Changing regulations are changing consumption
Consumer landscape

• Seeking H&W
  • Roughly six in 10 make an effort to consume fiber, whole grains & protein
  • (2013 IFIC Food & Health Survey)

1. Whole Grain nutrition
2. Increased fiber (delivered through whole grains/whole wheat)
3. Clean Label

“Whole Wheat Flour” vs.
“Enriched Wheat Flour (Flour, Niacin, Reduced Iron, Thiamine Mononitrate [Vitamin B1], Riboflavin [Vitamin b2], Folic Acid)

• Blasted by negative messages
  • Grain-based foods increasingly receiving negative coverage
OUR VISION:
Ardent Mills is the TRUSTED partner in nurturing our customers, consumers and communities through innovative and nutritious grain-based solutions.

OUR VALUES:
We will make a positive impact with our employees, customers, communities and partners by:

• Working to earn TRUST every day, always operating with reliability and integrity.
• SERVING others with understanding, respect and care.
• Operating with SIMPLICITY, clarity and transparency, removing barriers and letting people do what they do best.
• Ensuring the SAFETY of our products and people; doing what’s best to create the safest environment now and for the future.

ENHANCING THE QUALITY OF LIFE AND STANDARD OF HEALTH
Why Sprouted Grains?

Sprouting Makes Grains Come To Life

Sprouts

Life

Strong Conceptual and Aesthetic Overlap

- Plants
- Green
- Water
- Blue
- Soil
- Hands
- Sun
- Activity / Movement
- Growth (physical and personal)
Top Sprouted Grains in New Products in the U.S. 2004 - 2014

Source: Innova Database
Top Sprouted Grains used by Category between 2004 and 2014

Source: Innova Database
Do & Don’t List

✔ Sprouted Grains
  − Baking/Cooking Applications
  − Not for Brewing Applications

x Grain Sprouts
Sprouted Grain Definition

- Wikipedia / Dictionary
- No regulated definition of “sprouted grain”
- Essential Eating Sprouted Foods: ½ original FN
- AACCI: "Malted or sprouted grains containing all of the original bran, germ, and endosperm shall be considered whole grains as long as sprout growth does not exceed kernel length and nutrient values have not diminished. These grains should be labeled as malted or sprouted whole grain."
Grain Sprouting Process

• Steeping
  *Impacts*: Nutrient Profile & Enzyme Activity
  *By varying*: Temperature, stages, length, pH

  **Opportunity**
  reduce Phytate

• Germination
  *Impacts*: Modification (physiological and biochemical)
  *By varying*: Temperature, stages, length, pH, Aeration

  **Opportunity**
  increase sugars & nutrients

• Kilning
  - *Impacts*: Aroma, flavor, texture, color, enzyme
  - *By varying*: temperature, length, aeration

  **Opportunity**
  Increased nutty character or sweetness
Ardent Mills Sprouted White Spring Whole Wheat

Success Criteria

1. Wheat Moisture
2. WW Flour FN
3. Wheat Kernel Stabilization
4. No Gluten Protein Damage
5. Micro Control – GMPs

100% Whole Wheat / 100% Sprouted / WW Bread Applications / Better Taste / Better Baking Performance
Ardent Mills Sprouted White Spring WWF

**SPROUTED**
WHITE SPRING WHOLE WHEAT FLOUR

Better volume, less proofing and greater stability

Control WWF
Sprouted WWF

0% Vital Wheat Gluten
3% Vital Wheat Gluten

Vital Wheat Gluten in Unsprouted
Vital Wheat Gluten in Sprouted

Sprouted w/o Malt  Control w/ Malt  Control 2X Malt

3%  0%
3%  0%
The overall finished bake loaf of the 100% sprouted flour in volume, texture and tolerance was superior to the stoneground baked loaf. Blended with standard bakers flour, texture and volume was improved.
Ardent Mills Sprouted White Spring WWF

FLOUR color (Whiteness L* Values)

BREAD CRUMB color (Whiteness L* Values)
Ardent Mills Sprouted White Spring WWF

Consumer CLT Results (n=99)

Bitter Taste Levels in the Crust

- 100% White Whole Wheat
- Commercial Sprouted WW
- 100% Sprouted White WW

Intensity of Aftertaste of the Crust

- 100% White Whole Wheat
- Commercial Sprouted WW
- 100% Sprouted White WW
Ardent Mills Sprouted White Spring WWF
Sprouting of Wheat & Pulses Improves Nutrient, Flavor, Color and Taste …

**WHEAT FLOUR:** Effect of 4 days of germination on Thiamin (B1)

100% wheat flour (Control) – left;
100% sprouted wheat flour with light kilning – middle
100% sprouted wheat flour with heavy kilning – right
Pros and Cons

✓ Pros/Goals
  1) Market Trends/H&W Halo
  2) Better Sensory/Acceptance
  3) Increased Nutrients
  4) Decreased Anti-nutrients
  5) Better Baking Performance

✓ Cons/Risk
  - Food Safety
  - FDA: Guidance for Industry: Reducing Microbial Food Safety Hazards For Sprouted Seeds
    Contains Nonbinding Recommendations
    October 27, 1999
    http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/ProducePlantProducts/ucm120244.htm
Reduce Risk - Sprout Safety Alliance (SSA)

- Working with the public-private Sprout Safety Alliance could carve out a niche for purity processing in the sprout world.

A public-private alliance to develop a core curriculum, training and outreach programs for stakeholders in the sprout production community to enhance the industry's understanding and implementation of best practices for improving sprout safety...
A new company.
A great new era for grain.