



# Economic Evaluation of the Greenhouse Tomato Short Course

Greenhouse production is advantageous because it allows producers to extend the growing season, increase their presence in the market throughout the year, and obtain better prices during the off-season. However, given the higher production costs, proper management is essential to a profitable greenhouse enterprise.

For 28 years, the Greenhouse Tomato Short Course has provided research-based information to more than 3,500 current and potential producers from Mississippi and around the world. The short course has also served as an educational opportunity for dozens of Extension agents from the five-state Risk Management Agency region who received grant-supported training.

The short course covers a variety of research-based topics related to greenhouse crop production, including:

- plant nutrition and fertility
- marketing (including social media marketing)
- operations
- budgeting and financial management
- pest management
- water sanitation
- greenhouse design
- environmental control
- alternative crops
- nutritional deficiencies and physiological disorders

A survey of participants from all short courses was conducted in 2018. This survey indicated that the majority of respondents increased production levels, reduced costs, and increased revenue as a result of the knowledge obtained at the short course. Responses indicated 68.8 percent of all participating producers increased their production levels by up to 60 percent, while the remaining respondents either maintained the same level of production (21.1 percent) or reduced production (10.1 percent). All respondents indicated they were able to reduce costs by up to 60 percent, while 72.7 percent of the respondents indicated they were able to increase revenue that, in some cases, exceeded 100 percent. Together, these

observations provide a meaningful basis to demonstrate the economic effect and educational impact the program has had on Mississippi.

How do these responses translate into economic benefits for the state? The Mississippi State University Extension Service estimates that there were 10 acres (435,600 square feet) of greenhouse tomato production in the state in 2018 with a yield of 6 pounds per square foot and an average production cost of \$5.22 per square foot. Producers in Mississippi use various market outlets to sell their products, including wholesale, retail, and direct-to-consumer marketing channels like restaurants.

Because tomatoes produced in a greenhouse environment have better quality, producers can receive a price premium, particularly when selling at restaurants or other outlets that demand a higher quality product. It is estimated that the blended price of tomatoes received at all these outlets averaged \$2.50 per pound. The economic impact of the program can be estimated if it is assumed Mississippi's producers had the same average benefit as the short course participants responding to the survey.

Survey responses indicated that those producers adhering to the tenets provided in the short course were able to reduce production costs by 5 percent on average; this translates to a total cost savings of \$113,692 for all producers in the state (a savings of \$11,369 per acre of production).

Furthermore, 75 percent of responding producers indicated that their gross revenue had increased by a modal response of 15 percent as a result of improved production, management, and marketing techniques learned in the short course. This suggests that the producers in the state realized an additional \$735,075 in revenue for the 10 acres under greenhouse production (an average \$73,508 increase per acre of production).

The decline in production costs combined with the increase in revenue suggests that the total direct impact of the educational program was \$848,834, or \$84,883 per acre, for 2018. But this isn't the only economic effect that occurs.

While the reduction in cost is likely a transfer of funds from greenhouse supply companies to the greenhouse producer and would have little effect on any entity other than these two parties, the increase in revenue provides monies to the farmer that are spent in the local community on business supplies and maintenance, as well as personal purchases.

Using IMPLAN (an economic impact and contribution analysis software), we estimate that the so-called “spill-over” effects of this revenue increase (additional revenue earned by businesses that transact with the greenhouse producers as well as the earnings of workers spent on personal purchases) results in an additional \$490,613 of contribution to the state’s economy that can be directly attributed to the educational impact of the Greenhouse Tomato Short Course. In addition, it is estimated that this increase in sales provides an additional \$41,778 in state and local taxes that can be used to support initiatives that benefit the residents of Mississippi.

## Conclusions

The economic impact of the Greenhouse Tomato Short Course is substantial. Not only has the short course increased the profits of individual producers, but it has also increased economic activity in these producers’ communities and increased state and federal tax revenues.

Based on the Greenhouse Tomato Short Course’s potential economic effects in 2018, it is evident that this educational program has had a tremendous impact on the greenhouse production industry since it began 28 years ago. While the impacts presented in this report cannot simply be multiplied to gauge the total economic benefit that the short course educational program has had over the last 28 years, it is likely that the types and levels of impacts described here would exist for each producer who adopted the recommendations of short course educators.

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