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Tax Incentive Evaluation

Georgia Agricultural Sales Tax (GATE) Exemption

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Tax Incentive Evaluation: Georgia Agricultural Sales Tax (GATE) Exemption

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Executive Summary

This study, conducted in accordance with the Tax Credit Return on Investment Act of 2021, also known as Senate Bill 6 (SB6), reviews the financial impact of Georgia's Agricultural Sales Tax Exemption (GATE) (O.C.G.A. § 48-8- 3(55)). Since some agricultural inputs have been exempt from sales tax in Georgia for decades, no clear cut "taxed" v. "tax exempt" time periods exist for direct comparison. Consequently, the research team compared the return on investment (ROI) of the exemption to the following counterfactual scenario: what if Georgia's GATE exemption did not exist?

The projected ROI of Georgia's GATE sales tax exemption is -0.68 between 2023 and 2028 (Table A). For every $1 in sales tax exempted from GATE eligible sales, $0.32 in value-added impact accrues to the state's economy. In the case of the alternate use of forgone revenue, for every $1 in sales tax collected on GATE eligible expenses and spent by the state, $1.33 in value-added impact accrues to the state's economy.

In addition to ROI, it is useful to compare the employment effects of the current (without sales tax) and alternate-use (with sales tax) scenarios. For each $1 million in direct output, agricultural operations support 18 direct jobs, 3 indirect jobs, and 2 induced jobs (IMPLAN 2021). Under the alternate-use scenario, each $1 million in revenue collected and spent by the state yields 20 direct (state) jobs, two indirect jobs, and five induced jobs. In terms of employment impact, the alternate-use scenario creates more jobs per dollar.

Table A. ROI of GATE and alternate use of forgone revenue, 2023-2038.

YEAR	2023	2024	2025
Forgone Revenue	$296,269,780	$300,762,911	$305,256,042
Exemption Value-Added	$95,544,087	$96,680,232	$97,816,377
ROI of Exemption	-0.68	-0.68	-0.68
Alternate Use Value-Added	$395,428,097	$401,425,030	$407,421,964
ROI of Alternate Use	0.33	0.33	0.33
YEAR	**2026**	**2027**	**2028**
Forgone Revenue	$309,749,173	$314,242,304	$318,735,435
Exemption Value-Added	$98,952,522	$100,088,667	$101,224,812
ROI of Exemption	-0.68	-0.68	-0.68
Alternate Use Value-Added	$413,418,897	$419,415,831	$425,412,765
ROI of Alternate Use	0.33	0.33	0.33

Source: Institute of Government Projections based on Georgia Farm Gate Value Report Data & IMPLAN 2021 Data.

Background

This study, conducted in accordance with the Tax Credit Return on Investment Act of 2021, also known as Senate Bill 6 (SB6), is a review of the Georgia Agricultural Tax Exemption (GATE) (O.C.G.A. § 48-8-3.3). SB6, passed during the 2021 legislative session, requires evaluation of Georgia tax credits and exemptions on a rolling five-year basis. SB6 evaluations estimate 1) the net change in state revenues and expenses resulting from the exemption (also known as the fiscal impact) and 2) the net change in economic activity (also known as the economic impact) and net public benefit due to exemption. The research team also calculated the return on investment (ROI) of the exemption and the alternate use scenario. The study includes a brief history of the exemption, a review of existing academic literature on similar exemptions, and estimates of additional costs or revenues incurred by the state in administering the exemption. Most importantly, evaluations must examine whether the taxpayer spending and accompanying economic impact would have occurred in the absence of the exemption, commonly referred to as the "but for" question. This study is one of three produced under contract with the Georgia Department of Audits and Accounts by the Carl Vinson Institute of Government at the University of Georgia in 2023.

HISTORY & PURPOSE

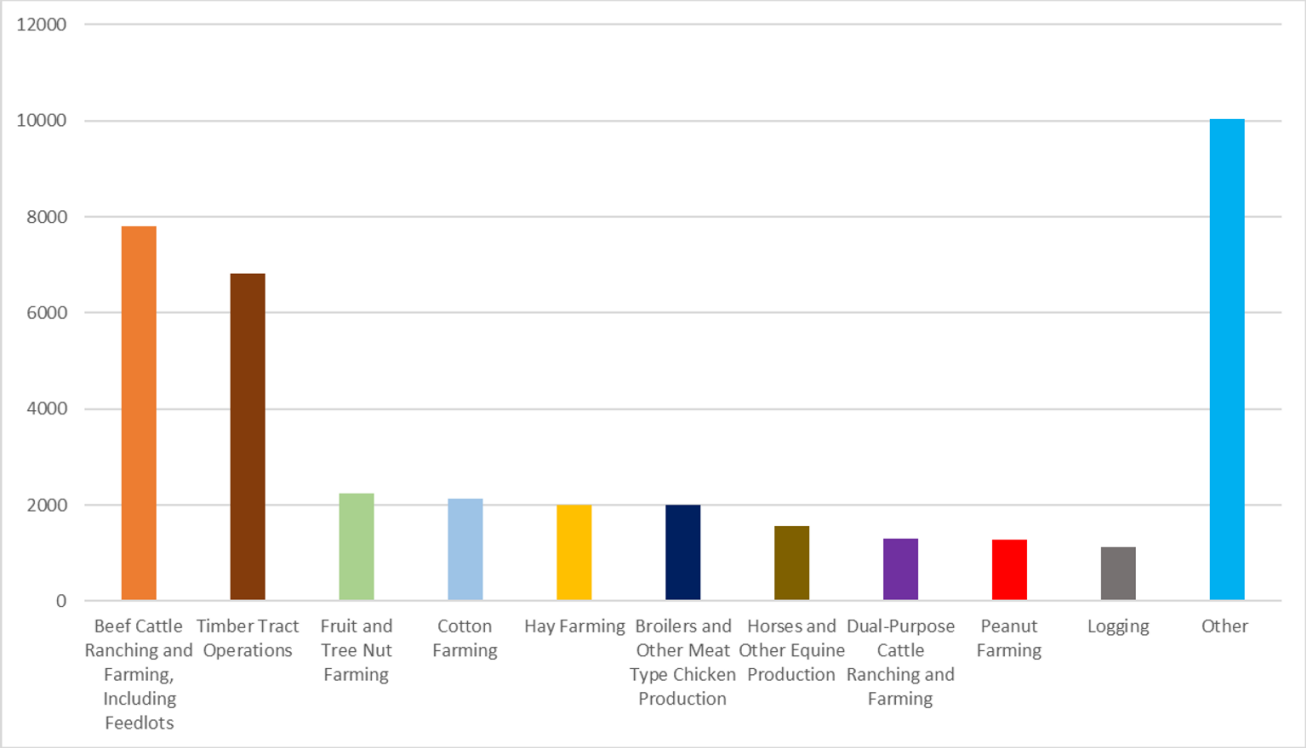
The state of Georgia has exempted selected agricultural inputs from sales tax since the 1960s. Early exemptions included seed, fertilizer, and livestock. Over time, additional items were added, including energy used in production. In 2013, the GATE law (House Bill 386; O.C.G.A. § 48-8-3.3) combined all existing agricultural input exemptions into a single code section, expanding the list of tax-exempt inputs and formalizing exemption criteria. The Georgia Department of Agriculture (GDA) administers the program, which replaced Form ST-A1, determining eligibility requirements, accepting applications, and issuing GATE cards, which must be presented at the time of purchase of tax-exempt inputs. Based on GDA data, producers in Georgia and neighboring states currently hold just over 39,000 GATE cards.

The GATE program is one of the most expansive sales and use tax exemptions on agricultural inputs in the southeastern U.S., with a relatively low qualification threshold and many products classified as exempt. Farmers from neighboring states report buying agricultural inputs from Georgia, specifically to take advantage of the program. Following an October 2017 performance audit conducted by the Georgia Department of Audits and Accounts, the General Assembly passed House Bill 886 in 2018 revising the GATE program. These amendments increased the GATE minimum income requirement from $2,500 to $5,000, limited applicants' agricultural commodity to their primary North American Industry Classification System (NAICS) industry code, required a taxpayer identification number, moved from a one-year to a three-year

reviewing cycle, increased the GATE card fee from $25/year to $150/three years, and prohibited retailers from completing tax exempt sales to producers without a valid GATE card. Although the legislation does not explicitly state its purpose, this study assumes that the GATE program was implemented in order to 1) promote agricultural production in Georgia by lowering the cost of inputs to production and 2) make Georgia's agriculture industry more competitive with that of surrounding states with similar tax exemption programs.

Figure 1 shows the number of GATE cards currently in circulation for major crops produced in Georgia (38,273 as of 2022). Institute researchers utilized Georgia Department of Agriculture data on GATE cardholders by North American Industry Classification System (NAICS). When applying for a GATE card, producers must indicate their primary industry based on NAICS. In 2022, nearly 7,800 GATE cards (20.37% of the state total) were associated with the beef cattle industry. Timber was the second largest industry (17.84%), followed by fruit and tree nut farming (5.84%) and cotton farming (5.56%). Broilers, the most valuable commodity in Georgia according to farm gate value, only accounted for 5.22% of GATE cards in 2022, tied with hay farming. Horses and other equine production accounted for 4.06% of GATE cards, followed by dual-purpose cattle ranching and farming for meat and milk purposes (3.40%), peanut farming (3.35%), and logging (2.91%). "Other," representing the remaining 44 NAICS industries holding GATE cards, accounted for 26.23% of the state total, fewer than 1,000 GATE cards.

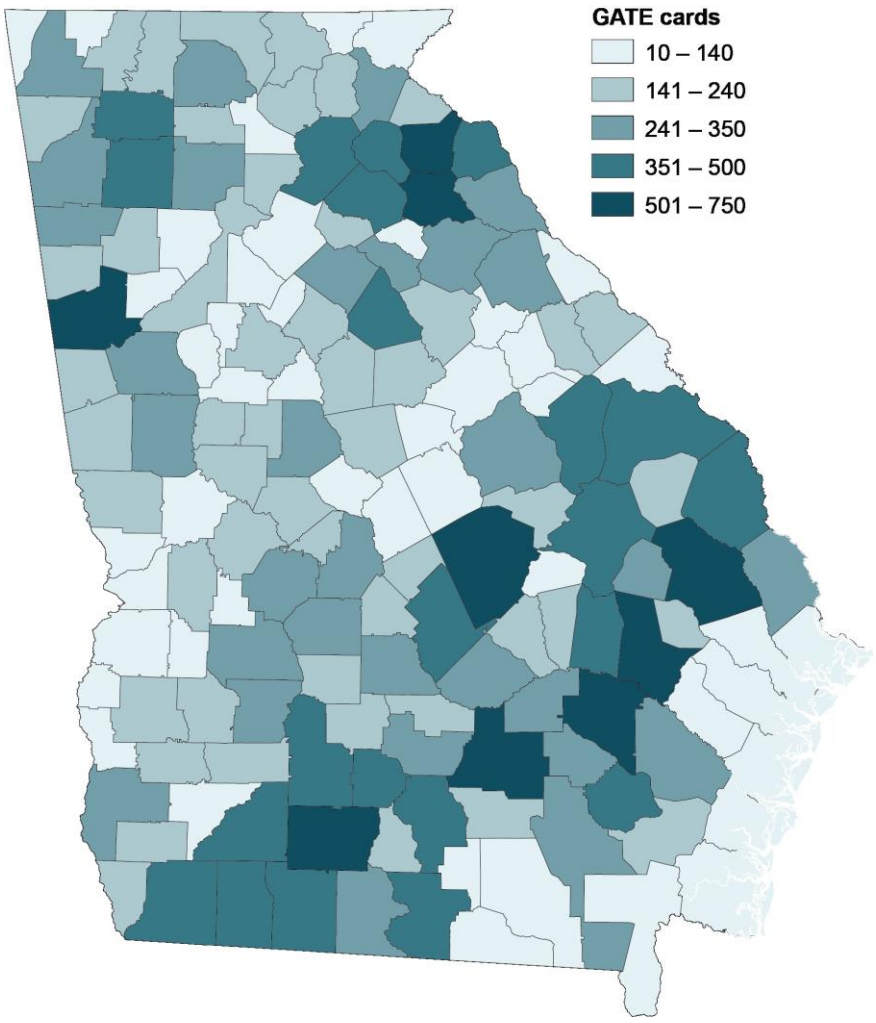
Figure 1. Number of GATE cards in circulation for major crop categories.



Source: Institute of Government calculations based on Georgia Department of Agriculture GATE cardholder data.

Figure 2 presents the geographic dispersion of GATE cardholders. In 2022, the largest portion lived in the Upper Coastal Plain region of Georgia, south of the fall line. Since agriculture is a primary industry in this area, the GATE card provides its many agriculture producers with savings opportunities. Along the southeastern coast of Georgia, where the soil is sandier, most counties have fewer than 132 GATE cardholders. The northeast section of Georgia, including Hall, Jackson, Madison, Hart, Franklin, and Banks Counties, showed increased GATE cards in 2022 relative to the rest of the state, consistent with the presence of the highly valuable broiler industry in that region. Carroll County, along the Georgia-Alabama border, held 511 GATE cards in 2022, an outlier compared to its surrounding counties due to its high concentration of beef cattle farmers. Approximately 2% of the 38,273 GATE cards are registered outside of Georgia.

Figure 2. Geographic dispersion of GATE cardholders.



HOW THE GATE PROGRAM WORKS

Producers of agricultural products or providers of agricultural services (e.g., cotton gins, feed mills, and timber producers) may apply to the GATE program online at the Georgia Department of Agriculture's website. The application requires basic identifying information, including the NAICS code of the applicant's primary crop, and an attestation to at least $5,000 in annual sales of agricultural crops or services. Upon approval by GDA personnel, applicants receive a wallet-sized tax exemption card (GATE card), to be presented at the time of purchase of tax-exempt inputs. GATE cards are issued for a period of three years and cost $150.

In general, eligible production activities include livestock production, crop production, and agricultural support services. Exempt items fall into the broad categories of 1) machinery, equipment, and repair parts; 2) seeds and seedlings; 3) livestock, feed, and veterinary supplies; 4) fertilizers, pesticides, herbicides, and fungicides; and 5) fuel and electricity. Qualifying tax-

exempt purchases are not limited to a set dollar amount. See GDA's website for a complete listing of GATE regulations.

GEORGIA AGRICULTURAL PRODUCTION DATA

Sales tax exemptions under Georgia's GATE program relate directly to the level of agricultural output in the state and the level of input costs used in production. The research team used data from the University of Georgia College of Agricultural and Environmental Sciences' (CAES) Farm Gate Value Report[1] to assess crop, livestock, and timber production. Input cost data were derived from individual crop production enterprise budgets published the UGA CAES Department of Agricultural Economics, with supplementary information provided by the Department of Poultry Science, Warnell School of Forestry, and the Georgia Poultry Federation. For study purposes, individual, itemized crop production budgets were examined to identify GATE-eligible input costs for all commodities representing ≥1% of Georgia's total Farm Gate Value between 2011 and 2021. For crops accounting for less than 1% of total Farm Gate Value, where production budgets did not exist, the team developed estimates of GATE-eligible input costs from existing budget averages.

Broilers, Georgia's top-ranked agricultural commodity for the past 11 years, represented as much as 36.03% of total Farm Gate Value in 2011, but its share decreased over the following decade as the value of other commodities grew. Cotton represented the second-largest percentage of Georgia's total agricultural value in eight out of the last 11 years. Although cotton's percentage value topped out at 7.75% in 2019, the highest dollar value came in 2021, at over $1 billion. Eggs and beef held the second position in the remaining three years. Eggs were the second-largest commodity in 2018, representing 6.89% of total Farm Gate Value, at almost $950 million. The value of eggs has seen tremendous fluctuations over the past 11 years; they fell to 12th in value in 2019 and 2020.

Peanuts' value in the total Georgia Farm Gate ranged from third- to seventh-largest commodity between 2011-2021. In the last two years (2020-2021), peanuts have maintained their position as the third largest commodity, at 5.58% and 5.29% of total Farm Gate Value, respectively. While their share of total value decreased, the monetary value of peanuts increased from $678,038,017 to $776,675,989.

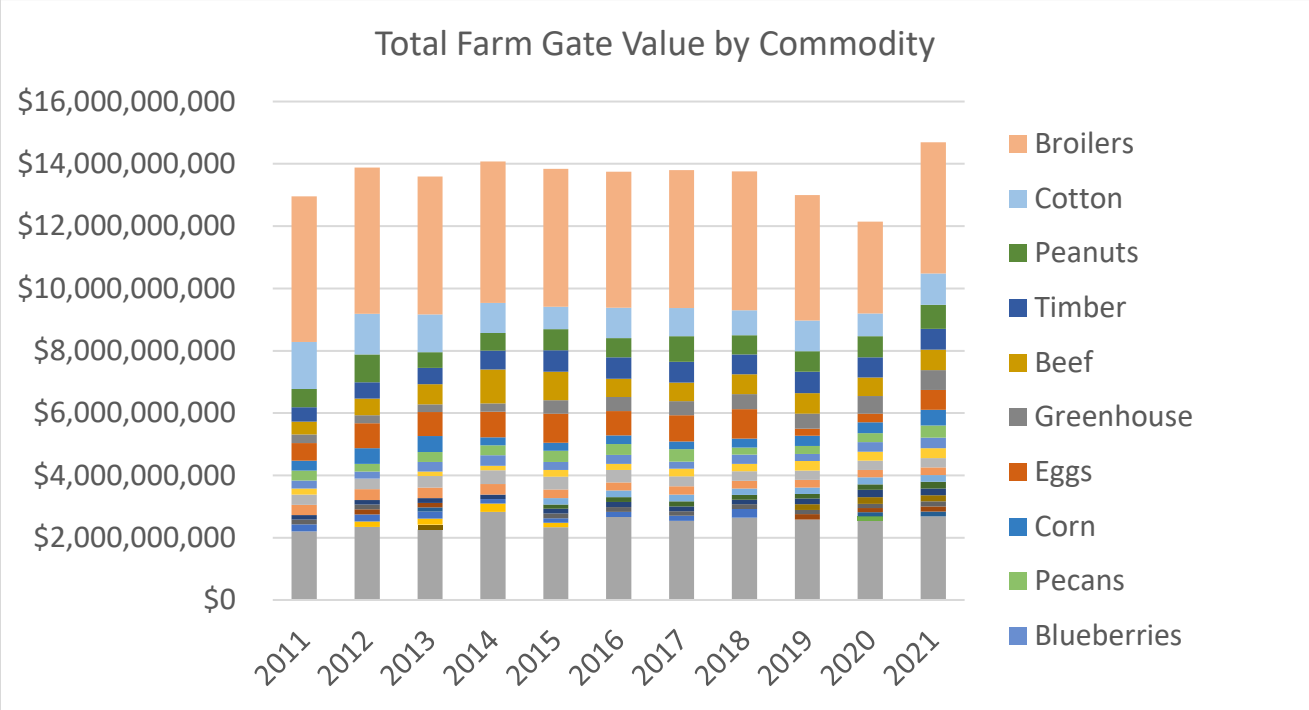
[1] The Georgia Farm Gate Value Report is prepared annually by the University of Georgia Center for Agribusiness and Economic Development. The Total Farm Gate Value rose to over $14 billion twice, in 2021 and 2014. The lowest total Farm Gate Value was $12,148,661,560 in 2020, likely driven by the economic downturn of the COVID-19 pandemic. A summary of historical Farm Gate Value by commodity is shown in Figure 1.

Beef has consistently remained in Georgia's top six commodities in terms of total Farm Gate Value. It peaked in 2014, as the second-largest commodity, accounting for 7.74% of the total Farm Gate Value. Beef was valued at over $1 billion in 2014 and $923 million in 2015; since then, its production has declined by as much as 35%.

Timber, at almost $680 million or 5.23% of the total Farm Gate Value, ranged from sixth to third most valuable commodity in Georgia in 2019. The monetary value of timber peaked in 2015, at $681,237,748. Since 2019, timber has steadied as the fourth most valuable commodity.

Other commodities that regularly appeared in the top ten included greenhouse plants, dairy, corn, blueberries, pecans, horses, and hay. Commodities like onions, bell peppers, watermelon, sweet corn, and container nursery plants consistently represent less than 2.00% of the total Farm Gate Value in Georgia. The category "Other," is comprised of commodities each equivalent to less than 1.00% of the total Farm Gate Value. Farm Gate Report categories not associated with the GATE exemption include hunting leases, agriculture-based tourism, crop insurance, government payments, and all other miscellaneous. "Other" has trended towards a larger share of the total value of the Farm Gate over the 11 years of data, peaking in 2020 with at 38.97%.

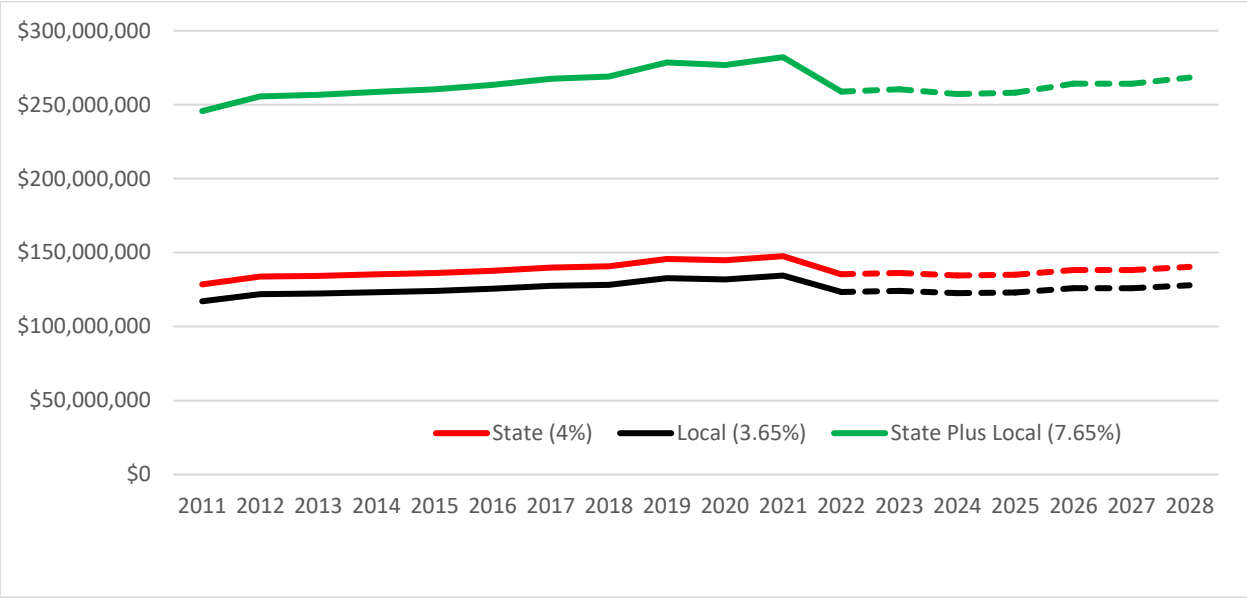
Figure 3. Georgia Farm Gate Values for major commodities, 2011-2021.



Source: Georgia Farm Gate Value Report 2011-2021.

Budget information on the cost of crop-specific, GATE-exempt, budget items for each of the state's major crops (i.e., those that contributed 1% or more to total Farm Gate Value) was used to generate estimates of exempt costs per unit of production (i.e., per acre, per head, per lb., etc.). These estimates were multiplied by total units produced from the Farm Gate Value Report, and by the state tax rate, to provide estimates of foregone sales tax revenue by crop type. As previously mentioned, estimates of foregone sales tax revenue for less important crops were estimated based on average input costs from larger crops. See Figure 4 for estimates of foregone state, local, and total sales tax revenue attributable to GATE. Projections through 2028 were based on historical production and inflation trends. Importantly, long-run historical trends influence these projections more than the recent run up in agricultural input prices associated with the 2020 COVID pandemic and 2022 Russian invasion of Ukraine, since attempting to forecast world events is well beyond the scope of the study.

Figure 4. Estimated foregone sales tax revenue with projections, 2011-2028.



Source: Carl Vinson Institute of Government.

AGRICULTURAL SALES & USE TAX EXEMPTION IN OTHER STATES

Nearly every U.S. state offers some form of agricultural sales and use tax exemption, although program structures vary. This section reviews the agricultural sales and use tax exemption programs in the states surrounding Georgia: Florida, Alabama, South Carolina, Tennessee, Mississippi, North Carolina, Kentucky, and Virginia.

After years of agricultural producers and farmers completing purchaser's exemption certificates or affidavits for each agricultural input or farm equipment purchase to receive the sales tax exemption, Florida will accept applications for the Farm Tax Exempt Agricultural Materials (TEAM) card beginning January 1, 2024. This new system will function similarly to the Georgia GATE card program, where a farmer can present the card at the time of purchase to claim the applicable sales tax exemption.

Though Alabama does not offer agricultural sales and use tax exemption certificates to farmers and producers in the state, a small list of agricultural inputs qualify for a sales tax exemption with the completion of the proper form at the time of purchase. Farm machinery, which does not qualify for sales tax exemption, is taxed at a special farming rate, 1.50% instead of 4.00%.

After several years of agricultural sales tax exemptions, South Carolina adopted the streamlined South Carolina Agricultural Tax Exemption (SCATE) card program in 2022. Any person who buys items from the exempt list in South Carolina can qualify for a SCATE card, regardless of

whether they are a farmer, meet a specific agricultural income threshold, or file the IRS Schedule F.

Tennessee introduced an Agricultural Sales and Use Tax Certificate of Exemption in 2008 for farmers, timber harvesters, and nursery operators. An individual must be a farmer or nursery operator owning or leasing land that has produced at least $1,500 in a year, provide for-hire custom agricultural services, own taxable land under the Agricultural Forest and Open Space Land Act of 1976, and have a federal income tax return with business activity on an IRS Schedule F, Form 4835, or Schedule E.

While Mississippi does not have an agricultural sale and use tax exemption certificate program, several agricultural inputs do qualify for a sales tax exemption. Farm tractors, implements, and the parts and labor used to maintain and or repair the machinery, though not sales tax-exempt, are eligible for a reduced sales tax rate of 1.5%. Farmers must supply their Commercial Farmer Permit certificate, which certifies their standing and attests that the equipment will be used directly for agricultural production or operations.

North Carolina adopted the Qualifying Farmer Exemption Certification Number for Qualified Purchases system in 2014, as an expansion of their agricultural exemption certificate program. A qualifying farmer must have farming operations with either 1) an annual gross income of $10,000 or more in the previous year or 2) an average annual gross income of $10,000 in the three previous years. To make a qualifying purchase, a farmer must provide the retailer with a Streamlined Sales and Use Tax Certificate of Exemption (Form E-595E), which will include the qualifying farmer exemption certificate number.

In January of 2021, Kentucky began requiring farmers to apply for an Agriculture Exemption (AE) Number to make qualifying purchases, after years of offering agricultural sales tax exemptions. The AE number is offered to farmers who are "regularly engaged" in tilling and cultivating soil to produce crops as a business, raising and feeding livestock, raising, and feeding poultry, producing milk, or raising other animals. To make a qualified purchase, a Kentucky farmer must provide the letter from the Department of Revenue with their AE number, along with either Form 51A158 (Farm Exemption Certificate for farm purchases and machinery) or Form 51A159 (Certificate of Exemption for Materials, Machinery and Equipment) when purchasing items related to the construction of farm facilities.

Virginia offers separate agricultural sales tax exemption forms based on the specific purchase. To qualify as a farmer, a person "must be engaged in the business of producing agricultural products for market." Exemption Certificate ST-18 Agricultural Materials and Equipment covers a common list of items that are necessary to produce crops or other agricultural products for market.

Economic Impact

This section presents the economic activity attributed to the Georgia Agricultural Tax Exemption. The analysis begins with projected estimates of gross economic activity generated by the sales tax exemption on agricultural inputs, from 2022-2028. Next, this section presents calculations of net value-added economic activity generated by the sales tax exemption and calculates its return on investment, permitting a direct comparison between the ROI for the sales tax exemption and the value-added economic activity generated by an alternate-use, hypothetical situation in which the exemption does not exist and the state collects and spends the respective revenue as it would any other.

METHODOLOGY

Most sales tax exemption studies hinge on the "but for" question; that is, "but for" the sales tax exemption, how would taxpayers behave, and how would these behaviors differently affect resultant tax collections? Since at least some agricultural inputs have been tax exempt in Georgia for decades, and additional items have been exempted over time, there is no clear-cut demarcation line between "tax exempt" and "taxed" time periods. Consequently, researchers must answer the "but for" question by posing a counterfactual scenario: how might the addition of a sales tax on agricultural inputs change producer behavior and thus the economic and fiscal impacts of agriculture?

As previously noted, researchers examined individual crop production budgets for the state's major crops to identify the cost of GATE-exempt input purchases per unit of production (i.e., per acre, per head, etc.), which were multiplied by the number of units produced (i.e., number of acres, number of head, etc.) to arrive at estimates of forgone tax revenue. This calculation represents the current or status quo case where the GATE exemption exists.

For the counterfactual, or No-GATE, scenario, it was assumed that the cost of GATE-eligible inputs would rise by 7.65%, the sum of 4% state sales tax and (average) 3.65% local sales tax. In accordance with economic theory, the model assumed that farmers would purchase fewer inputs at higher prices, leading to declining production, and, therefore, declining Farm Gate Value. The difference in Farm Gate Value with and without the GATE exemption is thus taken to represent the impact of the GATE exemption on Georgia's economy.

Agricultural economists commonly refer to the measure of the decline in production resulting from an increase in the price of inputs as the price elasticity of supply. Price elasticity of supply quantifies the percentage change in the quantity of a good that is produced given a 1% change in the price of inputs costs. Numerous academic researchers have addressed the estimation of

price elasticities of supply in agriculture over the years. For a more detailed discussion, see Appendix B.

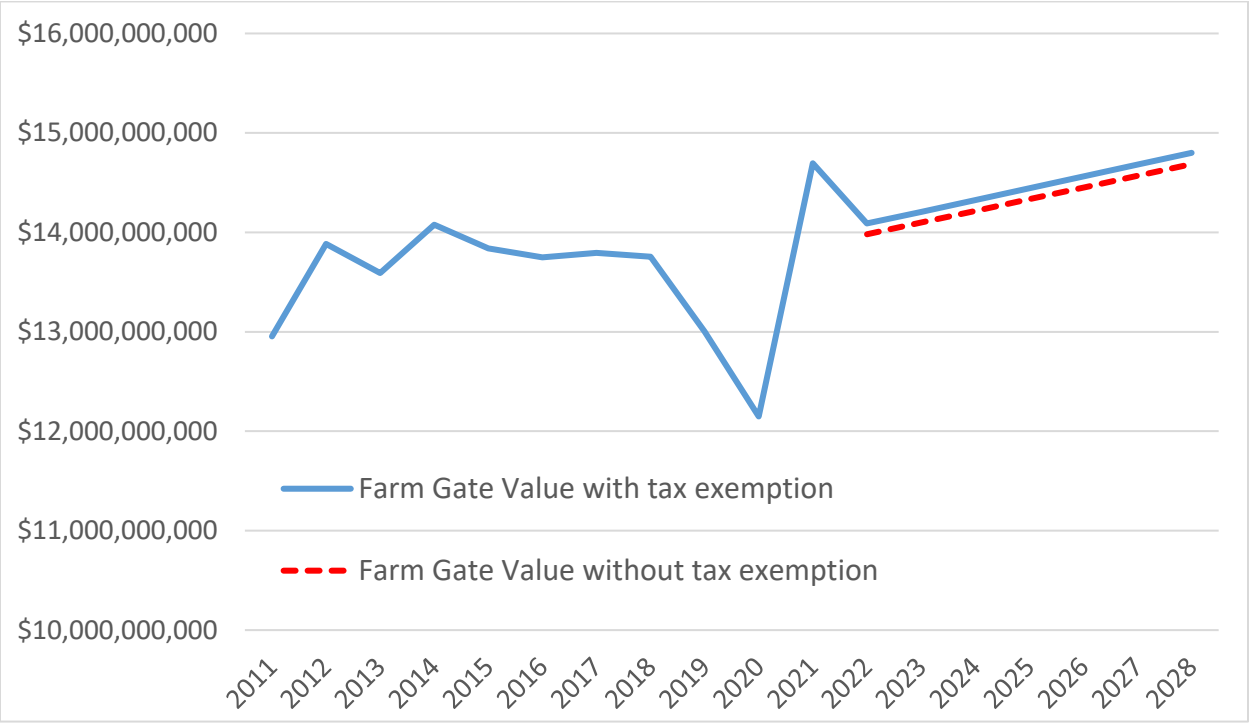
After an extensive review of academic literature on price elasticities in agriculture, researchers determined that -0.1 was the most appropriate measure to utilize in the analysis. The interpretation is that, on average, for a 1% increase in input costs, production declines by one tenth of one percent. While this figure may seem relatively small compared to price elasticities of demand used in similar studies of tax exemptions (i.e., lottery tickets and life insurance), the justification is intuitive. In the short run, farmers must typically invest substantially in land, buildings, and equipment as well as crops under production: they must purchase the inputs necessary to see that crop through to completion. In the long run, as all farmers tend to face the same increases in input costs, they understand that permanent cost increases, such as a tax on inputs, is ultimately passed on to the end consumer in the form of higher prices. Thus, it is expected that price elasticities of supply in agriculture are small relative to demand elasticities for consumer goods.

After deriving estimates of the value of agricultural production and foregone sales tax revenue, Institute researchers utilized IMPLAN, a widely used and accepted county-level economic model of the United States, to estimate the economic impact of the sales tax exemption on GATE-eligible agricultural inputs. For more detailed information on methodology and IMPLAN, see Appendix A.

GROSS ECONOMIC ACTIVITY

Institute researchers projected GATE-exempt input sales under the current (without sales tax) scenario based on the linear trend in Farm Gate Value from 2011-2021 (Figure 5). GATE-exempt input sales under the counterfactual scenario (with sales tax) were based on reduced Farm Gate Values, to account for reduced input demand due to the addition of state and local sales tax. This reduction in the value of agricultural production due to the addition of a sales tax on inputs can be thought of as the “but for” reduction.

Figure 5. Historical and projected Georgia Farm Gate Value with and without tax, 2011-2028.



Source: Georgia Farm Gate Value Report, Institute of Government Projections based on GFGV Data.

Under the current scenario, in which GATE-exempt purchases are not taxed, Farm Gate Value is projected to grow from $14.2 billion in 2023 to $14.8 billion in 2028 (Table 1). Under the counterfactual scenario, in which currently exempt purchases are taxed, Farm Gate Value is projected to grow from $14.1 billion in 2023 to $14.7 billion in 2028. The difference in projected Farm Gate Value with and without tax ranges from $108.7 million in 2023 to $113.2 million in 2028. Over the six-year period (2023 to 2028), the research team projects that collecting state and local sales tax would reduce Farm Gate Value by $665.7 million, due to the reduced production that results from increased farm input prices.

Table 1. Projected Farm Gate Value with and without GATE, 2023-2028.

YEAR	2023	2024	2025
WITH GATE	$14,206,995,905	$14,325,498,602	$14,444,001,299
WITHOUT GATE	$14,098,312,387	$14,215,908,538	$14,333,504,689
DIFFERENCE	$108,683,519	$109,590,064	$110,496,610
YEAR	**2026**	**2027**	**2028**
WITH GATE	$14,562,503,996	$14,681,006,693	$14,799,509,389
WITHOUT GATE	$14,451,100,840	$14,568,696,991	$14,686,293,142
DIFFERENCE	$111,403,156	$112,309,701	$113,216,247

Source: Institute of Government Projections based on Georgia Farm Gate Value Report Data.

The research team used IMPLAN to model the estimated economic impact of the GATE exemption on Georgia's agricultural and timber production and supporting services, the equivalent of its contribution to state GDP, from 2023 to 2028. Table 2 displays the combined, value-added economic impact across all state agricultural products and services, including timber production, attributable to the GATE exemption. The difference in economic impact with and without the GATE exemption ranges from $95.5 million in 2023 to $101.2 million in 2028. Importantly, in order to represent average or "typical" production years, these numbers deviate substantially from the years immediately preceding the forecast period (2023-2028), which were characterized by extreme price volatility due to the 2020 COVID pandemic. The COVID pandemic, with its disruptions to the agricultural supply chain, led to a severe decline in Farm Gate Value, followed a year later by inflated commodity prices.

Table 2. Economic Impact of GATE, 2023-2028.

YEAR	2023	2024	2025
ECONOMIC IMPACT	$95,544,087	$96,680,232	$97,816,377
YEAR	2026	2027	2028
ECONOMIC IMPACT	$98,952,522	$100,088,667	$101,224,812

Source: Institute of Government Projections based on Georgia Farm Gate Value Report Data & IMPLAN 2021.

Table 3 displays the four economic indicators—employment, labor income, value-added, and total output—modeled by IMPLAN for a sample year of 2023. The research team calculated that additional agricultural production due to the GATE exemption would create $90.8 million in direct output. For $90.8 million in direct output, a direct employment impact of 1,954 jobs would be created. An additional 284 indirect and 225 induced jobs would be created, for a total employment impact of 2,463 jobs. IMPLAN calculated direct labor income at $30.7 million, for an average salary of $15,732 across the three component industries.

Table 3. Economic impact of GATE, 2023.

IMPACT	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
DIRECT	1,954	$30,740,731	$55,565,563	$90,847,893
INDIRECT	284	$14,256,878	$19,614,611	$37,128,354
INDUCED	225	$12,683,170	$20,363,913	$34,609,746
TOTAL	2,463	$57,680,779	$95,544,087	$162,585,994

Source: Institute of Government Projections based on Georgia Farm Gate Value Report Data & IMPLAN 2021.

ALTERNATE USE OF FORGONE REVENUE

The GATE exemption, enacted in 2013, broadened the array of agricultural input costs exempted from sales tax. To compare the ROI of the counterfactual (taxed) scenario to the current (tax-exempt) scenario, the research team modeled the economic impact of the alternate use of forgone revenue, which assumes that the state collects taxes on GATE-eligible purchases and spends that revenue on goods and services that it typically provides to taxpayers. Forgone revenue is modeled in IMPLAN as the direct output of state spending.

Under the counterfactual scenario, the state would collect a 4% sales tax on GATE-eligible purchases that are currently tax-exempt, and individual counties would collect an average of approximately 3.64%. Forgone state and local revenue is estimated at $296.3 million in 2023, increasing to $318.7 million in 2028 (Table 4). Over the six-year period from 2023 to 2028, total forgone state revenue amounts to $1.85 million. Table 4 also displays the value-added economic impact (GDP) of state and local governments collecting and spending taxes on otherwise GATE-eligible purchases, 2023-2028. The value-added impact of the alternate use of forgone revenue grows from $395.4 million in 2023 to $425.4 million in 2028. Over the six-year period, the total value-added economic impact of the alternate use of forgone revenue amounts to $2.46 billion.

Table 4. Forgone revenue due to GATE and value-added economic impact of the alternate-use scenario, 2023-2028.

YEAR	FORGONE REVENUE	VALUE ADDED ECONOMIC IMPACT
2023	$296,269,780	$395,428,097
2024	$300,762,911	$401,425,030
2025	$305,256,042	$407,421,964
2026	$309,749,173	$413,418,897
2027	$314,242,304	$419,415,831
2028	$318,735,435	$425,412,765
TOTAL	$1,845,015,645	$2,462,522,584

Source: Institute of Government Projections based on Georgia Farm Gate Value Data & IMPLAN 2021.

Table 5 displays the estimated economic impact of state and local governments collecting and spending $296.3 million in taxes on what would have otherwise been GATE-exempt purchases for a sample year of 2023. Direct impacts represent the direct expenditure of those tax collections by state and local governments on items such as employee salaries or government purchased equipment and supplies. Indirect impacts are associated with upstream businesses that supply those goods and services that are purchased with the additional taxes collected. Finally, induced impacts are the downstream result of government employees spending their earnings in the economy.

Table 5. Economic impact of the alternate use of forgone revenue, 2023.

IMPACT	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
DIRECT	5923	$226,165,346	$211,130,188	$296,269,780
INDIRECT	553	$28,506,243	$48,517,652	$93,813,844
INDUCED	1484	$71,425,963	$135,780,257	$232,466,273
TOTAL	7960	$326,097,552	$395,428,097	$622,549,894

Source: Institute of Government Projections based on Georgia Farm Gate Value Report Data & IMPLAN 2021.

NET ECONOMIC ACTIVITY

The research team calculated the ROI (the gain from the investment—i.e., the value added by the sales tax exemption—minus the cost of the investment—i.e., forgone state revenue—divided by the cost of the investment) of Georgia's sales tax exemption on GATE-eligible purchases and the alternate-use scenario. Over the study period, the ROI of Georgia's GATE exemption is -0.68 compared with an ROI of 0.33 for the counterfactual scenario where sales tax on GATE -eligible items is collected and spent in the same manner as other tax collections (Table 6).

Table 6. ROI of GATE and alternate use of forgone revenue, 2023-2028.

YEAR	2023	2024	2025
Forgone Revenue	$296,269,780	$300,762,911	$305,256,042
Exemption Value-Added	$95,544,087	$96,680,232	$97,816,377
ROI of Exemption	-0.68	-0.68	-0.68
Alternate Use Value-Added	$395,428,097	$401,425,030	$407,421,964
ROI of Alternate Use	0.33	0.33	0.33
YEAR	**2026**	**2027**	**2028**
Forgone Revenue	$309,749,173	$314,242,304	$318,735,435
Exemption Value-Added	$98,952,522	$100,088,667	$101,224,812
ROI of Exemption	-0.68	-0.68	-0.68
Alternate Use Value-Added	$413,418,897	$419,415,831	$425,412,765
ROI of Alternate Use	0.33	0.33	0.33

Source: Institute of Government Projections based on Farm Gate Value Report Data, CAES Enterprise Budgets & IMPLAN 2021.

Fiscal Impact

SB6 requires tax incentive evaluations to calculate the fiscal impact of credits and exemptions as well as the economic impact. The fiscal impact of a tax exemption sums forgone state revenue, increased state tax collections, and any cost to the state of administering the exemption. Forgone state revenue was calculated as 4% of estimated GATE-exempt purchases under the counterfactual scenario. The research team modeled additional, hypothetical, state revenue generated by removing the GATE exemption using IMPLAN.

Table 7 presents the difference in state tax collections between the current (without tax) and counterfactual (with tax) scenarios. Increased tax collections due to the exemption range from $1.8 million in 2023 to $1.9 million in 2028, for a total increase of $11.1 million over the six-year period. The fiscal impact of Georgia's GATE exemption on agricultural input purchases is projected to be -$153.2 million in 2023, growing to -$164.9 million by 2028. Total fiscal impact of the exemption over the six-year period was estimated to be -$954.3 billion in state revenue.

Table 7. Forgone revenue due to GATE, increased state tax collections due to the exemption, and fiscal impact of the exemption, 2023-2028.

YEAR	FORGONE STATE REVENUE	INCREASED STATE TAX COLLECTIONS	EXEMPTION FISCAL IMPACT	ALTERNATE USE TAX COLLECTIONS	ALTERNATE USE FISCAL IMPACT	FORGONE LOCAL REVENUE
2023	$(155,025,950)	$1,811,269	($153,214,681)	$9,048,302	$164,074,252	$(141,243,830)
2024	$(157,378,531)	$1,828,595	($155,549,936)	$9,185,614	$166,564,145	$(143,384,380)
2025	$(159,731,112)	$1,845,921	($157,885,191)	$9,322,926	$169,054,038	$(145,524,930)
2026	$(162,083,692)	$1,863,247	($160,220,445)	$9,460,237	$171,543,929	$(147,665,481)
2027	$(164,436,273)	$1,880,574	($162,555,699)	$9,597,549	$174,033,822	$(149,806,031)
2028	$(166,788,853)	$1,897,900	($164,890,953)	$9,734,860	$176,523,713	$(151,946,582)
TOTAL	$(965,444,411)	$11,127,506	($954,316,905)	$56,349,488	$1,021,793,899	$(879,571,234)

Source: Institute of Government Projections based on Georgia Farm Gate Value Report Data & IMPLAN 2021.

A residual effect of the counterfactual scenario is the loss of GATE card fee revenue. GATE cards are typically renewed for three years at a cost of $150 per card. This amounts to approximately 12,000 renewals each year, for a total of $1.8 million in annual fee revenue. The annual cost of administering the program is projected at $500,000. According to GDA, GATE fees are submitted directly to the State Treasury, with the General Assembly annually appropriating funds back to GDA to administer the program and the balance being retained in the General Fund (Georgia Department of Audits and Accounts, 2017). The economic impact of an additional $500,000 in state spending to administer the GATE program is estimated to be about $667,000 per year, creating 13 additional jobs and generating $29,000 in state taxes plus $12,000 in local taxes.

Public Benefit

Georgia's GATE exemption provides several public benefits in addition to simply lowering input costs to agricultural producers. By lowering farm input costs, and thereby encouraging production, it also supports agriculture-related employment, especially among farm laborers and agricultural service providers in rural Georgia, including in some of the poorest areas of the state.

The exemption also encourages farmers to make large-scale equipment and input purchases within the state, rather than in surrounding states with similar sales tax exemptions. The absence of an exemption that is on par with those of neighboring states would place Georgia's supporting industries at a competitive disadvantage. For example, without the GATE exemption on farm equipment purchases, farmers would almost certainly find it cost effective to travel to farm equipment dealers in neighboring states to purchase tractors and other big-ticket implements, leaving the future of in-state dealers uncertain. In turn, any closure of local equipment dealers would extend wait times for repair and maintenance services. Similar conclusions could be drawn for other farm input suppliers in the absence of a GATE exemption.

The number of GATE cards in circulation by crop type (i.e. NAICS Code) suggests that a large proportion are held by small farmers and producers of new or emerging crops. Many GATE cards are held by cattle producers and those in "all other" category, typically characterized by small and niche crop farmers. The result is that a proportionally large number of small and beginning farmers are likely to benefit from the GATE sales tax exemption, a possible boon to those producing crops for local sale, at farmer's markets, farm-to-table restaurants, and similar venues.

For many larger producers, farming is typically a high-volume, low-margin business that frequently faces considerably price volatility in both input prices and commodity prices. For this reason, farm finances may swing from profit to loss based on small price changes. The GATE exemption offers some cushion, if only a small one, to price volatility.

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Appendix

A. NOTES ON THE IMPLAN MODELNG SYSTEM

Economic impact modeling is a technique used to estimate how a new firm, facility, or policy change will affect a specific economy, such as a county, region, or state. Such estimates are often produced using an input-output model that first calculates a baseline forecast of economic activity for a geographic region and then estimates how shocks (inputs) to the economy alter economic activity (output). For this report, Institute of Government researchers estimated the economic impacts of the Georgia Agricultural Tax Exemption on the purchase of GATE eligible agricultural production inputs.

Institute researchers use IMPLAN, a widely used and accepted county-level economic model of the United States, to estimate the economic impacts of projects and changes to public policy. This model produces a baseline economic forecast using data from the U.S. Census Bureau, the North American Industry Classification System (NAICS), the Bureau of Economic Analysis, and the Bureau of Labor Statistics, as well as other data from the U.S. Department of Commerce.

In IMPLAN, adding an input, or change to the economy (e.g., new jobs, labor income, increased demand for goods and services, or a policy change such as a tax credit) allows for estimations of the overall increase or decrease in economic activity resulting from the change. The economic measures reported by the model include the number of jobs supported, the labor income associated with those jobs, the value added (or lost) to the economy in the particular geographic study region, and the total economic output added (or lost) as a result of the change.

IMPLAN provides estimates of the direct, indirect, and induced effects of an economic event—in this case, the additional revenue collected by the state of Georgia if the GATE exemption on the agricultural inputs did not exist—on employment, labor income, value-added impact, and total output impact. Direct effects, one or more production changes or expenditures made by producers/consumers following an activity or policy,[2] can be positive or negative. For example, the direct effect of taxing agricultural inputs would be to raise input costs, and, consequently, reduce agricultural production in Georgia. By applying the initial change to the multipliers in IMPLAN, it is possible to project a given region's economic response. Indirect effects are business-to-business purchases in the supply chain resulting from the initial industry input purchases. An example of an indirect effect of taxing agricultural inputs might be reduced spending by Georgia farmers on seed, fertilizer, or farm machinery. Induced effects, or values from household spending of labor income after subtracting taxes, savings, and commuter income, are generated by employees' spending within the business' supply chain. An example

[2] Understanding IMPLAN: Direct, Indirect, and Induced Effects

of an induced effect of taxing agricultural inputs might be reduced spending by farm employees in the local economy.

Researchers examined individual crop production budgets, compiled by the UGA College of Agricultural and Environmental Sciences' Agricultural Economics Extension Faculty, for 22 of the state's major crops, to identify the cost of GATE-exempt input purchases. Information on timber production costs was provided by faculty in the UGA Warnell School of Forestry. This data included all crops produced in the state that contributed 1% or more to total state Farm Gate Value between 2011 and 2021 (the last year with available data). A complete listing of these crops, including their associated IMPLAN commodity codes, is shown in Table A. GATE-exempt purchases per unit of production (i.e., per acre, per head, etc.) were multiplied by the number of units produced (i.e., number of acres, number of heads, etc.) to arrive at estimates of forgone tax revenue. Crop production budgets are generally published in current year (2023) dollars. Input costs were adjusted for inflation for all other years using the United States Department of Agriculture's Index of Agricultural Prices.

Table A. IMPLAN category descriptions and codes for Georgia's top agricultural commodities.

COMMODITY	IMPLAN CODE	IMPLAN CATEGORY DESCRIPTION
Beef	11	Beef Cattle Ranching & Farming
Bell Peppers	3	Vegetable and Melon Farming
Blueberries	4	Fruit Farming
Breeder Pullet Unit	13	Poultry & Egg Production
Broilers	13	Poultry & Egg Production
Container Nursery	6	Greenhouse, Nursery, and Floriculture Production
Corn	2	Grain Farming
Cotton	8	Cotton Farming
Dairy	12	Dairy Cattle & Milk Production
Eggs	13	Poultry & Egg Production
Field Nursery	6	Greenhouse, Nursery, and Floriculture Production
Greenhouse	6	Greenhouse, Nursery, and Floriculture Production
Hay	10	All Other Crop farming
Horses	14	Animal Production Except Cattle, Poultry, and Eggs
Misc. Vegetables	3	Vegetable and Melon Farming
Onions	3	Vegetable and Melon Farming
Peanuts	1	Oilseed Farming
Pecans	5	Tree Nut Farming
Pork	14	Animal Production Except Cattle, Poultry, and Eggs
Sweet Corn	3	Vegetable and Melon Farming
Timber	15	Forestry, Forest Products, and Timber Tract Production
Watermelon	3	Vegetable and Melon Farming

B. PRICE ELASTICITY OF DEMAND

Most sales tax exemption studies hinge on the "but for" question. "But for" the sales tax exemption, how would taxpayers behave, and how would these behaviors differently affect resultant tax collections? Since at least some agricultural inputs have been tax exempt in Georgia for decades, and additional items have been exempted over time, there is no clear-cut demarcation line between "tax exempt" and "taxed" time periods. Consequently, researchers must answer the "but for" question by posing a counterfactual scenario: how might the addition of a sales tax on agricultural inputs change producer behavior and thus the economic and fiscal impacts of agriculture?

In the parlance of economics, this amounts to estimating the price elasticity of supply for those agricultural inputs that are currently exempt from sales tax under the GATE program. Price elasticity of supply is essentially the percentage change in the quantity of a good that is produced given a 1% change in the price of inputs to production. If the price of a good, in this case an input to agricultural production such as seed, feed, or fertilizer, was to rise by 7.65% (4% state tax plus 3.65% local tax) in the presence of an imposed sales tax, demand for that input could logically be expected to either fall or stay the same, depending on buyer sensitivity to price (i.e. elasticity). If the demand for a particular agricultural input was to fall in response to rising prices, the demand for that input would be termed elastic, and if it were to stay the same, it would be termed inelastic. In short, answering the question of "but for" is synonymous with estimating price elasticity. In the case of agricultural production, higher input prices tend to lead to marginally reduced demand for those inputs, which, in turn, may lead to reduced production levels for the resulting crop. For example, if fertilizer prices rise, cotton growers may weigh the expected tradeoff between higher fertilizer prices and the extra value generated by additional yields that result from increased fertilizer use. Similar examples exist across all crops, and may be affected to different degrees by the substitutability of inputs, e.g., trading reduced fertilizer usage for increased irrigation usage in the presence of rising fertilizer prices.

Price elasticities of supply tend to be relatively low in agriculture compared with price elasticities of demand for consumer goods, such as lottery tickets or life insurance coverage. The justification is quite intuitive. In the short run, farmers typically have substantial investments in land, buildings, and equipment, as well as crops under production, leaving them little choice but to purchase the inputs necessary to see that crop through to completion. In the long run, all farmers tend to face the same increases in inputs costs, and understand that permanent cost increases, such as a tax on inputs, is ultimately passed on to the end consumer in the form of higher prices. Thus, it is expected that price elasticities of supply in agriculture are small relative to demand elasticities for consumer goods.

Supply elasticities in agriculture have been the subject of lively debate in the agricultural economics literature for decades. The brief literature review that follows, while by no means exhaustive, highlights the findings consulted in order to develop a reasonable elasticity estimate for this study.

The estimation of price elasticities of supply for agricultural commodities is, by nature, crop-specific, and may be input-specific as well. In a seminal paper on the subject entitled "Agricultural Output and The Demand for Inputs" (1959), University of Chicago economist Zvi Griliches develops a theoretical framework for estimating the demand for agricultural inputs, arriving at generalized supply elasticities for "total plant nutrients" ranging from -.54 to -2.3. For cotton, he arrives at estimates ranging from -.45 to -1.1.

In "State-Level Output Supply and Input Demand Elasticities for Agricultural Commodities" (1992), Pedro Villezca-Becerra and Richard Shumay estimate own-price and cross-price production elasticities in four major agricultural states (California, Iowa, Texas, and Florida), measuring the sensitivity to price changes of as many as 25 individual crop and livestock output supplies and six input demands. While they found most responses to be highly inelastic, they observed a wide range of elasticities across states, generally greater for crop supplies than for input supplies. Elasticities for crops, summed across GATE-eligible budget categories, ranged from -.004 to -.07. Elasticities for livestock production, summed across GATE-eligible budget categories, ranged from -.05 to -.12.

More recently, Iqbal and Babcock, in "Global Growing Area Elasticities of Key Agricultural Commodities Estimated Using Dynamic Heterogeneous Panel Methods" (2016), estimate changes in crop acreage relative to changes in input prices, with associated supply elasticities ranging from -.01 to -.07. In "Examining the Input and Output Linkages in Agricultural Production Systems" (2021), Suh and Moss estimate supply elasticities around -.08.

Perhaps the most interesting characteristic of these estimates, when viewed longitudinally, is not the wide range at any given point, but rather the relative consistency of the midpoints of the ranges over time. Wide ranges are to be expected, given differences in production practices across time and geography and the substitutability of inputs (e.g., substituting labor for capital). Midpoints of these ranges, on the other hand, tend to hover around -.1, perhaps suggesting, as hypothesized earlier, that producers face sunk costs in the short run and understand the ability to pass on increased costs to the end consumer in the long run. Notably, in those instances where separate elasticities were estimated for crops and livestock, margins of error rendered differences in the two indiscernible. In light of the data, researchers chose to use a supply elasticity figure of -.1 across all crops evaluated.