



An Initial Assessment of the Economic Impacts of E. Coli on the Texas Spinach Industry

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Introduction

On September 13, 2006, the Centers for Disease Control and Prevention (CDC) informed the U.S. Food and Drug Administration (FDA) that an outbreak of E. coli 0157:H7 (CDC) had occurred. The outbreak resulted in 205 confirmed illnesses, three deaths, and reportedly spread to 26 states. E. coli is the leading cause of food borne illness in the United States and has major economic consequences for the Texas spinach industry. Industry experts estimated that the E. coli outbreak reduced Texas sales of fresh and processed spinach by at least 20 percent, while prices for fresh market spinach fell one-quarter (USDA).

Texas spinach production had an annual farm value of \$12.9 million from 2002-2004 and accounted for about eight percent of the nation's total spinach crop. Spinach grown for processing represented 70 percent of the volume of the Texas crop and nearly one-fifth of the nation's processed spinach (National Agricultural Statistics Service). About 90 percent of the Texas spinach crop was produced in the Winter Garden and the rest in the Lower Rio Grande Valley (Jose G. Peña).

The economic impacts of the E. coli outbreak on the Texas spinach industry were estimated using IMPLAN. This input/output model reports economic impacts including business activity, income and employment. IMPLAN estimates indicate how a change in one sector of the economy, spinach for example, affects economic activity in all other sectors.

Baseline economic impacts were estimated for the value of annual average Texas spinach production for the period 2002-2004. Next, the 20 percent decline in Texas spinach sales for both fresh and processed markets was analyzed to assess the impacts on the Texas economy. This issue brief reports business activity which includes income and the value of inputs used in spinach production. Income includes employee compensation, proprietor income and other property income and is equivalent to Gross State Product. Since income is included in business activity, the two should not be combined. These results are preliminary and will be revised as additional information becomes available.

Baseline Economic Situation, 2002-2004

The annual business activity attributed to the Texas spinach industry was estimated at \$55 million. This includes spinach sales of \$30.4 million and purchases of inputs and services worth \$24.6 million. Fresh market spinach sales of \$9.5 million were supported by input purchases of \$8.0 million, while processed spinach sales of \$20.9 million were supported by input purchases of \$16.6 million.

The annual income generated by the Texas spinach industry was \$29.1 million which is also included in the \$55 million in business activity reported above. Fresh sales resulted in \$11.4 million in income and processed sales accounted for income of \$17.7 million. Employment supporting the Texas spinach industry totaled 481 jobs, with 158 in fresh production and related sectors and an estimated 323 jobs supporting the production of processed spinach. These employment numbers represent full time equivalent jobs required to support the spinach industry. The actual number of workers employed is higher due to the use of part time seasonal labor.

Economic Impacts of E. Coli 0157:H7

Industry experts indicate that the E. coli outbreak in 2006 reduced Texas spinach sales by at least 20 percent. CNAS estimates indicate that the \$55 million in business activity attributed to the spinach sector was reduced by \$11.0 million and resulted in 96 job losses (table). Business activity losses in the processing sector were estimated to be \$7.5 million, while fresh spinach sector business activity losses were \$3.5 million.

Business activity losses attributed directly to fresh spinach farming operations totaled \$1.9 million, while income losses were \$1.4 million (table). Business activity losses attributed directly to spinach processing operations were estimated to be \$4.2 million, while income losses were \$1.7 million. Employment losses attributed directly to processing plants were estimated at 39 jobs and an additional 18 jobs were lost in fresh spinach farming operations.

Other sectors of the Texas economy also experienced reduced business activity and job losses. Packing sheds and other agricultural support activities, for example, had business activity losses of \$69,000. Wholesale trade business activity losses were \$574,000. Transportation sector business activity losses were \$226,000. Employment losses in sectors supporting spinach production and processing were 39 jobs, including four in retail food, three in wholesale trade and two in transportation services.

| Estimated Economic Losses in the Texas Spinach Industry due to E. Coli <i>(Values in Thousand Dollars, Employment in Number of Jobs)</i> | | | |
|--|---------------------------|-----------------|-------------------|
| | Business Activity* | Income* | Employment |
| Spinach Production | -\$1,905 | -\$1,424 | -18 |
| Spinach Processing | -\$4,230 | -\$1,716 | -39 |
| Wholesale Trade | -\$574 | -\$392 | -3 |
| Real Estate | -\$542 | -\$420 | --- |
| Transportation | -\$226 | -\$96 | -2 |
| Utilities | -\$196 | -\$136 | --- |
| Retail Food | -\$193 | -\$100 | -4 |
| Agricultural Support | -\$69 | -\$41 | --- |
| All Other Sectors | -\$3,054 | -\$1,489 | -30 |
| Total | -\$10,989 | -\$5,814 | -96 |

Impacts calculated by Center for North American Studies staff using IMPLAN 2004

* Business Activity includes product sales and purchases of inputs and services. Income includes employee compensation, proprietor income, and other property income, and is equivalent to Gross State Product.

Prepared at the request of the Texas Vegetable Association and the Texas Spinach Producers Board. For further information, please contact Parr Rosson, 979-845-3070 or prosson@tamu.edu. Contributors to this report were Michelle N. Tomlinson, Jose G. Peña, Flynn J. Adcock, Marco Palma, and Luis Ribera, Department of Agricultural Economics, Texas A&M University, College Station, TX 77843-2124.