Product development: disclaimer

No part of this presentation is intended to give legal advice.

Sue Gray

King Arthur Flour

Fun facts—ethical is important to consumers

- Sixty-four percent of consumers under 35 say there aren't enough ethically produced snacks available to them, compared to 57 percent of all consumers, according to "Ethics on the Go," a new study from Chicago-based Culinary Visions Panel's Mindful Dining Initiative project.
- The study also found that 67 percent of millennials say they'd be willing to pay more for ethically produced grab 'n go foods, compared to 55 percent of all consumers. Three out of four consumers under 35 called ethical efforts made by restaurants "trendy."
- "From sustainable farming to free-range eggs, consumers do not want their dining choices to have unintended negative consequences," says Sharon Olson, executive director of Culinary Visions Panel. "Whether it's rewarding a company's Fair Trade labor practices or their zero-waste policies, we found that millennials are the most serious about ethically-sourced foods."

product development

Resources available : Search Vermont or state food incubator

VT Food Venture Center | Center for an Agricultural Economy

https://hardwickagriculture.org/farmers-food.../shared-use-commercialkitchen

New England Local Food Processors | Farm to Institution New England

https://www.farmtoinstitution.org/new-england-local-food-processors

Mad River Food Hub L3C | The Atlas | Vermont Farm to Plate

www.vtfarmtoplate.com/organization/mad-river-food-hub-l3c

Food Incubator & Commercial Kitchen Space ... - Food Fight Vermont

https://foodfightvt.com/food-incubator-commercial-kitchen-space-available

SCORE

https://www.score.org/

https://www.score.org/local-workshops-events

Services provided by food incubators

- Business advising, writing a business plan
- Branding, marketing, logo design
- Formulation, sourcing, ingredient selection
- Packaging, materials and design, (affects shelf life)
- Information about Food regulations, food safety,
- shared kitchen or production space for rent, servesafe certification may be needed to use facility.
- Distribution leads and information

Know your customer: who are they, and where do they shop? How much will they pay?

No product will satisfy everyone. Does it need to be "Free From"? (top 8 allergens Milk. Eggs. Peanuts. Tree nuts (such as almonds, cashews, walnuts) Fish (such as bass cod, flounder) Shellfish (such as crab, lobster, shrimp) Soy. Wheat.

Gluten free? Paleo? High protein, Vegan, lower sugar, alternative sugar or other special diet?

Money spent upfront to identify key attributes that appeal to consumers =saved effort and \$\$.

Design for quality

- While you may not be required to comply with all regulations, at a minimum, consumers will want to know the ingredients and possible allergens.
- Food safety should be a top concern and needs to be considered from the first steps of concept. Protect your company, its name, goodwill and image.
- Naming of your product: standard of identity, trademark infringement.(milk? Mayo? Jam?)
- Determining packaging and shelf life (quality, safety, sustainability)
- Is your product Ready to Eat? If not, label DO NOT EAT RAW. Validate that your directions make it safe to eat.
- Is it "Natural", Is it worth using that word?

nat∙u•ral

/ˈnaCH(ə)rəl/ -

adjective

 existing in or caused by nature; not made or caused by humankind. "carrots contain a natural antiseptic that fights bacteria"

proc·ess¹ /ˈpräˌses,ˈprōˌses/ •)

verb gerund or present participle: **processing**

perform a series of mechanical or chemical operations on (something) in order to change or preserve it. "the various stages in processing the wool" Companies with less than \$ 500,000 in sales (see following slides)are not required to provide nutritional labeling, most consumers want it. Many companies provide services, two examples below:

Prime Label Services - www.primelabel.com/services

Food Consulting Company- www.foodlabels.com informative blog: food label news

Each state has regulations, be sure you know them. (California Prop 65 etc.) Vermont's special rules about maple products, using "Made in Vermont" on your label

https://vtdigger.org/2015/02/22/vermont-brand-adds-value-rules-claiming-connection-complex/

https://legislature.vermont.gov/statutes/fullchapter/18/085

Overview of Vermont state regulations: (out of date, but useful)

http://agriculture.vermont.gov/sites/ag/files/pdf/consumer_protection/Packaging%20and%20La beling%20Regulations.pdf

Vermont allows for home bakeries, low risk foods http://forrager.com/law/vermont/ CFR 101.9

(j) The following foods are exempt from this section or are subject to special labeling requirements:

(1)(i) Food offered for sale by a person who makes direct sales to consumers (e.g., a retailer) who has annual gross sales made or business done in sales to consumers that is not more than \$500,000 or has annual gross sales made or business done in sales of food to consumers of not more than \$50,000, Provided, That the food bears no nutrition claims or other nutrition information in any context on the label or in labeling or advertising. Claims or other nutrition information subject the food to the provisions of this section, 101.10, or 101.11, as applicable.

(ii) For purposes of this paragraph, calculation of the amount of sales shall be based on the most recent 2-year average of business activity. Where firms have been in business less than 2 years, reasonable estimates must indicate that annual sales will not exceed the amounts specified. For foreign firms that ship foods into the United States, the business activities to be included shall be the total amount of food sales, as well as other sales to consumers, by the firm in the United States.

Labeling & Nutrition > Guidance for Industry: Food Labeling Guide - FDA

The Food and Drug Administration (FDA) is responsible for assuring that foods sold in the United States are safe, wholesome and properly labeled. This applies to foods produced domestically, as well as foods from foreign countries. The Federal Food, Drug, and Cosmetic Act (FD&C Act) and the Fair Packaging and Labeling Act are the Federal laws governing food products under FDA's jurisdiction. the Nutrition Labeling and Education Act (NLEA), which amended the FD&C Act requires most foods to bear nutrition labeling and requires food labels that bear nutrient content claims and certain health messages to comply with specific requirements. Although final regulations have been established and are reflected in this guidance, regulations are frequently changed. It is the responsibility for the food industry to remain current with the legal requirements for food labeling. All new regulations are published in the Federal Register (FR) prior to their effective date and compiled annually in Title 21 of the Code of Federal Regulations (CFR). The Federal Food, Drug, and Cosmetic Act requires packaged foods and dietary supplements to bear nutrition labeling unless they qualify for an exemption (A complete description of the requirements). One exemption, for lowvolume products, applies if the person claiming the exemption employs fewer than an average of 100 fulltime equivalent employees and fewer than 100,000 units of that product are sold in the United States in a 12-month period. To qualify for this exemption the person must file a notice annually with FDA. Note that low volume products that bear nutrition claims do not qualify for an exemption of this type. Another type of exemption applies to retailers with annual gross sales of not more than \$500,000, or with annual gross sales of foods or dietary supplements to consumers of not more than \$50,000. For these exemptions, a notice does not need to be filed with the Food and Drug Administration (FDA).

- Formulas/recipes are just ratios of ingredients
- Invest in a good gram scale
- Set up a spread sheet to track your tests
- Be efficient in your testing: divide batches when possible
- Weigh everything: your batter or dough, and your finished product
- Bake or cook in different areas of your oven, at different temperatures.
- Test different equipment- mixing methods, timelines
- Cooling or keeping cool, before packaging
- Set up shelf life testing as soon as possible, for best by dating

Function of ingredients:

It Has to Taste Good

Products may be changed, sometimes in surprisingly drastic ways, by simple alterations of the ratio of ingredients, time or temperature of baking, fat used, sugar granulation, leavening type, or flour quality

Chemical Leaveners

- Rates of CO₂ generation at different temperatures cause very different shapes and texture in products.
- Changes in pH due to small changes in the amount of baking soda can have large effects on the browning of products.
- Leaveners that appear the same on the ingredient statement or specification sheet may have different reaction rates due to granulation size, or coating
- Always test any new ingredient suppliers product

1 Recipe, Different Leaveners



Different leaveners, have different co2 release curves, which cause the shape differences

In 1# of dry ingredients, 2g Soda on left, 3 g on right, same formula, same oven, same time



The correct batter viscosity is needed to keep inclusions suspended. Ingredients that affect viscosity include flour, sugar granulation, fast acting leavening agents, gums, pregel starches, HPMC, flax, chia or psyllium







No specific viscofier added

Cake was overbeaten, and included more viscofier than needed. causing it to raise in the oven, collapse upon cooling.



Viscofier thickens a batter or dough, may be a gum, hydrocolloid cold water swelling starch, or fiber **Flour**—provides the backbone or structure (toughening) and drying to baked goods.

Flour, as are most of the ingredients you will work with, is a raw agricultural products that should not be eaten raw.

Work with a reliable supplier so minimal adjustments to formulas will be needed.

Protein and starch are the major components that contribute structure and absorb water. (proteins absorbs 1 to 2 times their weight in water, while starch absorbs ¼ to ½ its weight— one of the reasons small changes in protein affect baked goods)

Chlorinated (bleached with Chlorine and Benzyol Peroixde) Cake flour absorbs more than unbleached flour, even though is it lower protein, and mostly soft wheat. The pH is lowered to 4.6 to 5.1. The starch swelling capacity increased.

5.8-6.1 normal pH wheat flour

whole wheat flour - amylase activity Same formula, with and without sugar





Flour Quality, absorption, protein, ash content, and falling number



Open texture, slight compression on bottom



even texture, loaf shorter, stronger protein

Slick of flour from two mills, with similar ash contents, but big variability in color, due to milling and wheat varietal.



White whole wheat from 3 mills, different areas of the country, different granulation



SUGAR

cane, beet, coconut or palm, brown, fine, coarse, demerara, honey, trehalose evaporated cane syrup, maple, date sugar, maltose,

All are hygroscopic to some degree (attract and bond to water), vary in taste and function

Sugar provides:

- flavor-sweetness, caramelization, other notes
- Texture-crunchy, or moistness from syrups
- Bulking
- Tenderizer-interferes with gluten formation, protein coagulation, starch gelatinization.
- Mold inhibitor, preservative (at high levels) (attracts water, control water activity)
- Helps keep ice cream smooth, lowers freezing temperature, interferes with formation of ice crystals
- Shiny crisp crust on brownies, controls spread in cookies, finer granulations spread more.
- Stabilizes egg foams (meringues

EGGS

Provide structure in baked goods, especially cakes. Known as tougheners.

- Thickening and gelling in custards, sauces and pastry cream
- Emulsifiers (primarily in the yolk) keep fat and water from separating
- Aeration (stabilize foams) leavening action
- Flavor and Color
- Moisture (eggs are about 76 percent moisture)
- Slows staling-interferes with starch retrogradation
- Adds glossy brown shine to baked goods
- Sugar and starch slow coagulation of eggs

Milk products:

- Provide fine even crumb to baked goods (pan bread and brioche, vs. artisan bread)
- Increase crust softness
- Flavor and browning
- Delays staling
- Cream forms stable foams at 28% milkfat, milk proteins foam (froth on coffee drinks)
- Provide moisture
- Calcium in milk products aids in coagulation of eggs
- Dry milk absorbs water in doughs, increasing shelf life