THE LANDSCAPE OF COMMERCIALLY AVAILABLE NON-DAIRY FROZEN DESSERTS

An exploration into current plant based offerings

Emily Daw - Frozen Dessert Center Director- edaw@wisc.edu
What is a plant-based diet and why should you try it?

POSTED SEPTEMBER 26, 2018, 10:30 AM, UPDATED SEPTEMBER 27, 2018

Katherine D. McManus, MS, RD, LDN
Contributor

Trend of the year: Plant-based foods

Forbes

Plant-Based Foods Are Hot, And They’re Only Getting Hotter

Douglas Yu Contributor ©
Food & Drink
I write about trends and investments in the consumer goods industry.

Total U.S. Plant-Based Food Market

<table>
<thead>
<tr>
<th>Year</th>
<th>Dollar Sales</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>$3.9b</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>$4.5b</td>
<td>+15%</td>
</tr>
<tr>
<td>2019</td>
<td>$5.0b</td>
<td>+11%</td>
</tr>
</tbody>
</table>

Retail sales of plant-based foods surge

Growth outpaces overall U.S. retail food market

Russell Redman | Jul 16, 2019
THE BREAKDOWN

- 57 brands
- 379 total unique finished products
- 85 unique base mix formulas

Caveats
- This is not an endorsement of any particular brand or product
- Products studied were found between April-May 2020
- This is not a comprehensive list of all available products
- Only information available on company’s website was used
- Novelties were largely left out
- Nondairy products offering an ice cream like experience
**BASIC PROFILE OF REAL ICE CREAM**

**Standard of Identity: Ice cream**

- At least 10% Butterfat
- 20% milk solids (including butterfat and nonfat milk solids)
- ~36% total solids
  - Typical range 36-42%
- Weigh no less than 4.50 lbs/gallon (finished ice cream weight)
  - Typically close to 100% overrun
*Custard- 1.4% egg yolk solids

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Function in Ice Cream</th>
<th>Typical Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cream</td>
<td>Primary fat source, creamy mouthfeel, body/texture, standup properties</td>
<td>10-18% butterfat</td>
</tr>
<tr>
<td>Skim Milk</td>
<td>Primary source of MSNF, mouthfeel, body/texture, standup properties, primary protein source</td>
<td>10% MSNF, ~4% total protein</td>
</tr>
<tr>
<td>Whey/ Buttermilk</td>
<td>Source of MSNF</td>
<td>Usually 2.5% or less</td>
</tr>
<tr>
<td>Sugar (sucrose)</td>
<td>Sweetness, freezing point depression</td>
<td>10-17%</td>
</tr>
<tr>
<td>Corn Syrup</td>
<td>Sweetness, freezing point depression, increases mix viscosity, chewy texture</td>
<td>3-7%</td>
</tr>
<tr>
<td>Stabilizers</td>
<td>Guar gum, locust/carob bean gum, carrageenan, etc&lt;br&gt; Increase mix viscosity, increase heat shock resistance.</td>
<td>0.1-0.3%</td>
</tr>
<tr>
<td>Emulsifiers</td>
<td>Egg yolk, mono and diglycerides, polysorbate 80&lt;br&gt; Encourage partial coalesce by displacing proteins from the fat globule interface</td>
<td>0.5% or less</td>
</tr>
</tbody>
</table>
MILK REPLACEMENTS
COCONUT “MILK” AND COCONUT “CREAM”
NUT “MILKS”

ALMOND

CASHEW

HAZELNUT

PISTACHIO
BANANA “MILK”
AVOCADO “MILK”
LEGUME “MILKS”

PEA

PEANUT

SOY

FABA BEAN
CEREAL GRAIN “MILKS”

RICE

OAT
SEED “MILKS”

Hemp

Sunflower Seed
ANIMAL FREE “MILK”

NON-ANIMAL WHEY PROTEIN
“MILK” BREAKDOWN

- Coconut milk
- Cashew milk
- Almond milk
- Oat milk
- Banana milk
- Soy milk
- Avocado milk
- Hazelnut milk
- Peanut milk
- Sunflower milk
- Pistachio milk
- Rice milk
“MILK” BREAKDOWN

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%
PROTEIN POWDER SOURCE BREAKDOWN

- 33% of unique formulas used a protein powder ingredient

- Pea
- Soy
- Hemp
- Faba bean
- Chickpeas
- Rice
- Whey
CREAM REPLACEMENT
FAT SOURCE BREAKDOWN

- 64% of all unique formulas used an oil/fat ingredient

- coconut oil
- safflower oil
- cocoa butter
- avocado oil
- sunflower oil
- palm oil
- soybean oil
- rapeseed oil
SWEETENERS
SWEETENED WITH DATES
SWEETENED WITH MAPLE SYRUP
SWEETENED WITH AGAVE SYRUP
96% of unique formulas used a nutritive sweetener of some kind.
13% of unique formulas used a polyol of some kind
4% of unique formulas used polyols and high intensity sweeteners alone
STABILIZERS
87% of all unique formulas used a gum stabilizer ingredient.
- 25% of unique formulas used a fiber ingredient
- 7% of unique formulas made a high in fiber claim
EMULSIFIERS

Small Molecules
46% of all unique formulas used an emulsifier ingredient.
COMPOSITION BREAKDOWN
<table>
<thead>
<tr>
<th>Property</th>
<th>Average</th>
<th>Stdev</th>
<th>Min</th>
<th>Max</th>
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</thead>
<tbody>
<tr>
<td>Calories (kCal/100g)</td>
<td>177.60</td>
<td>50.82</td>
<td>68.97</td>
<td>300.00</td>
</tr>
<tr>
<td>Total Fat (%)</td>
<td>9.38</td>
<td>4.60</td>
<td>0.00</td>
<td>18.57</td>
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<tr>
<td>Total solids (%)</td>
<td>34.26</td>
<td>7.47</td>
<td>17.24</td>
<td>51.43</td>
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<tr>
<td>g/ Serving (2/3cup)</td>
<td>109.46</td>
<td>17.90</td>
<td>74.62</td>
<td>163.24</td>
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<tr>
<td>Density (lb/gal)</td>
<td>9.10</td>
<td>0.16</td>
<td>8.64</td>
<td>9.40</td>
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<tr>
<td>Overrun (%)</td>
<td>61.13</td>
<td>26.92</td>
<td>0.00</td>
<td>136.02</td>
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<tr>
<td>Saturated Fat (%)</td>
<td>4.81</td>
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THE AVERAGE LABEL

Nutrition Facts
3 servings per container
Serving size 2/3 cup (109g)

Amount Per Serving
Calories 190

% Daily Value*
Total Fat 10g 13%
Saturated Fat 5g 25%
Trans Fat 0g
Cholesterol 0mg 0%
Sodium 0mg 0%
Total Carbohydrate 25g 9%
Dietary Fiber 2g 7%
Total Sugars 18g
Includes 13g Added Sugars 26%
Protein 2g 4%
Vitamin D 0mcg 0%
Calcium 0mg 0%
Iron 0mg 0%
Potassium 0mg 0%

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

- Ingredients: coconut milk (coconut cream, water), cashew milk (cashews, water), cane sugar, coconut oil, pea protein concentrate, inulin, guar gum, sunflower lecithin.
THE FLAVORS
FRUIT BASED FLAVOR BREAKDOWN

- strawberry: 30%
- cherry chocolate: 15%
- raspberry: 10%
- blueberry: 5%
- banana: 5%
- cherry: 5%
- berry: 5%
- lemon: 5%
- mango: 5%
- passion fruit: 5%
- mixed fruit: 5%
- acai: 1%
- apple: 1%
- blueberry coconut: 1%
- mango: 1%
- peach: 1%
- pear and ginger: 1%
- wild berry: 1%
THE CLAIMS
100% of unique formulas made at least 1 claim
BOYZ II MEN CELEBRITY ENDORSEMENT?
PRODUCT CATEGORIES
“GOOD” FOR YOU

1. Perfect World - Sweet Espresso (342 calories, 4.4g)
2. Halo Top - Candy Bar (380 calories, 26g)
3. Enlightened - Cookies & Mint (90 calories)
4. So Delicious - Strawberry (300 calories per pint)
5. Arctic Zero - Cookie Shake (160 calories)
INGREDIENT CENTRIC
TARGETED DIET: PALEO FRIENDLY
QUESTIONS?

Please leave questions or comments in the survey following this presentation.