

# Improving Packaging in Pasteurized and Fresh Blue Crab Meat

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IFTPS CONFERENCE FEB 28, 2008  
SAN ANTONIO, TEXAS

# Improve Packaging

- Pasteurized crabmeat
  - Traditional metal cans



# An Existing Alternative



# What We Did And Will Continue

- Tests on Pasteurized Product in trays, cans and plastic cups
- 10K OTR Film For Fresh Refrigerated Product
- Package Characteristics
- Quality and Sensory Comparisons against traditional packages
- Microbiological Analyses
- Shelf life Analyses
- Consumer Focus Groups
- Market Evaluations For Industry And Retail



# Improving Package Integrity

Evaluate and improve seam seal and package form during pasteurization and refrigeration



# Testing



Package and Packaging Equipment

What If ? Let's Try... Maybe?



Boston Seafood

# Cryovac "Simple Steps" Tray System

- Multivac sealer
- Cryovac film
- Mullinex tray
- Carton/sleeve





# Costs Comparisons

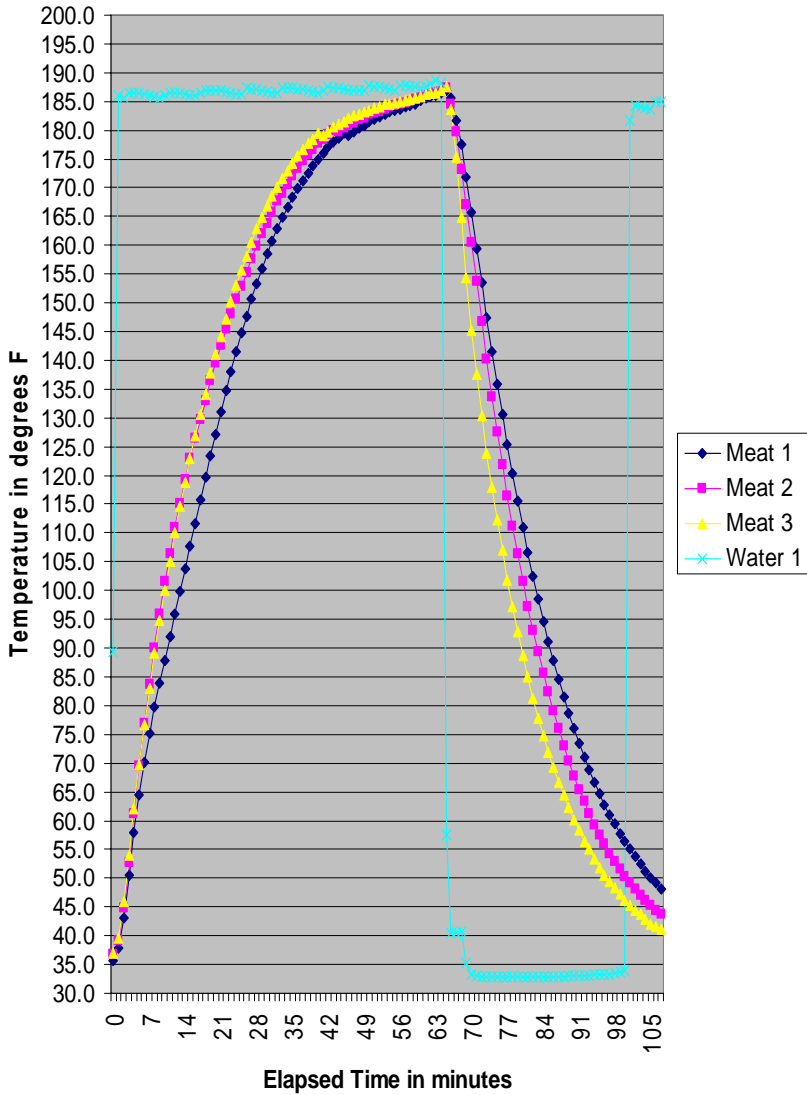
- Price of cans approximately \$.75/can
- Price of cups approximately \$.65/cup
- Price of trays approximately \$.27/tray
  
- Initial sealing machine investment
- \$45,000, w/accompanying installation \$

# Thermal Evaluation and Validation

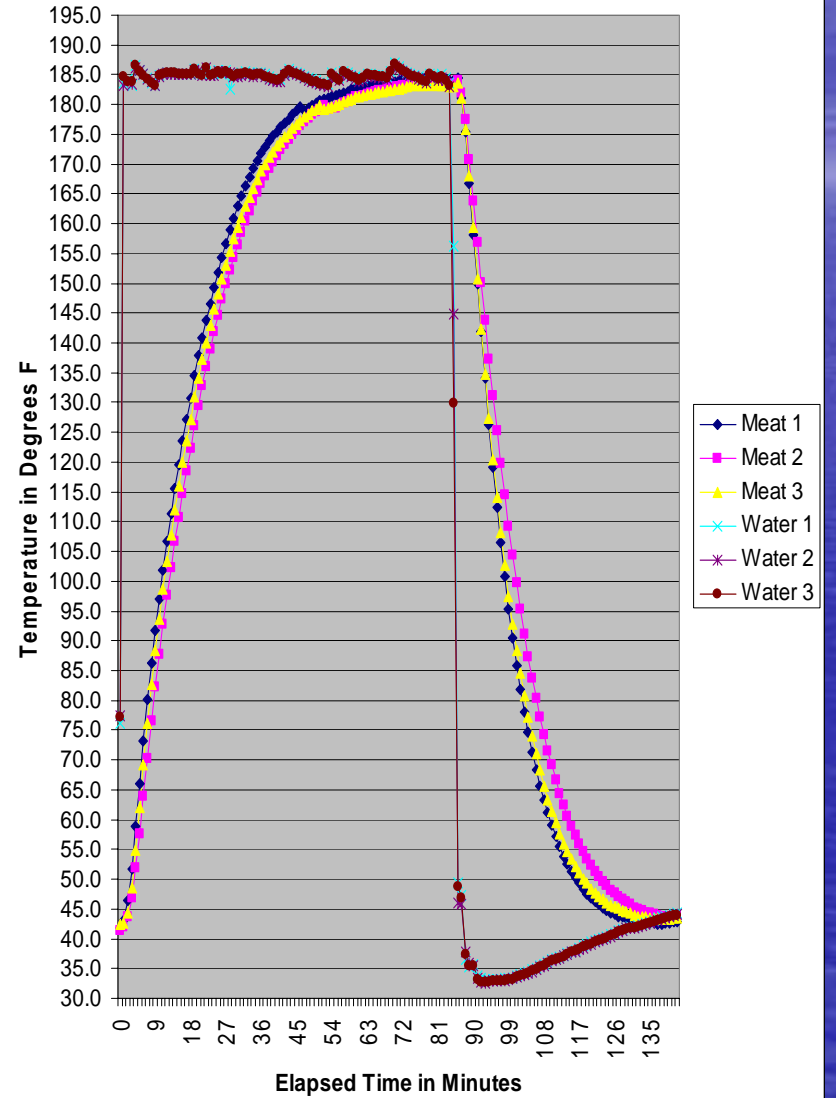


Thermocouple

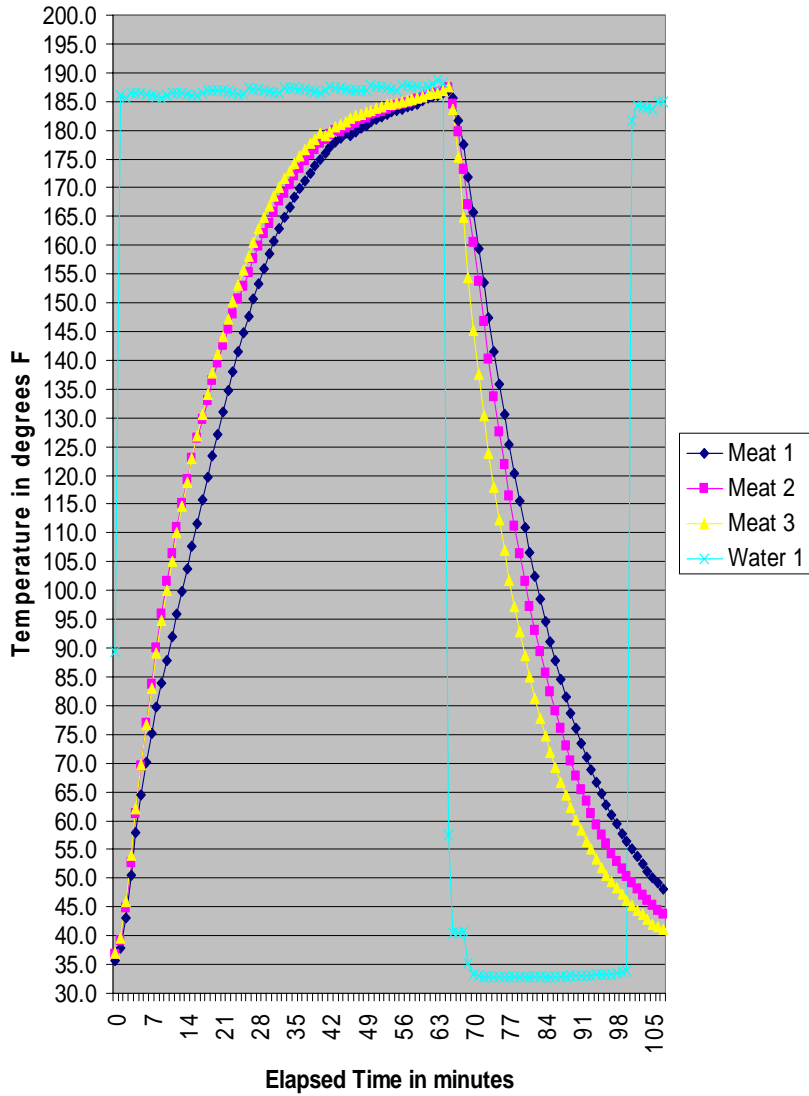
Pasteurization Trials: Croyvac Simple Step Trays



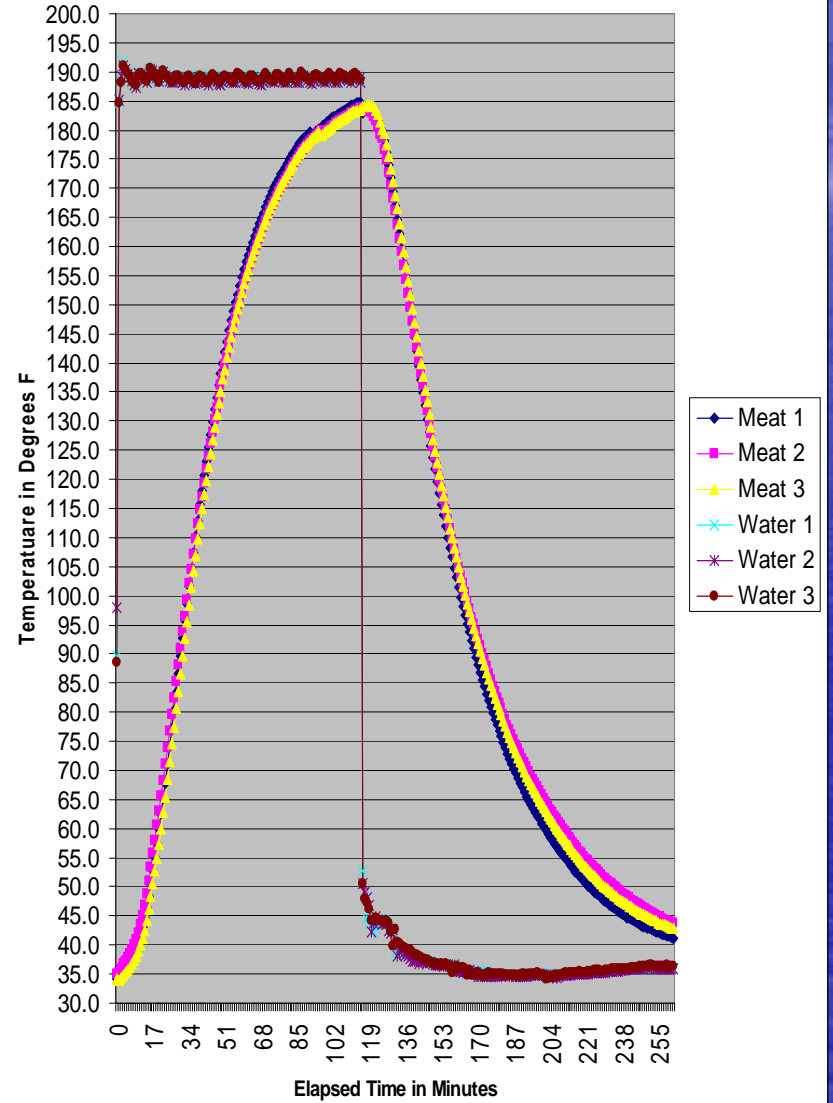
Pasteurization: 40106 Plactic Cup and Aluminum Pull Top



Pasteurization Trials: Croyvac Simple Step Trays



Pasteurization: 307 X 409 Can



# Microbiological Analysis

## Food Safety



Preliminary microbiological results for crabmeat sealed in Cryovac simple steps packaging, pasteurized and placed in refrigerated storage for nine months have an APC count of  $1 \times 10^3$  CFU/g.

# Shelf Life Studies



Set I processed July 12,  
2007

one week storage

Incubation  
Temperature

<u>Package</u>	40°F	
<u>Type</u>	<u>APC</u>	<u>Anaerobes</u>
Can 1	< 10	< 10
Can 2	< 10	< 10
Can 3	900	< 10
Tray 1	10	100
Tray 2	70	20
Tray 3	2,000	20
King cup 1	< 10	< 10
King cup 2	< 10	< 10
King cup 3	< 10	< 10

Set I processed July 12, 2007

2 months storage	<u>Incubation Temperature</u>		<u>Incubation Temperature</u>	
<u>Package</u>	40°F		48°F	
<u>Type</u>	<u>APC</u>	<u>Anaerobes</u>	<u>APC</u>	<u>Anaerobes</u>
Can 1	1,600	< 10	>100,000	< 10
Can 2			4,300	< 10
Can 3			1,200	< 10
Tray 1	6,400	< 10	> 100,000	< 10
Tray 2			> 100,000	< 10
Tray 3			> 100,000	< 10
King cup 1	77,000	< 10	> 100,000	< 10
King cup 2			100,000	< 10
King cup 3			> 100,000	< 10



Set I  
3 months storage

processed July 12, 2007  
Incubation Temperature

Package

40°F

Type

APC

Anaerobes

Can 1

30

< 10

Can 2

100

< 10

Can 3

< 10

< 10

Tray 1

3,000

< 10

Tray 2

250

< 10

Tray 3

60

< 10

King cup 1

120,000

< 10

King cup 2

350,000

< 10

King cup 3

380,000

< 10

# Auger Slants for Gram Stains

Microorganism samples from tray and can sample containers stored at 48 ° F

Gram stain of the tray sample indicated the presence of a *Bacillus sphaericus*, probably group III

Gram stain of the can meat sample indicates *Proteus mirabilis* because of its motile spreading rod nature.

# Sensory Evaluation



# Sensory Evaluation

- Results from our trained panel indicate that crabmeat in trays were slightly sweeter with a more intense crab like flavor.
- Further sensory evaluation will be part of the continued evaluation process.

# DUO – TRIO TEST

- Compared in random order each tray, can and cup sample with the other two as unknowns to determine which sample was different.
- A 1 % probability level\_ the tray was different than the cup was recognized by 14 out of 16 panelists
- No other significant differences were found.
- More statistical testing will occur.

# Comparisons of Fresh Packed

- Shelf life for crabmeat packed in trays with 10K OTR film was similar to crabmeat packed in fresh cups over a period of 5 to 10 days at 40° F
- CO<sub>2</sub> and O<sub>2</sub> gases sampled from the head space of crabmeat packed in the 10K OTR film tray and in the fresh crabmeat cup were also similar.

# Market Acceptability

Future programs  
looking at specific  
target markets to  
determine market  
acceptability.



# Thank you

Virginia Seafood Council    C-FAST Industry Grant  
Virginia Sea Grant

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Dr. George Flick  
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Mr. Bill Seiling Chesapeake Bay Seafood Industries  
Association.

Cryovac Inc.

Multi- Vac

Ross Industries

APT Packaging

E.I. DuPont Tienjen Films