.70	\$0.47	\$3.32	_____
Spray	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Spray	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Spray	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Harvest	Picker/Module Builder (Round)		6-row	\$67.29	\$16.95	\$8.72	\$2.50	\$95.46	_____
Harvest	Tractor, 215 hp	Module Handler		\$2.26	\$0.00	\$1.85	\$1.25	\$5.36	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Total				\$163.61	\$29.44	\$21.08	\$11.26	\$225.40	_____



## FOOTNOTES

- 1) Cotton price estimate includes the loan rate plus an estimated loan equity payment and seed and hauling allowance. Cotton yield is the predicted 2020 linear trend line yield for cotton in Tennessee, using state average yields from 1980-2019. Most ginning arrangements provide producers cottonseed revenue net ginning costs.
- 2) Seed cost varies by variety and seed size. Check with farm suppliers for rebates, discounts and incentives for seed and chemicals. Substantial cost savings may be available.
- 3) Bale wrap is estimated at \$0.02 per lb of lint.
- 4) Lime is assumed to be applied once every four years at a rate of 2 tons per acre. Includes the cost of application. Fertilizer quantities and prices are shown in elemental lb. Check with farm suppliers for rebates, discounts and incentives for fertilizers, seed and chemicals. Substantial cost savings may be available. Substantial variation in prices for seed, chemical and fertilizer exist based on quantity purchased, product purchased and location of purchase.
- 5) Assumes a normal crop rotation with minimal weed infestation. A continuous cotton system may require additional expenses for chemicals and/or land preparation. Weed control chemicals should be selected for specific weed or grass problems that are present. 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. Generic chemicals may be a cost-effective option. Contact your chemical supplier, qualified consultant or weed control specialist. Alternative weed control options are available in the University of Tennessee Weed Control Manual for Tennessee. Follow all labels, state and national regulations when using all chemicals. Check with farm suppliers for rebates, discounts and incentives for seed and chemicals. Substantial cost savings may be available. Significant variation in chemical costs between location and product exist.
- 6) 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. A second harvest may add \$25-50/acre to variable costs.
- 7) 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.
- 8) Operating interest is assumed to be charged on half of all variable expenses.
- 9) Cash rental rates are the 2019 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.

## 2020 Cotton, Conventional Tillage, Non-Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
<b>Revenue<sup>1</sup></b>				<b>Gross Revenue (\$/Acre)</b>	
Cotton	lb	1,033	\$0.72	\$746.34	_____
Government Payments	\$/acre	1	\$0.00	\$0.00	_____
Other Revenue	\$/acre	1	\$0.00	\$0.00	_____
			<b>Total Revenue</b>	<b>\$746.34</b>	_____
<b>Variable Expenses</b>					
Seed <sup>2</sup>	Thous.	45	\$2.24	\$100.58	_____
Wrap <sup>3</sup>	lb	1,033	\$0.02	\$20.66	_____
Fertilizer & Lime (Table 1) <sup>4</sup>	Acre	1	\$111.76	\$111.76	_____
Chemical (Table 2) <sup>5</sup>	Acre	1	\$129.08	\$129.08	_____
Crop Scout or Consultant	Acre	1	\$10.00	\$10.00	_____
Repair & Maintenance (Table 3) <sup>6</sup>	Acre	1	\$34.98	\$34.98	_____
Fuel, Oil & Filter (Table 3) <sup>6</sup>	Acre	1	\$28.77	\$28.77	_____
Operator Labor (Table 3) <sup>6</sup>	Acre	1	\$16.40	\$16.40	_____
Crop Insurance <sup>7</sup>	Acre	1	\$9.36	\$9.36	_____
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	_____
Other	Acre	0	\$0.00	\$0.00	_____
Other	Acre	0	\$0.00	\$0.00	_____
Operating Interest <sup>8</sup>	%	\$461.61	6.10%	\$14.08	_____
			<b>Total Variable Expenses</b>	<b>\$475.69</b>	_____
			<b>Return Above Variable Expenses</b>	<b>\$270.66</b>	_____
<b>Fixed Expenses</b>					
Machinery <sup>6</sup>					
Capital Recovery (Table 3)	Acre	1	\$179.20	\$179.20	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Cash Rent <sup>9</sup>	Acre	1	\$99.00	\$99.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor	Acre	1	\$18.00	\$18.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
			<b>Total Fixed Expenses</b>	<b>\$296.20</b>	_____
			<b>Total Expenses</b>	<b>\$771.89</b>	_____
			<b>Return Above Specified Expenses</b>	<b>-\$25.55</b>	_____

### Breakeven Price for Selected Yield

<u>Yield (lb)</u>	<u>Variable Cost (\$/lb)</u>	<u>Total Specified Cost (\$/lb)</u>
783	\$0.61	\$0.99
833	\$0.57	\$0.93
883	\$0.54	\$0.87
933	\$0.51	\$0.83
983	\$0.48	\$0.79
<b>1,033</b>	<b>\$0.46</b>	<b>\$0.75</b>
1,083	\$0.44	\$0.71
1,133	\$0.42	\$0.68
1,183	\$0.40	\$0.65
1,233	\$0.39	\$0.63
1,283	\$0.37	\$0.60

### Breakeven Yield for Selected Price

<u>Price (\$/lb)</u>	<u>Variable Cost (lb)</u>	<u>Total Specified Cost (lb)</u>
\$0.47	1,007	1,634
\$0.52	910	1,477
\$0.57	831	1,348
\$0.62	764	1,240
\$0.67	707	1,148
<b>\$0.72</b>	<b>658</b>	<b>1,068</b>
\$0.77	616	999
\$0.82	578	938
\$0.87	545	885
\$0.92	516	837
\$0.97	489	794

Table 1. Fertilizer & Lime<sup>4</sup>

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	80	\$0.42	\$33.57	_____
Phosphorous	P <sub>2</sub> O <sub>5</sub>	60	\$0.49	\$29.55	_____
Potassium	K <sub>2</sub> O	90	\$0.33	\$29.82	_____
Sulfur		10	\$0.60	\$6.00	_____
Boron		0.5	\$0.65	\$0.33	_____
Lime	Limestone	1,000	\$25.00	\$12.50	_____
Other		0.0	\$0.00	\$0.00	_____
Other		0	\$0.00	\$0.00	_____
Other		0	\$0.00	\$0.00	_____
Total				\$111.76	_____

Table 2. Chemicals<sup>5</sup>

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Pre-Emerge	Cotoran	pt.	1	2	\$5.60	\$11.20	_____
		Caparol	pt.	1	2	\$3.90	\$7.80	_____
		Gramaxone SL	oz.	1	32	\$0.15	\$4.70	_____
	Post-Emerge	Liberty	oz.	1	26	\$0.47	\$12.33	_____
		Roundup	qt.	1	1	\$4.88	\$4.88	_____
		Sequence	pt.	1	2.5	\$4.50	\$11.25	_____
		Surfactant	\$/acre	3	1	\$1.50	\$4.50	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Mepex (Mepiquat Chloride)	pt.	1	2	\$1.00	\$2.00	_____
		Defoliant	oz.	1	12	\$0.15	\$1.80	_____
Growth Regulator	Boll Opener	Ethephon	oz.	1	32	\$0.16	\$5.12	_____
		Seed Treatment	acre	1	1	\$10.00	\$10.00	_____
		In-Season	acre	1	1	\$45.00	\$45.00	_____
	Insecticides	Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
Fungicides	Seed Treatment	Seed Treatment	acre	1	1	\$8.50	\$8.50	_____
		Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
	Other	Other		0	0	\$0.00	\$0.00	_____
		Other		0	0	\$0.00	\$0.00	_____
Total							\$129.08	_____

Table 3. Machinery<sup>6</sup>

	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Chop Stalks	Tractor, 215 hp	Rotary Mower	15'	\$7.23	\$3.84	\$2.91	\$1.96	\$15.94	_____
Chisel	Tractor, 215 hp	Chisel Plow	21'	\$6.14	\$1.81	\$2.74	\$1.85	\$12.54	_____
Disk	Tractor, 215 hp	Tandem Disk	29'	\$10.30	\$1.82	\$2.20	\$1.49	\$15.81	_____
Prepare Seedbed	Tractor, 215 hp	Cultimulcher	20'	\$7.67	\$2.18	\$3.05	\$2.06	\$14.96	_____
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$4.73	\$1.53	\$1.99	\$1.35	\$9.60	_____
Plant	Tractor, 215 hp	Planter	12-row	\$12.07	\$4.64	\$2.50	\$1.69	\$20.91	_____
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Weed Control	Tractor, 215 hp	Hooded Sprayer		\$1.83	\$0.32	\$0.70	\$0.47	\$3.32	_____
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Spray	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Spray	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Spray	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	_____
Harvest	Picker/Module Builder (Round)		6-row	\$67.29	\$16.95	\$8.72	\$2.50	\$95.46	_____
Harvest	Tractor, 215 hp	Module Handler		\$2.26	\$0.00	\$1.85	\$1.25	\$5.36	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Other				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	_____
Total				\$179.20	\$34.98	\$28.77	\$16.40	\$259.36	_____

## **FOOTNOTES**

- 1) Cotton price estimate includes the loan rate plus an estimated loan equity payment and seed and hauling allowance. Cotton yield is the predicted 2020 linear trend line yield for cotton in Tennessee, using state average yields from 1980-2019. Most ginning arrangements provide producers cottonseed revenue net ginning costs.
- 2) Seed cost varies by variety and seed size. Check with farm suppliers for rebates, discounts and incentives for seed and chemicals. Substantial cost savings may be available.
- 3) Bale wrap is estimated at \$0.02 per lb of lint.
- 4) Lime is assumed to be applied once every four years at a rate of 2 tons per acre. Includes the cost of application. Fertilizer quantities and prices are shown in elemental lb. Check with farm suppliers for rebates, discounts and incentives for fertilizers, seed and chemicals. Substantial cost savings may be available. Substantial variation in prices for seed, chemical and fertilizer exist based on quantity purchased, product purchased and location of purchase.
- 5) Assumes a normal crop rotation with minimal weed infestation. A continuous cotton system may require additional expenses for chemicals and/or land preparation. Weed control chemicals should be selected for specific weed or grass problems that are present. 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. Generic chemicals may be a cost-effective option. Contact your chemical supplier, qualified consultant or weed control specialist. Alternative weed control options are available in the University of Tennessee Weed Control Manual for Tennessee. Follow all labels, state and national regulations when using all chemicals. Check with farm suppliers for rebates, discounts and incentives for seed and chemicals. Substantial cost savings may be available. Significant variation in chemical costs between location and product exist.
- 6) 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. A second harvest may add \$25-50/acre to variable costs.
- 7) 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.
- 8) Operating interest is assumed to be charged on half of all variable expenses.
- 9) Cash rental rates are the 2019 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.

## 2020 Cotton, No-Till, Irrigated Budget

	<u>Unit</u>	<u>Quantity</u>	<u>Price</u>	<u>Total</u>	<u>Your Farm</u>
<b>Revenue<sup>1</sup></b>				<b>Gross Revenue (\$/Acre)</b>	
Cotton	lb	1,200	\$0.72	\$867.00	_____
Government Payments	\$/acre	1	\$0.00	\$0.00	_____
Other Revenue	\$/acre	1	\$0.00	\$0.00	_____
			<b>Total Revenue</b>	<b>\$867.00</b>	_____
<b>Variable Expenses</b>					
Seed <sup>2</sup>	Thous.	45	\$2.24	\$100.58	_____
Wrap <sup>3</sup>	lb	1,200	\$0.02	\$24.00	_____
Fertilizer & Lime (Table 1) <sup>4</sup>	Acre	1	\$115.96	\$115.96	_____
Chemical (Table 2) <sup>5</sup>	Acre	1	\$142.20	\$142.20	_____
Crop Scout or Consultant	Acre	1	\$10.00	\$10.00	_____
Repair & Maintenance (Table 3) <sup>6</sup>	Acre	1	\$29.44	\$29.44	_____
Fuel, Oil & Filter (Table 3) <sup>6</sup>	Acre	1	\$21.08	\$21.08	_____
Operator Labor (Table 3) <sup>6</sup>	Acre	1	\$11.26	\$11.26	_____
Crop Insurance <sup>7</sup>	Acre	1	\$9.36	\$9.36	_____
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	_____
Irrigation Energy Cost <sup>8</sup>	Ac-In	6	\$4.86	\$29.16	_____
Irrigation System R&M <sup>8</sup>	Ac-In	6	\$2.22	\$13.32	_____
Other Irrigation Costs	Acre	1	\$0.00	\$0.00	_____
Other	Acre	0	\$0.00	\$0.00	_____
Other	Acre	0	\$0.00	\$0.00	_____
Operating Interest <sup>9</sup>	%	\$506.37	6.10%	\$15.44	_____
			<b>Total Variable Expenses</b>	<b>\$521.81</b>	_____
			<b>Return Above Variable Expenses</b>	<b>\$345.19</b>	_____
<b>Fixed Expenses</b>					
Machinery <sup>6</sup>					
Capital Recovery (Table 3)	Acre	1	\$163.61	\$163.61	_____
Other Fixed Machinery Costs	Acre	1	\$0.00	\$0.00	_____
Capital Recovery (Irrigation Equipment) <sup>8</sup>	Acre	1	\$96.31	\$96.31	_____
Other Irrigation Costs	Acre	1	\$0.00	\$0.00	_____
Property Taxes	Acre	1	\$0.00	\$0.00	_____
Cash Rent <sup>10</sup>	Acre	1	\$180.00	\$180.00	_____
Insurance (Non-Machinery)	Acre	1	\$0.00	\$0.00	_____
Management Labor <sup>11</sup>	Acre	1	\$18.00	\$36.00	_____
Other Fixed Costs	Acre	1	\$0.00	\$0.00	_____
			<b>Total Fixed Expenses</b>	<b>\$475.92</b>	_____
			<b>Total Expenses</b>	<b>\$997.74</b>	_____
			<b>Return Above Specified Expenses</b>	<b>-\$130.74</b>	_____

### Breakeven Price for Selected Yield

<u>Yield (lb)</u>	<u>Variable Cost (\$/lb)</u>	<u>Total Specified Cost (\$/lb)</u>
950	\$0.55	\$1.05
1,000	\$0.52	\$1.00
1,050	\$0.50	\$0.95
1,100	\$0.47	\$0.91
1,150	\$0.45	\$0.87
<b>1,200</b>	<b>\$0.43</b>	<b>\$0.83</b>
1,250	\$0.42	\$0.80
1,300	\$0.40	\$0.77
1,350	\$0.39	\$0.74
1,400	\$0.37	\$0.71
1,450	\$0.36	\$0.69

### Breakeven Yield for Selected Price

<u>Price (\$/lb)</u>	<u>Variable Cost (lb)</u>	<u>Total Specified Cost (lb)</u>
\$0.47	1,104	2,112
\$0.52	999	1,910
\$0.57	911	1,743
\$0.62	838	1,603
\$0.67	776	1,484
<b>\$0.72</b>	<b>722</b>	<b>1,381</b>
\$0.77	675	1,292
\$0.82	634	1,213
\$0.87	598	1,144
\$0.92	566	1,082
\$0.97	537	1,026

Table 1. Fertilizer & Lime<sup>4</sup>

Fertilizer	Description	Quantity (lbs)	Price (\$)	Total (\$/Acre)	Your Farm (\$/Acre)
Nitrogen	Urea	90	\$0.42	\$37.76	
Phosphorous	P <sub>2</sub> O <sub>5</sub>	60	\$0.49	\$29.55	
Potassium	K <sub>2</sub> O	90	\$0.33	\$29.82	
Sulfur		10	\$0.60	\$6.00	
Boron		0.5	\$0.65	\$0.33	
Lime	Limestone	1,000	\$25.00	\$12.50	
Other		0.0	\$0.00	\$0.00	
Other		0	\$0.00	\$0.00	
Other		0	\$0.00	\$0.00	
Total				\$115.96	

Table 2. Chemicals<sup>5</sup>

Chemical	Function	Description	Unit	Number of Apps.	Quantity	Price	Total (\$/Acre)	Your Farm (\$/Acre)
Herbicides	Burndown	Roundup	qt.	1	1	\$4.88	\$4.88	
		Engenia	oz.	1	12	\$0.69	\$8.24	
	Pre-Emerge	Cotoran	pt.	1	2	\$5.60	\$11.20	
		Caparol	pt.	1	2	\$3.90	\$7.80	
Post-Emerge		Gramaxone SL	oz.	1	32	\$0.15	\$4.70	
		Liberty	oz.	1	26	\$0.47	\$12.33	
		Roundup	qt.	1	1	\$4.88	\$4.88	
		Sequence	pt.	1	2.5	\$4.50	\$11.25	
	Surfactant	Surfactant	\$/acre	3	1	\$1.50	\$4.50	
		Other		0	0	\$0.00	\$0.00	
		Other		0	0	\$0.00	\$0.00	
	Growth Regulator	Mepex (Mepiquat Chloride)	pt.	1	2	\$1.00	\$2.00	
		Defoliant	oz.	1	12	\$0.15	\$1.80	
		Ethephon	oz.	1	32	\$0.16	\$5.12	
Insecticides	Seed Treatment	Seed Treatment	acre	1	1	\$10.00	\$10.00	
		In-Season	acre	1	1	\$45.00	\$45.00	
	Other	Other		0	0	\$0.00	\$0.00	
		Other		0	0	\$0.00	\$0.00	
		Other		0	0	\$0.00	\$0.00	
Fungicides	Seed Treatment	Seed Treatment	acre	1	1	\$8.50	\$8.50	
		Other		0	0	\$0.00	\$0.00	
	Other	Other		0	0	\$0.00	\$0.00	
		Other		0	0	\$0.00	\$0.00	
Total							\$142.20	

Table 3. Machinery<sup>6</sup>

	Power Unit	Implement	Size	Capital Recovery	Repairs & Maintenance	Fuel, Oil & Filter	Labor	Total	Your Farm (\$/Acre)
Chop Stalks	Tractor, 215 hp	Rotary Mower	15'	\$7.23	\$3.84	\$2.91	\$1.96	\$15.94	
Burndown	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Plant	Tractor, 215 hp	Planter	12-row	\$12.07	\$4.64	\$2.50	\$1.69	\$20.91	
Fertilize	Tractor, 215 hp	Fertilize Spreader	900#	\$4.73	\$1.53	\$1.99	\$1.35	\$9.60	
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Weed Control	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Weed Control	Tractor, 215 hp	Hooded Sprayer	90'	\$1.83	\$0.32	\$0.70	\$0.47	\$3.32	
Spray	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Spray	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Spray	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35	
Harvest	Picker/Module Builder (Round)		6-row	\$67.29	\$16.95	\$8.72	\$2.50	\$95.46	
Harvest	Tractor, 215 hp	Module Handler		\$2.26	\$0.00	\$1.85	\$1.25	\$5.36	
Other	Other			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Other	Other			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Total				\$163.61	\$29.44	\$21.08	\$11.26	\$225.40	

## FOOTNOTES

- 1) Cotton price estimate includes the loan rate plus an estimated loan equity payment and seed and hauling allowance. Cotton yield is the predicted 2020 linear trend line yield for cotton in Tennessee, adjusted for irrigation practices, using state average yields from 1980-2019. Most ginning arrangements provide producers cottonseed revenue net ginning costs.
- 2) Seed cost varies by variety and seed size. Check with farm suppliers for rebates, discounts and incentives for seed and chemicals. Substantial cost savings may be available.
- 3) Bale wrap is estimated at \$0.02 per lb of lint.
- 4) Lime is assumed to be applied once every four years at a rate of 2 tons per acre. Includes the cost of application. Fertilizer quantities and prices are shown in elemental lb. Check with farm suppliers for rebates, discounts and incentives for fertilizers, seed and chemicals. Substantial cost savings may be available. Substantial variation in prices for seed, chemical and fertilizer exist based on quantity purchased, product purchased and location of purchase.
- 5) Assumes a normal crop rotation with minimal weed infestation. A continuous cotton system may require additional expenses for chemicals and/or land preparation. Weed control chemicals should be selected for specific weed or grass problems that are present. 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. Generic chemicals may be a cost-effective option. Contact your chemical supplier, qualified consultant or weed control specialist. Alternative weed control options are available in the University of Tennessee Weed Control Manual for Tennessee. Follow all labels, state and national regulations when using all chemicals. Check with farm suppliers for rebates, discounts and incentives for seed and chemicals. Substantial cost savings may be available. Significant variation in chemical costs between location and product exist.
- 6) 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. A second harvest may add \$25-50/acre to variable costs.
- 7) 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.
- 8) Center-pivot irrigation costs are estimated using the following assumptions: purchase price and installation cost of \$85,000; useful life of 20 years; and an irrigated acreage of 125 acres. Well depth and energy source will dramatically impact irrigation costs. Irrigation rates should be adjusted to meet commodity- and farm-specific applications.
- 9) Operating interest is assumed to be charged on half of all variable expenses.
- 10) Cash rental rates are the 2019 USDA-NASS reported cash rental rates for irrigated cropland in Tennessee. Substantial differences may exist in cash rental rates reported by NASS and the prevailing rate in your location.
- 11) Management labor for irrigated acreage is assumed to be double that of dryland acres.

Appendix 1: Input Summary Table

Commodity Prices Received by Producers		
Corn	\$4.00	bu
Soybeans	\$9.60	bu
Wheat	\$5.40	bu
Cotton	\$0.72	lb
Fuel, Interest Rates and Labor Costs		
Diesel Fuel (\$/gal)	\$2.35	\$/gal
Electricity (\$/Kwh)	\$0.060	\$/Kwh
Operator Labor (\$/hr)	\$16.00	\$/hr
Management Labor (\$/hr)	\$18.00	\$/hr
Operating Interest (%)	6.10%	%
Fixed Capital Interest (%)	6.20%	%
Crop Scout, Consulting, Cash Rent and Crop Insurance		
Crop Scout / Consulting Fee	\$9.00	acre
Crop Scouting-Cotton	\$10.00	acre
Drying (\$/bu)	\$0.00	bu
Irrigated Cropland Cash Rent	\$180.00	acre
Non-Irrigated Cropland Cash Rent	\$99.00	acre
Crop Insurance-Corn	\$12.12	acre
Crop Insurance-Soybean	\$7.24	acre
Crop Insurance-Wheat	\$8.54	acre
Crop Insurance-Cotton	\$9.36	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	\$18.00	\$/acre
Seed		
Corn	\$3.20	\$/Thousand Seeds
Soybean	\$0.39	\$/Thousand Seeds
Wheat	\$15.50	\$/bu
Cotton	\$2.24	\$/Thousand Seeds



<b>Fertilizer</b>		
Urea	\$0.42	\$/lb
Ammonium Nitrate	\$0.47	\$/lb
UAN 28%	\$0.44	\$/lb
UAN 32%	\$0.44	\$/lb
P <sub>2</sub> O <sub>5</sub>	\$0.33	\$/lb
DAP (18-46-0)	\$0.49	\$/lb
K <sub>2</sub> O - Potash	\$0.32	\$/lb
Lime	\$25.00	\$/ton
Boron	\$0.65	\$/lb
Sulfur	\$0.60	\$/lb

<b>Irrigation</b>		
Irrigation Energy Cost	\$4.86	\$/acre-in
Irrigation System R&M & Labor	\$2.22	\$/acre-in
Capital Recovery (Irrigation Equipment)	\$96.31	\$/acre

<b>Fungicide Treatments</b>		
Tilt	\$5.00	\$/oz.
Soybean-Foliar	\$14.40	\$/acre
Soybean-Seed Treatment	\$3.85	\$/acre
Cotton-Seed Treatment	\$8.50	\$/acre
Wheat-Seed Treatment	\$8.75	\$/acre
Wheat-Foliar	\$12.50	\$/acre
Crop Oil Concentrate	\$3.50	\$/pint
Corn-Foliar	\$14.00	\$/acre
Surfactant	\$3.80	\$/pint

<b>Insecticide Treatments</b>		
Soybean -Foliar	\$7.50	\$/acre
Soybean-Seed Treatment	\$10.00	\$/acre
Cotton-Seed Treatment	\$10.00	\$/acre
Cotton-Foliar	\$45.00	\$/acre
Wheat-Seed Treatment	\$12.00	\$/acre
Wheat-Foliar	\$3.50	\$/acre
Maintenance Fee (Boll Weevil Eradication)	\$1.50	\$/acre

<b>Herbicides</b>		
	<b><u>Price/Unit</u></b>	<b><u>Unit</u></b>
2, 4-D	\$2.22	\$/pt.
Accent Q	\$32.81	\$/oz.
Aim EQ	\$8.12	\$/oz.
Assure II	\$0.96	\$/oz.
Atrazine	\$2.98	\$/qt.
Authority First	\$5.37	\$/oz.
Authority MTZ	\$1.36	\$/oz.
Authority XL	\$3.89	\$/oz.
Axial XL	\$0.96	\$/oz.
Axiom	\$1.86	\$/oz.
Banvel	\$7.00	\$/pt.
Basagran	\$13.53	\$/pt.
Beacon 75 WDG	\$36.70	\$/oz.
Bicep II Magnum	\$12.62	\$/qt.
Boll Opener (Ethephon)	\$0.16	\$/oz.
Boundary	\$10.26	\$/pt.
Buctril 4EC	\$18.59	\$/pt.
Butyrac 200	\$5.23	\$/pt.
Cadet	\$12.63	\$/oz.
Callisto	\$1.43	\$/oz.
Canopy DF	\$2.56	\$/oz.
Canopy EX	\$8.20	\$/oz.
Caparol	\$3.90	\$/pt.
Cinch ATZ	\$12.48	\$/qt.
Clarity 4EC	\$11.48	\$/pt.
Classic	\$17.00	\$/oz.
Cobra	\$1.57	\$/oz.
Command 3ME	\$14.45	\$/pt.
Cotoran	\$5.60	\$/pt.
Cotton Pro	\$4.39	\$/pt.
Crossbow	\$12.25	\$/qt.
Defoliant	\$0.15	\$/oz.
Degree	\$5.00	\$/pt.
Degree Xtra	\$11.52	\$/qt.
Desiccant	\$17.50	acre
Devrinol 2E	\$9.31	\$/qt.
Devrinol 50DF	\$9.05	\$/lb.
Dicamba	\$0.35	\$/oz.
Direx 4L	\$4.06	\$/pt.
Distinct DF	\$2.32	\$/oz.
Domain	\$12.97	\$/lb.

(continued)

Herbicides		
Dual Magnum	\$15.97	\$/pt.
Dual II Magnum	\$16.98	\$/pt.
Engenia	\$0.69	\$/oz.
Envive	\$5.23	\$/oz.
Envoke	\$98.58	\$/oz.
Eptam	\$5.83	\$/pt.
Extreme	\$3.39	\$/pt.
Fexapan	\$0.43	\$/oz.
Fierce	\$6.14	\$/oz.
Finesse	\$6.70	\$/oz.
FirstRate	\$41.82	\$/oz.
Firstshot SG	\$8.62	\$/oz.
Flexstar	\$3.48	\$/pt.
Forefront R & P	\$7.43	\$/pt.
Frontrow	\$22.21	\$/oz.
Fusilade DX	\$1.35	\$/oz.
Gly-4 Plus	\$10.19	\$/qt.
Goal 2XL	\$10.21	\$/pt.
Gramoxone SL	\$0.15	\$/oz.
Grazon P + D	\$4.31	\$/pt.
Guardsman Max	\$14.80	\$/qt.
Halex GT	\$4.95	\$/pt.
Harmony Extra	\$9.51	\$/oz.
Harness	\$14.51	\$/pt.
Harness Xtra	\$13.76	\$/qt.
Hoelon 3EC	\$9.02	\$/pt.
Hornet	\$4.83	\$/oz.
Instigate	\$2.84	\$/oz.
Leadoff	\$8.50	\$/oz.
Liberty	\$0.47	\$/oz.
Mepex (Mepiquat Chloride)	\$1.00	\$/pt.
Metribuzin	\$0.98	\$/oz.
Outlook	\$1.01	\$/oz.
Permit	\$20.67	\$/oz.
Poast/Poast Plus	\$12.54	\$/pt.
Prefix	\$9.27	\$/qt.
Prowl H2O	\$4.54	\$/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.

(continued)

Herbicides		
Roundup	\$4.88	\$/qt.
Scepter	\$4.80	\$/oz.
Select Max	\$0.83	\$/oz.
Sequence	\$4.50	\$/pt.
Sharpen	\$5.86	\$/oz.
Steadfast Q	\$12.07	\$/oz.
Storm	\$11.18	\$/pt.
Surfactant	\$1.50	\$/acre
Treflan	\$3.38	\$/pt.
Ultra Blazer	\$9.85	\$/pt.
Valor	\$3.76	\$/oz.
Verdict	\$1.75	\$/oz.
Warrant	\$4.43	\$/pt.
Xtendimax with VaporGrip	\$0.43	\$/oz.

Appendix 2: Field Operation Table

Commodity	Process	Power Unit	Implement	Size	Capital Recovery	Repair & Maintenance	Fuel	Labor	Total
All	Chisel	Tractor, 215 hp	Chisel Plow	21'	\$6.14	\$1.81	\$2.74	\$1.85	\$12.54
	Disk	Tractor, 215 hp	Tandem Disk	29'	\$10.30	\$1.82	\$2.20	\$1.49	\$15.81
	Prepare Seedbed	Tractor, 215 hp	Do-All	26.5'	\$6.87	\$1.66	\$2.30	\$1.56	\$12.40
	Prepare Seedbed	Tractor, 215 hp	Cultimulcher	20'	\$7.67	\$2.18	\$3.05	\$2.06	\$14.96
	Plant	Tractor, 215 hp	Planter	16-row	\$15.41	\$2.82	\$1.88	\$1.27	\$21.37
	Plant	Tractor, 215 hp	Grain Drill	20 ft	\$11.76	\$5.18	\$3.49	\$2.36	\$22.79
	Fertilize	Tractor, 215 hp	Fertilizer Spreader	900#	\$4.73	\$1.53	\$1.99	\$1.35	\$9.60
	Spray	SP Boom Sprayer		90'	\$8.53	\$0.27	\$0.30	\$0.25	\$9.35
	Harvest	Combine	Corn Head	8-row	\$33.42	\$31.18	\$6.98	\$2.62	\$74.19
	Harvest	Combine	Grain Head	30 ft	\$24.62	\$23.14	\$5.23	\$1.96	\$54.96
Cotton	Haul	Tractor, 215 hp	Grain Cart	800 bu	\$6.30	\$0.76	\$1.22	\$0.83	\$9.11
	Haul (soybean)	Semi Tractor/Trailer			\$5.91	\$0.32	\$0.25	\$0.55	\$7.03
	Haul (corn)	Semi Tractor/Trailer			\$7.68	\$1.25	\$0.79	\$1.76	\$11.48
	Haul (wheat)	Semi Tractor/Trailer			\$6.17	\$0.43	\$0.35	\$0.77	\$7.72
	Chop Stalks	Tractor, 215 hp	Rotary Mower	15'	\$7.23	\$3.84	\$2.91	\$1.96	\$15.94
	Plant	Tractor, 215 hp	Planter	12-row	\$12.07	\$4.64	\$2.50	\$1.69	\$20.91
	Weed Control	Tractor, 215 hp	Hooded Sprayer	90	\$1.83	\$0.32	\$0.70	\$0.47	\$3.32
	Harvest	SP Cotton Picker		6-row	\$22.83	\$7.84	\$7.85	\$2.95	\$41.46
	Harvest	Tractor, 215 hp	Boll Buggy		\$6.42	\$0.93	\$3.05	\$2.06	\$12.46
	Harvest	Tractor, 215 hp	Module Builder	32'	\$6.76	\$1.04	\$2.72	\$1.84	\$12.37
	Harvest	Picker/Module Builder (Round)		6-row	\$67.29	\$16.95	\$8.72	\$2.50	\$95.46
	Harvest	Tractor, 215 hp	Module Handler		\$2.26	\$0.00	\$1.85	\$1.25	\$5.36

## Summary of Revenue, Variable and Fixed Expenses, and Profit or Loss for each Commodity and Production Method

Commodity & Production Process	Revenue (\$/Acre)	Variable Expenses (\$/Acre)	Fixed Expenses (\$/Acre)	Returns Over Specified Costs
Corn No-Till, Non-Irrigated	\$644.00	\$383.74	\$214.83	\$45.43
Corn Conventional Tillage, Non-Irrigated	\$644.00	\$394.78	\$229.63	\$19.59
Corn No-Till, Irrigated	\$900.00	\$476.48	\$413.20	\$10.32
Soybeans No-Till, Non-Irrigated	\$441.60	\$244.85	\$216.59	(\$19.84)
Soybeans No-Till, Irrigated	\$624.00	\$288.11	\$414.34	(\$78.46)
Wheat & Soybean, Double Cropped	\$756.60	\$448.78	\$314.58	(\$6.76)
Cotton No-Till, Non-Irrigated	\$746.34	\$470.27	\$280.61	(\$4.54)
Cotton Conventional Tillage, Non-Irrigated	\$746.34	\$475.69	\$296.20	(\$25.55)
Cotton No-Till, Irrigated	\$867.00	\$521.81	\$475.92	(\$130.74)

## Appendix 3: Budget Summary



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This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication.

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