



## Evaluation of AgriTec on the Shelf Life of Lettuce

Performed by NSF Microbiology Laboratory for The Toxicology Group LLC

**Client:** Earth Science Laboratories, Inc.  
**Product:** AgriTec  
**Date of Experimentation:** January 28, 2003  
**Copper Concentration:** 1, 4, 40 ppm

### BACKGROUND

The Client has contracted the Toxicology Group, LLC to perform an initial assessment of the potential for their product to extend produce shelf life.

### METHODOLOGY

Lettuce samples were purchased at a local grocery store. Samples of 10 grams were aseptically cut and placed into a small plastic bag. The bags were then amended with 100 mL of an AgriTec solution to result in concentrations of 1 ppm, 4 ppm, and 40 ppm copper. Control bags containing no AgriTec were also prepared. After exposure to the solution for 2-3 seconds, the liquid was drained from the sample. Aeration was provided to the lettuce by cutting a corner off the bag. The samples were then stored at 4° C. At time points 0 days, 2 days, 4 days, and 15 days, samples were removed from storage and placed into a neutralizing solution consisting of lecithin, Tween 80, and phosphate buffer. They were then eluted with Butterfield's Buffer, serially diluted, and plated onto APC Petrifilm (3M). The Petrifilms were incubated for 48 hours at 35° C.

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## RESULTS

**Table 1.** Bacterial growth on lettuce exposed to varying concentrations of AgriTec. Shelf life is provided in days. Heterotrophic bacteria concentrations are provided as CFU/mL. The limit of detection is 10CFU/mL.

Shelf life (Days)	0 ppm Copper	1 ppm Copper	4 ppm Copper	40 ppm Copper
0	<10	<10	<10	<10
2	20	<10	15	10
4	25	<10	<10	<10
15	240	<10	65	15

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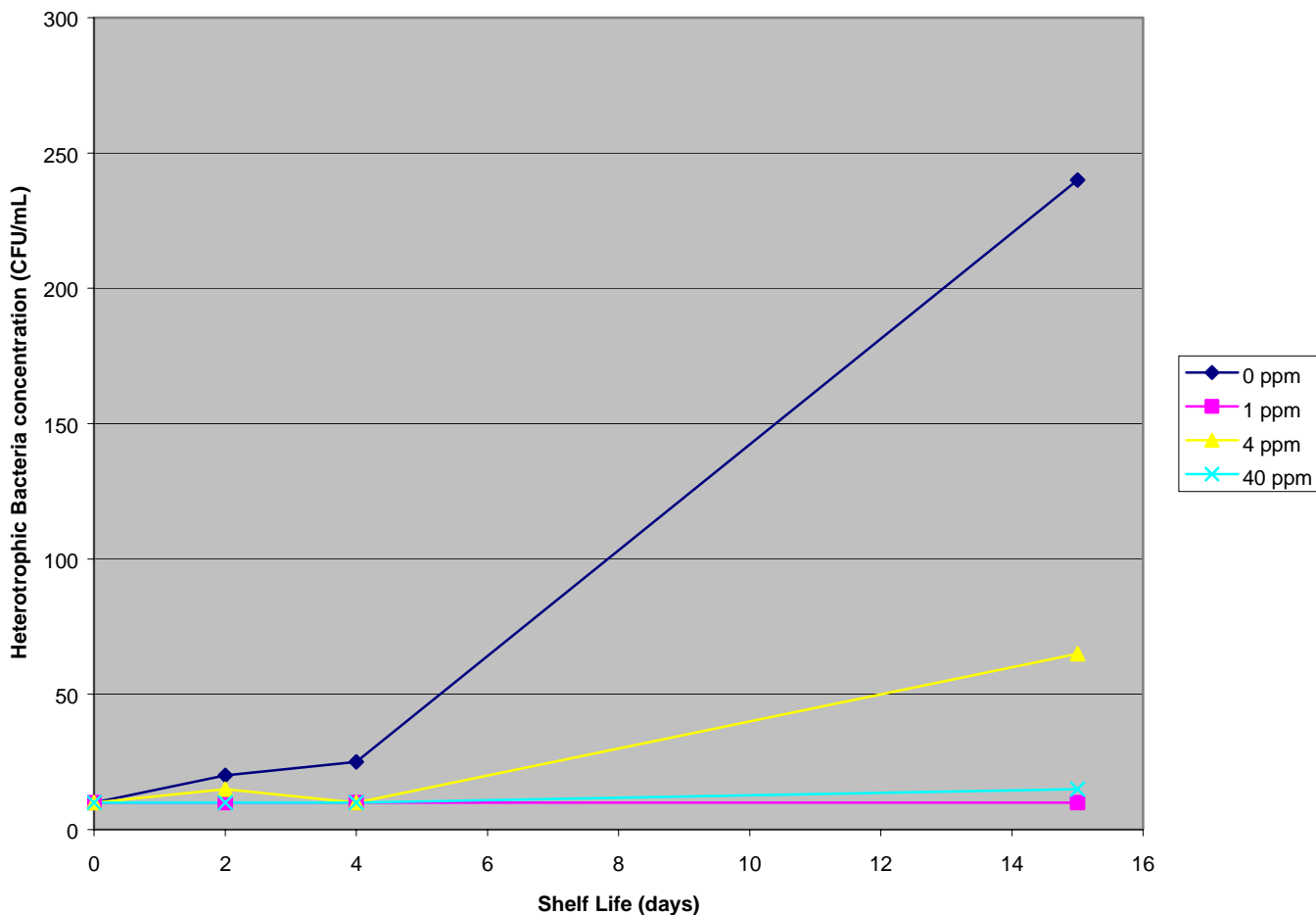
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**Figure 1.** Heterotrophic Bacteria counts at varying concentrations of AgriTec. The limit of detection is 10 CFU/mL.



### SUMMARY

Over the 15 day shelf life test, the untreated control group displayed the greatest increase in heterotrophic bacteria. All AgriTec concentrations had an effect on decreasing heterotrophic bacterial growth. These treatment groups were effective in retarding bacterial growth when compared to the control.

Laboratory Supervisor: RDJ Date: 5-14-03

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