

Hemp Budget for CBD Production in Georgia

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With the passage of the 2018 Farm bill, hemp has been removed from the list of Schedule 1 substances. In addition to this rescheduling, the bill also called on the nation's land grant universities to research and assess hemp. At the University of Georgia, the Departments of Agricultural & Applied Economics and Horticulture collaborated to develop an enterprise budget for hemp production in Georgia.

This factsheet aims to analyze the profitability of hemp production and discuss the effects of risk and the impact it has on profitability over time. With respect to the budget, the estimates on cost of production were based on a 2019 hemp trial from the UGA Department of Horticulture. CBD prices were based on discussions with producers and stakeholders throughout the Southeastern U.S. Simulations were then used to identify the potential profitability given changes to various parts of the budget, such as price, yield and percent CBD oil.

Limitations of Hemp Enterprise Budgets

The value of the data from enterprise budgets is limited to the accuracy of the estimates relative to the actual cost of production. A number of potential issues can have an impact on profitability, such as

- 1) Varying Prices and Yield,
- 2) Varying Costs, or the
- 3) Crop exceeding allowable THC limits.

Prices and yields can be highly variable depending on location, weather, production practices, etc. Similarly, production costs can be variable if production practices are different from those used in the UGA hemp trial.

Perhaps the largest unknown that will have a major impact on profitability is the required destruction of a hemp crop that tests above the 0.3% THC limit. Anecdotal evidence in current

hemp producing states has identified between 20% and 40% of hemp crops that have been sampled have tested “hot” (i.e. over the 0.3% limit). Based on Georgia and federal law, a hemp crop that tests hot will be destroyed, resulting in a total loss to the producer for that year. Based on the enterprise budget estimates, that would be a \$13,000 loss. A number of issues can cause a crop to test hot including certain hemp varieties, weather, production practices, harvest time, etc.; some of which are outside of the control of the producer.

Profitability

A number of items can impact profitability, including costs, price and yield. As noted above, costs were developed from the 2019 UGA hemp trial. With respect to price, the market price per CBD percentage point has been reported to be between \$1.50 to \$2.00. However, prices are highly variable depending on the source of the estimate and there is currently no official price data reported by the USDA. The price has dropped considerably over the last couple of years as hemp supply continues to increase. The authors have heard of a price as low as \$0.60 per CBD percentage point being offered.

In the 2019 UGA hemp trial, yield was highly variable, but averaged a dry weight of 1,350 lbs per acre normalized to 10% moisture content. Using this average yield, we show the profit associated with different price points in Table 1. At 8% CBD and a \$1.50 price per percentage point, a producer could make a profit of \$3,138 per acre while making \$8,538 per acre at a \$2.00 price. Meanwhile, as the percentage of CBD oil goes up, profitability increases. However, if price falls to \$1.00 then profits turn negative at 8% CBD.

Table 1. Profit associated with varying prices per CBD percentage point at a yield of 1,350 lbs of dry matter per acre.

Sensitivity analysis assuming dry matter yield of 1,350 lbs per acre				
	Percent CBD	8%	10%	12%
Price per CBD Percentage				
\$0.50		-\$7,662	-\$6,312	-\$4,962
\$1.00		-\$2,262	\$438	\$3,138
\$1.50		\$3,138	\$7,188	\$11,238
\$2.00		\$8,538	\$13,938	\$19,338
\$2.50		\$13,938	\$20,688	\$27,438
\$3.00		\$19,338	\$27,438	\$35,538

In order to better understand the riskiness of hemp production, profitability simulations were utilized. The simulations show about a 20% chance of a negative return for hemp production (Figure 1). Furthermore, there is a 40% chance of between \$0 and \$10,000 in profit and a 20% chance of a profit between \$10,000 and \$20,000. Finally, there is a 20% chance of a profit greater than \$20,000.

When incorporating the risk associated with THC testing hot, the potential profitability decreases substantially. At a hot rate of 20%, the potential for a negative return is around 30-40%. At a hot rate of 40%, the potential for a negative return is around 50-60%.

Producers need to consider what their individual risk tolerance will be before deciding to produce hemp. It is also important to have more information on the potential marketing opportunities and prices. ***The results of this profitability factsheet are meant to be used as a reference in decision making and should not be used as a sole resource in deciding to produce hemp.***

Figure 1. Probability of profitable hemp production based on simulations associated with varying price, yield, and percentage CBD oil (evaluated over 10,000 iterations).

