



The University of Georgia

Center for Agribusiness and Economic Development

College of Agricultural and Environmental Sciences

Economic Impact of Georgia Tomato Production Value Losses due to the U.S. Salmonella Outbreak

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Executive Summary

The U.S. Food and Drug Administration (FDA) issued in 2008 a nationwide warning to consumers linking an outbreak of Salmonella to consumption of some raw red plum, red Roma, round red tomatoes, and products containing these types of raw tomatoes. A list of tomato growing areas that have not been associated with the outbreak includes Georgia tomatoes as acceptable for consumption. Although Georgia spring season tomatoes are safe for consumption, tomatoes produced in the state are subject to negative perceptions from consumers. Decreased demand for Georgia tomatoes that is due to a general U.S. tomato warning has resulted in diminished markets for all tomatoes. Total production values losses in the state are \$13.9 million. Losses average \$11,778 per acre for tomatoes not sold. Total Georgia grower expenses for 2008 tomatoes harvested and packed, but not sold, are an additional \$1.6 million loss in farmer net income. Loss for tomatoes that were harvested but not sold is \$6,111 per acre leading to total losses of \$17,889 per acre. The loss in production value has negative impacts in the Georgia economy as decreased grower income leads to diminished economic activity. The decreased output impact totals \$11.8 million, and combined with the decline in tomato sales, the total economic output decrease in the Georgia economy is \$25.7 million.

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Situation for Georgia Tomato Producers

Although Georgia spring season tomatoes are safe for consumption, tomatoes produced in the state are subject to negative perceptions from consumers. A general U.S. tomato warning could result in decreased demand for Georgia tomatoes. Georgia tomato growers could suffer production value losses either by producing tomatoes that they are unable to sell, or by having to sell tomatoes at reduced prices because of low demand. The objective of this analysis is to determine the extent of production value losses in the 2008 spring tomato crop due to the U.S. salmonella outbreak.

Georgia Tomato Production Value

Georgia tomato production is concentrated in nine counties located in the southwestern portion of the state. One county in northeastern Georgia has significant production. Data from the National Agricultural Statistics indicates 6,000 acres of tomatoes were harvested in 2007. The Georgia Vegetable Growers Association states that 60% of annual tomato production occurs during the spring season. Average yield for 2005-2007 was 353 cwt. per acre. This yield is equivalent to 1,412 boxes weighing 25 lbs. each. Average price during 2005-2007 was \$8.33 per box. This leads to a three-year annual average value of production for the Georgia spring tomato crop of \$42.4 million.

A survey instrument was designed to determine the value of sales lost due to diminished tomato demand caused by the U.S. salmonella outbreak in some tomato types. Individual tomato growers were surveyed by Georgia county agents in counties with significant tomato acreage. Individual grower responses were weighted by 2008 acreage harvested to quantify an aggregate state loss value.

The grower survey indicates that 2008 spring planted tomato acreage in Georgia is 80% of the 2007 acreage. Reduced acreage planted leads to an expected 2008 production value of \$33.9 million. Survey results determine the weighted percentages of acres not harvested due to lack of demand, as well as acres harvested but not sold. The balance is equal to the percentage of acres harvested with tomatoes sold. Survey results show that 32% of total tomato acreage was left in the field, not harvested due to decreased demand. Tomato acreage harvested with tomatoes later discarded due to decreased demand composes 9% of acreage. The balance of acreage, or 59%, was harvested and the tomatoes sold. Yield for 2008 is equal to the normal yield of 353 cwt. per acre. Survey results do not indicate a 2008 aggregate average price that is below normal (\$8.33 per box) due to decreased demand. Prices reported by individual growers range from \$5.50 per box to \$15.00 per box.

Value of 2008 Georgia spring tomato production with only 59% of acreage harvested and sold at the normal market price is \$20.0 million. This represents a \$13.9 million loss in revenue for tomato growers due to reduced tomato demand. Loss per acre based on 41% of acres not sold is \$11,778 per acre. Losses reported are for the average grower receiving the three-year average price. With low prices reported by some growers, individual farms could have losses exceeding the average loss per acre.

Tomatoes harvested and packed, but not sold account for \$3.1 million of the total production value loss of \$13.9 million. At expected yields and prices, this represents a production quantity of 92,000 cwt. of tomatoes in which growers incurred harvesting and packing expenses. With boxes weighing 25 lbs. each this is equal to 366,336 boxes. These expenses represent additional decreases in net income that is in addition to the \$13.9 million of production value losses. Costs of production budgets by the University of Georgia indicate that harvesting, packing, and grading costs are \$4.32 per box. Thus, total Georgia grower harvesting and packing expenses for 2008 tomatoes harvested and packed but not sold are \$1.6 million. Loss per acre based on 9% of tomatoes that were harvested but not sold is \$6,111 per acre. Thus, total losses for these tomato growers are \$17,889 per acre.

Production value losses will have negative impacts in the Georgia economy as decreased grower income leads to diminished economic activity. Impacts of value losses are concentrated in the major tomato producing counties. The next section of this report is a description of economic impact analysis, followed by a section that quantifies the impacts of grower losses to the state economy.

Principles of Economic Impact Analysis

Economic impacts can be estimated with input-output models (IMPLAN) that separate the economy into various industrial sectors such as agriculture, construction, manufacturing, trade, and services. An input-output model calculates how a change in the tomato industry changes output, income, and employment in other industries. These changes, or impacts, are expressed in terms of direct and indirect effects. Impacts are interpreted as the contribution of tomato production to the total economy. Direct effects represent the initial impact on the economy of tomato production. Indirect effects are changes in other industries caused by direct effects of production and include changes in household spending due to changes in economic activity. Thus, the total economic impact is the sum of direct and indirect effects. Input-output analysis can interpret the effects of an enterprise in a number of ways including output (sales), labor income (employee compensation and proprietary income), employment (jobs), and tax revenue.

Output impacts are a measure of economic activity that results from tomato production expenditures in a specific industrial sector. Output is equivalent to sales, and the output multiplier indicates how initial economic activity in one sector leads to sales in other sectors. Personal income impacts measure purchasing power that is created due to the output impacts. This impact provides the best measure of how standards of living are affected for residents in the impact area.

Tomato production involves a specified number of employees that is determined by the available technology. Employment multipliers indicate the effect on employment resulting from tomato production initiating economic activity. IMPLAN indirect employment includes both full-time and part-time jobs without any distinction. Jobs calculated within an IMPLAN industrial sector are not

limited to whole numbers and fractional amounts represent additional hours worked without an additional employee. With no measure of hours involved in employment impacts, IMPLAN summations for industrial sectors which include fractional employment represent both jobs and job equivalents. Since employment may result from some employees working additional hours in existing jobs, instead of terming indirect employment impacts as “creating” jobs, a more accurate term is “involving” jobs or job equivalents. The same reasoning applies to situations in which jobs are lost due to contraction of an industry.

Economic Impacts due to Production Value Losses

Value of production losses totaling \$13.9 million are equal to the decrease in tomato sales due to reduced tomato demand. Decreased farmer revenue leads to decreased expenditures that affect industrial sectors throughout the Georgia economy. The direct output impact of reduced grower revenue is \$7.2 million in Table 1 with indirect output losses of \$4.6 million. The output impact totals \$11.8 million, and this is the economic output loss to the Georgia economy due to decreased tomato sales. Combining decreased tomato sales with the output impact results in a total output decrease of \$25.7 million in the Georgia economy. Economic impacts represent losses throughout the state, but are concentrated in tomato producing counties. Total labor income for employees and proprietors not involved in tomato production decreases by \$ 3.7 million. This income reduction is distributed among 101 jobs. Diminished economic activity and income losses impact tax revenues collected by state and local governments. State tax revenue decreases are \$465,290, and local governments in the state have declining revenues of \$389,479.

Table 1. Economic Impact due to Tomato Production Value Losses of \$13.9 Million, Georgia Impacts 2008

	Direct Impact	Indirect Impact	Total Impact
Output (\$)	7,183,498	4,647,088	11,830,585
Labor Income (\$)	2,201,927	1,524,687	3,726,614
Employment	64	37	101
State Taxes (\$)			465,290
Local Taxes (\$)			389,479
Sum of Taxes (\$)			854,768

Table 2 shows the distribution of economic impacts among major industrial sectors. Although reduced revenue initially occurs in the agricultural sector, impacts are distributed throughout the Georgia economy. The greatest impacts due to decreased tomato production value are in the services sector in which output declines by \$4.3 million, and labor income is reduced by \$1.9 million for 56 jobs. The trade sector, composed of wholesale and retail trade, has a \$2.2 million reduction in output. Labor income decreases by \$883,368 among 26 jobs.

Table 2. Economic Impact due to Tomato Production Value Losses of \$13.9 Million, Impacts to Major Georgia Sectors, 2008

Sector	Output (\$)	Labor	
		Income (\$)	Employment
Agriculture	99,330	28,995	1
Mining & Construction	54,092	21,495	0
Utilities	324,708	69,676	0
Manufacturing	1,078,637	170,342	3
Transportation, Warehousing	323,375	138,824	3
Trade	2,226,512	883,368	26
Finance, Insurance, & Real Estate	1,788,100	469,828	9
Services	4,292,019	1,907,764	56
Government and non-Classified	1,643,811	36,323	1
Total	11,830,585	3,726,614	101

Summary

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The Center for Agribusiness & Economic Development



The Center for Agribusiness and Economic Development is a unit of the College of Agricultural and Environmental Sciences of the University of Georgia, combining the missions of research and extension. The Center has among its objectives:

To provide feasibility and other short term studies for current or potential Georgia agribusiness firms and/or emerging food and fiber industries.

To provide agricultural, natural resource, and demographic data for private and public decision makers.

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J. Scott Angle, Dean and Director