



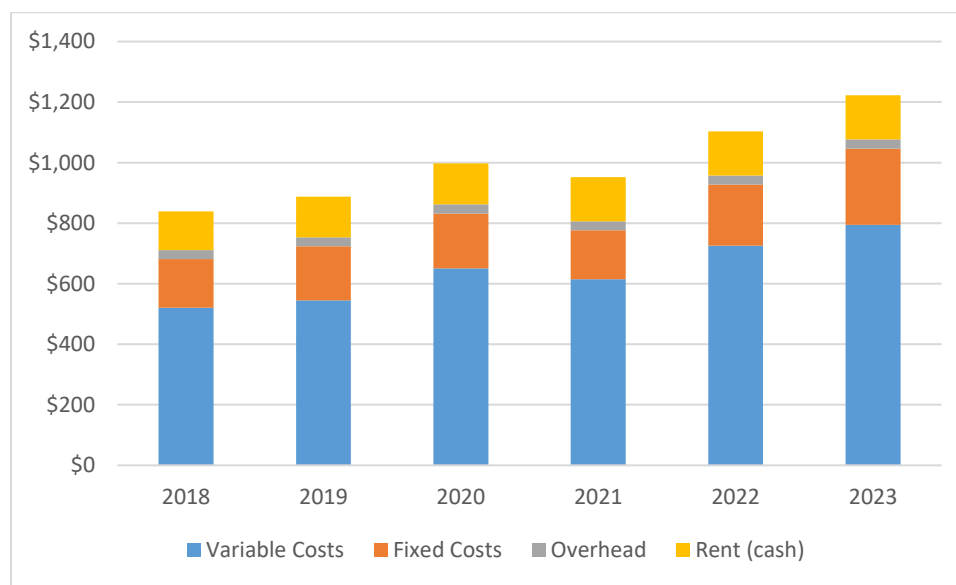
## Input Price Volatility on Cotton Production Costs and its Relation to the Seed Cotton Reference Price: A Louisiana Case Study

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Since 2018, production costs for upland cotton in Louisiana have undergone significant increases. Direct (variable) costs (e.g., fertilizer, fuel, seed, labor, and crop protection products) for 2023 have increased by \$274 per acre over 2018 costs, an increase of 53%. Figure 1. The recent rise in the costs associated with cotton production are primarily attributable to inflationary pressures and geopolitical factors impacting both input unit pricing as well as input availability. Fixed costs are defined as those costs associated with the ownership of equipment (e.g., tractors, implements, and round bale harvesters). In addition to increases in production costs, land rental rates have also increased since 2018. The latest data reported by USDA NASS for cash rents in the northeast region of Louisiana average over \$145 per acre, denoting an increase of 18% for the period. When combined with overhead expenses, the total costs associated with cotton production in Louisiana exceed \$1,200 per acre.

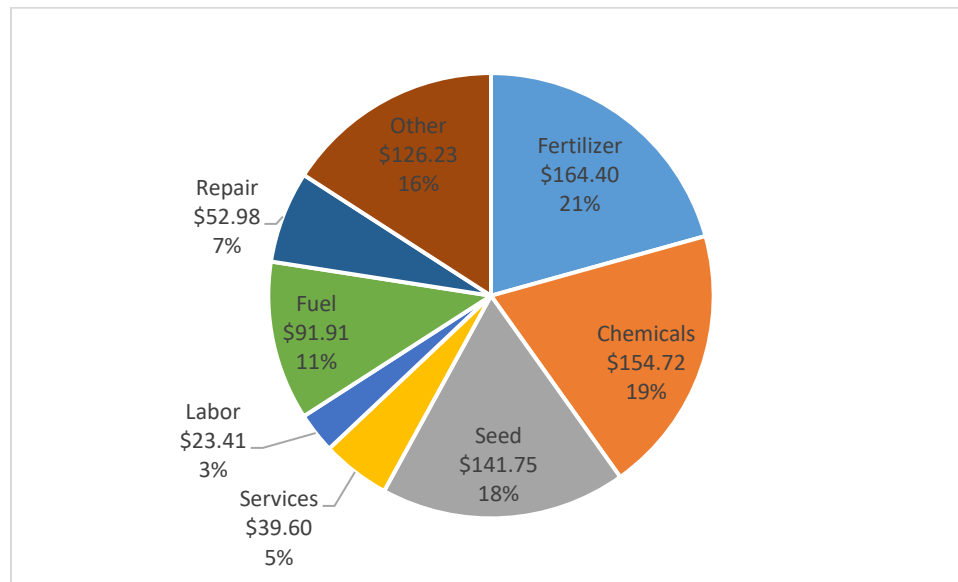
Figure 1. Historical cost of production for upland cotton in Louisiana, 2018-2023.



LSU AgCenter.

Coupled with the high management intensity of the crop, Louisiana cotton growers have recorded substantial production cost increases relative to other crops cultivated alongside (or in rotation with) cotton in Louisiana. This is due to these crops' requiring energy-intensive related inputs such as fertilizer, fuel, and chemicals. Collectively, these production inputs represent over half of the variable costs per acre in 2023 for upland cotton. Figure 2.

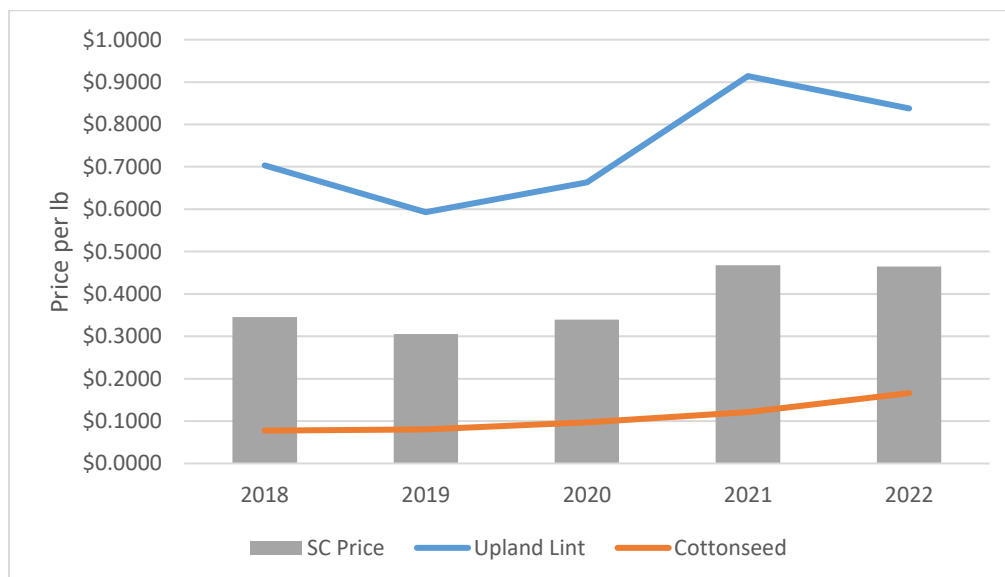
Figure 2. Current share of variable (direct) operating cost for upland cotton in Louisiana, 2023.



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Beginning with the 2018 crop year, ‘seed cotton’ was designated as a covered commodity and was granted eligibility in participating in the ARC/PLC programs contained in Title I of the Farm Bill. The seed cotton price definition includes a weighted calculation of the upland cotton lint and cottonseed prices, respectively. Figure 3. The price of cotton lint heavily influences the price calculation for seed cotton. Cotton lint has not seen the appreciation in commodity prices that other grain and oilseed crops have exhibited over the past two years. This can be attributed to the fact that cotton is a semi-durable good, heavily influenced by macroeconomic factors and export demand (80% of production is exported).

Figure 3. U.S. marketing year average price for upland cotton lint, cottonseed, and seed cotton, USDA NASS.



USDA NASS.

To present production cost volatility for Louisiana cotton producers in relation to the market price and support program levels, cost of production (C.O.P.) estimates from Figure 1 are presented based on the pounds of seed cotton produced per acre. Average lint yield per acre has been converted to seed cotton yields by a factor of 2.4, subject to language specified in the seed cotton program. Estimates for the total cost or production (breakeven price) for Louisiana seed cotton producers are listed in Table 1 subject to a cash rented land tenure arrangement.

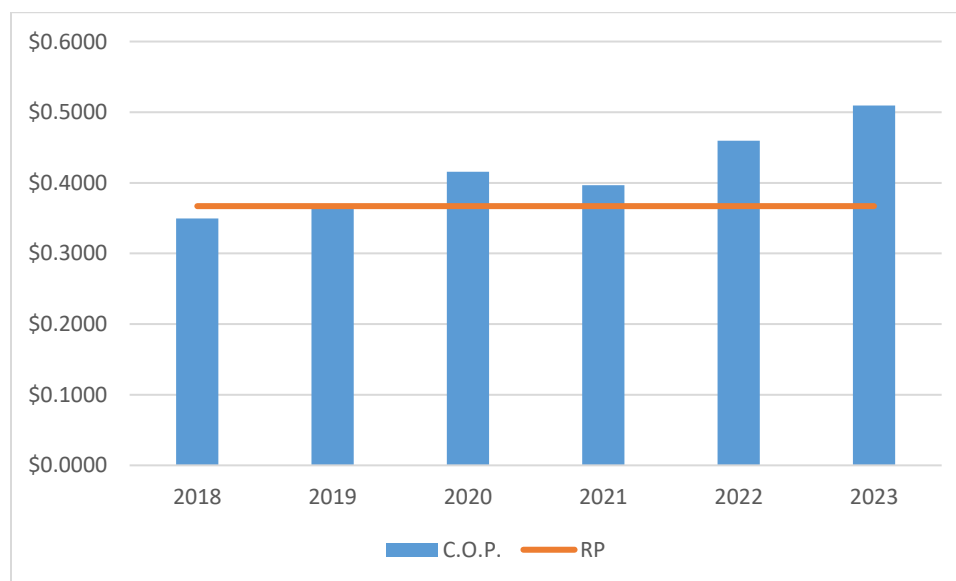
Table 1. Cost of production for seed cotton in Louisiana, 2018-2023.

Seed Cotton Yield	2018	2019	2020	2021	2022	2023
2,880 pounds (1,200 lint pounds)	\$0.2913	\$0.3081	\$0.3464	\$0.3306	\$0.3831	\$0.4245
2,640 pounds (1,100 lint pounds)	\$0.3178	\$0.3361	\$0.3779	\$0.3606	\$0.4180	\$0.4630
2,400 pounds (1,000 lint pounds)	\$0.3496	\$0.3698	\$0.4157	\$0.3967	\$0.4598	\$0.5094
2,160 pounds (900 lint pounds)	\$0.3884	\$0.4108	\$0.4619	\$0.4408	\$0.5109	\$0.5659

irrigated production system, cash rental agreement with cost estimates from the LSU AgCenter.

Following the trend of U.S. seed cotton program election, PLC was the primary Title I safety net program for cotton growers in Louisiana. Estimates for the Louisiana C.O.P. per pound of seed cotton (assuming a 2,400-pound yield per acre) from 2018 to 2023 are presented in Figure 4. These production estimates are contrasted with the PLC reference price (in orange) of \$0.3670 per pound. Assuming a base yield per acre of 2,400 pounds of seed cotton per acre, total production costs per pound have increased \$0.1598 per pound or 46% since 2018. From 2020 onward, the C.O.P. estimates have exceeded the statutorily mandated PLC reference price of \$0.3670 per pound.

Figure 4. Cost of production per unit (pound) of seed cotton in Louisiana, 2018-2023, with PLC reference price per pound of seed cotton.



In addition to cash rental agreements, share rental arrangements are the other most common rental mechanism utilized between landowners and producers. Estimates for the total cost or production (breakeven price) for Louisiana seed cotton producers are listed in Table 2 for a share rented land tenure situation where the landowner receives 20% of the lint production in exchange for land privileges.

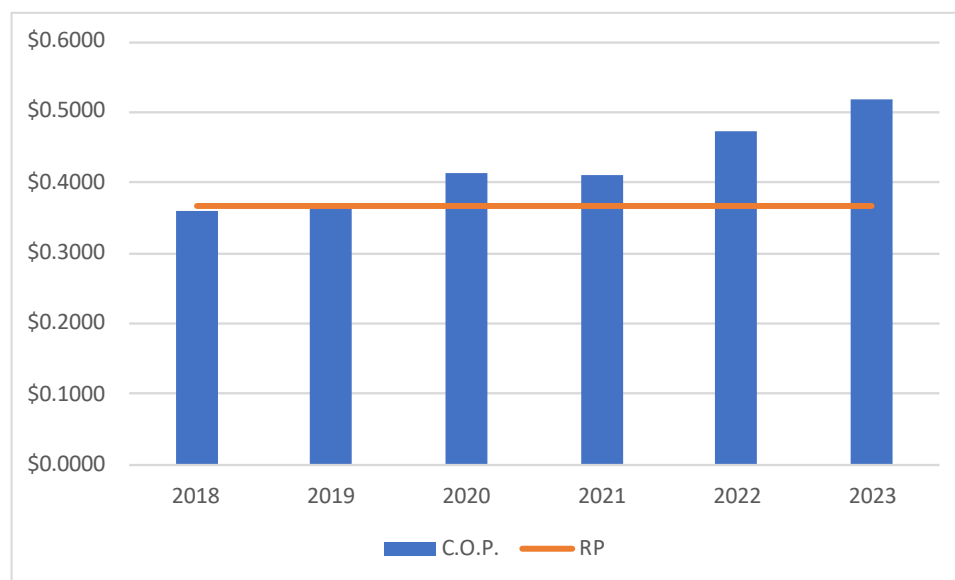
Table 2. Cost of production for seed cotton in Louisiana, 2018-2023.

Seed Cotton Yield	2018	2019	2020	2021	2022	2023
2,880 pounds (1,200 lint pounds)	\$0.3098	\$0.3150	\$0.3550	\$0.3534	\$0.4078	\$0.4429
2,640 pounds (1,100 lint pounds)	\$0.3322	\$0.3388	\$0.3822	\$0.3788	\$0.4380	\$0.4769
2,400 pounds (1,000 lint pounds)	\$0.3592	\$0.3673	\$0.4148	\$0.4094	\$0.4743	\$0.5177
2,160 pounds (900 lint pounds)	\$0.3921	\$0.4022	\$0.4547	\$0.4467	\$0.5186	\$0.5675

irrigated production system, 20% share rental agreement with cost estimates from the LSU AgCenter.

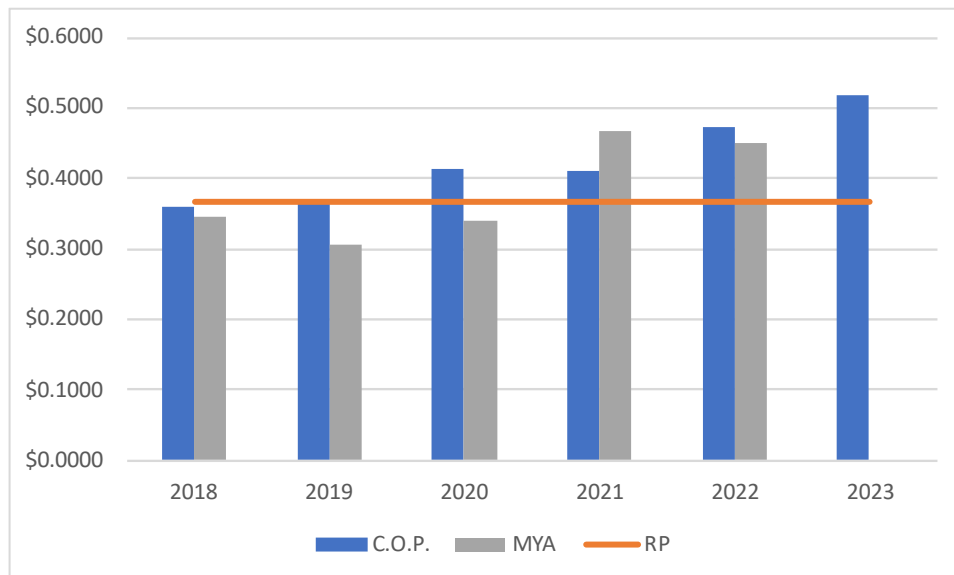
Alternatively, the C.O.P. per pound of seed cotton (assuming a 2,400-pound yield per acre) are presented in Figure 5 with the PLC reference price of \$0.3670 per pound. Assuming a base yield per acre of 2,400 pounds of seed cotton per acre, total production costs per pound have also increased \$0.1585 per pound or 44% since 2018.

Figure 5. Cost of production per unit (pound) of seed cotton in Louisiana, 2018-2023, with PLC reference price per pound of seed cotton.



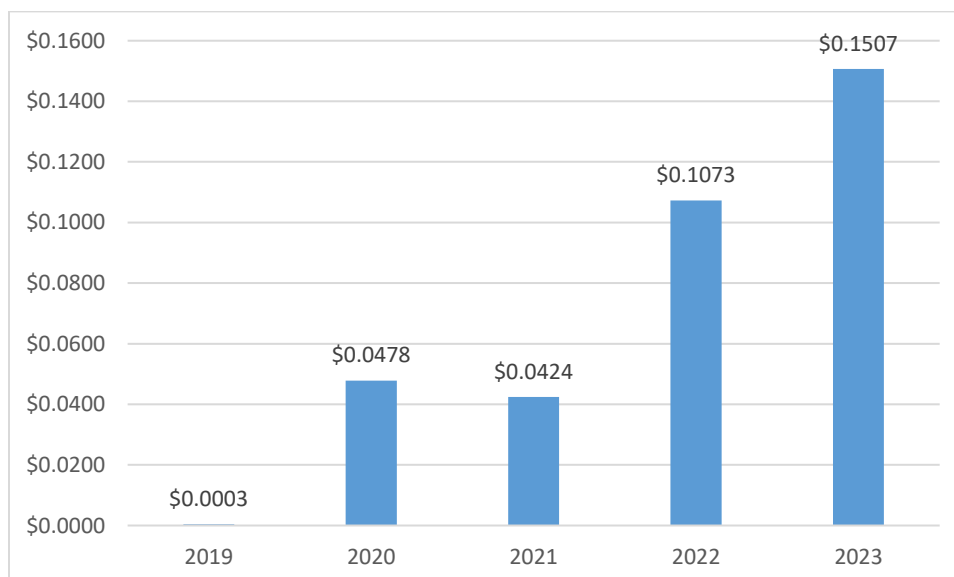
While crop revenues for major row crops are projected to decrease in 2023, C.O.P. associated expenses are rising just as quickly and are outpacing revenues. Figure 6. The combination of significantly higher crop input costs and increasing land rental rates pressure breakeven price levels. With higher costs already incurred, it is necessary for growers to achieve robust yields at above average prices to break even. Albeit the cotton market has only exhibited one year (2021) out of the past five in which the national seed cotton market year average price has exceeded the C.O.P.

Figure 6. Cost of production per unit (pound) of seed cotton in Louisiana, 2018-2023, MYA seed cotton price, and PLC reference price.



The degree to which the C.O.P. for Louisiana seed cotton has exceeded the reference price has now increased to over \$0.15 per pound. Figure 7. Only in 2018 was the Louisiana seed cotton C.O.P. below the reference price (only \$0.0078 per pound). Since 2019, the C.O.P. has, on average, exceeded the reference price by \$0.0697 per pound. Input price increases in 2022 and 2023 have seen that threshold increase by \$0.1073 and \$0.1507 per pound, respectively.

Figure 7. Louisiana seed cotton C.O.P. in relation to the reference price (\$0.3670), 2019-2023.



While this report examines the C.O.P. for Louisiana cotton, similar trends in costs can be observed in other cotton-producing states. Cotton's exposure to production cost increases is not unique, as other commodities have seen their C.O.P. rise since 2018. However, the management intensity of cotton as compared to other crops grown as part of a farm's rotation (e.g., corn, soybeans, wheat) does present a

greater exposure to risk in terms of input price volatility. Combined with input price risk, cotton growers have seen depressed market prices for lint, especially during the 2018-2020 crop years. The stagnant lint prices (which determine the seed cotton covered commodity price) have not benefited from market support to the degree the grain and oilseed complex has undergone since 2021/22. Therefore, the PLC program continues to be relied upon for price support by growers. The level of support is the focus of this report in an attempt to compare recent C.O.P. estimates for Louisiana to the seed cotton reference price of \$0.3670 per pound.



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