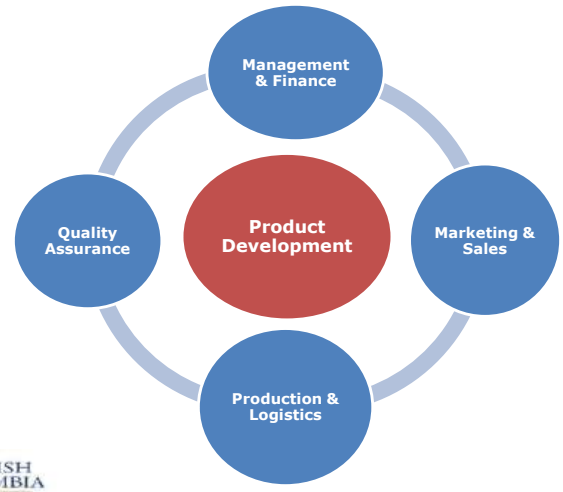
Growing Forward 2
A federal-provincial-territorial initiative

PRODUCT DEVELOPMENT #3



BRITISH COLUMBIA

Canada

SESSION OUTLINE

- Product Development Process
- The Product – an example
- Defining the Attributes of the Product
- Documenting the Finished Product

In this session we will be discussing the process of Product Development.

This includes developing a product, in this case a berry syrup; defining the attributes of the product and then documenting the finished product so that this information can then be used by other departments.

PRODUCT DEVELOPMENT PROCESS

Great Idea, Necessity, or Demand by Customer

To →

The objective of Product Development is:

To create a food product that is legal, can be sold, is safe to consume, and will retain the desirable attributes, such as flavour, texture, and appearance for the expected duration of time, or **shelf life**.

The idea for the product can be obtained by inspiration, necessity such when there is an overabundance of "left-overs" or a change in manufacturing or supplies, or demand by the Customer.

PRODUCT DEVELOPMENT PROCESS

How do you create the next great product?

Any ideas?

Starting place?

In this session we will only be discussing a new product being developed but in your experience you may spend more funds in adjusting existing products due to changes in regulations, ingredients that are no longer available or are no longer in favour with the population, updating of flavour profiles as the marketplace is a dynamic entity and customers are always looking for something new or adjusted such as lower salt or sugar.

So, how do you create the next great product?

Any ideas? Well, let's go to the starting place.

PRODUCT DEVELOPMENT PROCESS

Starting place: **THE END**

Visualize your new food product!

What is it?

Describe it as it would be on the shelf or in the consumer's hand.

Well, like all great travels you have to know where you are going, so let's start at the end.

Close your eyes and let's visualize your new food product.

You see it on the store shelf, then in the hands of the consumer and they are smiling as they too are visualizing how it will taste and that it will bring pleasure to their palate.

The packaging is pleasing and conveys to the consumer how the product is to be used, what it will taste like. Thus it is not hard for the consumer to visualize how this product is going to be beneficial to them.

PRODUCT DEVELOPMENT PROCESS

Who defines what the product will be?

Who define what the product will look like?

The process of product development is extremely expensive thus we want to take it out of the hit and miss or trial and error category and apply planning and smart logical execution to the process. This is considered the research phase.

A trained food technologist or an executive chef will spend more time in the thought and formulation development process than actual lab or hands on time as it is expected that the professional will have enough expertise to understand the interrelationships of ingredients and the specific processes that will be required to complete the product.

This thought process may result in less than 5 lab trials versus over 10-? lab trials if all work is conducted at the benchtop.

So, we want to describe the product, but who defines what the product will be, the function and appearance?

PRODUCT DEVELOPMENT PROCESS

Who decides?

- **Customer?**
- **Marketing?**
- **You?**
- **Production?**
- **Quality Assurance?**
- **Finance and Accounting?**
- **Your boss? Your spouse?**

There are many options and at times…. Too many!

Ultimately we would be prefer that the specific person who is going to purchase the product (the target market) will define the product as this would be the most cost effective method to guarantee sales!

This, of course, is not always viable. We rely on Marketing to conduct the research and distil the preferences of the consumer. From that information the Product Developer will translate those preferences to the formulation or recipe.

Examples abound where, in small to large companies alike, with all the research resources available, that research can be ignored due to an influencer's bias or preference. Whenthe product is out on the shelf or preliminary market testing is conducted then the truth becomes known – sometimes a very expensive lesson if the influencers are wrong!

One of the reasons food products have a high failure rate at the retail marketplace.

PRODUCT DEVELOPMENT PROCESS

All of the above – to some extent and at certain times.

Ultimately it is the consumer!

Who represents the consumer for you?

MARKETING

Now that we have indicated that the final consumer should have the greatest influence on the product development there are circumstances where you will want and require additional input.

This can occur when there is excess ingredients or crops where you want to add value.

There may not be an immediate customer demand for those individual ingredients or even obvious value added products thus further research to identify a need for products that contain these ingredients.

This research may not involve the consumer at this stage, but possibly foodservice operators, industrial suppliers, or even your neighbor!

Ultimately, you want the consumer to purchase the final product thus once potential products are identified then the Marketing group will be required to assess if there is indeed a consumer demand.

THE PRODUCT - EXAMPLE

HASKAP Berry Syrup

- **750 mL bottle size**
- **Prefer bottle similar to the picture**
- **6 jars packed per case**
- **The colour will be rich red blue**

Now let's set the stage with an example.

Have you heard of Haskap berries? Honey Berries? They are a crop of high antioxidant berries that are blue similar to Blueberries but are more oblong than circular. They are grown in Canada and have the potential to usurp Blueberries to be known as the medicinal berry of choice!

There are a myriad of products that we can produce using these berries but let's take a relatively straightforward product, like Syrup to use as our example.

Our market research has indicated that the customer prefers the 750 mL bottle size based on the target price and the specialty or newness of the product. The retailers have also indicated that a pack of 6 bottles per case is what they would be willing to carry as many of the stores are smaller in size and that they may only purchase one case to try the new product.

We have retrieved a picture of a similar type product but with a different colour product as we wanted to show the bottle style the consumer preferred versus the typical maple flavour table syrup.

THE PRODUCT - EXAMPLE

Define the Finished Syrup

Basic Attributes

Sensory – descriptive

- Taste - sweet
- Colour – dark red blue
- Odour – berry, slightly flowery
- Thickness – smooth and thick in mouth, lingers on the tongue

We all use of our senses to determine if we like or dislike a food product.

It is one of the few items that we purchase where we engage all of our senses as well as our memory.

Consider your childhood and think of a favourite food that you can smell, taste, and you see yourself eating. Why did you pick that one? Think of when you ate the food, who prepared it and who was with you?

Food is such an integral part of our everyday life that we can have either pleasant or unpleasant memories. Is there a food that you cannot eat or even thinking about it makes you ill? Besides the food itself, was there a bad memory associated with it?

For this product we want the syrup to be sweet, smell like a berry (slightly flowery), and the texure or mouthfeel must be smooth and linger on the tongue. To distinguish it as a Haskap berry the colour will be dark red blue.

THE PRODUCT - EXAMPLE

Define the Finished Product

General Attributes – measurable

- **Physical** – Bottle Size, Viscosity
- **Chemical** – Moisture, % Sugar, pH
- **Biological** – Bacteria, Yeast, Mold, Pesticide residues

We have defined the sensory attributes but do not have any measureable values that help us to design the product.

Food technology is researching how to quantify some of these attributes, such as odour with a machine called THE NOSE but it is still in the stage of building the relationship with the description of odours with a defined scale.

So in the meantime we have to request additional descriptions as to how sweet and how thick. The latter we can use a viscometer but we still have to rely on comparisons of other products of known viscosity.

We are now in the process of developing the specification document of the finished product defining the various attributes so that each time the product is made it will be the same.

The categories in bold define the type of attribute into measureable targets and ranges. Some of these attributes will establish the food safety hurdles whereas others will define information or quality control parameters for conformance to the customer's expectation.

THE PRODUCT - EXAMPLE

Define the Finished Product

General Attributes – measurable

- **Environmental –**
  - Organic, Non-GMO, recycling, energy
- **Regulatory** –
  - Where will you **sell** the food?

Global and local environmental concerns and knowledge of where the food is grown and processed is of growing concern in many countries. The consumer has the ability to access instantaneous activities that are occurring around the world that affect their purchasing decisions.

Some of these concerns are precipitated by news reports of food safety, water quality, and societal and political rights, methods of rearing animals, energy consumption, and food crops being diverted for fuel as well as inequity of access to food through pricing. Food businesses must be aware of the environment that they are processing and selling their foods.

The regulations relating to food are so diverse between countries and even within countries the next slide will describe the main regulatory bodies to consult in Canada.

REGULATORY ATTRIBUTES OF THE PRODUCT

Main Regulatory Agencies

- Health Canada
- The Safe Food for Canadians Act, 2012
- Canadian Food Inspection Agency, CFIA

The jurisdiction of the sale of food dictates the regime of regulations that will be consulted.

If you sell food in Canada, Health Canada has jurisdiction over the Food and Drugs Act and Regulations.

In 2012 the Canadian federal government passed the Safe Food for Canadians Act which consolidates the authorities of the *Fish Inspection Act*, the *Canada Agricultural Products Act*, the *Meat Inspection Act*, and the food provisions of the *Consumer Packaging and Labelling Act* into a single overreaching Act and Regulations that should streamline and provide inspection across Canada to be more evenly implemented. –more information is included in tour workbook.

The Canadian Food Inspection Agency, CFIA, is the entity that enforces the regulations for food in Canada.

If you intend to develop food for sale in countries outside of Canada it is best to investigate the regulations in those countries prior to starting the process, even for the USA.

DEFINE THE FINISHED PRODUCT

Define the Finished Product

General Attributes – measurable

- Cultural – Ethnic, Religious, Dietary preference – Vegan, Vegetarian, Raw
- Commercial – Price, Advertising, Product Benefits, Canada Brand

Cultural aspects of a food product may be included but usually when the attribute is prescribed by the customer. It is of value to define the cultural attributes and to investigate the influence of a name or brand and ingredients that may be culturally significant to avoid an embarrassing situation in the marketplace as well as to provide the marketplace with the benefits of the product to markets that you may not have considered significant nor even considered.
Commercial attributes generally are not recorded on a product development specification even though these attributes are usually some of the most influential at the time of product development. To augment advertising the benefits of a product can be added at the time of initial development of the marketing program versus after the fact. This knowledge at the start of the process may also eliminate unnecessary reformulations in the future.

THE PRODUCT - EXAMPLE

Now to build the Haskap Berry Syrup

- Ingredients:
  - Haskap Berries – variety, cleaning, processing
  - Sugar, Citric Acid, Water
- Packaging:
  - Glass Bottle, Cap and Sleeve, Label
  - Shipper box and outer label
- Processing
  - Cooking – time/temperature, packing temp., cooling method and time

Now let's design and build the Haskap Berry Syrup!

The Bill of Materials (listing of materials and the quantity of each) and the Processing Method Documents combined are similar to Engineering Designs when crafting an airplane or a bridge, just different language and attributes.

This information relates to the entire product, including packaging.

There are certain ingredients that we have to have to make the syrup taste good as well as to create a safe food product. You will note that there are no chemical preservatives in the list of ingredients. The consumer wants a "clean' label thus only minimal ingredients.

The food safety hurdles, or those attributes that are going to restrict growth of spoilage organisms, are contained within the ingredients and packaging but also the process used will greatly influence the shelf life and stability of the finished product.

DOCUMENTATION
PRODUCT CREATION

- **Record of Attributes** =
  - Specification Sheet
- **Record of Recipes & Processes** =
  - Formulations – raw materials and process
- **Record of Suppliers** =
  - who, what they sold you, and the cost

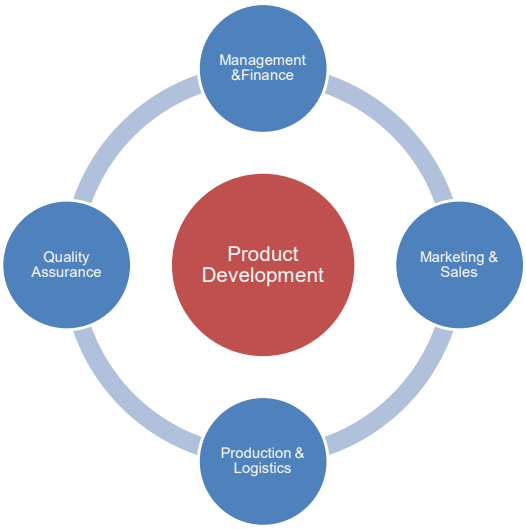
Now we can record all of the information about our new product into various documents that will define and ensure that the Haskap Berry Syrup will taste the same every time, will be what the customer expects and will be safe and conform to all regulatory requirements.

Record of Attributes – becomes the specification sheet for that product – a record the product to ensure consistency between production runs.

Record of Recipes & Processes (Formulations) Write down every trial of the recipes; make comments what you liked or disliked about the recipe, date the trials and who tasted them.

Record of Suppliers – providing standardized raw materials to ensure consistency of the finished product and to track costing of raw materials and shipping.

COLLABORATION



The Product Development process translates, creates, and documents new and revised formulations intersecting with all of the other departmental functions within a food business.

The ability to obtain descriptive terms of an idea or product and convert that to a scientific formulation involving ingredients, packaging and processes methods is a critical attribute for a cost effective product development department.

Understanding and collaborating with people of other departments is the only method of having a functional product development process.

NEXT STAGE OF LEARNING

1. Create a recipe
2. Prepare a formulation
3. Identify regulations that affect your products
4. Evaluate suppliers and new materials
5. Investigate Change Control

At this level you have learned the basics of the product development for food products.

To put the knowledge to work within your own food business the next steps will involve preparing a recipe and converting that into a formulation assuring regulatory requirements and the finished product attributes are defined.

The process to select suppliers and new materials will be defined all with the intention of saving you time and reducing your financial investment in product development.

Instituting change control is a basis of good business practices but is critical to implement the discipline for regulatory compliance and the establishment of archives for easy retrieval in the future.

FEEDBACK, PLEASE

Please take a few minutes to assist us by providing feedback as to the content and delivery of this module.

We would appreciate if you would provide your name and contact details to follow up for more details as we want these modules to constantly be relevant to food business owners. We appreciate all input, positive and less than positive!