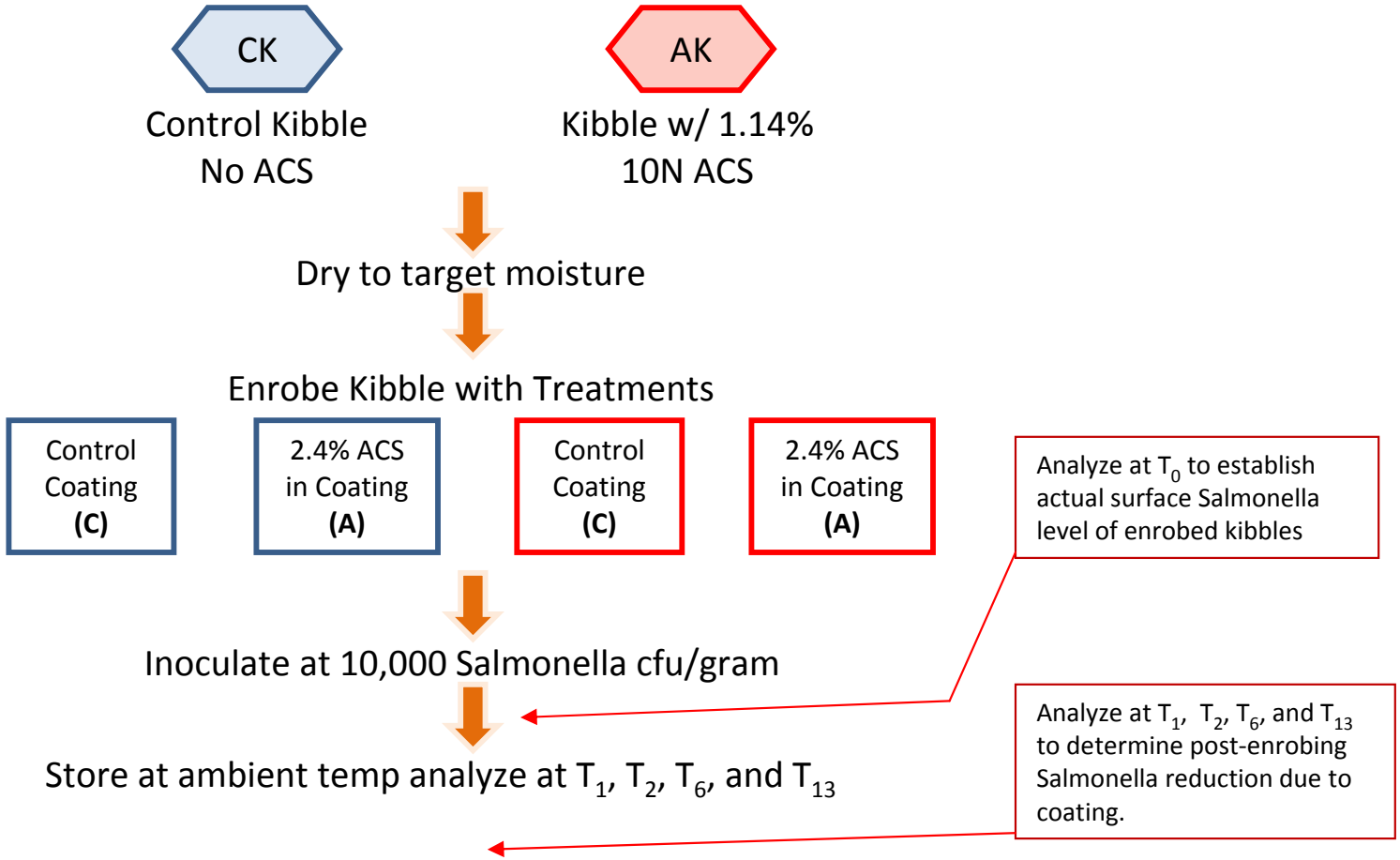
Control of Post-Extrusion *Salmonella* Contamination in Dry Pet Food Utilizing pHresh 10 (Acidic Calcium Sulfate)

Kansas State University
Dr. Randall K. Phebus/Danielle A. Perkin

Study Procedure

- Extruded kibble, confirmed to be Salmonella free by analysis
- Dried to 6% MCWB
- Enrobe with 6.5% Topical Coating
- Inoculated with Salmonella at 10,000 cfu/gram
- Packaged
- Stored and Tested

Experimental Design



This study illustrates expected results about how kibble formulation in combination with enrobing formulation will impact *Salmonella* survival in packaged pet food products contaminated during cooling and/or packaging.

Control of Post-Extrusion *Salmonella* Contamination in Dry Pet Food Utilizing pHresh 10 (Acidic Calcium Sulfate)

Kansas State University
Dr. Randall K. Phebus/Danielle A. Perkin

Study Procedure

- Extruded kibble, confirmed to be Salmonella free by analysis
- Dried to 6% MCWB
- Enrobe with 6.5% Topical Coating
- Inoculated with Salmonella at 10,000 cfu/gram
- Packaged
- Stored and Tested

pH Data

5.81 pH	5.23 pH
CK	AK
Control Kibble No ACS	Kibble w/ 1.14% 10N ACS

Control Coating **(C)**	2.4% ACS in Coating **(A)**	Control Coating **(C)**	2.4% ACS in Coating **(A)**
5.76 pH	5.68 pH	5.14 pH	5.08 pH

NOTE:
pH test performed on finely ground pet food samples in a 10% solids solution at T = 4 hrs.

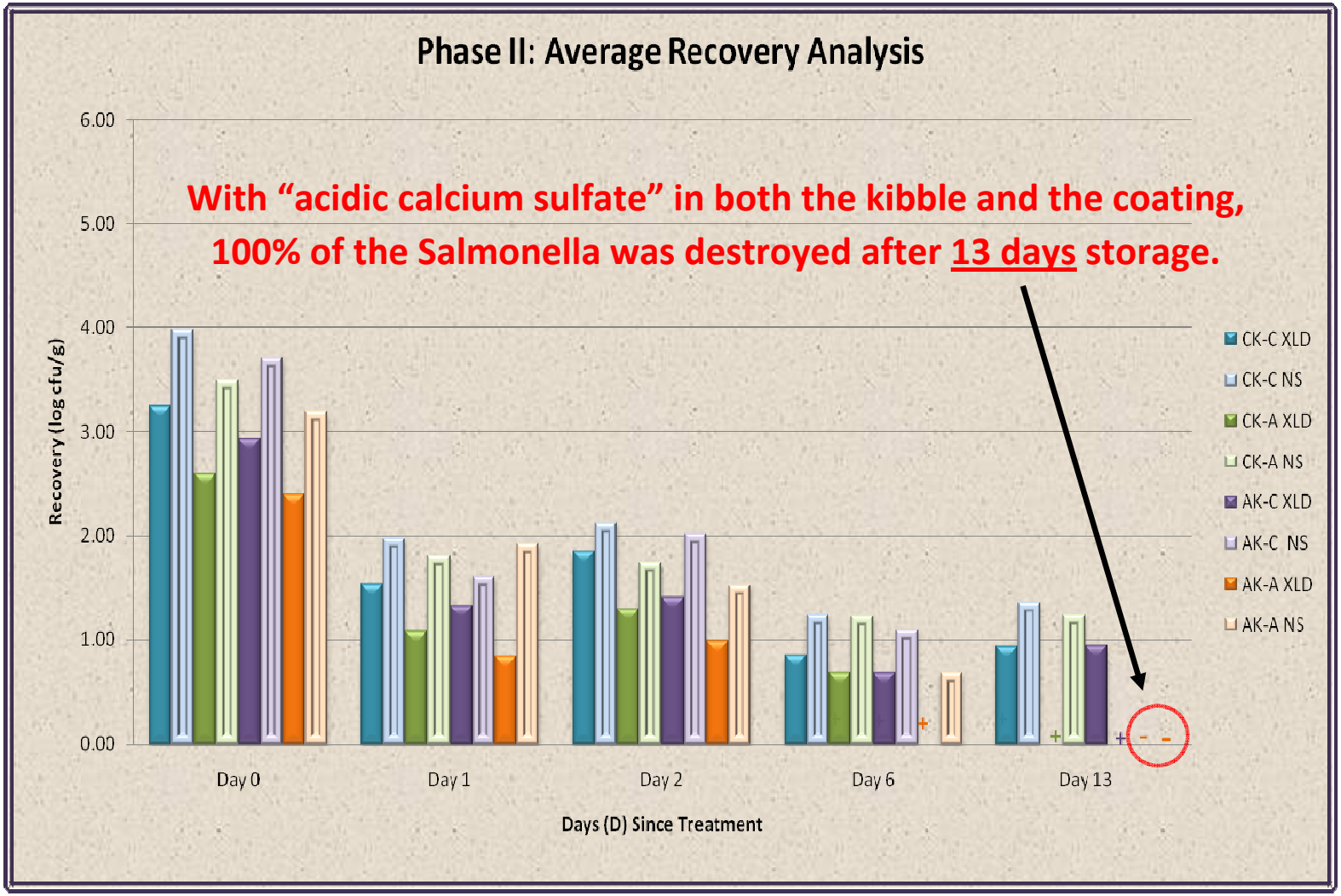
The control kibble product and control coating formulations used for this study are equivalent to current commercially marketed pet food product.

Control of Post-Extrusion *Salmonella* Contamination in Dry Pet Food Utilizing pHresh 10 (Acidic Calcium Sulfate)

Kansas State University
Dr. Randall K. Phebus/Danielle A. Perkin

Study Procedure

- Extruded kibble, confirmed to be Salmonella free by analysis
- Dried to 6% MCWB
- Enrobe with 6.5% Topical Coating
- Inoculated with Salmonella at 10,000 cfu/gram
- Packaged
- Stored and Tested



XLD agar is a selective agar specifically for *Salmonella*.
NS agar is a nutritional growth medium that allows sublethally injured *Salmonella* cells to grow more readily but still appear as distinctive black (*Salmonella*) colonies in the presence of other bacteria.

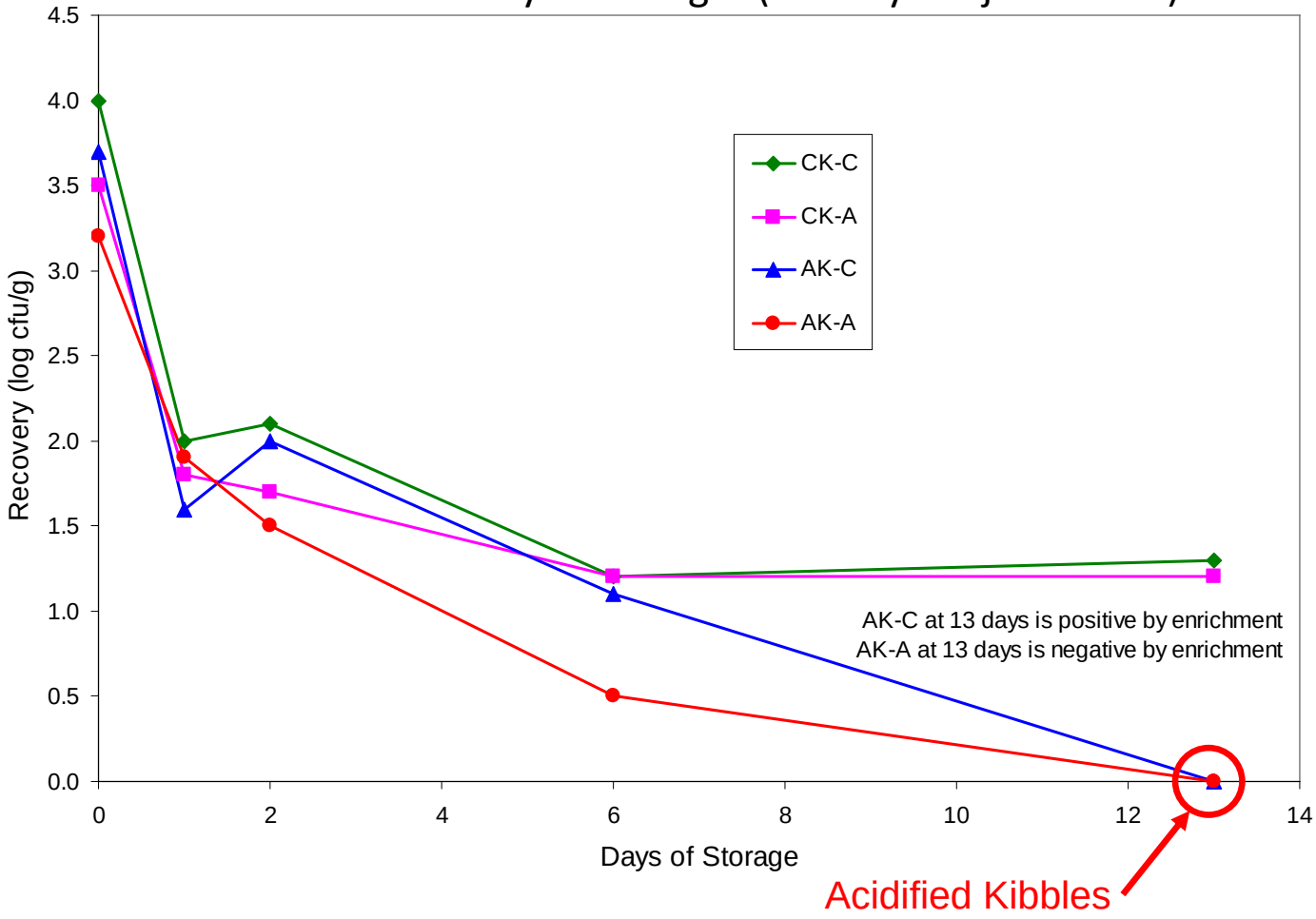
Control of Post-Extrusion *Salmonella* Contamination in Dry Pet Food Utilizing pHresh 10 (Acidic Calcium Sulfate)

Kansas State University
Dr. Randall K. Phebus/Danielle A. Perkin

Study Procedure

- Extruded kibble, confirmed to be Salmonella free by analysis
- Dried to 6% MCWB
- Enrobe with 6.5% Topical Coating
- Inoculated with Salmonella at 10,000 cfu/gram
- Packaged
- Stored and Tested

Salmonella recovery on NS agar (healthy + injured cells).



This graph demonstrates the effectiveness of having ACS in the Kibble for continued injury and eventually lethality of the *salmonella.*

NS agar is a nutritional growth medium that allows sublethally injured *Salmonella* cells to grow more readily but still appear as distinctive black (*Salmonella*) colonies in the presence of other bacteria.