



The tortilla blueprint: Strategies for cost reduction

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Meet your presenters



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Megatrends affecting the food and beverage industry



Environmental concern

The effects of climate change are putting *sustainability* into sharper focus. We're experiencing the impacts on health, *food security* and the economy.

Health of the planet is the #1 global issue of concern for consumers globally.

Health pressures

Healthcare systems and policies are having to adapt. *Aging and growing populations*, plus *rising obesity* levels, are key challenges.

Health of the population is the #2 global issue of concern for consumers.

Economic uncertainty

Global economic growth forecasts are below the historical average and were predicted to fall to 3% in 2023 and 2.9% in 2024, with global headline inflation remaining elevated.

3 in 4 consumers globally are concerned about the cost-of-living crisis.

Tech transformation

Technological change continues at pace with transformations across several fronts, from CRISPR gene editing to generative AI.

It's shaping our future, presenting both challenges and opportunities.

Source: Innova Lifestyle & Attitudes Survey 2023, IMF

Notes: Qs: Which of these global issues concern you most? To what extent are you concerned about the following crises/issues and their impact on your country/community?

Global consumer demands (2023-2024)

Better for you

- Functional: gut health, antiaging, immune focused
- Clean/natural: simple, less processed: colors, flavors, sweeteners
- Reduce/remove sugar, salt, fat, allergens, gluten.
- Enrich/Increase: protein, antioxidants, fiber

Plant-based / sustainable

- Dairy free: plant-based proteins
- Egg free: proteins, gums, fibers
- Upcycled ingredients

Cost / value for money

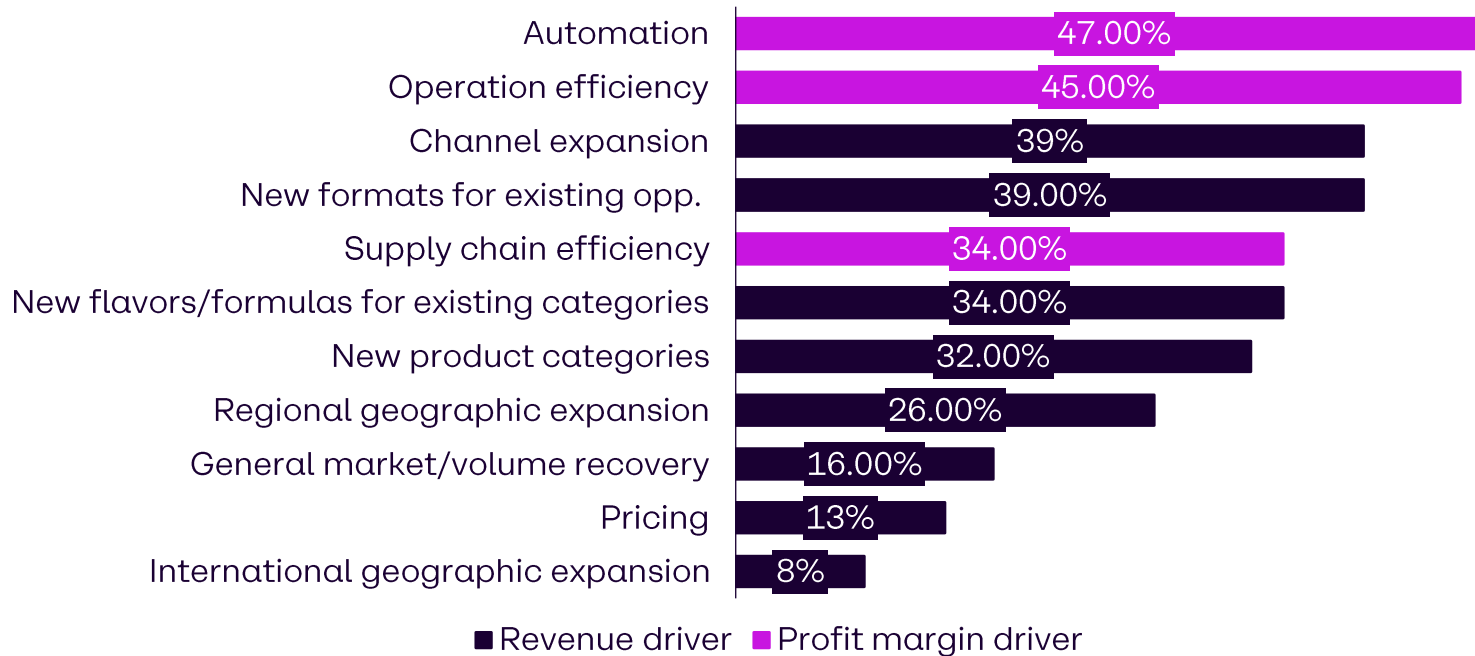
- Freshness and longer shelf life (antioxidants, enzymes, antimicrobials)
- Sourcing local ingredients, reducing waste
- Removing expensive ingredients, such as VWG via enzymes and gums



Source: <https://www.innovamarketinsights.com>

Despite ongoing challenges, bakery sector is forecasting a prosperous 2024*

2024 opportunities in the bakery industry



[What's behind the bakery boom expected in 2024? \(bakeryandsnacks.com\)](https://www.bakeryandsnacks.com)

Source: Bakery and Snacks Magazine 2024

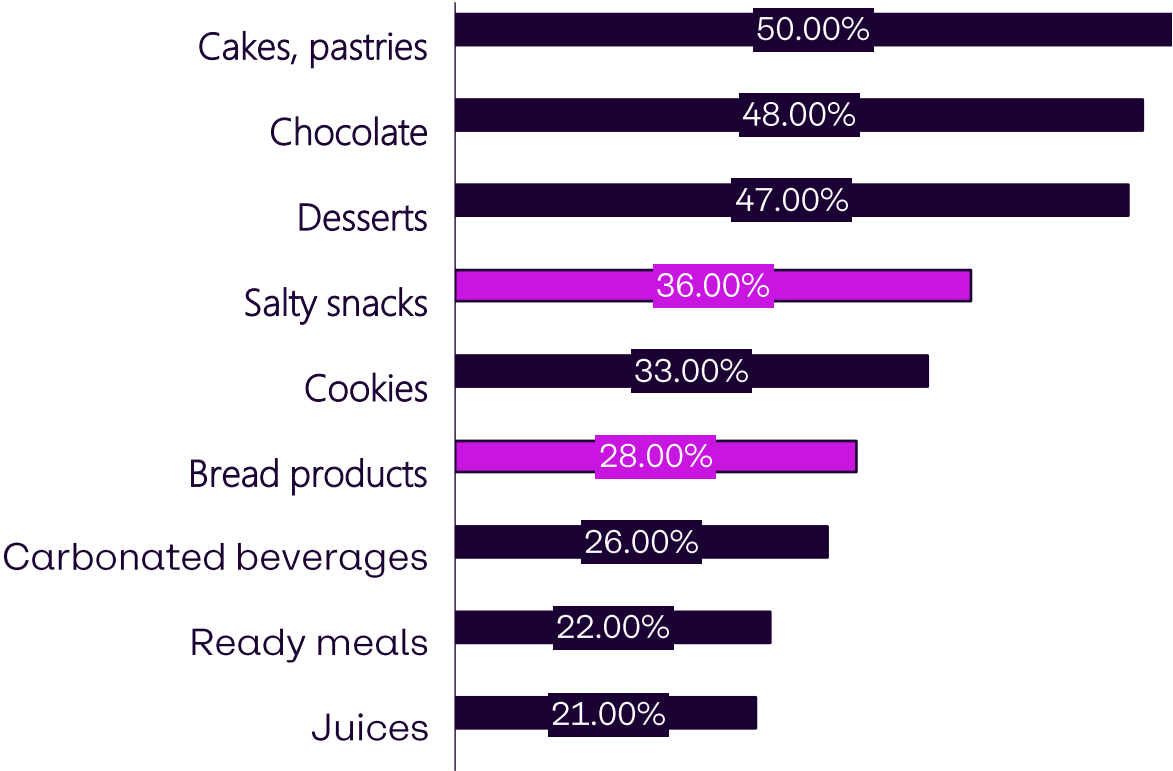


Global challenges and opportunities: Adapt or face the consequences

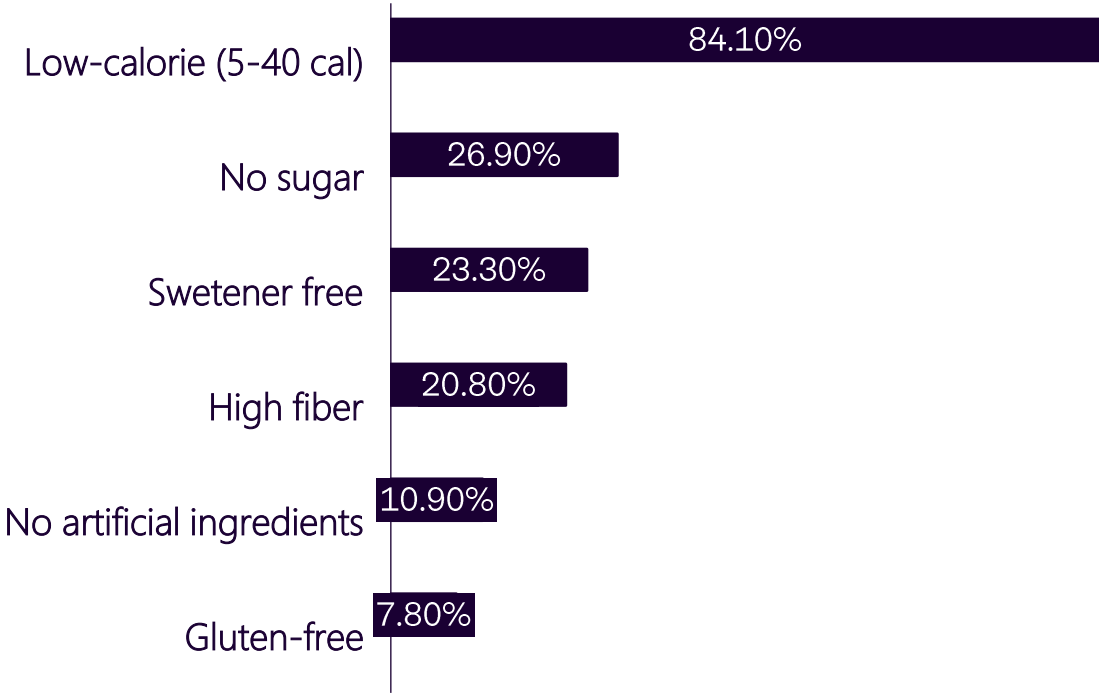
	Consumer demands	Baking	Ingredients
Challenges	<ul style="list-style-type: none">▪ Quality-Premium (BETTER FOR YOU-HEALTHLY, SUSTANIBLE)-Authenticity-Simplicity▪ Desire for new flavors and new delivery systems	<ul style="list-style-type: none">▪ Sustainability, efficiency▪ Labor shortages▪ Competition (start ups)	<ul style="list-style-type: none">▪ Price instability▪ Supply chain issues▪ Quality
Opportunities	<ul style="list-style-type: none">▪ Global cuisine and flavors▪ Leverage marketing tools, Innova, Mintel▪ Connect with the consumers via social media	<ul style="list-style-type: none">▪ Automation, process optimization, adaptation to new channels and new technologies▪ Technology adoption (visit expos: IBIE, BMA)▪ Expand global flat breads	<ul style="list-style-type: none">▪ Working with supplier with pricing stability▪ Strong vendor-partners▪ Direct and indirect cost reduction strategies<ul style="list-style-type: none">▪ Distributors can help de-complexing▪ Less and simple ingredient list

Healthier versions of sweet goods, salty snacks and breads

Global BAKERY-Consumers are looking for healthier versions



Global BAKERY consumer trends (2023)



Source: <https://www.innovamarketinsights.com>



Total product count: 390

Positioning Subcategory	Product Launches (%)
Convenience - Ready Prepared	95.38%
Convenience - Packaging	51.54%
Kosher	49.23%
GMO Free [F]	31.79%
Vegan	27.95%
No Additives/Preservatives [F]	27.69%
Microwaveable	26.92%
High/Source of Fiber	25.90%
No Trans Fats	24.87%
Gluten Free	23.85%

Company	Product Launches (%)
Mission Foods	11.03%
La Tortilla Factory	6.67%
Ole Mexican Foods	4.36%
General Mills	4.10%
Bimbo	3.85%
Bimbo Canada	3.08%
Mr Tortilla	2.82%
Harbar	2.56%
George Weston Foods	2.31%
Gruma	2.31%

2022-2024: Flat breads new product launches (unleavened and leavened)

Positioning Subcategory	Product launches(%)
Sugar Free	57.58%
High/Source of Fiber	33.66%
Microwaveable	23.81%
No Trans Fats	18.56%
Low/No/Reduced Cholesterol	17.98%
Wholegrain	14.44%
Kosher	13.54%
Gluten Free	12.90%
Convenience - Packaging	12.44%
Convenience - Ready Prepared	11.29%



Consumer demands: Tortillas and flatbreads are expanding their versatility and health claims to great success

Ethnic fusion



Health-conscious



New flavors



Convenience



New delivery systems



Source: Bakery and Snacks Magazine, 2024

Supply chain management

- SKU consolidations and distribution model
- Simplification of traceability (documentation)
- Supplier network optimization / reduction
- Supports lean production flow -> reduction on “left over” materials

Ingredient usage optimization

- Process optimization
 - Blends
 - Enzymes
 - High potency salt
- End product optimization
 - Moisture control, textural shelf life: hydrocolloid (fibers, gums, starches), enzyme
 - Textural shelf life: enzymes, enzyme blends
 - Fat reduction: rancidity reduction during shelf life\antioxidants, long chain inulin

Cost
reduction

- Bakery blends
- Bakery enzymes to replace expensive ingredients
- Stabilizer systems
- Phosphates (they are cheaper than antimicrobials)

Encapsulated ingredients

- Product expiration date expansion
 - Antimicrobials
 - Antioxidants
 - Leavening systems
- Textural shelf-life extenders
 - Enzymes
 - Gums
 - Packaging

Cost effective ingredients

Waste reduction



Supply chain management

Choosing suppliers with global reach with regional focus and execution



One stop shop approach



Manage complexity for customers

- Reduction of single stock ingredients
- Simplification of traceability (documentation)
- Supplier network optimization/ reduction



Support on

- Applications
- Formulations
- Laboratory access
- Labelling, customised packaging, regulatory advice, documentation, proprietary blends



Cost effective ingredients

Examples: process optimizing ingredients,
blends (enzymes, stabilizers)

Replacing reducing agents hydrolyzed wheat protein

Improves the dough

Replacer of reducing agent
weakening dough strength
and improving extensibility



Clean label

Made from renewable raw
materials, has a neutral
taste, color and no e-number



Cost effective

Offers a better dough
extensibility and workability,
reduces mixing time



Source of proteins

Allows protein claims on your
packaging, offers health
benefits



Hydrolized proteins increase the extensibility and workability of the dough

Replaces reducing agents

- Highly soluble in water, neutral taste and color
- Weakens the dough strength, improves the extensibility and reduces mixing time
- Protein on db: 76.5%
- Low mineral content

Weakens the protein

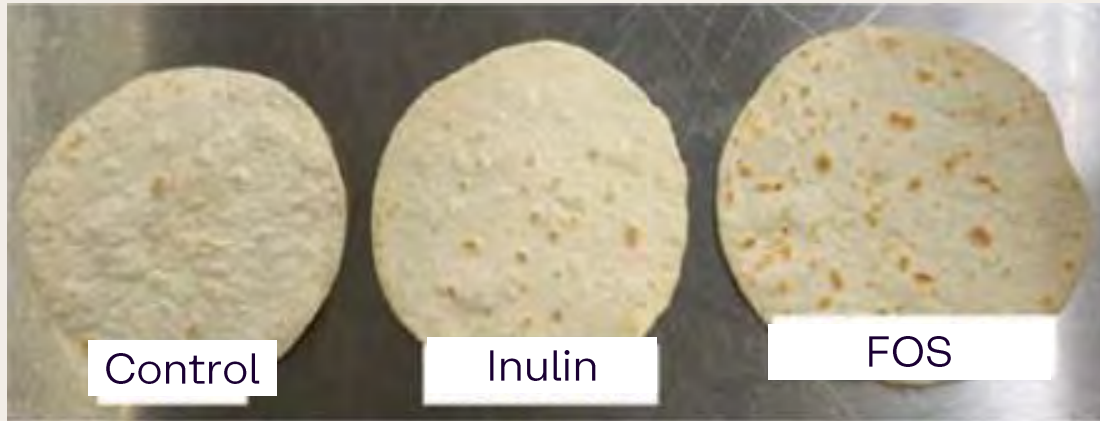
- When hydrolyzed protein is added, the dough loses its strength, giving better workability and shaping
- The dough development time reduces, which makes it a cost-effective solution

Provides more extensibility

- Adding hydrolyzed protein to dough reduces its elasticity, making it easier to shape

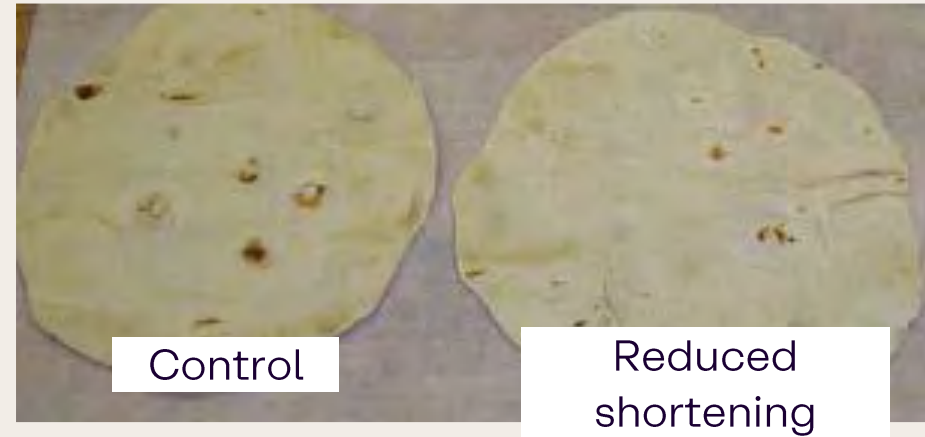
Soluble fibers can improve softness and can partially replace shortenings in flour tortillas

Soluble fibers can help developing toast marks with shorter bake time, and softer tortillas



Addition of 10% chicory fiber.

Soluble fibers to reduce the cost (3-6%) by replacing shortenings without sacrificing taste



Addition of 10% chicory fiber.

Improving process efficiency and textural shelf life (softness, rollability, moistness) with bakery enzymes

Enzymes and their substrates

- **STARCH:** Maltogenic alpha amylase; Fungal alpha amylase
- **LIPIDS/FATS:** Lipase, Phospholipase
- **GLUCOSE:** Glucose oxidase (GOX)
- **PROTEIN:** Transglutaminase (TG)
- **FIBER:** Xylanase, Cellulase

Benefits of enzymes

- Flour performance
- Dough rheology
- Gas retention
- Crumb softness
- Slowing staling-
WASTE REDUCTION
- Minimal effect on end product quality due to flour quality fluctuations.
- Improve dough fermentation, handling, machinability properties.
- Excellent volume through optimum gas production, gas retention, and gluten development.
- Superior textural qualities over extended shelf life.

Bakery enzymes can partially/completely replace

- Oxidizing agents: ascorbic acid, K-bromate, ADA
- Reducing agents: L-cysteine
- Emulsifiers: DATEM, SSL, MDG
- Vital wheat gluten (VWG)

They can be used individually or as blends to lower the human error and lower the cost. Low dosages 1% to 1.5% on flour weight.

Improving textural shelf life with stabilizer blends

- Additional and synergistic effects of hydrocolloids (fibers, starches and gums) enhance dough hydration, texture and shelf life.
- Can reduce the amount of flour or fat needed in the recipe
- Increased moisture management/retention
- Increased flexibility retention
- Increased cohesiveness of cooked product to prevent crumbliness
- Antimicrobial/yeast/mold additions



Ingredient Usage Optimization

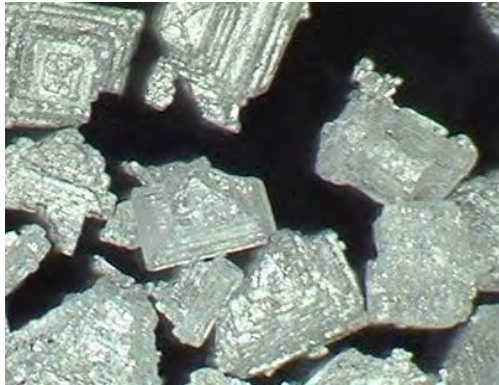
Examples: salt reduction by specialty salts and natural flavor

Reducing salt with specialty salts

High-purity, food grade, natural

It's unique, hollow **pyramid shape**, increased surface area, and low bulk density combine to offer a measurable advantage in terms of blendability, adherence, solubility and absorption.

Flake salts may provide **sodium reduction** through salt optimization: using the best functioning salt for the application



The advantages of specialty salts

Adherence

The salt crystal's ability to stick to food products

Better salt adherence

=

Less salt required to achieve a desired flavor profile

Less salt fall-off; potential sodium reduction

Less waste; potential cost savings

Measuring Adherence (0-100%)

Standard Granulated ↑ 75%

Specialty Fine Flake ↑ 95.8%

Bulk Density

The salt crystal's "fluffiness" or weight by volume

Lower bulk density

=

More even salt coverage with less weight

Potential for sodium reduction

Measuring Bulk Density (g/mL)

Standard Granulated ↓ 1,250

Specialty Fine Flake ↓ 865

Solubility

The time it takes to dissolve "X" amount of salt

Faster salt dissolution rate

=

A quicker and more intense flavor burst

Potential for sodium reduction

Slow dissolving salts may not dissolve before swallowing

Measuring Solubility Rate (sec.)

Standard Granulated ↓ 90 sec

Specialty Fine Flake ↓ 28 sec





Specialty salts: Consumer sensory testing

Consumer sensory testing suggests that specialty salt delivers the same flavor as table salt – using **75% less product** and with a **36% reduction in sodium**¹.

Salt Treatments	Amount Used (grams) ²	Sodium (mg) per 100g Fries	Overall flavor ^(3,4)	Overall Liking ^(2,3)
Granulated salt (control)	13.80	234.0	7.4a	7.4a
Specialty fine flake salt (test)	3.43	150.1	7.5a	7.5a

Achieve the **same flavor** with **less sodium**

Reduce salt fall off/waste, likely reducing overall cost/serving

¹ Supplier Sensory Research, 2013

² Per 1.5 lb frozen fries applied post frying

³ 9-point hedonic scale (1= Dislike Extremely, 9= Like Extremely)

⁴ Means followed by different letters are significantly different from each other at $p < 0.05$

Reducing salt with yeast extracts

- Based in cultured dextrose, derived from natural bacterial fermentation processes
- Containing a specific composition of organic acids, peptides and other natural compounds
- Natural flavors designed to:
 - Unlock the natural taste providing a well rounded, mouthfeel, savory enhancement
 - Increase salty perception with minimal flavor contribution
 - Umami enhancement
 - Off notes masking
 - Build and round flavor while maintaining integrity of original food
 - Improve product quality and profitability by enhancing the flavor profile and shelf life of foods

Dosage: 0.1% - 3% by weight of finished product



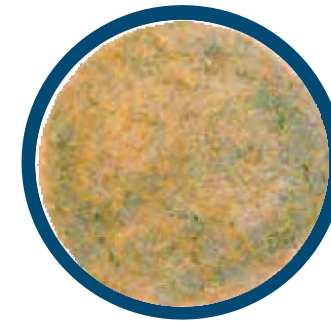
Waste reduction

Examples: encapsulated antimicrobials and leavening systems

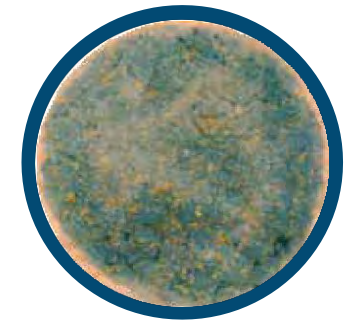
Encapsulated ingredients

Example: Encapsulated acidulants

- Encapsulation helps control the release and maintain ingredient functionality to improve stability and handling characteristics.
- The release of a lipid-coated encapsulate is affected by application factors:
 - Temperature (lipid melts and disperses)
 - Moisture (water migrates inside, substrate leaches out)
 - Force (shear from processing, mastication, etc.)

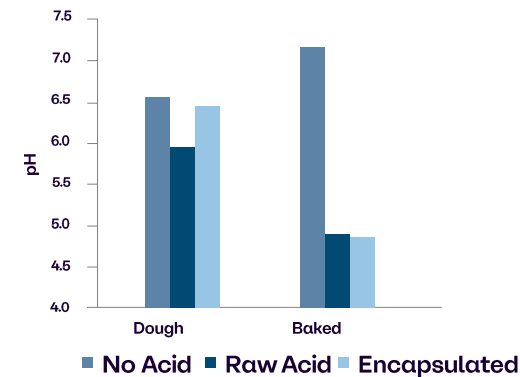


Encapsulated Fumaric Acid



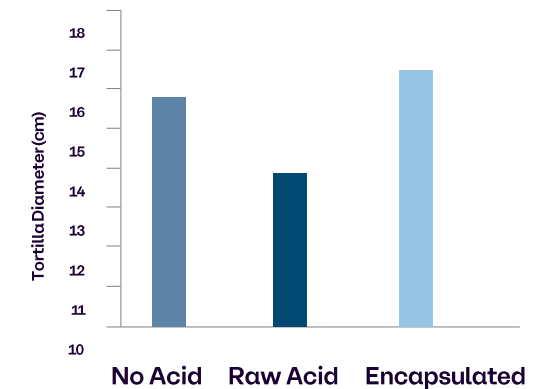
Raw Fumaric Acid

Control pH Development in Tortillas



Tortillas made with encapsulated version maintain pH in the dough protecting leavening performance and increasing opacity.

Impact on Tortilla Diameter



Produce larger tortillas using encapsulated fumaric acid.

Encapsulated acidulants improve product yield and appearance

More consistent
(round) shape



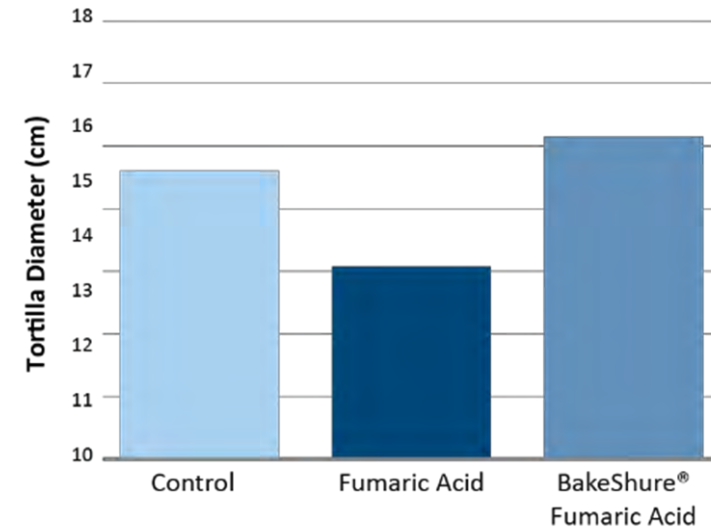
Extensibility (larger diameter)



Reduced translucency



Increased stack height



Encapsulated ingredients

Example: Encapsulated leavening systems

- Encapsulated leavening provides full control of the reaction between sodium bicarbonate and the acidic components within dough and batter, improving baked product yield and appearance.
- Encapsulation extends the viability of frozen dough and increases flexibility in the production of fresh and refrigerated bakery products.



Controls

- Product appearance
- Release of chemical leavening
- Outgassing in finished product packaging



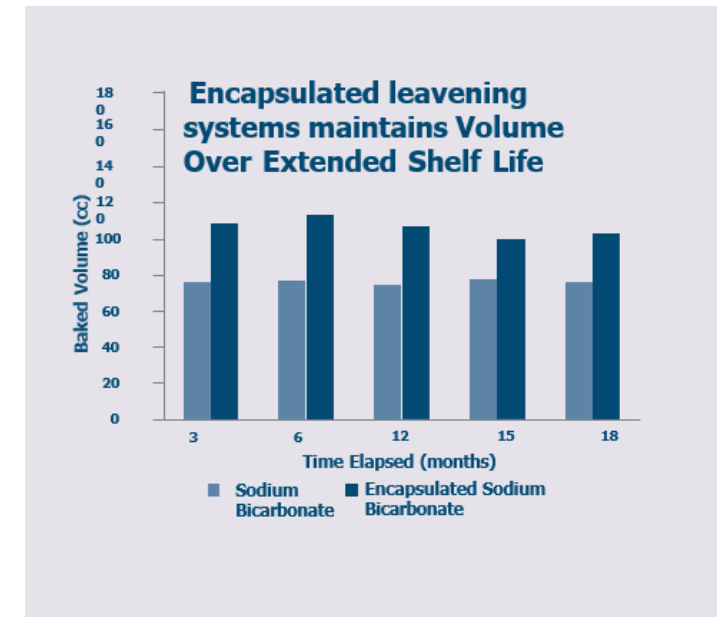
Protects

- Against unwanted interactions
- Leavening performance throughout shelf life
- From freeze thaw abuse



Delivers

- Superior finished product volume
- Improved production flexibility
- New product opportunities
- Extended product shelf life



Overview

- Running a commercial tortilla production involves various challenges, including managing costs, ensuring quality, and meeting customer demands.
- By implementing effective ingredient strategies, you can simplify the process and enhance production efficiency, manage ingredient costs, and promote sustainability.
- There are numerous strategies to directly and indirectly reduce costs:
 - Supply chain management
 - Cost effective ingredients
 - Ingredients usage optimization
 - Waste reduction





Thank you, questions?