



# **Consumer trends are impacting the way we develop & produce Food**

**24/09/2025**

# Nourishing the world in a safe, responsible and sustainable way

Cargill is a family company committed to providing food, ingredients, agricultural solutions and industrial products to nourish the world in a safe, responsible and sustainable way.

We sit at the heart of the agricultural supply chain, partnering with producers and customers to source, make and deliver products that are vital for living.



# We are...



**155K+**

Employees



**70**

Countries



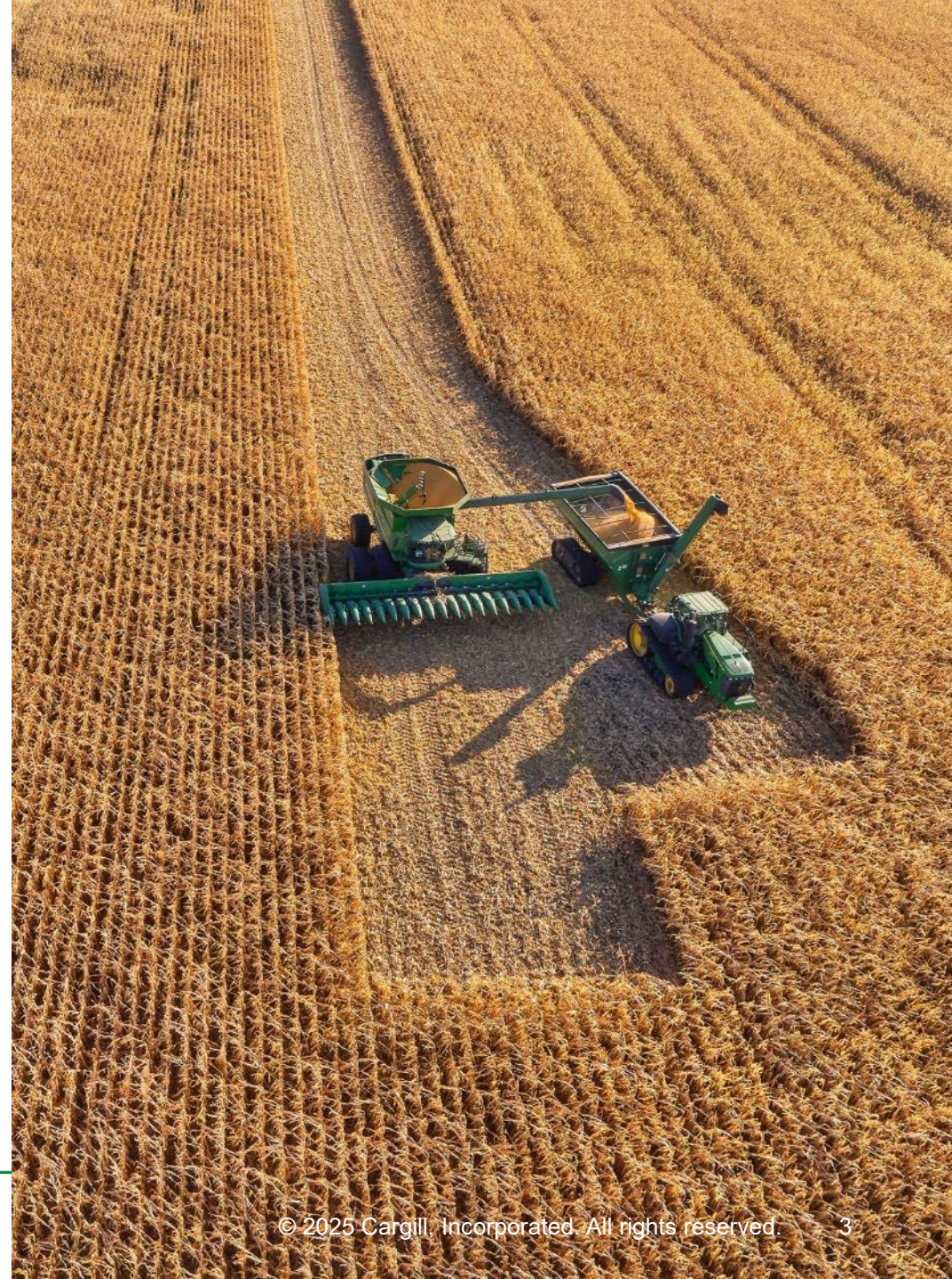
**125**

Markets



**160**

Years old



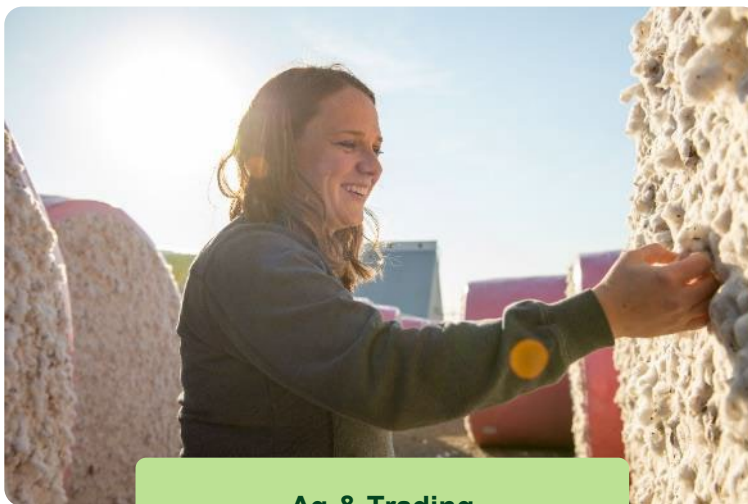
# Our enterprises: Sourcing, making and delivering vital products



Food

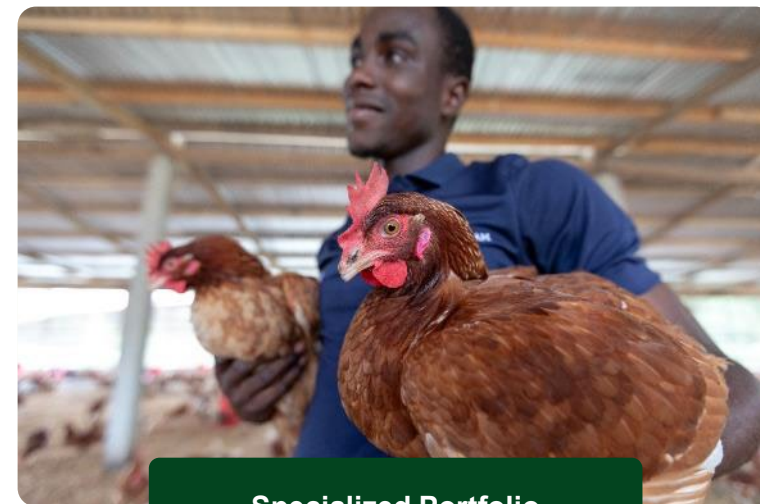
Providing manufacturers, foodservice customers, retailers and consumers with protein products and a range of ingredients and solutions.

We provide innovative ingredients to branded products such as meat, egg, alternative protein, salt, oils, starches, cocoa and sweeteners that customers need to deliver the food and drinks people want.



Ag & Trading

Connecting farmers and users of grains and oilseeds through sourcing, processing and distribution while providing trading and risk management solutions.



Specialized Portfolio

Serving diverse businesses serving unique customers or markets, including animal nutrition and health, bioindustrial, deicing solutions, and Cargill joint ventures.

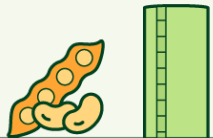
# How we source, make and deliver goods that are vital for living

## Source and trade

Partner with farmers and ranchers growing crops and raising animals.



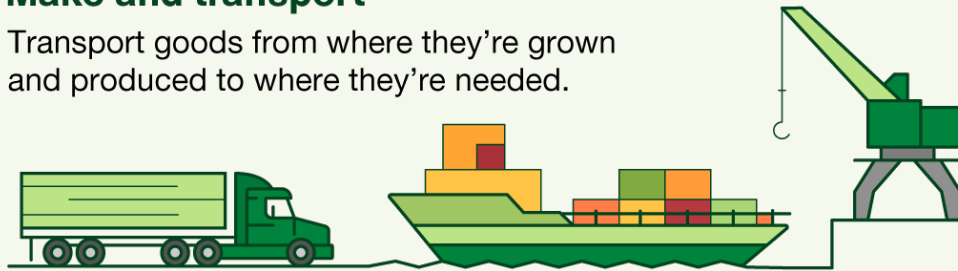
Originate, source, store and trade commodities.



Provide global insights and risk management solutions.

## Make and transport

Transport goods from where they're grown and produced to where they're needed.



Craft meat, egg and alternative protein products, and salt, oils, starches, cocoa and sweeteners.



Formulate feed to support animal health and productivity.



Create nature-derived, bio-based products and biofuels.

## Deliver for customers



Sell food products and ingredients, agricultural solutions and bio-based industrial products to manufacturers, farmers and ranchers, foodservice customers, retailers and consumers—to nourish the world in a safe, responsible and sustainable way.

# Consumers are influencing the production & processing of food

(although often they are not aware about it)



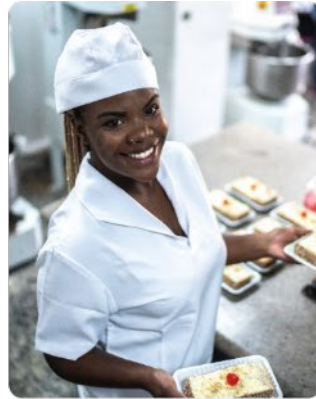
## Farmers and ranchers

- Crop farmers
- Livestock producers
- Aquaculture farmers
- Distributors



## Manufacturers

- Food and beverage
- Feed and pet food
- Industrial
- Cosmetics
- Pharmaceutical



## Foodservice

- Chain restaurants
- Independent restaurants
- Distributors
- Non-commercial operators



## Retailers

- Grocery store
- Industrial retailers
- Distributors and buying groups
- Small independents
- Online retailers



## Consumers

Cargill makes products that touch billions of consumers' lives every day—from food to fibers to flooring.

## Consumer trends

- **Affordable & cost competitive (balance vs other expenses)**
- **Demand for personalization, clean labels and sustainability as a design principle.**
- **Rise of home-based food technology, e.g. food-processors, food-printing, ...**
- **Shift towards transparency, ethical sourcing, and immersive experiences.**
- **Agile systems and consumer feedback integration**
- **Co-innovation across sectors**

**The whole supply chain will have to adapt their ways-of-working to deliver on those expectations.**

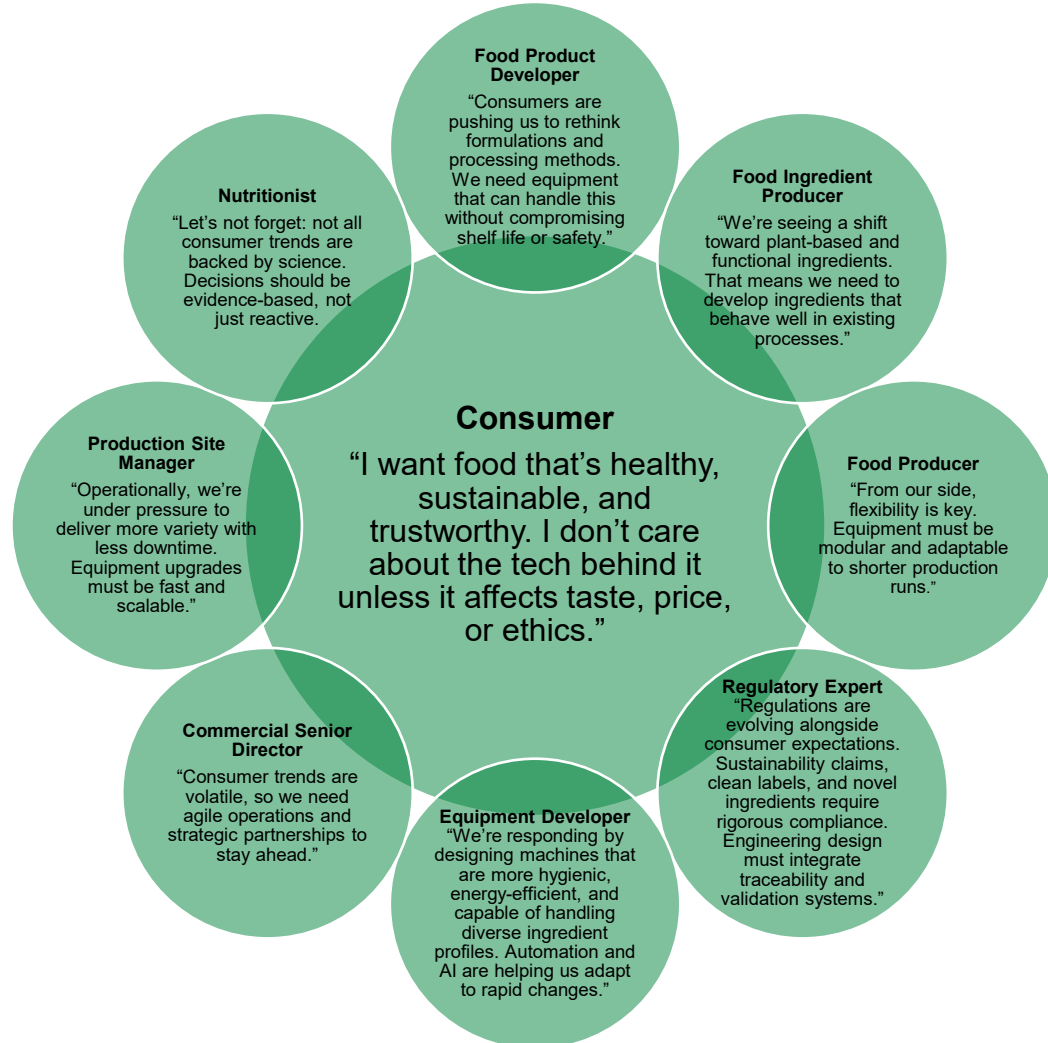
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# Technical Innovations are critical to be successful

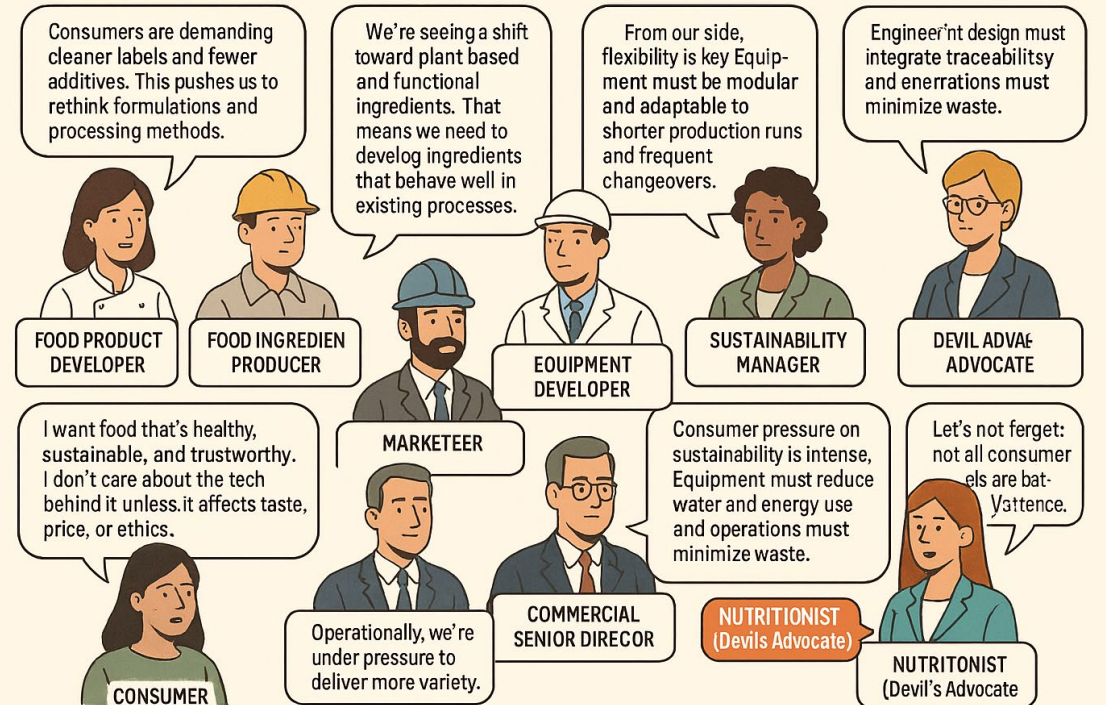
(it's a marathon not a sprint)

FROM

TO



## CONSUMER TRENDS: THEIR IMPACT ON FOOD PROCESSING

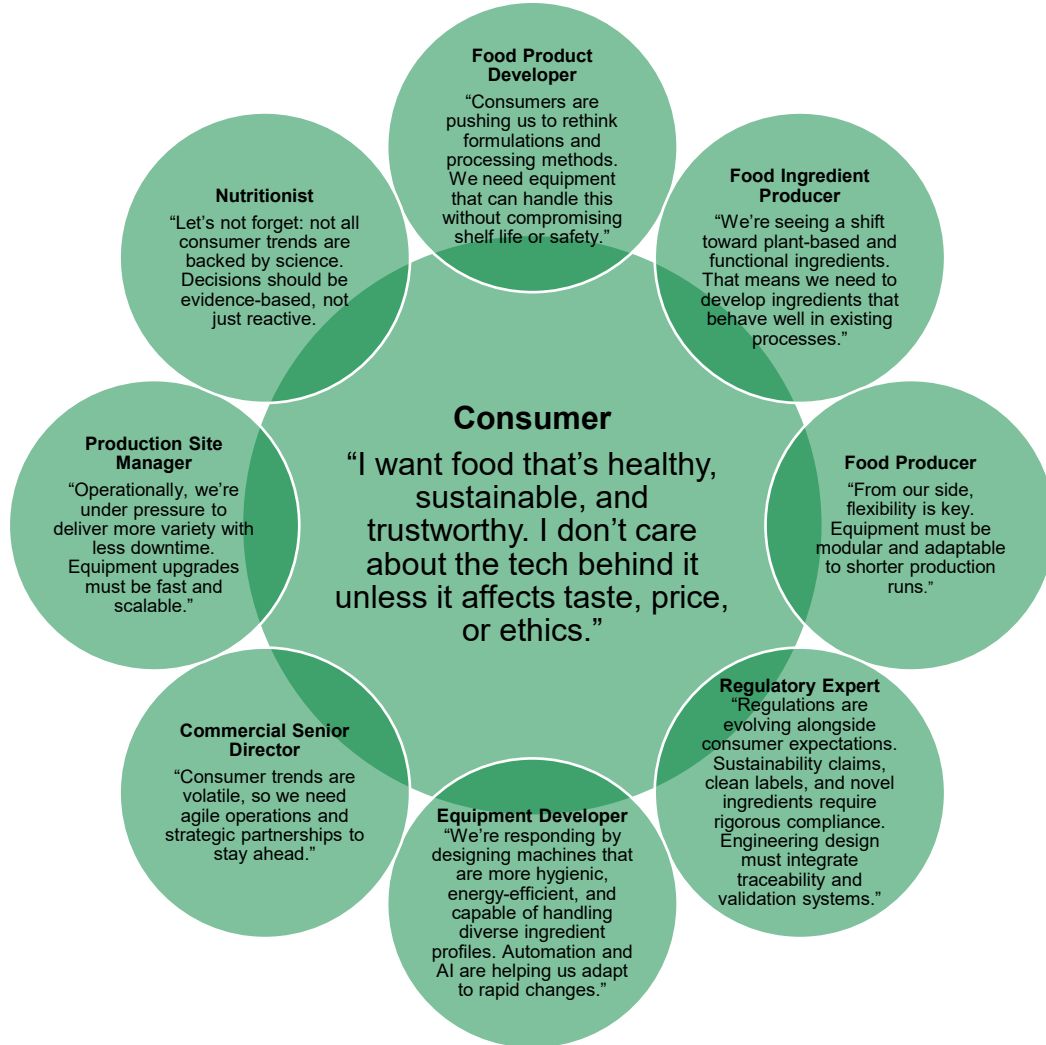


Co-created with Microsoft Copilot™  
(but not good enough yet)

# Technical Innovations are critical to be successful

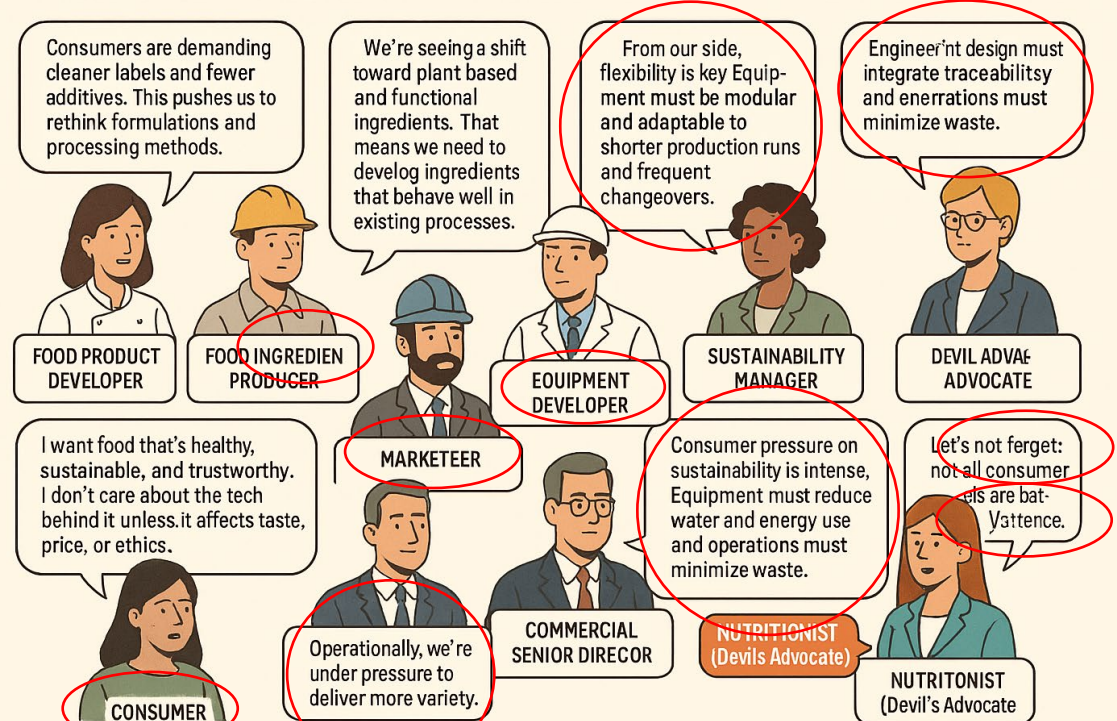
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FROM



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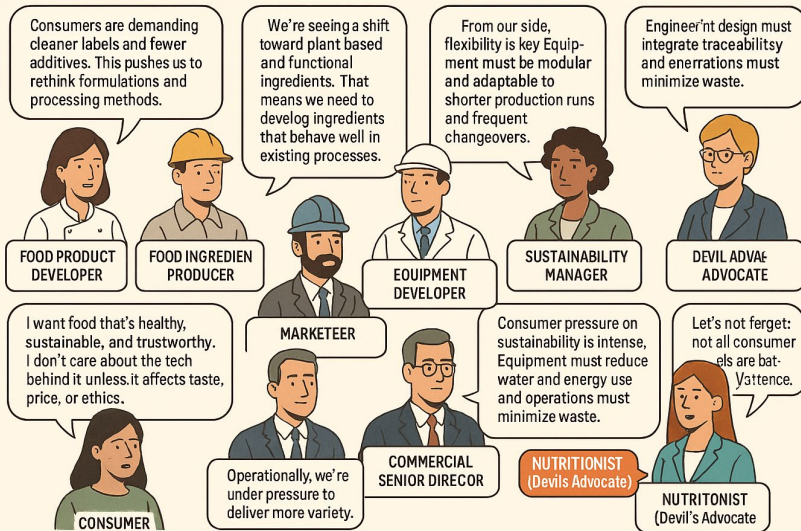


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# Technical Innovations are critical to be successful

(it's a marathon not a sprint)

## CONSUMER TRENDS: THEIR IMPACT ON FOOD PROCESSING



## What does this practically mean?

- Sustainability, label friendly and minimal processing drive innovation.
- Consumer values shape operations and product design.
- Consumer food preparation habits will change the supply chain
- Flexibility & modularity in equipment is essential.
- Regulatory alignment is critical to avoid risk.
- Evidence-based decisions must balance trend responsiveness.

# Technical Innovations are critical to be successful

## (daily operations)

The shift in consumer behavior—toward **personalized nutrition**, **home-based food tech** (e.g., 3D printing, smart cookers),...—can have profound implications. How these trends impact **food producers**, **food ingredient producers** and **raw material, equipment and supply chain suppliers**?

### Food (ingredient) Producers & Distributors (B2B & B2C)

- **Shift Toward Functional & Printable Formats**
  - **Ingredients will be engineered for compatibility** with home devices (
  - Production equipment will need to handle **precise rheology control** (viscosity, flowability).
  - **Microencapsulation**, **emulsification**, and **gelation technologies** will become central.
- **Modular & Customizable Ingredient Systems**
  - Equipment will produce **base ingredients** that can be customized post-production (e.g., flavor pods,).
  - **Batch flexibility** will be critical—smaller runs, more SKUs, and rapid changeovers.
- **Enhanced Safety & Shelf Stability**
  - As ingredients are stored and used at home, production must ensure **long shelf life**..
  - Equipment will integrate **advanced drying**, **freeze-drying**, and **preservation technologies**.
- **Smart Packaging Integration**
  - Equipment will need to support **traceability**, **authentication**, and **digital instructions** embedded in packaging.
- **Data-Driven Ingredient Design**

### Strategic Opportunities

**Co-innovation with food brands** to develop ingredient-compatible devices.

**Expansion into consumer tech** and smart kitchen ecosystems.

**R&D in novel processing technologies** (e.g., cold extrusion, ultrasonic mixing, AI-driven control systems).

### Raw Material, Equipment & Supply Chain (Suppliers)

- **New Design Paradigms.**
  - **Miniaturization & Modularity** for decentralized production.
  - **Precision Engineering** to handle highly specific ingredient with tight tolerances.
- **Integration with Digital Ecosystems**
  - Equipment will need to be **IoT-enabled**; **software-hardware co-development** becomes essential
- **Flexible Manufacturing Systems**
  - Accommodate **high-mix, low volume** manufacturing.
  - **Rapid prototyping** and **agile engineering** will be needed to keep pace with fast-changing trends.
- **New Compliance & Safety Standards**
  - **regulatory requirements** for food safety in decentralized and home-based contexts.
  - **Built-in safety features**, traceability, and hygiene protocols will be critical.
  - **Remote diagnostics**, **predictive maintenance**, and **user training platforms**
- **Service & Support Transformation**

# Technical Innovations are critical to be successful (sustainability)

Traditional B2B models will expand to include **B2C** and **prosumer** markets (e.g., home chefs, nutrition enthusiasts).

Food & food ingredient producers will need to adapt to a diverse customer segmentation.

What is differentiating each customer segment?

## Food Producers (Bulk Volumes)

- **Key Needs:**
  - **Consistency, cost-efficiency, scalability**
  - Ingredients tailored for **industrial processing** (e.g., thermal stability, flow properties)
- **Implications for Production**
  - Maintain **high-throughput lines** with robust quality control.
  - Invest in **automation, inline monitoring, and predictive maintenance.**
  - Offer **customized ingredient specs** for different processing technologies (e.g., extrusion, fermentation)

## Retailers & Distributors (Mid-Sized Packs & bulk)

- **Key Needs:**
  - **Shelf-stable, consumer-friendly** formats (e.g., powders, concentrates, ready-to-mix)
  - **Branding, traceability, and clean labeling**
- **Implications for Production**
  - Add **flexible packaging lines** for different formats and sizes.
  - Integrate **smart labeling** (e.g., QR codes for origin, usage, sustainability)
  - Ensure **regulatory compliance** across multiple markets

## Consumers (Small Packs, Direct-to-Device)

- **Key Needs:**
  - **Personalization, convenience, and printability** (for 3D food printing or smart kitchen devices)
  - **Nutritional transparency and interactive experiences**
- **Implications for Production**
  - Develop **modular ingredient systems** (e.g., cartridges, pods, sachets)
  - Use **precision dosing, microencapsulation, and AI-driven formulation**
  - Ensure **food safety** for home storage and use (e.g., ambient-stable, tamper-proof)

### Strategic Opportunities

Cross-Segment Strategies Recommended by the Panel

Segmented production lines or co-manufacturing models to serve different markets without compromising efficiency

Digital twin and traceability systems to track ingredients from bulk to consumer

Sustainability integration across all formats (e.g., recyclable packaging, low-impact processing)

Data-driven product development using feedback from all customer types

# Technical Innovations are critical to be successful (sustainability)

**Energy efficiency** and **waste reduction** are critical drivers of innovation across the entire food value chain.  
How these trends impact **food producers**, **food ingredient producers** and **raw material, equipment and supply chain suppliers**?

## Food Producers & Distributors (Customers)

- **Facility-Level Optimization:**
  - Equipment will be selected based on **energy modeling, carbon reduction targets, and waste audits**
  - **On-site renewable energy integration** (e.g., solar-powered processing units) will influence equipment specs.
- **Circular Production Models**
  - Equipment must enable **reuse of process water, recovery of heat, and recycling of packaging materials**.
- **Agile systems** that reduce overproduction and allow for just-in-time manufacturing will reduce food waste.

## Food Ingredient Producers (Cargill)

- **Process Efficiency:**
  - Shift toward **low-energy processing methods** (e.g., cold extrusion, enzymatic treatments).
  - Adoption of **closed-loop systems** for water and heat recovery.
- **Waste Valorization:**
  - Equipment will support **by-product recovery** (e.g., fiber, protein, polyphenols) for secondary markets.
  - **Zero-waste production lines** will become a competitive advantage.
- **Sustainable Packaging Integration:**
  - Equipment that supports **recyclable, refillable, or biodegradable packaging** formats as well as recycling of packaging materials

## Raw Material, Equipment & Supply Chain (Suppliers)

- **Design & Engineering Shifts**
  - **Energy-efficient motors, heat recovery systems, and low-friction components** will become standard.
  - Equipment will be designed for **minimal water use, shorter cleaning cycles, and optimized thermal profiles**.
- **Sustainability as a Core Requirement**
  - Clients will demand **carbon footprint data and lifecycle assessments** for equipment.
  - Suppliers will need to offer **modular upgrades** to extend equipment life and reduce replacement waste.
- **Smart Monitoring & Optimization**
  - Integration of **IoT sensors and AI analytics** to track energy use and waste in real time.
  - Predictive maintenance will reduce downtime and resource waste.

### Strategic Opportunities

**Sustainability is no longer optional—it's a design principle.**

Equipment suppliers must **co-innovate** with producers to meet ESG goals.

**Data transparency and cross-sector collaboration** will be key to scaling energy and waste innovations.

