

Factors Potentially Contributing to the Contamination of Leafy Greens Implicated in the Fall 2020 Outbreak of *E. coli* O157:H7

Executive Summary

Between August and December 2020, the U.S. Food and Drug Administration (FDA) and multiple state and federal partners were involved in an outbreak investigation related to *E. coli* O157:H7 illnesses and the consumption of leafy greens. The outbreak, which caused 40 reported domestic illnesses, was linked via whole genome sequencing (WGS) and geography to outbreaks traced back to the California growing region associated with the consumption of leafy greens in 2019 and 2018. FDA, alongside state and federal partners, investigated the outbreak to identify potential contributing factors that may have led to leafy green contamination with *E. coli* O157:H7. The *E. coli* O157:H7 outbreak strain was identified in a cattle feces composite sample taken alongside a road approximately 1.3 miles upslope from a produce farm with multiple fields tied to the outbreaks by the traceback investigations. In addition, several potential contributing factors to the 2020 leafy greens outbreak were identified.

Isolates within this cluster of illnesses are part of a reoccurring strain of concern and are associated with outbreaks that have occurred in leafy greens each fall since 2017. The two most recent outbreaks associated with this strain were an outbreak in 2018 (linked to romaine lettuce from the Santa Maria growing region of California) and an outbreak in 2019 (linked to romaine lettuce from the Salinas growing region of California). Clinical isolates from cases in this 2020 outbreak appear more closely related to those from the 2019 outbreak than the 2018 outbreak. In addition, several specific food and environmental isolates that appear to be highly related to this 2020 outbreak include a fecal-soil composite sample collected by FDA in February 2020 from the Salinas growing region and two leafy green samples collected in 2019 by state partners as a part of the 2019 investigation that traced back to the Salinas growing region.

As part of this investigation, tracebacks of leafy greens consumed by ten ill individuals from eleven points of service were conducted. Although that traceback investigation was based on a relatively small number of the total cases, it was based on those cases which presented the strongest evidence via purchase card information, invoices, bills of lading, and electronic data. The traceback investigation identified the Salinas growing region of California as a geographical region of interest.

In light of this most recent finding, combined with previous outbreak investigation findings in the region, FDA has identified key trends regarding the issues of a reoccurring strain, a reoccurring region, and reoccurring issues around adjacent and nearby land use of primary importance in understanding the contamination of leafy greens by *E. coli* O157:H7 that occurred in 2020 and previous years.

FDA also recognizes the interconnection between people, animals, plants, and their shared environment when it comes to public health outcomes. As such, we strongly encourage collaboration among various groups in the broader agricultural community (i.e. livestock owners; leafy greens growers, state and federal government agencies, and academia) to address this issue. With this collaboration, the agricultural community, alongside academic and government partners, can work to identify and implement measures to prevent contamination of leafy greens. FDA recommends that

these parties participate in efforts to understand and address the challenge of successful coexistence of various types of agricultural industries to ensure food safety and protect consumers against foodborne illness.