

# Getting to Know the **TASTES AND PREFERENCES** of Produce Consumers

Brought to you by Bayer Crop Science  
with Dr. Chow-Ming Lee and Kathy Smith, MS

**PRODUCE FOR®  
BETTER HEALTH**  
FOUNDATION



A smiling woman with long dark hair is holding a large metal tray. On the tray are several glasses of red smoothies topped with blueberries and a plate of green salad with lemon slices. In the background, a man with a beard and suspenders is also visible. The scene is set outdoors at a wooden table with other plates of food.

# Our Purpose

---

The Produce for Better Health Foundation (PBH), a 501(c)3, is the only national non-profit organization committed to helping people live happier, healthier lives by eating more fruits and vegetables in all their glorious forms every day.

**PRODUCE FOR®  
BETTER HEALTH**  
FOUNDATION

# Spread the Fruit and Veggie Love

## #haveaplant

 @fruits\_veggies

 @fruitsandveggies

 @fruitsandveggies







A New Era In Vegetables....

## *Getting to Know The Tastes and Preferences of Produce Consumers*



**Kathy Smith, MS**

Strategic Accounts & Industry  
Affairs

**Chow-Ming Lee, Ph.D.**

Global Consumer  
Sensory Lead







# Dr. Lee and Kathy











# Our Breeding Crops

## Family

## Breeding Crops

Solanaceous

Tomato, tomato rootstock, pepper, eggplant

Cucurbits

Squash, cucumber, melon, watermelon

Root and Bulb

Onion, carrot, leek

Large Seed

Sweet corn, garden bean

Brassica

Broccoli, cauliflower, cabbage

Leafy

Lettuce, spinach, fennel





# Consumer





# Trends Influencing the Food Value Chain

## Competitive

- // Non-traditional competition
- // Consolidation



## Consumers

- // Want “natural,” organic, local
- // Transparency
- // High quality sensory experience, year-round



## Retailers

- // Looking for opportunities to differentiate produce segment



## Grower Economics

- // Want “natural,” organic, local
- // Transparency
- // High quality sensory experience, year-round
- // Rising input costs



## Technology

- // Venture capital







# The Chain is Our Customer

## Growers

- // Marketability of produce
- // Market access & extension
- // Long shelf-life & storability

## Processors

- // Return of Investment
- // Traceability & transparency
- // Consistent quality of harvested product
- // Compliance with food safety standards and regulations
- // Reduced loss
- // Competitive prices

## Traders

## Retailers

## Consumer

- // High-quality food
- // Large variety year-round
- // Reasonable prices

*Their Needs Drive  
Our Actions*





# Vegetable Innovation for Retailers and Consumers...

Our mission is to improve grower productivity, as well as increase worldwide consumption of fruits and vegetables, by developing new products through breeding and nutritional science innovation.

## Veg Consumer Research (2008) US & EU-5 Consumer Preference for Fresh Vegetables

### Sensory Experience



e.g

// Taste / Aroma / Flavor  
// Color  
// Texture

### Nutrition & Health



e.g

// Increase consumption by improving flavor

### Convenience



e.g

// Freshness  
// Shelf life  
// Fresh cut





# Population Changes Challenge Current Food Chain System and Create Polarization

## Changes



*Urbanization*



*Convenience*



*Transparency*

## Solutions



*Advanced  
Horticulture*



*Digital  
Tools*



*Data  
Analytics*





# Curious about *taste*

*Sensory information*





# Welcome to the world of consumer....

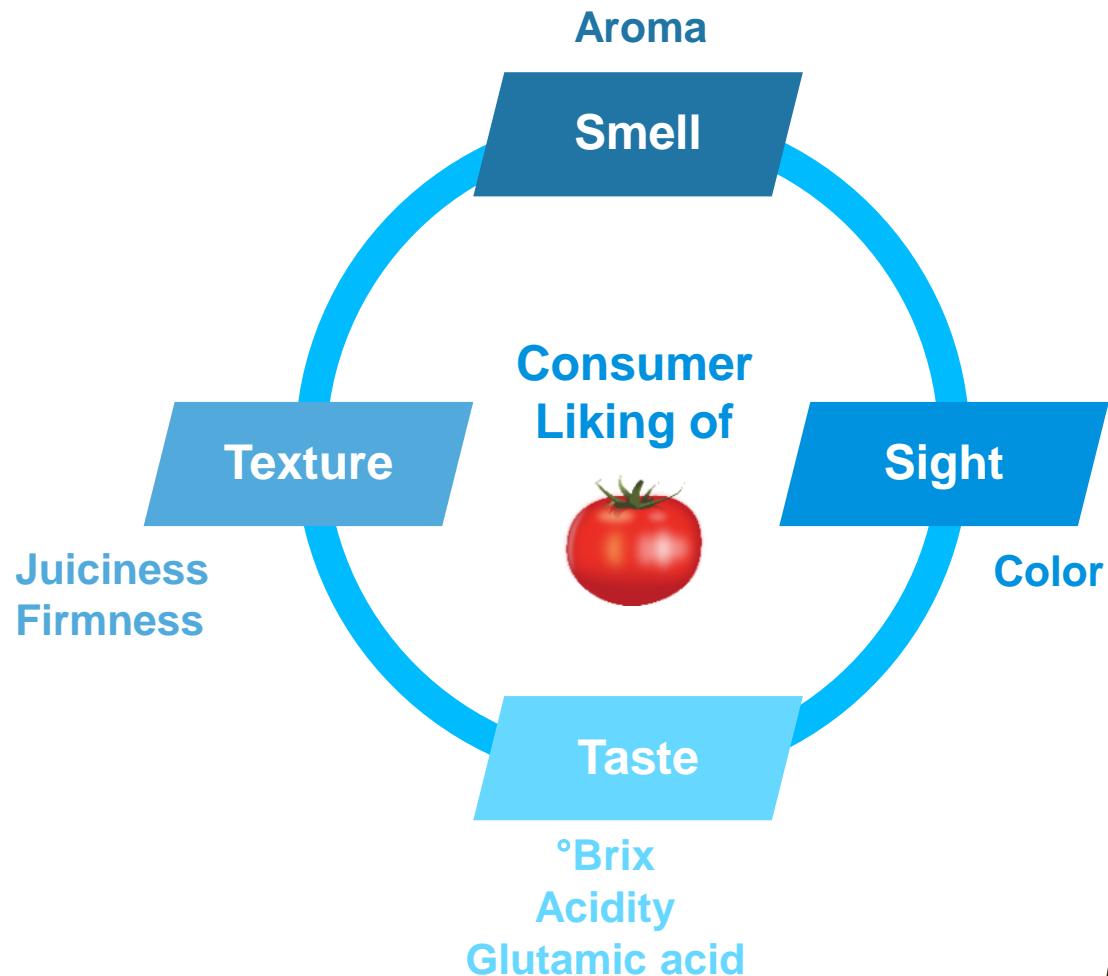






# Improving flavor by measuring its key components

Bringing the expertise and analytical toolbox together







# Sensory Experience Innovations in Flavor!!







# Crave™ Cantaloupe

Flavor



## It's time for a melon that demands a reaction.



Flavor is making a huge comeback in the melon category, and we're leading the charge with new Crave cantaloupe melons—your shoppers' newest sweet escape from the bland and boring. Crave isn't your typical fruit salad filler. It features the Flavorfull™ Ripening Indicator, which turns skin a golden straw color at peak ripeness. So you can be confident you're getting fresh, delicious, ready-to-eat melons every time.







# Delisher Tomatoes

*Convenience and Flavor*



*Delisher  
Delishious!*







# Two main approaches for *flavor understanding*

## *Consumer* Hedonic focus

Ratings of  
acceptance or  
preference with  
selected employees

>100 subjects

## *Sensory* Attributes focus

Ratings of attributes  
assumed to be  
important to  
consumers

10 to 40 subjects





# Panel

# Subjects

## Target Population

Representative of country & product

## Acuity

Screened for acuity if using few subjects

## Naïve consumers

Not too close to product

## Dedicated

Interested and committed, management support





# Design

*You can control*

## Coding

3-digit numbers,  
preparer doesn't  
participate

## Serving order

Randomize or  
use software

## Ask the right questions

Know what you want

## Sample

Uniformity and  
representative







# Testing

*Minimize data noise*

## Location

Odor and  
distraction free

## Pace

Not rushing,  
proper rinsing  
and resting

## Lighting

White lights for  
consumers, unless  
color needs to  
be masked

## Data Analysis

The right  
analysis for the  
right data type







# Consumers are demanding produce with better INHERENT sensory appeal



Let's skip the added sugar, salt, salad dressing, etc.

## Want more



## Want less



Whole cherry tomato consumer impressions based on the comments received

Source of data: 2018 Project Taratari3 (k=18, n=152, US – 1 location in California)





# Multiple Factor Analysis (MFA) of analytical and consumer data shows positive and negative analytical measurements

French and Germans are slightly different in red cherry tomato sensory preference

Liked cherry tomatoes *that are*



Sweeter  
More Acidic  
Firmer  
More umami



Sweeter  
More Acidic  
Firmer  
More sweet smell

Disliked cherry tomatoes *that are*

Less  
red color

More  
savory smell



Source of data: 2018 Project Traverser (k=18, n=150, FR – 1 location) and 2018 Project Tutti3 (k=14, n=150, DE – 2 locations)





# *We Have A* **United Purpose**

- // Healthier People and Healthier Planet
- // Consumer Insights
- // Industry Intelligence
- // Product Concepts
- // Successful Collaborations
- // Partnerships-Produce For Better Health







*Thank you!*





# Our Movement

Research shows, rather than a prescriptive recommendation to eat a certain amount of fruits and vegetables each day, consumers (particularly Gen Z and Millennials) want actionable, realistic and FUN approaches that make eating fruits and vegetables easy, helping them feel confident, happy and healthy.

That's where PBH's Have A Plant™ movement comes in. It's a way to tap into the emotional connection consumers have to the fruit and vegetable eating experience while inspiring long-term, sustainable behavior change. And it does so with a no-nonsense approach that's simple, understandable, and, importantly for this audience, non-prescriptive.





# Join the Movement



**SEPTEMBER IS NATIONAL  
FRUITS & VEGGIES  
MONTH™**  
#HAVEAPLANT  
#HAVEAPLANTPLEDGE

Show your support by taking and sharing the [Have A Plant™ pledge](#) at [fruitsandveggies.org](#). While you're there, check out the useful resources to equip you with the tools you need to enhance your nutrition knowledge and empower consumers to enjoy more fruits and vegetables every day.

September is National Fruits & Veggies Month™. Take a moment to promote and enjoy all forms of the fruits and veggies that you know and love – fresh, frozen, canned, dried and 100% juice – that taste great and also support your health and happiness!

Follow PBH's social channels to keep up to date on all the insights and inspiration. #haveaplant





# Join Us Next Time ...

A promotional graphic for a webinar. The background is a close-up of a white bowl filled with a yellow-orange soup, topped with green herbs and a white egg. The text is overlaid on the left side of the image.

WEBINAR

---

## TRENDY OR TRIED-AND-TRUE?

**Who sticks to different diets and how  
do they affect produce consumption?**

---

TUESDAY, NOVEMBER 19 @ 1 PM EST

BROUGHT TO YOU BY  
**Cans Get You  
COOKING**

**PRODUCE FOR  
BETTER HEALTH**  
FOUNDATION

A catalog of PBH's past webinars is available at [fruitsandveggies.org/expert-professionals/webinars](https://fruitsandveggies.org/expert-professionals/webinars). Continuing professional education units (CPEU) are available for live and pre-recorded webinars.





# THANK YOU

**PRODUCE FOR™  
BETTER HEALTH**  
FOUNDATION