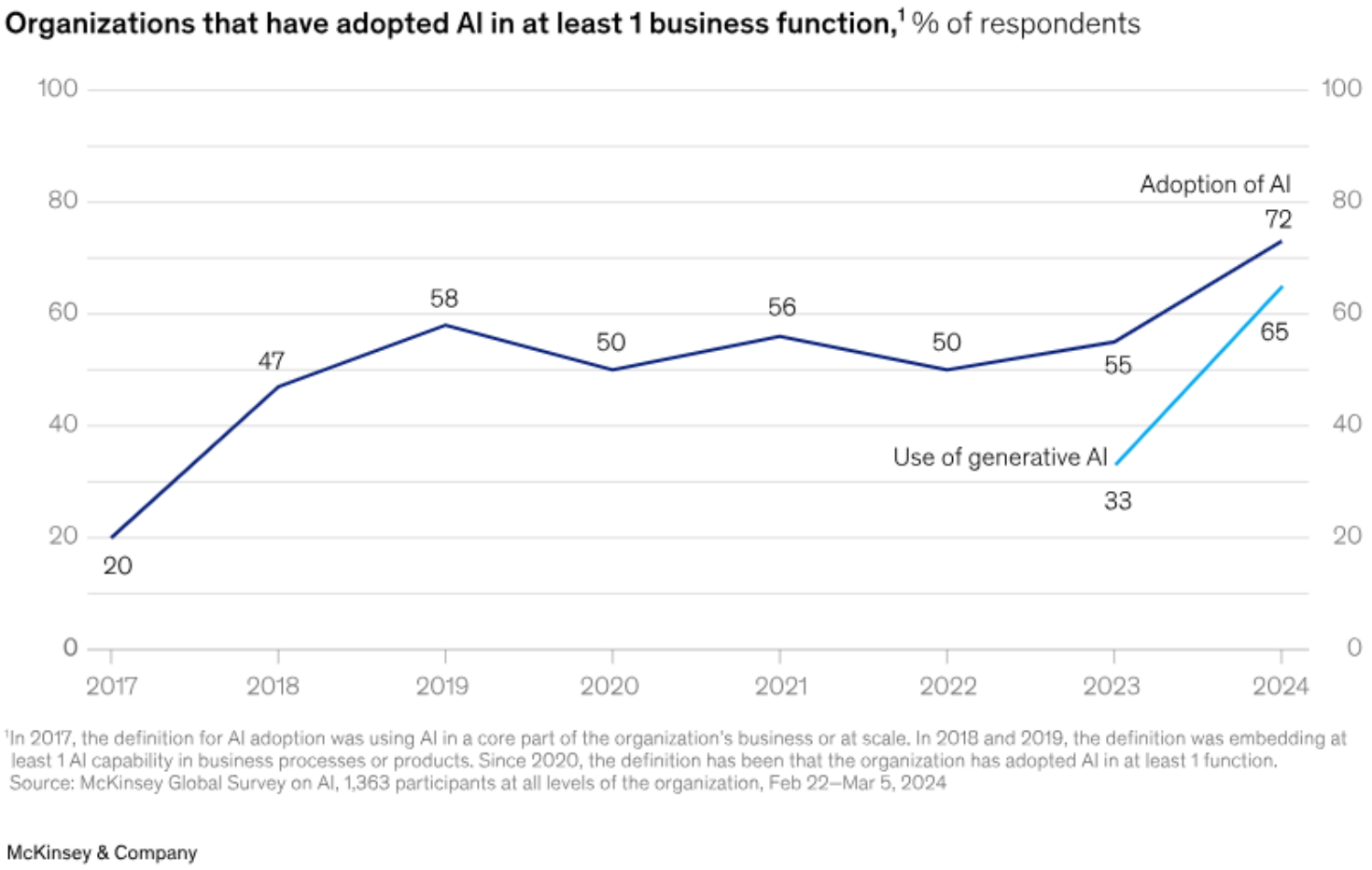
Accelerating Innovation

Leveraging Data-Driven Tools to Propel Growth in Tropicana R&D

September 19, 2024

tropicana
brands group

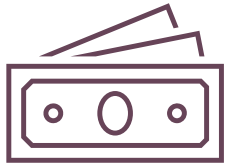
AI adoption worldwide has increased dramatically in the past year, after years of little meaningful change



The state of AI in early 2024: Gen AI adoption spikes and starts to generate value | McKinsey [3]

Advanced data tools (including Gen AI) are driving step-change impacts in Consumer Innovation

Lower Cost



Lowering number of tests, prototypes and hours per project

Faster Speed to Market

Speedier cycles of divergence and convergence with shorter innovation cycles

Better Innovation

Enhancing human creativity and resonance with consumers to launch concepts with higher success rates

There are many potential R&D use cases where advanced analytics can be applied

R&D Capabilities

Concept Development

- Trend Analysis and Competitive Intelligence
- Crowdsourcing and Co-creation

Product Design & Formulation

- Ingredients and Attributes Optimization
- Texture and Mouthfeel Optimization
- Packaging Material Analysis and Selection
- Clean Label Analysis
- Allergen Management and Tracking

Prototype Development

- Attribute Tagging
- Consumer Preference Analysis
- Shelf-life Analysis
- Cross Cultural Sensory Analysis
- Vendor Quality Control
- Pilot Plant Metrics Tracking

Connected Systems

- Product Management System Analytics
- Compliance Tracking and Automation
- Batch Traceability Analysis
- Enhanced Planning and Scheduling

Laboratory Informatics

- Capital Engineering and Quality Tracking
- Process and Energy Efficiency Optimization
- Equipment Performance Monitoring
- Predictive Equipment Maintenance
- Complaint Analysis
- Lab Information Management System (LIMS) Analytics

Build vs. Buy vs. Partnerships?

Some things to consider

Time

Budget

Features

Expertise

Data Sensitivity

Resources

Understanding technical & business challenges we wanted to solve was an important first step for TBG

Technical & Business Priorities

- Juice Blending & Formulation
- Nutrition & Shelf life
- Sugar Reduction in Formulation
- Plastic Usage
- Competitive Intelligence
- Claims
- Technology Roadmap
- Demand Signals
- Concept Development

R&D Pain Points

- External Reporting
- Better collection of available data
- Predicting price and supply
- PLM linkage with ERP & QC Data
- Better utilization of existing data

Disruptive R&D Tools to Accelerate Innovation & Elevate Consumer Experience (ie AI)

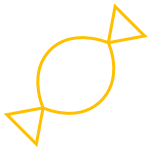
Building out our technology platforms and roadmap was a top priority at TBG, We partnered with Lux Research to create a robust program

- Enhance technical capability building for the company
- Landscape and plan for a pipeline of breakthrough technologies grounded in consumer insights
- Build out a robust external ecosystem and identify strategic partnerships
- Spot new areas of thinking and technology gaps
- Identify future opportunities

Build an innovation roadmap with prioritized technology spaces that tie back to consumer need by understanding why and where that is going

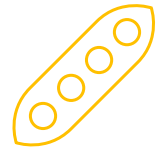
Advantaged and differentiated OJ that delights consumers

Improved nutrition profile and functional benefits



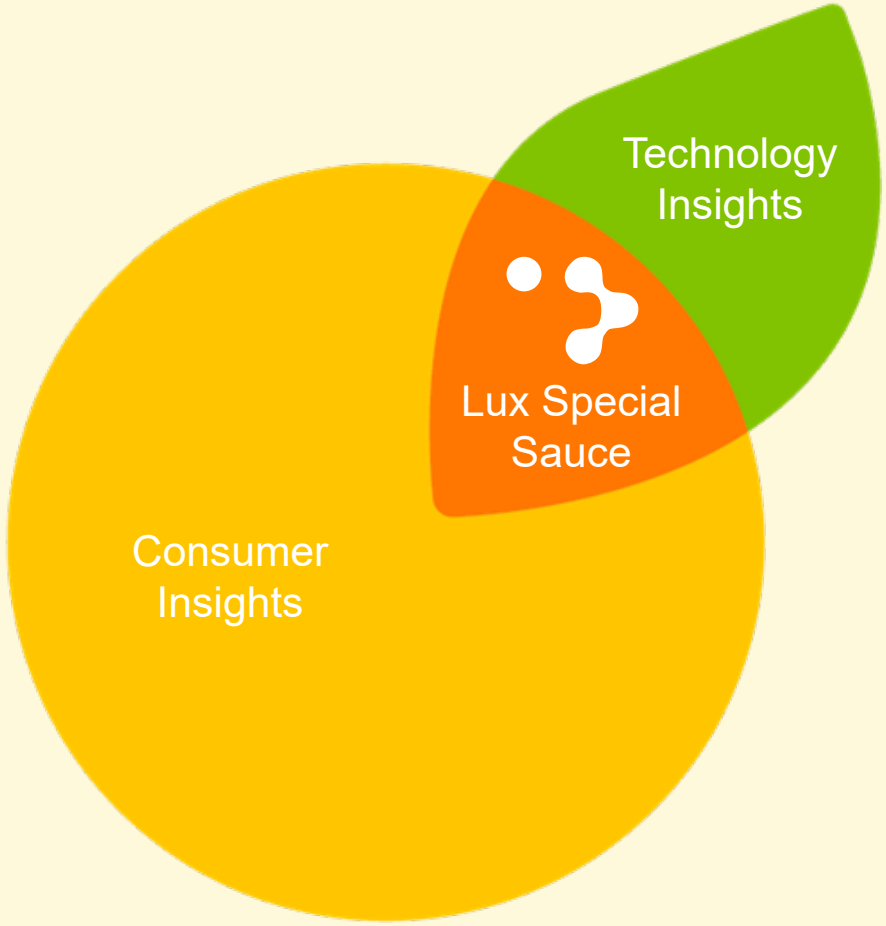
Solutions for **sugar conscious** consumers

Elevate consumer experience through packaging

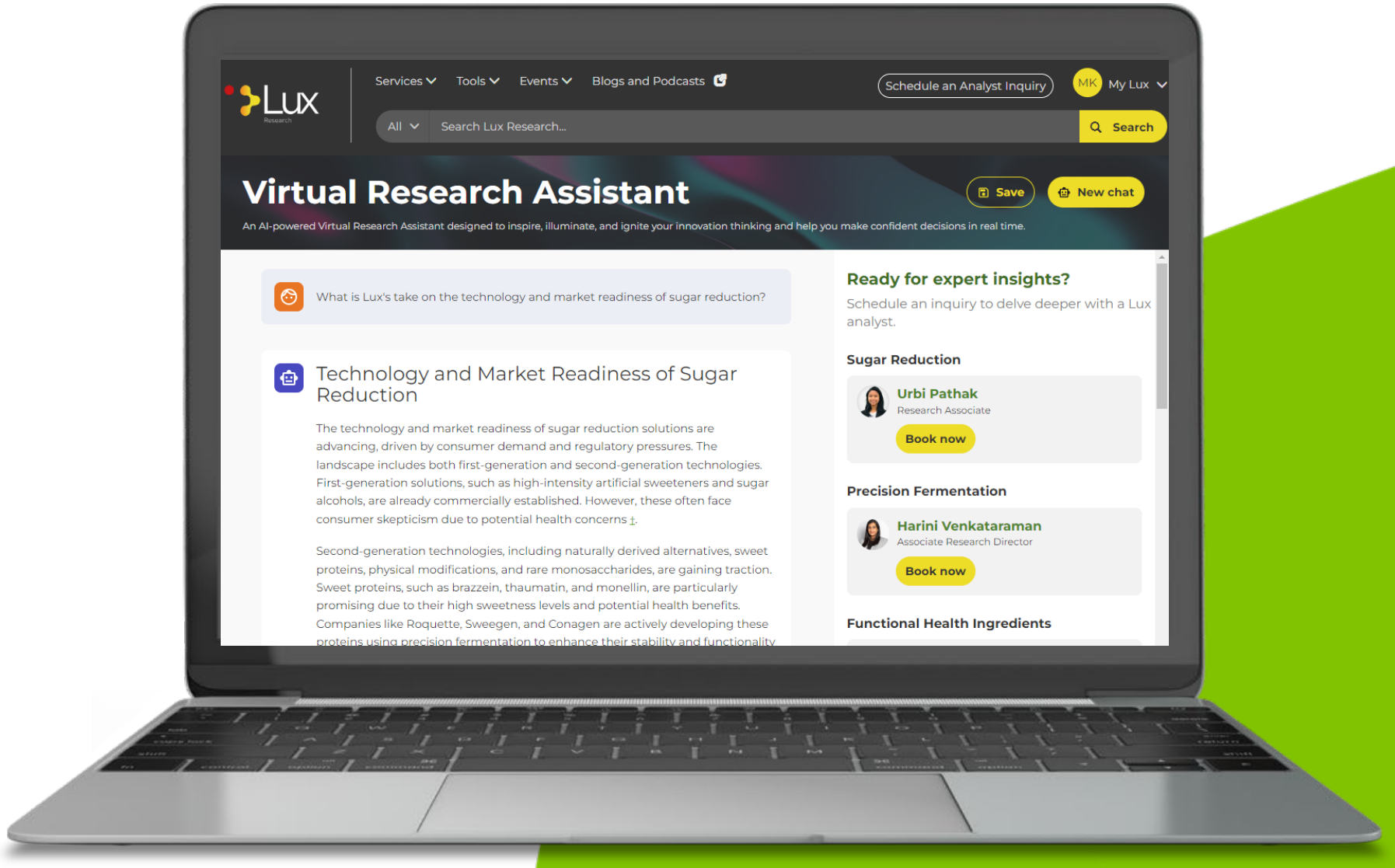


New product forms / categories to expand consumer access to benefits of fruit

Example:
Solutions for Sugar-Conscious Consumer



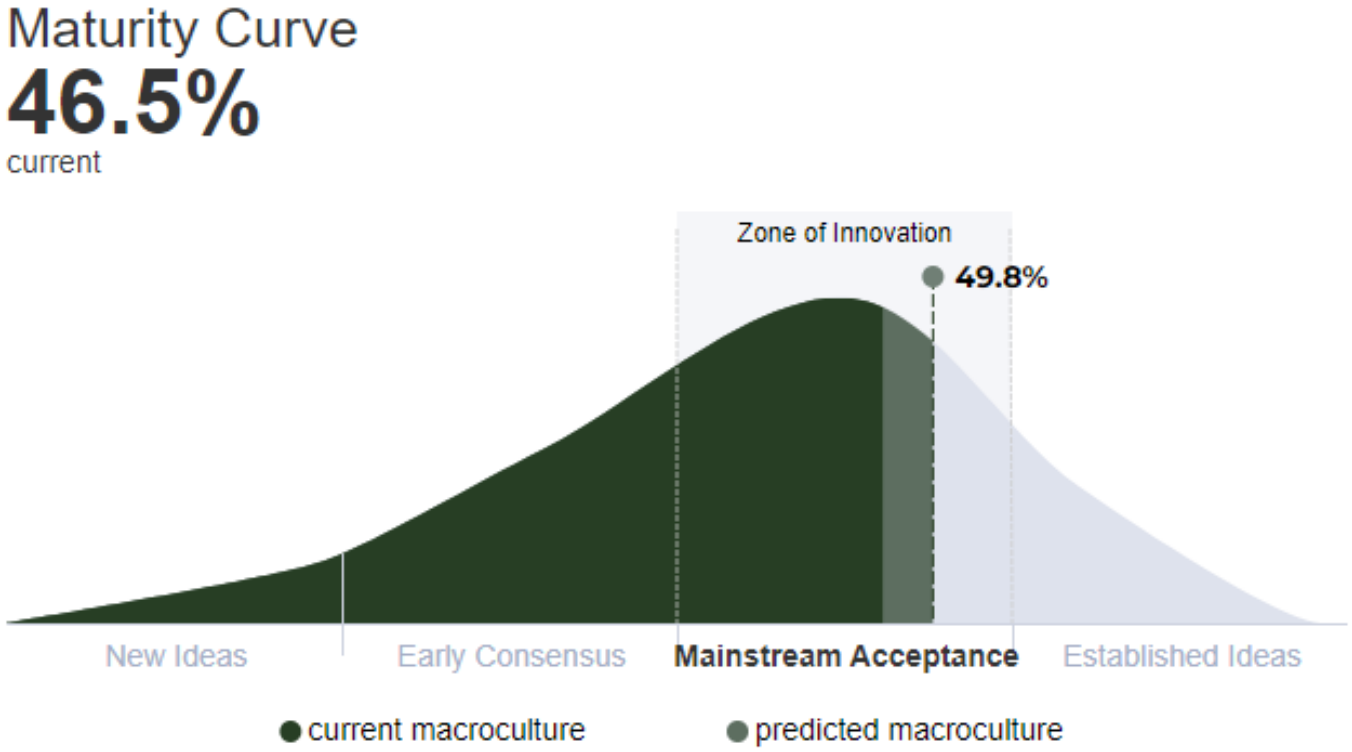
Technology & Consumer Insights Self-Service Platform



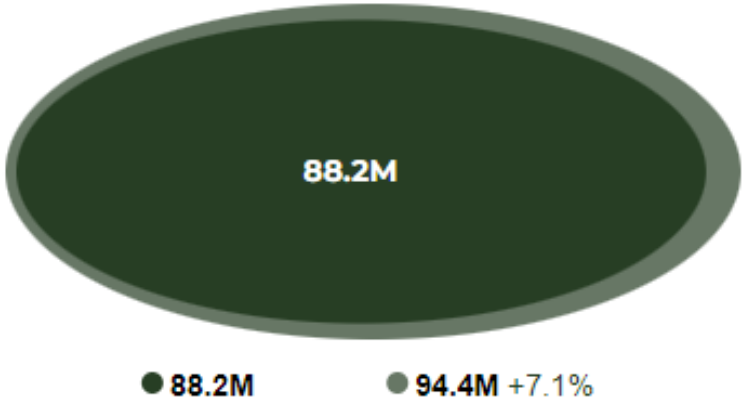
Consumer Insights

Sugar reduction: Lifestyle motivators

macroculture: wellness, low sugar



Population



This topic scores 46.5% on the **maturity curve** and is expected to expand to 49.8% in 12-24 months.

This culture is currently relevant to 88.2M **people** and is expected to grow by 7.1% in 12-24 months.

Sugar reduction: Lifestyle motivators

Theme 1

THEME:

Blood Sugar Management as Lifestyle

UNDERLYING SYMBOLISM:

The continuous balancing act of dietary vigilance

KEY INSIGHT:

For consumers, managing blood sugar isn't just about diet—it's a comprehensive lifestyle choice requiring constant attention and adjustment.

"Monitoring my blood sugar levels has become second nature. It's not just what I eat; it's about maintaining my overall health every day."

Theme 2

THEME:

Low Sugar Juices as Health Allies

UNDERLYING SYMBOLISM:

A quest for balance between pleasure and health

KEY INSIGHT:

Consumers view low sugar juices as vital tools in managing blood sugar and carbs, aligning with their health and dietary goals.

"I switched to low sugar juices to keep my blood sugar stable without giving up the joy of my favorite drinks. It's about finding that balance."

Theme 3

THEME:

Sugar Content Consciousness

UNDERLYING SYMBOLISM:

The search for transparency and control in diet

KEY INSIGHT:

Consumers demand clear labeling of sugar content, seeking empowerment in their choices to navigate the landscape of healthy eating.

"I scrutinize every label for sugar content. It's not just about avoiding sugar, it's about knowing exactly what I'm consuming and making informed choices."

Technology Insights

Sugar reduction: Technology insights

High-Intensity Artificial	Processing-based methods	Naturally Derived	Sweet Proteins	Physical Modification	Rare Sugars	Sugar Alcohols
• Aspartame • Sucralose • Acesulfame-K	• Enzymatic reduction • Non-enzymatic reduction • Precision fermentation • Enzyme modification • Membrane filtration • Gene edited fruit juice	• Fermentation-derived stevia • Mogroside V • Stevia • Monk fruit • Novel natural sweeteners	• Thaumatin • Brazzein • Monelin • Curculin • Mabinlin • Miraculin • Pentadin	• Hollow sugar crystals • Carrier molecules	• Tagatose • Allulose	• Erythritol • Xylitol • Sorbitol

Ingredient tools & technologies Focus areas

Fermentation-derived stevia and sweet proteins show recent developments

Lux Research | SUGAR REDUCTION

1 RARE SUGARS

From top to bottom: Corporates, SMEs, research institutes

CJ CheilJedang | General Mills | Ingredion | samyang Corporation | &
AmbrosiaBio | bonumose | RESUGAR | SAVANNA | KAGAWA UNIVERSITY

2 SWEET PROTEINS

From top to bottom: Corporates, SMEs, research institutes

Givaudan | PEPSICO | ROQUETTE | Coca-Cola | Amai Proteins
BIOFECT INNOVATIONS | B·R·A·I·N | CONAGEN | Lifeasible | NOMAD
Oobli | Sweegen | AB | CATAS |

3 PHYSICAL MODIFICATION

From top to bottom: Corporates, SMEs, research institutes

Nestlé | U | incredo | O'Taste

4 MEMBRANE FILTRATION

From top to bottom: Corporates, SMEs, research institutes

AQUAPORIN | Coca-Cola | DANONE | MANN+HUMMEL | Mondelēz International
Nestlé | SiccaDania | Better Juice | Bluefree | WAGENINGEN

5 MOGROSIDE

From top to bottom: Corporates, SMEs, research institutes

ANDERSON | HC HUACHENGBIO | Hunan NutraMax 绿 蔓 生 物 | layn Natural Ingredients | elo LIFE SYSTEMS
Natural Taste International Inc. | OptBiotix | 江南大学 JIANGNAN UNIVERSITY

6 STEVIOL GLYCOSIDES

From top to bottom: Corporates, SMEs, research institutes

ADM | AJINOMOTO | bayn solutions | Cargill | howtian
Ingredion | DSM | TATE & LYLE | Coca-Cola
CONAGEN | MANUSBIO | Sweegen | university of groningen |

7 ENZYMES

From top to bottom: Corporates, SMEs, research institutes

iff | ABM Enzymes | DSM | Nestlé | novonesis
Better Juice | ZYA | WYSS INSTITUTE

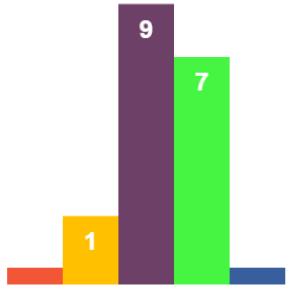
Sugar reduction: Technology landscape

Lux Take legend:

- Strong Positive
- Positive
- Wait and See
- Caution
- Strong Caution

Size of each circle corresponds to firm's relative maturity.

Lux Take trends:



Prompts are critical

Consumer Insights

- Why do consumers ***care about*** [product or category]?
- What do consumers ***expect from*** [product or category]?
- What do consumers ***dislike about*** [product or category]?
- What do consumers ***love about*** [product or category]?
- How do consumers see sustainability regarding [product or category]?

Technology Insights

- What is Lux's take on the technology and market readiness of…sweet proteins?
- How do physical separation methods compete with sugar alternatives in fruit juice?
- What is the current state of [technology] and who are the leading players across this ecosystem?
- How do [product or category] technologies stack up on commercialization?
- How can [technology] help with expediting R&D timelines?

This is a journey!

- Take the time to identify your key priorities.
- Identify the right skill sets to build into your organization.
- Not all data are created equal! (Solid data infrastructure & governance is key!)
- Dream big, but start small!
- AI can be transformative to how you see and use data.
- Developing partnerships with established leaders in the space can enable faster impacts.