

Microbial Quality During Storage, Prevalence of Foodborne Pathogens and *Salmonella* Colonization Based on Variances in Netting Densities of Melons Grown in Different Regions of the United States.

Determination of the Shelf-Life and Keeping Quality of Melons Grown In Different Regions With Respect To Background Microflora, Prevalence of Foodborne Pathogens and Variances in Netting Densities

Aishwarya Pradeep Rao¹, Richard Park¹, Jocelyn Rossete¹, Martin Porchas², Bhimu Patil³, Paul Brierley² and Sadhana Ravishankar¹

¹School of Animal & Comparative Biomedical Sciences, University of Arizona, 1117 E. Lowell Street, Tucson, AZ

²Yuma Center of Excellence for Desert Agriculture, University of Arizona, 6425 West 8th Street, Yuma, AZ

³Department of Horticultural Sciences, Texas A & M University, College Station, TX

Introduction

Melons are a widely consumed commodity and industry needs to ensure that consumers get safe and good quality melons.

Purpose

Assess background microflora and prevalence of pathogens on honeydews and cantaloupes grown in different regions in the US.

Methods

Microbiological Quality- 6 experimental honeydew and cantaloupe varieties were sampled from NC, TX, GA, AZ and CA on days 0 and 3 at room temperature. Samples were sonicated, serially diluted and plated on TSA (Aerobic Plate Count-APC), MacConkey (coliforms) and DRBC agar (fungi).

Prevalence of Pathogens- 228 cantaloupes were sampled for prevalence of *Salmonella enterica* and *Listeria monocytogenes*. 15 soil, 15 root, 3 water and 3 air samples per field were analyzed. Selective enrichment, plating and confirmation of presumptive positives using API were done.

Pathogen Colonization on Melons of Varying Netting Patterns- Rinds (dense, medium, light netting) were inoculated with bioluminescent *Salmonella* and biophotonic imaging was done to understand colonization variability based on netting density.

Results

Microbiological Quality- Honeydew rinds had lower microbial population than cantaloupes. DaVinci-SAKATA (NC) had highest APC (6.49 logs) and OC164 (TX-Weslaco), the lowest (3.26 logs) on day 0. Infinite-GOLD (AZ) had the highest (4.65 logs) and HD252 (NC) the lowest APC (3.62 logs) on day 3. F39 (CA) had the highest (6.89 logs) coliforms on day 0 and DaVinci-SAKATA (CA) (5.10 logs) on day 3. F39 (CA) had the most fungi (3.62 logs) on day 0 and DaVinci-SAKATA (GA) (3.46 logs) on day 3.

Prevalence- No pathogens were found on melons and environmental samples. Populations of enterococci ranged 2.79-3.23 logs and coliforms ranged 3.04-4.57 logs.

Pathogen Colonization on Melons of Varying Netting Patterns- Imaging showed that rinds with dense netting had most colonization followed by medium and light netting.

Significance

Understanding natural prevalence of pathogens and selecting varieties that harbor lower microbial burden will help growers produce high-quality, safe melons.