

Leveraging Food Protection Task Forces During a Food Related Incident

A case study of *E. coli* O157:H7 in romaine lettuce – November 2019



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Abstract

Escherichia coli O157:H7 is a shiga toxin producing *E. coli* (STEC) that can cause severe gastrointestinal illness, including bloody diarrhea. In November 2019, Wisconsin had the largest share of cases in a nationwide outbreak of STEC that was associated with romaine lettuce from the Salinas California growing region, CDC cluster 1911MLEXH-1.

A private sector member of the Wisconsin Food Safety Advisory Committee (FSAC) was alerted to potential intact sample of a product of interest. Through astute assessment of the situation the Wisconsin Rapid Response Team (RRT) was notified and activated, State and Local resources were coordinated, and the sample was collected and analyzed. The sample results focused the outbreak response to the Salinas Valley growing region.

Preventing recurrence of STEC in produce, especially leafy green-associated outbreaks is difficult and reinforces the need for food safety controls all along the farm-to-table continuum. Wisconsin public and private partners played a critical role in the outbreak response by gathering important information that led to the sampling of a product of interest and the identification of STEC in an intact sample.

Introduction

STEC can cause severe gastrointestinal illness, including bloody diarrhea. Symptoms appear approximately 1 to 3 days after exposure. STEC is spread by eating contaminated food, from person-to-person contact, and can also be contracted from contact with infected animals, environment, or contaminated water. In November 2019, Wisconsin was part of a multistate outbreak of STEC involving romaine lettuce. Thirty-five Wisconsin residents became ill, the largest single-state burden of illness in this outbreak. The median age was 25 years with a range of 4 to 78 years. The median duration of illness was 6 days, with a range of 4 to 28 days. Thirteen cases (37%) required hospitalization, 2 cases (6%) developed hemolytic uremic syndrome. No deaths in Wisconsin were associated with this outbreak.

On Nov. 13, 2019, the Wisconsin State Laboratory of Hygiene (WSLH) notified the Communicable Diseases Epidemiology Section (CDES) of 8 STEC positive specimens received for confirmation. Nov. 14, WSLH notified CDES of an additional 5 STEC cases; 4 in Wisconsin residents and 1 a Michigan resident. WSLH also reported that most isolates produced Shiga toxin 2 (STX 2) only; one case from the Western region produced both STX 1 and 2. CDES sent initial outbreak notification to investigation partners on Nov. 14. Case interviews revealed 5 case-patients reported consuming prepackaged romaine lettuce or salad mixes containing romaine; 3 specifically report purchasing the product at retail chain A, 1 at retail chain B, and 1 had romaine from both retail chain A and retail chain C. Consent to share shopper histories were collected from the case-patients. On Nov. 19, DATCP requested shopper card information from retail chain A. Records were received, and traceback findings were provided to the U.S. Food and Drug Administration.

Materials and Methods

Wisconsin has a Food Protection Taskforce known as FSAC, which provides a forum for retail food safety stakeholders to discuss issues relating to retail regulated food service facilities. FSAC membership includes representatives from food service industries, consumers, regulators, and academia. FSAC provides leadership in retail food safety by assisting and advising DATCP in goal setting, representing FSAC constituencies, and identifying resources and solutions to challenges facing DATCP.

On Nov. 26, a case-patient contacted the local branch of Retail Chain B to inform them that they had a closed package of Leafy Green Romaine Lettuce, which they purchased at the same time as another package of the same product which they believed cause their STEC illness. The Director of Food Protection and Regulatory Affairs for Retail Chain B is a member of the FSAC and advised the customer to immediately contact their local public health agency (LPHA). Representatives from Retail Chain B then immediately notified DATCP of the potential intact sample.

DATCP activated the RRT and coordinated with state and local public health, environmental health, and laboratory resources to determine the viability of the sample and coordinate sample collection and analysis. With the guidance from the Bureau of Laboratory Services (BLS), the LPHA collected and shipped the sample to the laboratory for analysis.



Figure 1. Photo of the front panel of the intact sample of Leafy Green Romaine Lettuce collected by the La Crosse County Health Department. Photo provided by the La Crosse County Health Department.

Results and Discussion

On Dec. 3, the intact sample was received by BLS. A presumptive positive *E. coli* result was reported on Dec. 4, and a confirmed positive detect was reported on Dec. 6. The sample was transferred to the WSLH the same day for Whole Genome Sequencing. On Dec. 13, all 5 isolates from the intact sample were determined to be highly related to the outbreak cluster, see Figure 3. RRT staff immediately notified state and federal partners of the results and provided supporting documentation.



Figure 2. Date and lot coding information from the intact sample of Leafy Green Romaine Lettuce. Photo provided by the La Crosse County Health Department.

Wisconsin's FSAC has been active for 11 years. FSAC membership includes representatives from the Wisconsin Restaurant Association, Wisconsin Tavern League, Wisconsin Grocers Association, Wisconsin Hotel and Lodging Association, Wisconsin Association of Campground Operators, food service product or equipment vendors and caterers. Regulatory officials include the Wisconsin Association of Local Health Departments and Boards, DATCP's Division of Food and Recreational Safety. FSAC has cultivated a close working relationship between the public and private sectors through open dialog and sharing concerns and challenges.

FSAC has provided input and guidance from an industry, consumer and public health perspective on a wide range of topics from rule revisions and new equipment approvals to providing feedback on a statewide online foodborne illness reporting module.

Through this open exchange, expectations have been set in regards to how DATCP will respond to a food-related incident. Trust has been earned that DATCP is first and foremost working in the public interest to protect the citizenry, minimize risk, and speed the recovery of industry.

Swift action by the FSAC member and the Wisconsin RRT led to the coordinated collection, shipment, and analysis of the intact sample. The positive detect led to a significant breakthrough in the larger national outbreak investigation. The confirmed positive detection of STEC in an intact sample was critical in tracing the product back to the Salinas Valley in California.

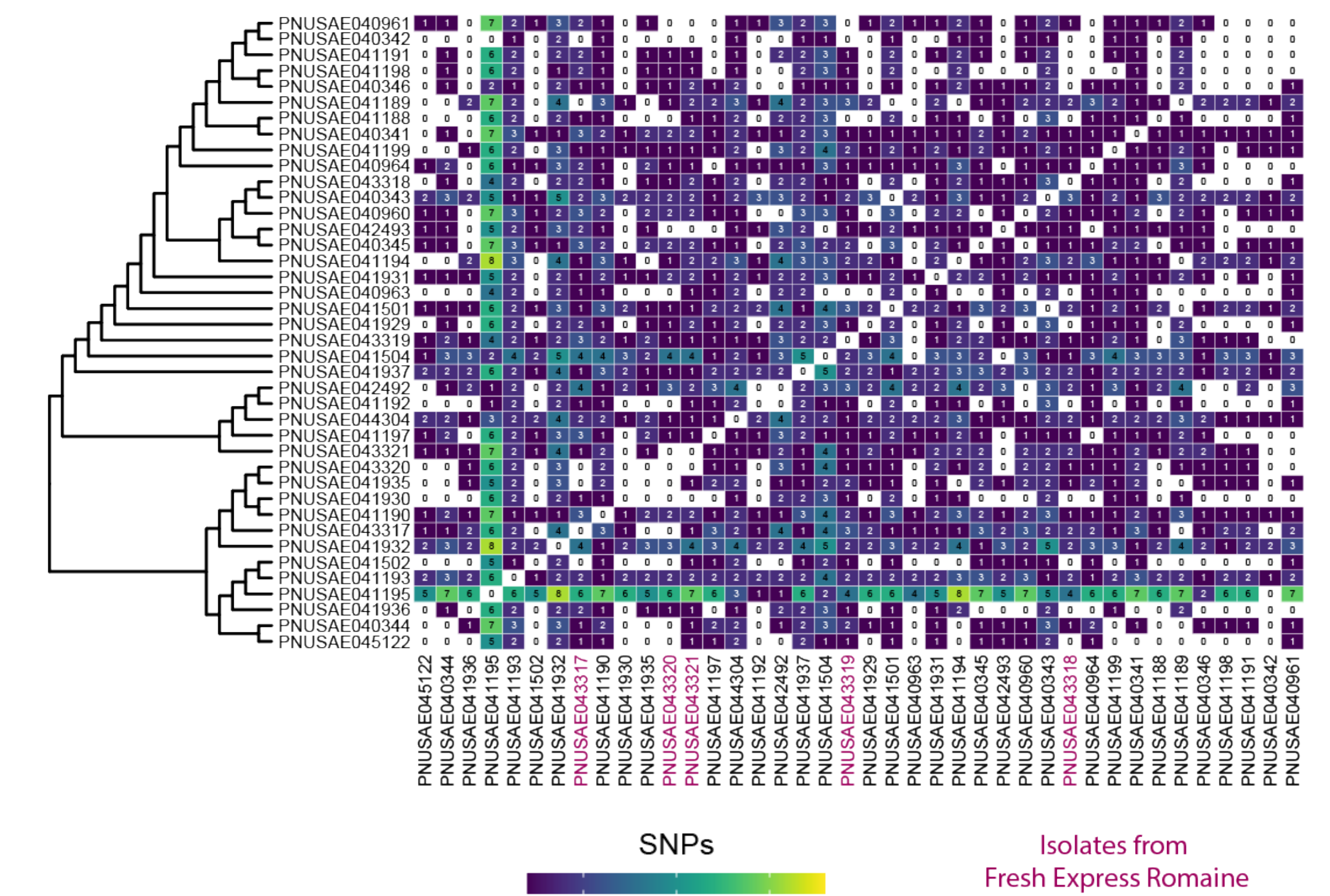


Figure 3. Whole Genome Sequencing heat map of Wisconsin cases associated with CDC cluster 1911MLEXH-1. The purple entries represent the isolates from the intact sample obtained from a case-patient.

Conclusion

The close working relationship and understanding between the public and private partners generated by membership in FSAC and coupled with past experience facilitated the rapid detection of the existence of an intact sample and the referral of the case-patient to LPHA and DATCP. A RRT led coordinated response over the Thanksgiving holiday ensured the sample was collected, shipped and analyzed. The positive STEC detection coupled with traceback efforts further focused the national response to the Salinas Valley growing region.

This case study is an excellent example of how a Food Protection Taskforce can be leveraged during a food-related incident to increase surveillance capacity and identification of promising food samples. Without the close working relationship of public and private partners, it is uncertain that this product would ever have been sampled and the course of the national response efforts focused on the Salinas Valley.