A Food Scientist’s Approach to Working with Organics

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October 29-30, 2013
Overview

• Background
  - Country Choice Organic
  - Natural and Organic Market

• What is Organic?
  - Regulatory
  - Consumer
  - Certification
  - Competitive

• Product Development Tool Box– Strategies for success!
Our Products
What defines us, affects our formulas

Real.Simple.

Easy to eat organic

Taste great

Best organic ingredients

Familiar
MARKET CATEGORIES:

- **NATURAL**
  - Government – USDA, FDA
  - Company defined (food and retailers)

- **ORGANIC**
  - Government – USDA

- **HEALTH(Y) FOODS**

- **SUPPLEMENTS**
Organic Consumers

Two targets...A wide spectrum of behaviors

**True Natural**
- Faith-based belief system
- Committed to organic
- Prioritize health and environment over price, convenience, taste
- <10% of households

**Health Seeker**
- Fact-based decision maker
- Committed to personal/family well-being
- Not willing to sacrifice taste or convenience for health benefit
- 20-25% of households
Growth Drivers

- Awareness of the link between nutrition and health
- Avoidance of Pesticides, Herbicides, GMOs, Trans Fat
  - Media attention on contaminants in conventional foods
- Environmental Concerns/Interest in Sustainability
- Culinary Interest/Taste
- Mainstreaming of Organics
  - Improved product quality
  - Increased availability
  - Increased consumer awareness
  - Competitive retail price points – Organic vs Natural
  - USDA Certification standards
CONSUMER DRIVEN FARMER POWERED
ORGANIC Food and Farming. Growing America’s Diverse Economy.

IN 2012 U.S. CONSUMER SALES OF ORGANIC PRODUCTS REACHED $35 BILLION.

$3.5 BILLION GENERATED BY CERTIFIED ORGANIC GROWERS IN FARM-GATE SALES IN 2011.

FOURTH IN U.S. FOOD/FEED CROP PRODUCTION AT FARM-GATE VALUES.

81% OF U.S. FAMILIES ARE BUYING ORGANIC.

16% OF THE ORGANIC MARKET IS DAIRY.

APPLE EXPORTS TRIPLED IN 2012.

17,750 ORGANIC FARMS, RANCHES, AND BUSINESSES IN THE UNITED STATES.

MORE THAN A HALF MILLION AMERICAN JOBS.

ORGANIC FOOD AND FARMING GENERATES ORGANIC MORE THAN $2.5 BILLION ORGANIC NON-FOOD MARKET.

FIBER PRODUCTS, SUCH AS CLOTHING, LINENS, AND MATTRESSES, ACCOUNT FOR THE LARGEST SHARE OF THE $2.5 BILLION ORGANIC NON-FOOD MARKET.

42% OF PARENTS REPORT THEIR TRUST IN THE USDA ORGANIC SEAL HAS INCREASED.

USDA ORGANIC

OVER 10% OF ALL FRUIT AND VEGETABLES SOLD TO U.S. CONSUMERS ARE ORGANIC.

TWO U.S. ORGANIC EQUIVALENCY ARRANGEMENTS WITH CANADA AND THE EU EXPAND GLOBAL MARKETS.

IN 2012, THE ORGANIC INDUSTRY GREW BY 8 PERCENT.

30% OF PARENTS BUY ORGANIC TO AVOID TOXIC PESTICIDES AND FERTILIZERS.

Organic is an important part of the diverse U.S. agricultural landscape. The Organic Trade Association represents over 6,500 farmers, ranchers, handlers, processors, distributors, and retailers across the organic supply chain. Learn more at OTA.COM.
Organic ....... Clean Label

89% of seasoned organic shoppers visit 2 or more stores per week.

97% of organic buyers purchased organic fruits and vegetables in the past 6 months.

42% of parents report their trust in the organic seal has increased.

81% of U.S. families are buying organic.

More parents are buying organic...

48% because “it’s healthier for me and my children”.

30% to avoid toxic pesticides and fertilizers.

29% to avoid antibiotics and growth hormones.

22% to avoid GMO’s.

2013 U.S. FAMILIES’ ORGANIC ATTITUDES AND BELIEFS STUDY KEY FACTS AND FIGURES.
Agricultural Definition

- An agricultural claim referring to a system of production that promotes bio-diversity and uses practices that maintain and enhance ecological harmony.
  - Optimizing the health and productivity ...soil, plants, animal and people.
  - System of production, processing, distribution and sales that maintains organic integrity that begins on the farm.
  - Use materials and agricultural practices to support organic definition
What is Organic?

Product Definition

• National Organic Program (NOP) regulates according to USDA organic standards.
  • Produced without **excluded methods** - genetic engineering, ionizing radiation or sewage sludge.
  • Produced per the National List of Allowed and Prohibited Substances (**National List**)
  • Overseen by a USDA National Organic Program-**authorized certifying agent**, following all USDA organic regulations.

• Levels of Organic Certification:
  • Certified 95 – 100%
  • Certified 70+%
Certification Levels

100% Organic Oats

95% Organic Instant Oatmeal

Instant Oatmeal Made With Organic Oats

Instant Oatmeal (no organic claim allowed)
Levels of Organic

95% Organic

70% Organic

0% Organic
All Natural

0% Organic
Conventional
Generally...
Allow most natural substances
Prohibit most synthetic substances

National List provides the exceptions:
• Prohibited natural materials
• Allowed synthetic materials

Defined by the National Organic Standards Board (NOSB) – includes a review and petition process.
National List of Allowed and Prohibited Substances

Allowed Substances

- Organic Ingredients (certified)
  - By definition: Agricultural
  - Examples:
    - Organic Wheat Flour
    - Organic Apples
    - Organic Soy Lecithin
    - Organic Lemon Oil
    - Organic Corn Starch
National List of Allowed and Prohibited Substances

Allowed Substances

- Non-Agricultural (205.605)
  - By definition: Not Organic
  - **Non-Synthetics**
    - Citric acid (microbial fermentation), natural flavors, sodium bicarbonate, enzymes, carrageenan.....
  - **Synthetics**
    - Ascorbic acid, ammonium bicarbonate, glycerin, vitamins and minerals, tocopherols...
Allowed Substances

- **Non-Organic Agricultural** substances not commercially available in organic form – 205.606.

- Examples:
  
  - Cornstarch (native)
  - Gums (arabic, guar, locust bean) – water extracted
  - Lecithin, deoiled
  - Colors from agricultural products (beet juice, blueberry juice, carrot juice, pumpkin juice....)
  - Fish oil
  - Pectin
Commercial Availability

- **Non-Organic agricultural** substances not commercially available in organic form (205.606)
- **Document** yearly searches for organic versions:
  - Minimum of **three** potential sources
  - **Reasons** for unavailability:
    - **Form** – powder, liquid
    - **Quality** - performance
    - **Quantity** – volumes availability
- **Reviewed** annually at organic inspection
- **Prove that it is unavailable organically** before you formulate with it.... search for organic versions.... continue to document
Sunset Process

• Substances can be removed or added through either:
  - Petition process
  - Sunset process

• All substances must be reviewed every 5 years
  - Based upon criteria in the Organic Foods Production Act
  - Action – renewed or prohibited
  - Requires public comment periods
  - Recommendation by NOSB to USDA

• HOT TOPICS:
  - Delay of NOSB meeting
  - Carageenan

• Be aware of substances that are undergoing a review...comment.
Verification process from farm to market

- Organic production standards
- On-site inspections
- Legally binding contracts
Organic Certification and Product Development

- 205.301: Product Composition
  - % Organic
  - Calculation subtracts water and salt
- 205.605: National List of allowed ingredients
- 205.272: Comingling and contamination avoidance
  - Processing development
- Affidavits:
  - Non Organic Ingredients
  - Natural Flavors
  - Vitamins and Minerals
Product Certification Choices

**USDA Organic seal** indicates that a product does not contain GMO’s (excluded method)

**Non GMO seal** indicates that a product has been produced according to rigorous best practices for GMO avoidance, including testing of risk ingredients. *This seal is used on both conventional and organic products*
NON GMO Project

- Third Party Certification
- Requires:
  - Review of all ingredients
  - Verification process
  - Risk assessment:
    - Testing of high risk (corn, soy)
    - Documentation review of low risk
NON GMO at Retail
Beyond (or within) Organic...

This is the yogurt made from milk made by cows that grazed in fields NOT sprayed with toxic persistent pesticides or sown with GMOs.

Obsessively organic. Purely delicious.
Other Verifications....

- Free Range
- Cage Free
- Natural
- Grass Fed
- Pasture Raised
- Fair Trade
- Gluten/Allergen Free
- Vegan
Product Development Tool Box

What it is....

Regulatory compliance
Knowledge of functionality
Ingredients
Packaging
Processing

Directed by....

Organic level
Additional certifications
Retailer requirement
Internal company requirement
Regulatory Compliance – Ingredients

- Level of Organic (100%, 95%, 70%)
- National List
- Non Organic Ingredient Declaration (Affidavit)
  - No GMO’s
  - No Irradiation
  - No sewage sludge
  - Processing aids
- Commercial Availability
- Other certification requirements
### Ingredient Functionality

<table>
<thead>
<tr>
<th>Function</th>
<th>Conventional</th>
<th>Organic</th>
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<tbody>
<tr>
<td>Emulsifier</td>
<td>Mono &amp; Diglycerides</td>
<td>Lecithin/Rice Bran/Oat Fiber</td>
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<tr>
<td>Humectant/Moisture control</td>
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<td>Antioxidant</td>
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<td>Flavor</td>
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Lecithin

- Lecithin
  - Organic Lecithin – Required in 95% organic products as it has been removed from the National List in the conventional (liquid) form.
    - Organic Soy Lecithin – 95% Organic
    - Non GMO Soy Lecithin – 70% Organic
  - Deoiled Lecithin – Allowed For use in organic products for Commercial Availability - 205.606
  - What about Sunflower Lecithin?
    - Organic Sunflower Lecithin – 95% Organic
      - Why? Agricultural so must be Organic
    - Non GMO Sunflower Lecithin – 70% Organic
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<tr>
<td>Humectant/</td>
<td>HFCS</td>
<td>Brown Rice/</td>
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<td>Moisture control</td>
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<td>Cane/Tapioca/Oat</td>
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<td>Antioxidant</td>
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<td>Syrups</td>
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Sweeteners

- NO to
  - Beet Sugar
  - Corn Syrups
  - Artificial Sweeteners

- YES to
  - Cane Sugar (ECJ)
  - Grain Syrups
  - Honey
  - Stevia
Organic Sugar (Evaporated Cane Juice)

• Organic Sugar
  - Granulation considerations
  - Scaleup/processing issues: Clumping due to molasses content

• Is it Sugar or Evaporated Cane Juice?
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<tr>
<td>Antioxidant</td>
<td>TBHQ/BHA</td>
<td>Tocopherols/Ascorbic Acid/Nitrogen/High Oleic Oils/Cinnamon</td>
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- **Flavor**: Artificial, Natural
Natural Flavors - Allowed

- **Organic Flavors**: 95% organic

- **Organic Compliant Flavors**: Flavors that meet the requirements to be used in organic products but are not themselves certified organic.
  - **Solvents**: allowed (water, natural ethanol, super-critical CO2, essential oils, natural vegetable oils). *No hydrocarbon solvents.*
  - **Carriers**: *No synthetics* (propylene glycol, polyglycerol esters of fatty acids, mono and diglycerides, polysorbate 80..)
  - **Preservatives**: *No synthetics* (benzoic acid, BHT/BHA..)
Natural Flavor Examples

- **Natural Apple Cinnamon Flavor**
  - Type: Powder
  - Description:
    
    *Natural Apple Cinnamon Flavor, Spray Dried, Organic Compliant*

  - Label: *Natural Flavor*

  - Carriers: Organic Tapioca Dextrin (Tapi Process Flow)
    Organic Gum Arabic

  - Solvents: Water
    Ethyl Alcohol (natural via fermentation)

  - Other: No Glycerin
    No Citric Acid
• Communicating to flavor supplier:
  - Best options:
    • Avoid GMO issues (use low risk carriers – rice maltodextrin, gum arabic..)
    • Glycerin is allowed if produced by hydrolysis of fats and oils
    • Citric acid is allowed if produced by fermentation of carbohydrates (Non GMO including enzymes)
  - Review ingredient statement before final flavor approval
Nutrient Vitamins and Minerals in accordance with 21 CFR 104.20, Nutritional Quality Guidelines for Foods.

• Allowed:
  - Vitamins and Minerals (104.20)
  - Others as allowed by FDA (DHA/ARA oils, nucleotides, specific amino acids)
  - Non-agricultural nutrients

• Written justification – how it meets the requirements
• No GMO’s
• Sunset review in 2012
Ingredient Availability Issues

- Organic ingredient availability
  - Supply and Demand
    - Ex: Organic Sugar, Organic Vanilla
  - Dictate level of organic
  - Commercial Availability
    - Cannot use organic and non-organic forms of an agricultural ingredient in 95%
      - Ex: Organic cocoa and conventional cocoa
- Market analysis...contract...alternate/secondary suppliers.
Almost 20 years later......