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## Microbial Food Safety and Postharvest Fruit Disinfection

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### Abstract

#### **Project ID: PPN Orchard Experiments**

Peaches, plums, and nectarines were inoculated in the orchard with generic rifampicin resistant *Escherichia coli* (*E. coli*) and/or attenuated *E. coli* O157:H7, and attenuated *Salmonella* in order to study their survivability when exposed to environmental stresses. Fruit was harvested within 2 hours after inoculation to determine the initial bacterial concentration at time 0, and then again harvested 2 days and 4 days post inoculation. Surviving bacteria were enumerated using standard microbial techniques. At first look, generic rifampicin resistant *E. coli* was reduced by 4-5 logs on peaches, plums, and nectarines by 4 days post inoculation. Attenuated *Salmonella* was reduced by 2.6 logs on peaches and attenuated *E. coli* O157:H7 was reduced by approximately 5 logs on peaches by 4 days post inoculation.

#### **Project ID: Peach Background Microflora and ClO<sub>2</sub> Gas**

Peaches were randomly harvested from trees nearby a cow feed lot. Background numbers of coliforms and general *E. coli* present on the fruit were enumerated using standard microbial techniques. Fruit was also exposed to chlorine dioxide gas for 4 days to determine its sanitation efficacy on natural bacterial populations. At first look, ClO<sub>2</sub> gas appears to be very effective at reducing both coliforms and *E. coli*. A repeat of this experiment is currently underway.

#### **Project ID: PPN fungal-bacterial interactions**

Peaches, plums, and nectarines were co-inoculated with either *Salmonella* and *Monilinia fructicola* or *E. coli* O157:H7 and *Monilinia fructicola* onto intact areas of the fruit and onto areas that had been damaged by micro-abrasion. Fruit was also inoculated with pathogenic bacteria alone and fungi alone to serve as controls. Inoculated fruit was stored at 0°C and 15°C for 7 days. Bacterial populations were enumerated at 4 days post inoculation and 7 days post inoculation to determine population growth patterns. A repeat of this experiment is currently underway with pathogenic bacteria and Botrytis.

\*Full report was not available at time of publication.

