Vegetable Juice Production, Trends and Marketing

International Citrus & Beverage Conference
Sheraton Sand Key Resort
September 16-19, 2014

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...A BIT ABOUT VEGETABLE JUICES INC.
In the Beginning ...
... it all starts with a seed

HARVESTING AND PROCESSING VEGETABLES
Vegetable Product Range

Juices

Purees

BLENDS
Fruit vs. Veggies

Different growing seasons and timeframes from seed to harvest:

- **Fruit**: 3 – 7 years to bear fruit; then bears fruit for productive life of tree or vine.
- **Vegetables**: annual crops from seed or transplant. Growers can switch crops annually to take advantage of market pricing.

Different concentration process:

- **Fruit**: filtration, heat
- **Vegetables**: filtration, heat
Seed - Plant – Harvest
Vegetables: Minimally Processed

Evaporator

Reverse Osmosis

Washer
Production Process - Purees

Step 1: Select Varietal and Customized Size from ¼” to 1/200’ micro-cut

- Salsa 1/4” 6.4 mm
- Apple Sauce 3/32” 2.4 mm
- Barbecue Sauce 1/32” 800 μm
- Baby Food 1/64” 400 μm **
- Smoothies 1/200” 130 μm **

Raw Vegetables → Milling → Blending → Sizing → Pasteurizing → Packaging
Practical considerations for design, development and launch

VEGETABLES...
THE OLDEST NEW SUPERFOOD
BEVOLUTION: Process & Package Innovation

SHELF STABLE

1930’s-1940’s
Retort

1980’s
Hot Fill; Bottles

Portable
Hot Fill; Tetrapak, Pouch

REFRIGERATED

1954
Flash Pasteurization

1980’s
Hot Fill; Plastic

Juicing

‘FRESH’

1970’s

HPP

2011-2012
Vegetables in Beverages:

A BRIEF HISTORY

1934: Dr. Rolle patents a veggie blend and asks Mr. Peacock to blend and pack the juice. It is sold in grocery stores.

1948: Campbell Soup Co. purchases the $5M V8 business and begins promoting the line for health.

1960's: Developed by Herb and June Taylor, it is served in bars and restaurants in LA and on American Airlines.
Vegetables in Beverages:

A BRIEF HISTORY

1970's: Juicing for health is a new trend.

1984: Odwalla enters the refrigerated market with carrot juice located in the produce department.

1990: Naked enters the refrigerated market with fruit and veggie blend located in the produce department.

1992: Evolution Fresh is started.
Vegetables in Beverages:

A BRIEF HISTORY

1997-2003: Bolthouse enters the refrigerated market with carrot juice and blends for FS, then retail, in produce section.

2000+: Juicing, raw juice bars, cleanses trend growing.

2005: Campbell Soup Co. introduces V8 V Fusion and offers the first retail, fruit forward fruit & veggie blend.

2009: Apple&Eve make fruit forward fruit and veggie blends convenient for kids’ lunches.
Vegetables in Beverages:

**A B R I E F H I S T O R Y**

**2010:** Naked enters the *refrigerated* market with smoothies in produce section.

**2010/11:** Evolution Fresh begins using HPP.

**2012:** Suja launches into retail.

**2012:** BluePrint purchased by Hain Celestial (est. $20M).

**2012:** Capri Sun puts fruit forward fruit & veggie blends into pouches for kids’ lunches.

**2013:** Tropicana Farmstand is introduced.
OPPORTUNITIES AND CHALLENGES WITH VEGGIES IN BEVERAGES
Opportunities *Do* Exist: Potential Platforms with Vegetables

**HEALTHY CALORIE REDUCTION**

**STEALTH HEALTH**

**INTUITIVE NUTRITION**

**HEALTHY**
OPPORTUNITY: Healthy Calorie Reduction

Low Brix vegetable juice products like cucumber, lettuce, etc. deliver less calories while still being 100% juice

<table>
<thead>
<tr>
<th>Juice Type</th>
<th>SS Brix</th>
<th>kcal/100g</th>
<th>kcal/fl. oz.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beet</td>
<td>7</td>
<td>24</td>
<td>6.5</td>
</tr>
<tr>
<td>Celery</td>
<td>3.1</td>
<td>8</td>
<td>2.2</td>
</tr>
<tr>
<td>Cucumber</td>
<td>3</td>
<td>9</td>
<td>2.3</td>
</tr>
<tr>
<td>Romaine Lettuce</td>
<td>2.7</td>
<td>17</td>
<td>4.6</td>
</tr>
<tr>
<td>Sweet Potato</td>
<td>10</td>
<td>34</td>
<td>8.8</td>
</tr>
<tr>
<td>Butternut Squash</td>
<td>10</td>
<td>45</td>
<td>11.8</td>
</tr>
<tr>
<td>Kale</td>
<td>5</td>
<td>14</td>
<td>3.7</td>
</tr>
<tr>
<td>Purple Sweet Potato</td>
<td>10</td>
<td>34</td>
<td>8.8</td>
</tr>
<tr>
<td>Red Bell Pepper</td>
<td>6</td>
<td>20</td>
<td>5.3</td>
</tr>
<tr>
<td>Red Tomato</td>
<td>5</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Spinach</td>
<td>2.6</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Yellow Carrot</td>
<td>8</td>
<td>30</td>
<td>7.9</td>
</tr>
<tr>
<td>Yellow Tomato</td>
<td>5</td>
<td>8</td>
<td>2.1</td>
</tr>
<tr>
<td>Grape</td>
<td>16</td>
<td>65</td>
<td>16.7</td>
</tr>
<tr>
<td>Apple</td>
<td>11.5</td>
<td>47</td>
<td>12.3</td>
</tr>
<tr>
<td>Orange</td>
<td>11.8</td>
<td>45</td>
<td>11.7</td>
</tr>
</tbody>
</table>
OPPORTUNITY: Stealth Health

Highly nutritious vegetables are attractive on your beverage label…

Think Kale, Purple Sweet Potato, Yellow Tomato…

Adding vegetable purees to your smoothie adds the benefit of whole vegetable nutrition.

THINK FUN, INDULGENT, INTERESTING!
OPPORTUNITY: Intuitive Health

We are supposed to have 5 servings of vegetables a day. That’s 2 ½ cups of vegetables *every day.*

**Veggie serving = ½ cup vegetable or ½ cup of juice**

<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Brix</th>
<th>Weight Needed to Equal 1 Cup Serving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cucumber</td>
<td>45</td>
<td>.40oz</td>
</tr>
<tr>
<td>Carrot</td>
<td>28</td>
<td>2.29oz</td>
</tr>
<tr>
<td>Beet</td>
<td>25</td>
<td>2.24oz</td>
</tr>
<tr>
<td>Tomato</td>
<td>25</td>
<td>1.6oz</td>
</tr>
<tr>
<td>Sweet Potato</td>
<td>60</td>
<td>1.33oz</td>
</tr>
<tr>
<td>Butternut Squash</td>
<td>25</td>
<td>3.2oz</td>
</tr>
</tbody>
</table>
OPPORTUNITY: Functional Beverages

Multitasking and efficient beverages are in!

✓ Nutritional and Label Improvement can be achieved with using vegetables

✓ Highly nutritious vegetables can help contribute to functional drinks...

Think Sports, Recovery, Energy,..
### Formulation Considerations

<table>
<thead>
<tr>
<th>INGREDIENTS</th>
<th>PROCESSING</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>S</td>
</tr>
</tbody>
</table>
Ingredient Considerations

COLOR

SWEET SPOT

TASTE

AVAILABILITY / NUTRITION
Ingredient: Color

- ✔ Naturally occurring
- ✔ Added color
  - *Natural*
  - *Artificial*
- ✔ Impact of processing
- ✔ Image with packaging
- ✔ Image on shelf
Ingredient: Taste

✔ Fruit forward or veggie forward

✔ Flavor combinations
  * Trendy      * Popular
  • Herbal      * Functional

✔ Carrot and orange; carrot and apple
✔ Beet and berries
✔ Greens and pineapple or orange or banana
✔ Tomato and other veggies; tomato and fruit
✔ Emergence and popularity of “heat”
Ingredient: Nutrition

✓ **Macro Nutrients**
  - *Protein, Fat, Calories*
  - Vegetables, by their nature, reduce calories when used in beverages

✓ **Micro Nutrients**
  - Vitamins: vitamin A, beta carotene
  - Minerals: potassium

✓ **Other**
  - Enzymes
  - Pro and prebiotics

✓ **Following science**
  - Studies on ingredients

✓ **Following trends**
  - Latest super foods

✓ **Impact of processing**
  - Mechanical
  - Thermal
Ingredient: Availability

✓ Desire to be “different” vs. practicality
  - *it’s a balance* –

✓ Sourcing:
  - Conventional vs. organic
  - Seasonality (chart)
  - Local, regional, global

✓ Supplier network:
  - What do you need?
    - Product, services, etc.
  - Minimum order quantities
  - New variety or blend minimums
Processing: Considerations

✓ Thermal:
  • Flash Pasteurization
  • Aseptic

✓ Non Thermal:
  • HPP
  • Fresh

<table>
<thead>
<tr>
<th>Method</th>
<th>Nutrition</th>
<th>Color</th>
<th>Storage</th>
<th>Shelf Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aseptic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPP</td>
<td></td>
<td></td>
<td></td>
<td>40 days</td>
</tr>
<tr>
<td>Fresh</td>
<td></td>
<td></td>
<td></td>
<td>24 hrs</td>
</tr>
</tbody>
</table>
Cost Considerations

✓ Initial cost versus longer term costs

✓ Seasonality of vegetable
  • Availability
  • Freight
  • Price
  • Spec/Quality

✓ Source
  • Domestic
  • Continental
  • Global

✓ Time
  • To source
  • To arrive
## Cost Considerations

### Sample: Sourcing Reference Chart, Mid-West

<table>
<thead>
<tr>
<th>Vegetables</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrots</td>
<td>MI/CAN</td>
<td>MI/CAN</td>
<td>GA</td>
<td>GA</td>
<td>GA</td>
<td>GA</td>
<td>MI/CAN</td>
<td>MI/CAN</td>
<td>MI/CAN</td>
<td>MI/CAN</td>
<td>MI/CAN</td>
</tr>
<tr>
<td>Cucumber</td>
<td>Mex</td>
<td>Mex</td>
<td>FL</td>
<td>FL/GA</td>
<td>GA</td>
<td>MI</td>
<td>MI</td>
<td>MI</td>
<td>MI</td>
<td>ALA./GA.</td>
<td>ALA./GA.</td>
</tr>
<tr>
<td>Celery</td>
<td>FL</td>
<td>FL</td>
<td>FL</td>
<td>FL</td>
<td>N/A</td>
<td>N/A</td>
<td>MI</td>
<td>MI</td>
<td>MI</td>
<td>MI</td>
<td>FL</td>
</tr>
<tr>
<td>Butternut Squash</td>
<td>TX</td>
<td>TX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MI</td>
<td>MI</td>
<td>MI</td>
<td>MI</td>
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</tr>
<tr>
<td>Red Beets</td>
<td>MI/CAN</td>
<td>MI/CAN</td>
<td>TX/MEX</td>
<td>TX/MEX</td>
<td>TX/MEX</td>
<td>TX/MEX</td>
<td>MI/CAN/WI</td>
<td>MI/CAN/WI</td>
<td>MI/CAN/WI</td>
<td>MI/CAN</td>
<td>MI/CAN</td>
</tr>
<tr>
<td>Kale</td>
<td>FL/GA</td>
<td>FL/GA</td>
<td>GA/NC</td>
<td>NC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ohio</td>
<td>GA</td>
</tr>
<tr>
<td>Sweet Potatoes-Purple</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
</tr>
</tbody>
</table>
For new product launch, consider all factors...

**Product Platforms:**
- Healthy calorie reduction
- Stealth health
- Intuitive nutrition
- Healthy functional

**Ingredient Considerations:**
- Taste
- Color
- Nutrition
- Availability

**Formulation Considerations:**
- Ingredients
- Processing
- Cost
Vegetables Deliver Value-Driven Elements to a Beverage

**Foundation**
- Familiar
- Easy to Understand
- Engenders Trust

**Values**
- Smart
- Health & Wellness
- Self Esteem
- Family

**Solid Ingredient Foundation + Emotional, Value Driven Connections = BRAND BUILDER**
A Garden of Possibilities:

Intentional Design Can Seed An Amazing Beverage

Awareness + Planning = Potential for some great, new market sensations!
Thank you for your time!