

## Registration Information

### Conference Attendee Fee:

The Conference Attendee fee allows full participation in the conference, including materials at the conference and access to speaker presentations post-conference via the website. The fee also includes daily morning refreshments, Wednesday's networking reception, Thursday's beachside dinner, and the Friday breakfast.

Conference Attendees		
<b>Early REDUCED Fee</b>	US \$150	on or before Jul. 31, 2009
<b>Regular Fee</b>	US \$175	on or before Aug. 31, 2009
<b>Late/Onsite Fee</b>	US \$200	After Aug. 31, 2009

### Guest Fee:

Conference attendees may purchase tickets for their accompanying guests to attend the Thursday's beachside dinner and/or the Friday breakfast. Tickets do not include conference participation or materials. (Please note the conference attendee fee includes all meal functions).

Guests		
<b>Thursday Dinner</b>	US \$60	on or before Sep. 16, 2009
<b>Friday Breakfast</b>	US \$25	on or before Sep. 16, 2009

### Register online at:

[www.conference.ifas.ufl.edu/citrus](http://www.conference.ifas.ufl.edu/citrus)

**Refund Policy:** Requests for refunds will be honored if a written notification of cancellation is received by the Office of Conferences & Institutes IFAS, University of Florida by Monday August 31, 2009. A processing fee of \$35.00 will be deducted from all conference registration refunds. A processing fee of \$10.00 will be deducted from all guest fees. No refunds will be honored for cancellations after Monday August 31, 2009.

**Special Needs:** Special needs (such as visual, hearing or walking impairments) of registered attendees can be reasonably accommodated if they contact the Office of Conferences & Institutes at least 10 working days prior to the conference. We can be reached by phone at 1-352-392-5930, by fax at 1-352-392-9734, by email at [mstage@ufl.edu](mailto:mstage@ufl.edu). If calling from within the State of Florida, the office can be reached through a telecommunications device for the deaf (TDD) at 1-800-955-8771.

## Meeting Location and Hotel Information

Sheraton Sand Key Resort  
1160 Gulfview Boulevard  
Clearwater Beach, FL 33767  
Phone: 727-595-1611  
Fax: 727-596-1117  
Web: [www.sheratonsandkey.com](http://www.sheratonsandkey.com)

Guest rooms have been set aside at the Sheraton for conference attendees at a reduced rate of \$136 plus tax (currently 12%) for single or double occupancy until August 17, 2009. **Please be aware the rooms traditionally fill before the discounted rate deadline, so we urge you to make your reservation as soon as possible.** After August 17, the discounted rate is not guaranteed on possible remaining rooms.

### Make reservations in one of two ways:

- 1) Contact the hotel directly at 727-595-1611 and identify yourself as a participant of the International Citrus & Beverage Conference (ICBC) to receive the reduced rate.
- 2) Reserve rooms via the Sheraton's personalized website for ICBC participants. (Through the **Location & Hotel** Information section of the conference website)

### Please note:

- Reservations must be guaranteed by a first night room deposit with a major credit card.
- Deposits will be forfeited if cancelled within 48 hours prior to your arrival date.
- The hotel check-in time is after 3:00pm and check out is prior to 11:00am.

**Florida government participants:** To receive tax exempt status, payment must be made in the form of a government issued check or credit card and be accompanied by a Florida sales tax exemption certificate presented at check-in.

## Additional Conference Information

### Program Information:

*Renée Goodrich Schneider*, Program Organizer  
University of Florida/IFAS, FSHN  
PHONE: 352-392-1991, ext. 208  
EMAIL: [Goodrich@ufl.edu](mailto:Goodrich@ufl.edu)

### Meeting Information:

*Mandy Stage*, Conference Coordinator  
University of Florida/IFAS, OCI  
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Project #0912

49<sup>th</sup> Annual Short Course  
for the Food Industry

# The International Citrus & Beverage Conference (ICBC)



September 15-18, 2009

Sheraton Sand Key Resort  
Clearwater Beach, FL

### Hosted by:

- University of Florida/IFAS, Food Science and Human Nutrition Department
- University of Florida, Juice and Beverage Center
- Institute of Food Technologists, Florida Section & Citrus Products Division

### Conference Web Site:

[www.conference.ifas.ufl.edu/citrus](http://www.conference.ifas.ufl.edu/citrus)

## Introduction

Welcome to our 49th Annual Program for the Food Industry. This year's conference will focus on the following key issues facing citrus processing and related industries: the global nature of our business, challenges facing the Florida citrus industry, technology in the processing plants, new markets and the research to support them. The impact of greening disease on the citrus industry cannot be overstated, and this year we have dedicated two sessions to discuss its implications. Greening disease topics will include scientific research activities, and the economics of the industry and potential impact on processed citrus products. Our invited speakers, all active in academia, industry and government, were selected because of their depth of knowledge in these pertinent topics and their enthusiasm in sharing their insights. This event will bring together our invited speakers with industry leaders, researchers, technical and managerial personnel, and partners who are actively involved in the food, beverage and citrus industries. We look forward to your participation!

**Renée Goodrich Schneider**  
Program Organizer  
University of Florida/IFAS, FSHN  
Gainesville, FL

## Tentative Agenda

### Tuesday, September 15, 2009

4:00PM Registration (*until 7:00PM*)

### Wednesday, September 16, 2009

7:30AM Registration (*until 5:00PM*)

8:30AM Welcome and Introductory Remarks

#### **SESSION 1**

#### **GLOBAL CITRUS AND PROCESSING INDUSTRY**

9:00AM European Update

9:40AM Citrus Processing and Byproduct Industry of Argentina

10:20AM Break

10:40AM Citrus Production and Utilization in China

11:20AM Global Food Safety Standards – an Overview

#### **SESSION 2**

#### **MARKETING TRENDS AND NEW PRODUCTS**

1:30PM Consumer-driven Trends in Beverages

2:05PM Use and Regulatory Status of Stevia as Sweetener

2:40PM Break

3:00PM Sustainability Messages and How to Reach Consumers

3:35PM Functionality and Utilization of Citrus Fiber in Consumer Products

4:10PM Incorporation of Fiber into Beverage Products

4:45PM Awards Ceremony

6:00PM Networking Reception (*until 7:00PM*)

### Thursday, September 17, 2009

7:30AM Registration (*until 5:00PM*)

#### **SESSION 3**

#### **PROCESSING AND TECHNOLOGY UPDATES**

8:30AM Calculating the Carbon Footprint of Florida Agricultural Products

9:05AM Citrus Pectin Production and World Market

9:40AM Mexican Lime and Lemon Essential Oils – Production and Utilization

10:15AM Break

10:35AM Velcorin as a Processing Aid

11:10AM Non-thermal Processing through Plasma Technologies

#### **SESSION 4**

#### **GROWER AND INDUSTRY HOT TOPICS – PART ONE**

1:30PM Greening from the Grower's Perspective

2:15PM USDA/South Florida Greening Projects Overview

3:00PM Break

3:30PM Controlling the Psyllid – Guava Volatiles and Other Remedies

4:15PM Effect of Greening on Fruit Size and Yield

6:30PM Dinner & Entertainment (*until 8:30PM*)

### Friday, September 18, 2009

7:30AM Registration (*until 10:00AM*)

#### **SESSION 5**

#### **GROWER AND INDUSTRY HOT TOPICS – PART TWO**

7:45AM Breakfast

8:30AM Genomic Changes in Greening Fruit and Effect on Fruit Physiology

9:15AM Volatile Changes in Greening-affected Product

10:00AM Consumer Sensory Testing of Greening-affected Product

10:45AM Effect of Greening on the Economy of Citrus

11:30AM Adjourn

# Functionality and Utilization of Citrus Peel Fiber in Consumer Products

Dr. Rebecca Miller  
Department of Grain Science  
Kansas State University

# Bread Yield

- quantity of bread produced from a given weight of dry ingredients
- economically important to bakers



# Increasing Yield

- increase moisture of final product
- increase product size (volume)

# Water Level

- 38% moisture limit in standard bread
- no limit for non-standardized bread
- most flours will not tolerate high water

# Fiber in Breadmaking

- high water holding capacity
- historically only insoluble materials containing bran and cellulose were considered to be fiber
- recent advances have made many new dietary fibers available
- new definitions of dietary fiber

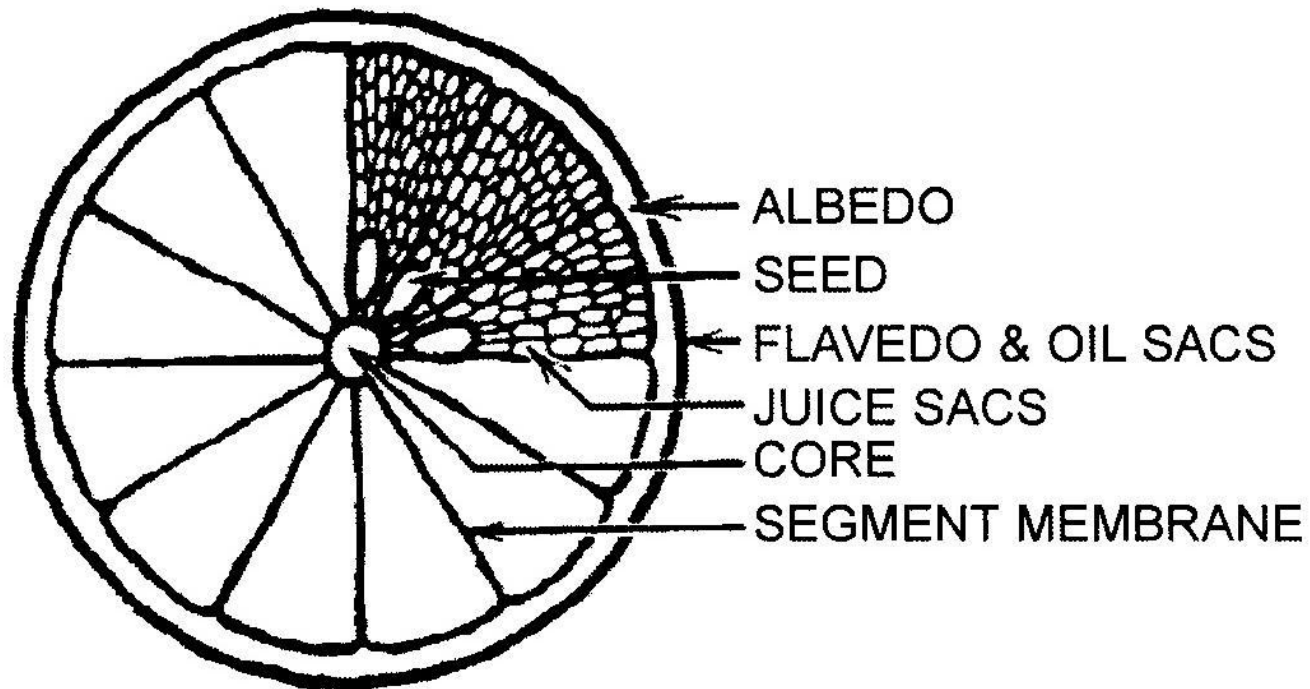
# High Fiber Bread

- 10 – 20% added for fiber claims
- increased water absorption
- reduced loaf volume
- negative effect on crumb grain

# Functional Fibers

- low levels
- for functionality
- marginal increase in dietary fiber

# Citrus Peel Fiber



**Albedo - rich source of pectin, hemicellulose and cellulose  
- high levels of naringin and limonin (astringent)**

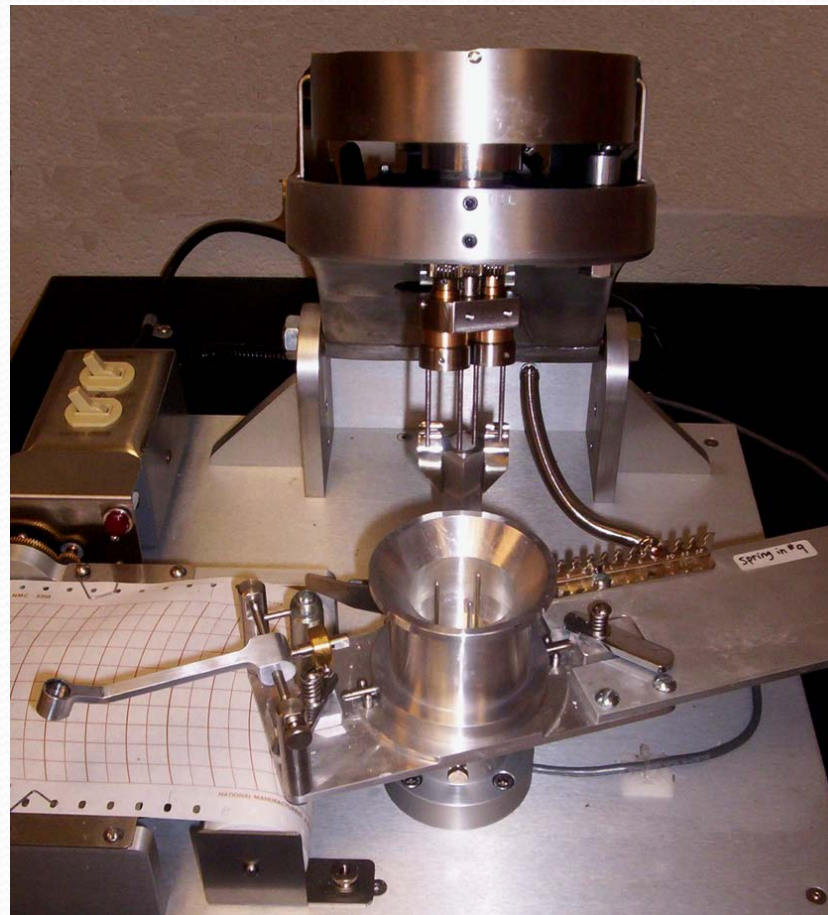
# Objective

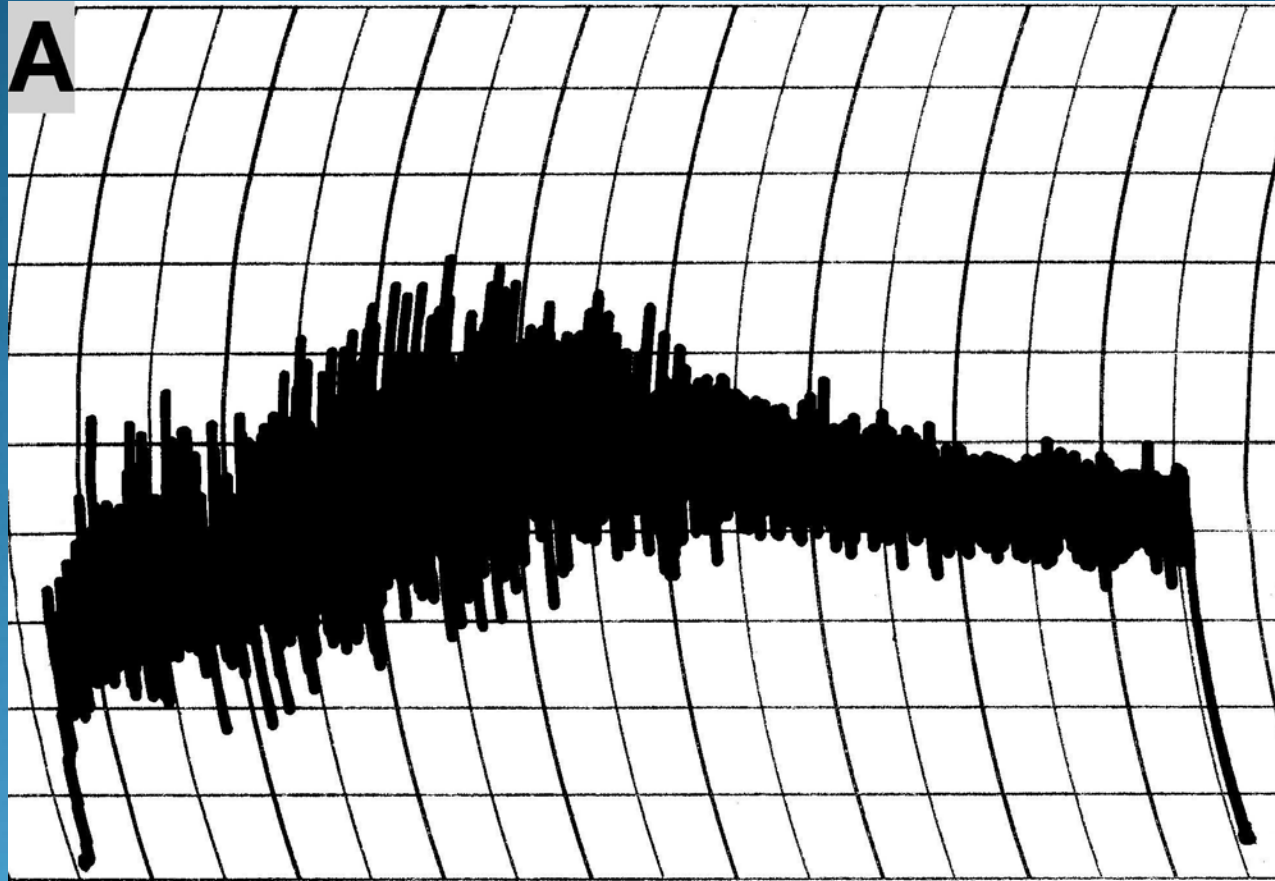
*To determine if low levels of citrus peel fiber would increase the yield of bread and other baked products*

# Flour/Water Dough

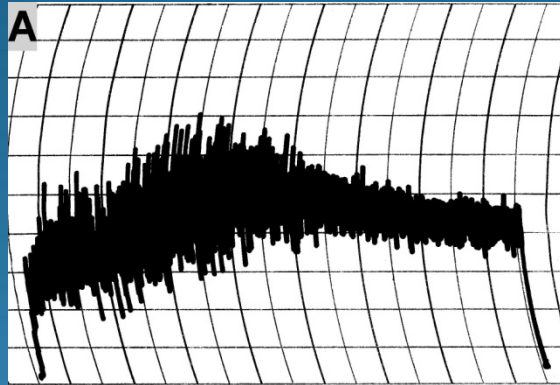
- citrus peel fiber levels
- water addition level
- mixing time
- mixing characteristics

# Mixograph

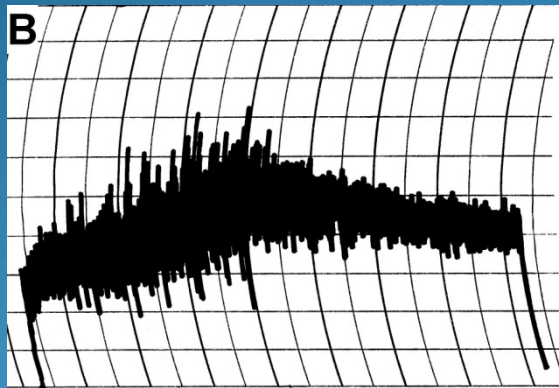




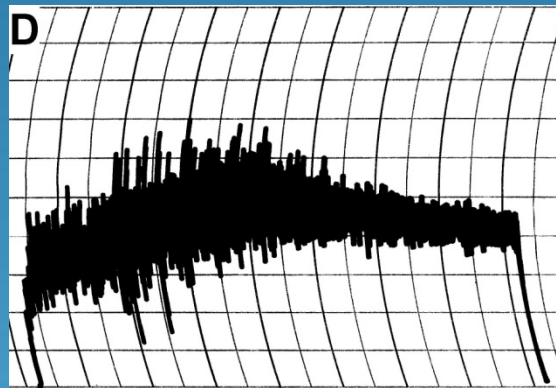
**control flour  
67% water**



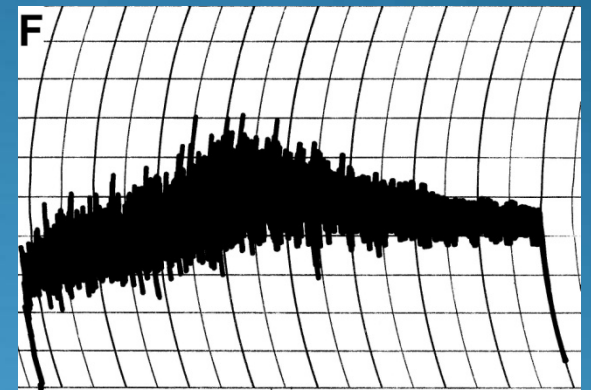
**control flour**  
**67% water**



**1.5% cpf**  
**73% water**  
**+6%**

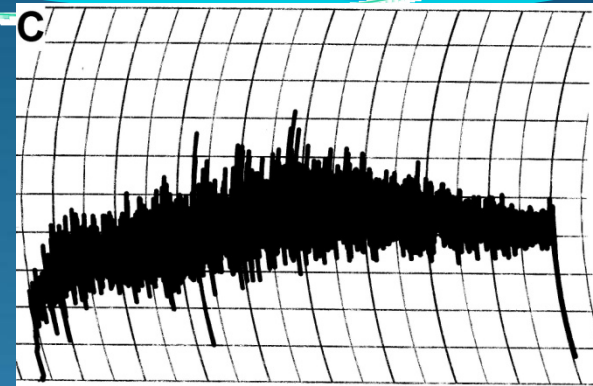
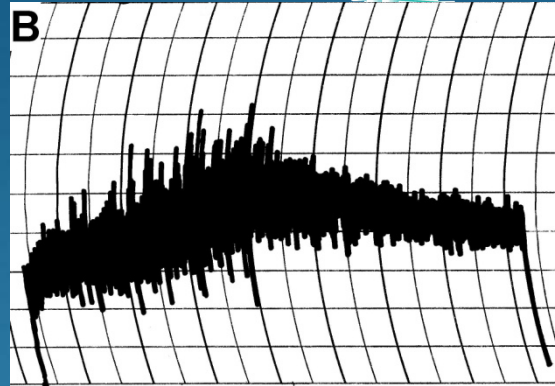


**2.5% cpf**  
**75% water**  
**+8%**

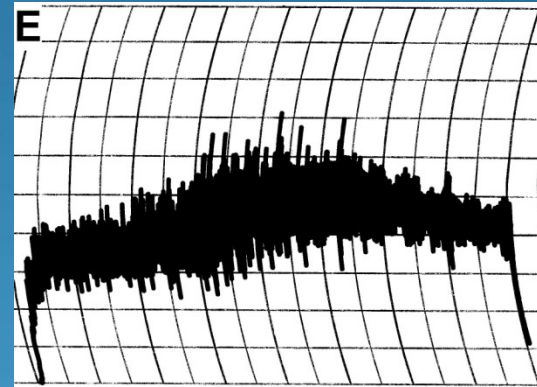
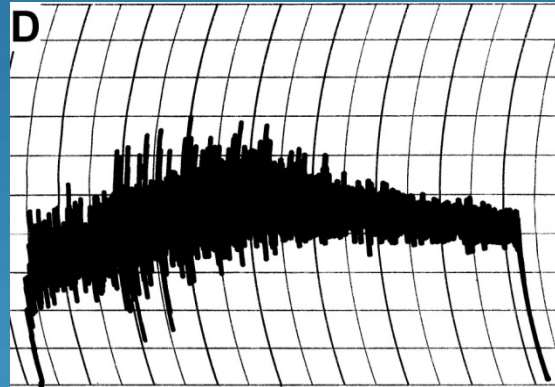


**3.5% cpf**  
**79% water**  
**+11%**

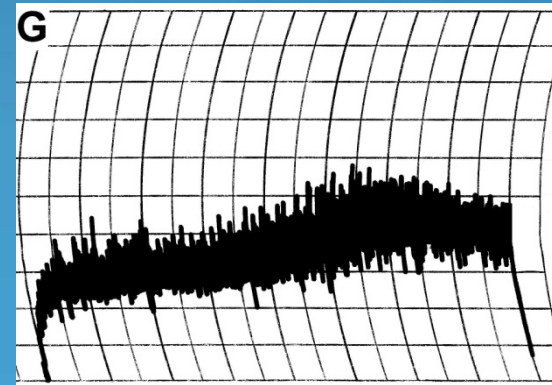
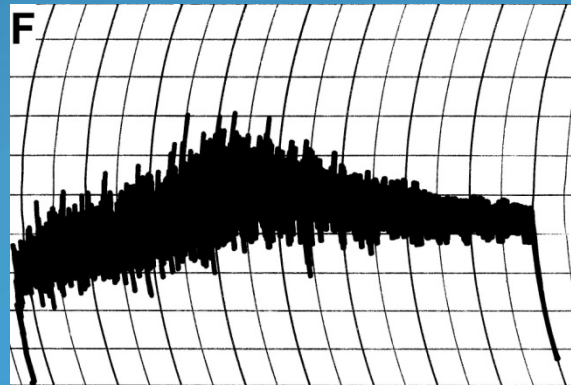
73% water



75% water



79% water



with citrus peel fiber

w/o citrus peel fiber

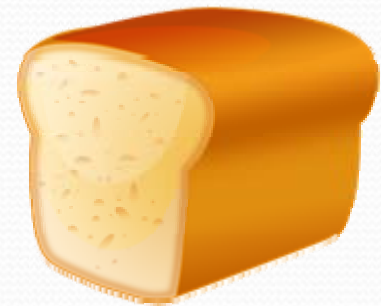
# Mixograph Data

<b>CPF (%)*</b>	<b>Water (%)*</b>	<b>Mix Time (min)</b>
0	67	3.50
0	73	4.25
0	75	4.75
0	79	6.25
1.5	73	3.75
2.5	75	3.75
3.5	79	4.00

\* flour weight basis

# White Pan Bread

- citrus peel fiber level
- water level
- mixing time
- dough handling properties
- bread volume
- crumb grain characteristics



# Bake Data

<b>CPF (%)*</b>	<b>Water (%)*</b>	<b>Mix Time (min)</b>	<b>Volume (cc)**</b>
0	70	3.00	903 b
1.5	76	3.25	1005 a
2.5	81	3.50	988 a
3.5	88	4.25	998 a

\* flour weight basis

\*\* statistically different  $p=0.05$

# Moisture Loss in Baking

<b>CPF (%)*</b>	<b>Dough Wt (g)**</b>	<b>Bread Wt (g)**</b>	<b>Wt Loss (g)**</b>
0	173 c	145 c	28 a
1.5	185 b	155 b	29 a
2.5	190 b	160 ab	30 a
3.5	196 a	164 a	31 a

\* flour weight basis

\*\* statistically different p=0.05

# Bread Moisture Content

CPF (%)*	Moisture (%)**		
	Day 2	Day 4	Day 6
0	34.6 b	36.0 b	34.6 b
2.5	38.7 a	38.6 a	38.0 a

\* flour weight basis

\*\* statistically different  $p=0.05$

# Crumb Elasticity

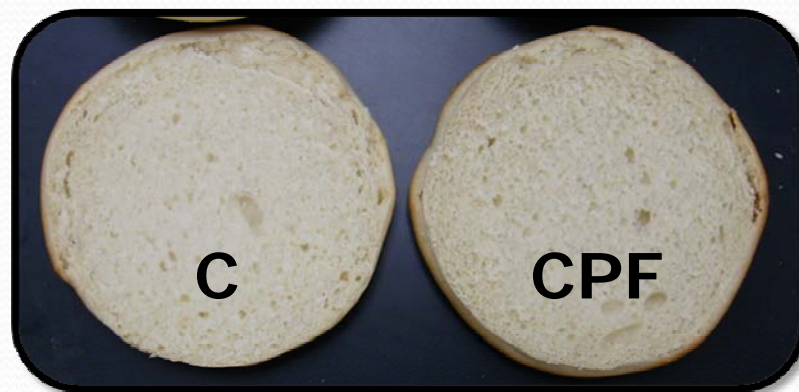
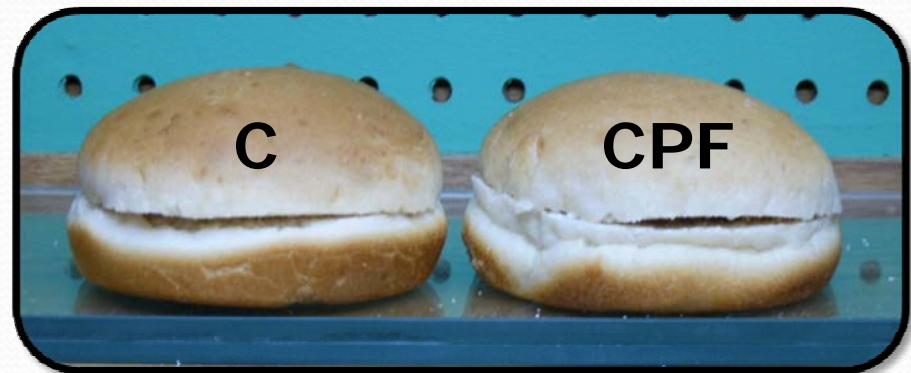
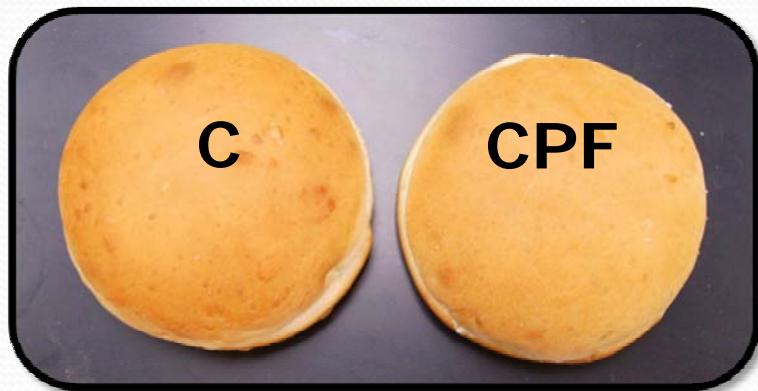
CPF (%)*	Elasticity (%)**		
	Day 2	Day 4	Day 6
0	58.4 ab	59.2 a	51.5 c
2.5	60.6 a	59.2 a	55.8 b

\* flour weight basis

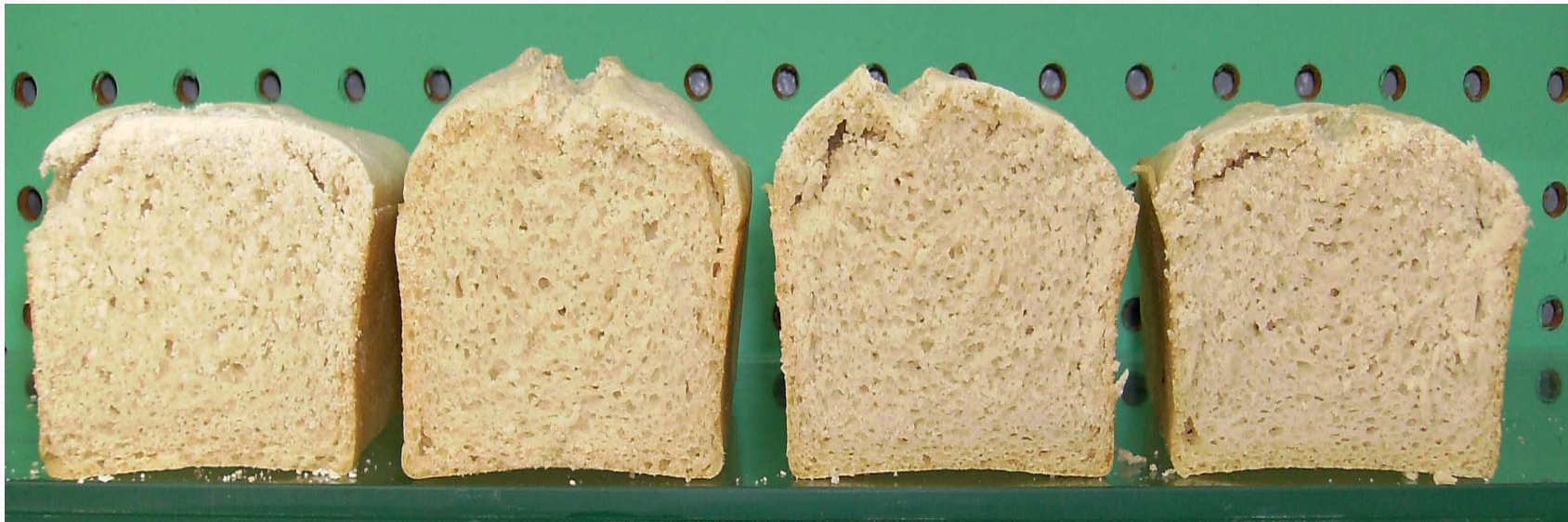
\*\* statistically different  $p=0.05$

# Hamburger Buns

+ 11% water with 2.5% citrus peel fiber



# Gluten-Free Bread



**control**  
**100% water**

**2.5% cpf**  
**125% water**

**5.0% cpf**  
**145% water**

**7.5% cpf**  
**165% water**

# Summary

- increased water absorption
- increased moisture content
- minor increase in mixing time
- no effect on dough handling
- larger volume
- improved loaf shape
- similar crumb grain
- not gummy

# Citrus Peel Fiber Increased Yield

- 1)** increased moisture in final product  
~ more dough at little additional cost
- 2)** increased product size (volume)  
~ lower scale weight per piece  
~ more pieces of same size

*Citrus Peel Fiber courtesy of*





Kansas State University

**GRAIN SCIENCE  
& INDUSTRY**