

# Process environment sampling can help to reduce the occurrence of *Listeria monocytogenes* in food processing facilities

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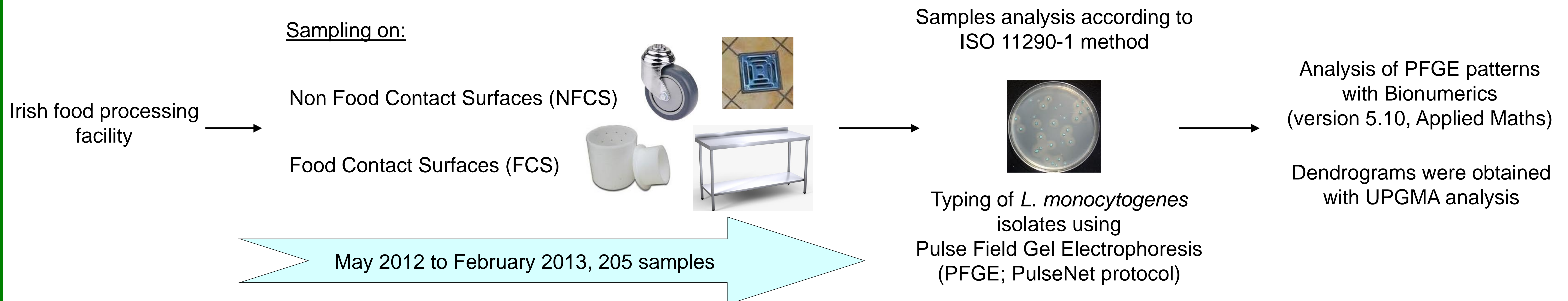
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## INTRODUCTION

The occurrence and persistence of *L. monocytogenes* strains in food processing environments pose a risk of cross-contamination to food. The control of these strains is thus essential to ensure food safety. The aim of the present study was to assess the presence of *L. monocytogenes* in a food processing facility facing recurrent occurrence of *L. monocytogenes* in the processing environment.

## MATERIALS & METHODS



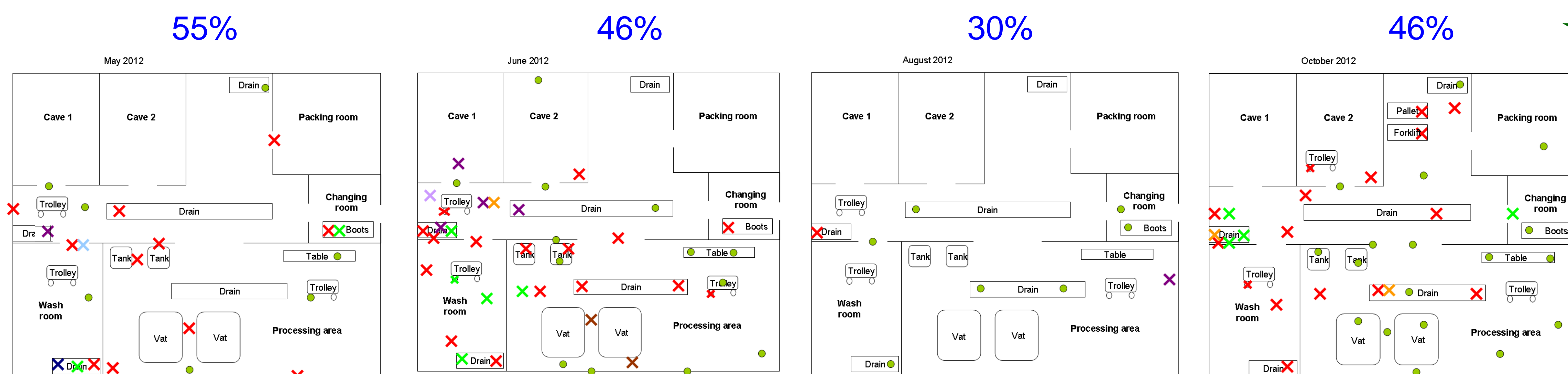
## RESULTS

### Implementation of corrective actions:

Drastic revision of workflows and cleaning/disinfection procedures (additional staff, use of peracetic acid)

### Before corrective actions

Proportions of positive samples (NFCS+FCS)



### After corrective actions

Proportions of positive samples (NFCS+FCS)

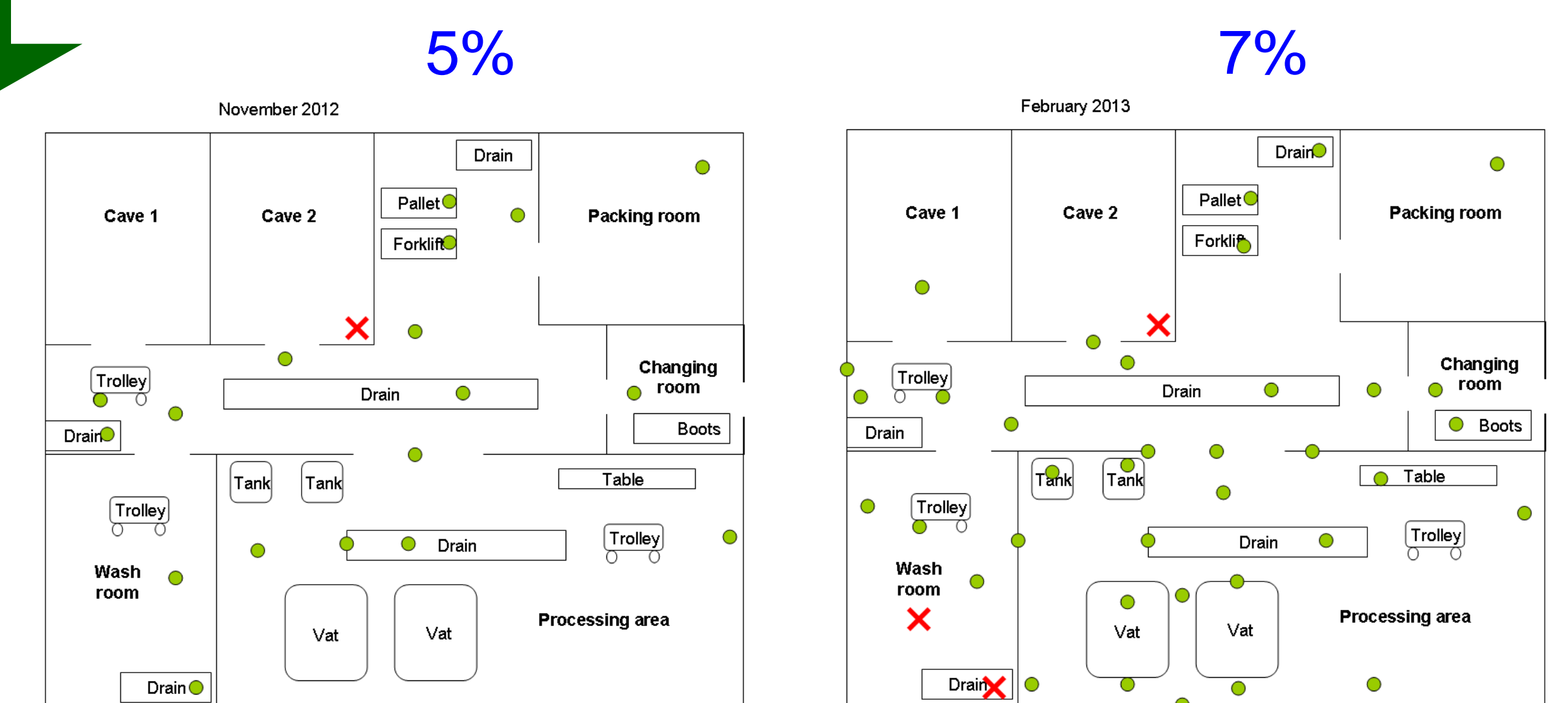
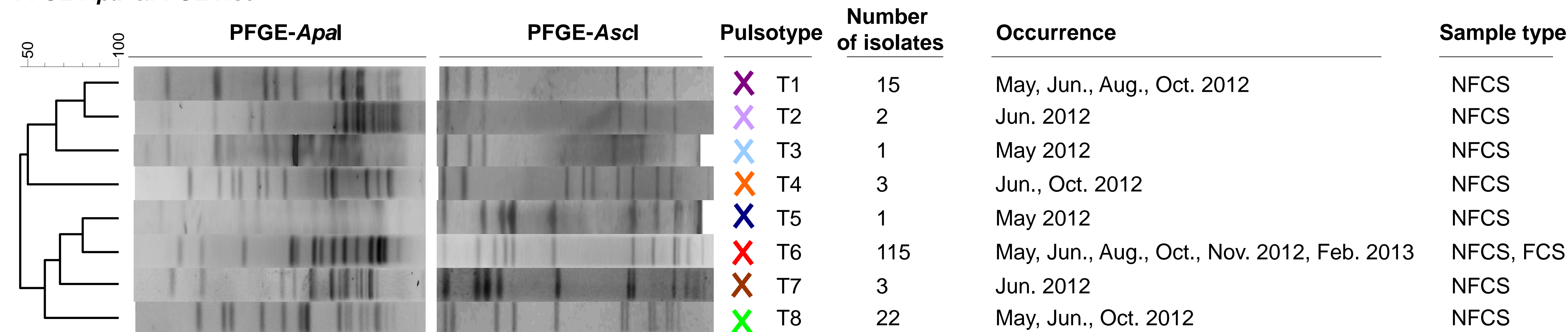


Figure 1: Representation of the location of the pulsotypes found on non-food contact surfaces in the food processing facility before corrective actions, from May to October 2012. The pulsotypes are symbolized as follows: T1 (x), T2 (x), T3 (x), T4 (x), T5 (x), T6 (x), T7 (x), T8 (x); no *L. monocytogenes* found (o).

- High contamination spread all over the food processing facility
- One persistent pulsotype found on every sampling occasion (T6)
- T6 could be found everywhere in the processing facility

- Decrease in occurrence of *L. monocytogenes* throughout the food processing facility
- T6 was the only pulsotype found

PFGE combined  
PFGE-*Apal* & PFGE-*Ascl*



- Persistent pulsotype T6 was displayed by 71% of the isolates collected
- Seven other sporadic pulsotypes were found
- The improved cleaning regimen eliminated the sporadic contaminating strains and reduced the occurrence of the persistent strain

Figure 3: Dendrogram of PFGE profiles combining *Apal* and *Ascl* enzymes from isolates in this study. NFCS: non-food contact surface; FCS: food contact surface

## CONCLUSION

The results of this study show that an environment sampling plans can be an effective contribution to assessing hygiene at a food processing facility, and to preventing future contamination events. It demonstrates that knowledge gained from sampling can lead to appropriate corrective action being introduced to reduce contamination and limit *L. monocytogenes* occurrence in food processing facilities and improve food safety, although additional measures may be required to eliminate very persistent strains.

This work was recently published: Dalmasso & Jordan, 2013. Irish Journal of Agricultural and Food Research, 52: 93–100.