

# RESEARCH SUMMARIES

## SURVEY OF ENVIRONMENTAL MONITORING PRACTICES IN FRESH PRODUCE PACKINGHOUSES

**TABLE 1. Percentage (frequency) of rapid test/chemical indicator, microbial indicator organisms, and foodborne pathogens tested for by zone in environmental monitoring programs for fresh produce packinghouses**

Tested for <sup>a</sup>	Zone <sup>b</sup>			
	1 N = 57	2 N = 56	3 N = 54	4 N = 46
<b>Rapid Test/Chemical Indicator</b>				
ATP	28.1 (16) <sup>c</sup>	8.9 (5)	5.6 (3)	6.5 (3)
<b>Microbial Indicator Organisms</b>				
Aerobic plate count	15.8 (9)	10.7 (6)	7.4 (4)	8.7 (4)
Enterobacteriaceae	1.8 (1)	0.0 (0)	0.0 (0)	0.0 (0)
Coliforms	10.5 (6)	12.5 (7)	11.1 (6)	13.0 (6)
Generic <i>E. coli</i>	17.5 (10)	19.6 (11)	16.7 (9)	15.2 (7)
<i>Listeria</i> species	15.8 (9)	25.0 (14)	31.5 (17)	34.8 (16)
<b>Foodborne Pathogens</b>				
<i>Listeria monocytogenes</i>	1.8 (1)	7.1 (4)	9.3 (5)	6.5 (3)
<i>Salmonella</i>	8.8 (5)	16.1 (9)	18.5 (10)	15.2 (7)

<sup>a</sup>Respondent indicated what is tested for including rapid test/chemical indicator, microbial indicators, and or foodborne pathogens.

<sup>b</sup>Zones were described according to United Fresh Environmental Monitoring Program Guidance Version 2 (30); and the N is the total number of responses per zone.

<sup>c</sup>Percentage (frequency).

Approximately 62.5% of produce packers (40/62 packinghouse; 5/10 field-pack) who responded to the survey indicated they had an EMP. ATP was the most common monitoring technique used for zone 1 surfaces, followed by generic *Escherichia coli*, *Listeria* species, and aerobic plate counts. A shift was noted towards addition and greater reliance on pathogen targets (e.g., *Salmonella*) for zones 2-4.

While 100% of produce packers with an EMP had corrective actions (CA) identified, 42% reported never needing to implement a CA, suggesting produce packers were always in conformance. This result indicates a potential shortfall in EMP rigor, as occasional failures are expected.

**TABLE 2. Percentage (frequency) of corrective action(s) used by zone in environmental monitoring programs for fresh produce packinghouses**

Corrective Action(s) <sup>a</sup>	Zone <sup>b</sup>			
	1 N = 84	2 N = 87	3 N = 85	4 N = 59
Visual inspection	16.7 (14) <sup>c</sup>	14.9 (13)	15.3 (13)	13.6 (8)
Clean and sanitize as normal	14.3 (12)	11.5 (10)	11.8 (10)	13.6 (8)
Intensified cleaning and sanitation	22.6 (19)	23.0 (20)	22.4 (19)	23.7 (14)
Breakdown equipment and clean/sanitize	14.3 (12)	16.1 (14)	15.3 (13)	15.3 (9)
Vector swab adjacent locations	9.50 (8)	13.8 (12)	15.3 (13)	15.3 (9)
Re-swab	22.6 (19)	20.7 (18)	20.0 (17)	18.6 (11)

<sup>a</sup>Correction action(s) used if the environmental monitoring program target was out of compliance (e.g., *Listeria* spp. positive sample, ATP value exceeded threshold).

<sup>b</sup>Zones were described according to United Fresh Environmental Monitoring Program Guidance Version 2 (30); and the N is the total number of responses per zone.

<sup>c</sup>Percentage (frequency).



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INFORMATION**



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