



Building and Maintenance of Your Brewery Sensory Program: Why? and How?

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AGENDA

- **PROGRAM OVERVIEW**
- **SENSORY BASICS**
- **QUALIFICATION and
MAINTENANCE OF TASTERS**



SENSORY PROGRAM DEVELOPMENT

The primary focus of this presentation is to answer these questions.

- 1. What is the Purpose for Sensory Program?**
- 2. What are some Process Control Points and Associated Characteristics.**
- 3. What are the basics of sensory?**
- 4. How to qualify and maintain tasters?**



Sensory Program

Purpose

To provide in-process sensory evaluation in your brewery.

General Process Control Points

Establish sensory monitoring requirements for process control points:

Water, Incoming Brewing Materials, Fermentation, Packaged Product.

Perspective

Sensory evaluation is an integral component in quality monitoring within a brewery.

- It is a troubleshooting and/or disposition tool when flavor concerns arise.
- The goal is to detect off-flavor product in the process as early as possible. Benefits to early detection include:
 - More timely process reviews
 - Timelier analytical and sensory testing
 - Ability to determine causes of off flavors to eliminate the potential for recurrence
 - Minimize disruptions to brewery / package operations by planning disposition before product is scheduled to be packaged



Some Potential Off-Flavor Sources

- Introduction
- Raw Materials
- Lack of Process Control
- Microbiological Spoilage
- Storage



Off-Flavor Sources

Introduction:

- Over 1,300 volatile compounds in beer, wine and whiskey.
- Expected beer flavor is a balance of these compounds.
- Off-Flavors develop when the balance is disturbed.
- Factors that determine whether a flavor is undesirable:
 - Beer Style
 - Sensitivity of the taster
 - Consumer expectation



Off-Flavors from Raw Materials:

- **Brewing Water:**
Sulfury, Rusty, Earthy, Phenolic, Musty
- **Malt:**
Sulphidic/tic, Grassy, Phenolic
- **Adjuncts:**
Rancid, Vomit-like, sickly
- **Hops:**
Cheesy, Burnt Rubber, Onion-Garlic



Off-Flavors - Lack of Process Control:

- **Mashing:**
 - Husky, grainy, astringent
- **Wort Boiling:**
 - Sulphidic/tic, cream corn, cooked cabbage, green olive, baked beans
 - Worty, grassy, cracker-like
 - Metallic, harsh, bitter, drying, roasted, bready



Off-Flavors - Lack of Process Control:

- **Fermentation:**

- Nail polish, solvent
- Fruity, estery
- Dry, astringent
- Sweet, worty
- Rotten egg, onion, garlic, rubbery, match-striking, acrid, sulphidic/tic
- Meaty, bouillon, yeasty
- Caprylic, soapy, goaty, fatty
- Sweet, buttery, butterscotch



Off-Flavors - Microbiological Spoilage:

Wild Yeast:

- Phenolic, spicy, clove, dentist's office
- Dry, astringent, phenolic
- Fruity, estery
- Sauerkraut

Molds:

- Moldy, musty
- Cellar-like



Off-Flavors - Packaging Materials:

Kegs:

- Metallic
- Bleach-like, medicinal

Aluminum Cans and Lids:

- Sulfury off-flavors
- Strong oxidation, very stale
- Moldy, musty, earthy

Bottles:

- Lightstruck, skunky, road-kill
- Metallic taste
- Oxidized, stale



Off-Flavors - Packaging Storage:

- The flavor of packaged beer changes with time.
- Beer type, raw materials used, brewing and packaging processes, and storage conditions influence flavor changes.
- General description of flavor change in beer:
 - Bitter / Sweet balance alters
 - Perceived bitterness decreases
 - Sweetness increases
 - Development of toffee-like, bready notes and cardboard flavor
 - Sulfur notes decrease
 - Fresh hop aroma is gradually lost



Qualified Tasters will utilize these senses:

Basic Taste

Indicates:

Sweet

Energy source

Sour

Not yet ripe or spoilage

Salt

Essential minerals for fluid balance

Bitter

Harmful/toxins

UMAMI

Protein, amino acids

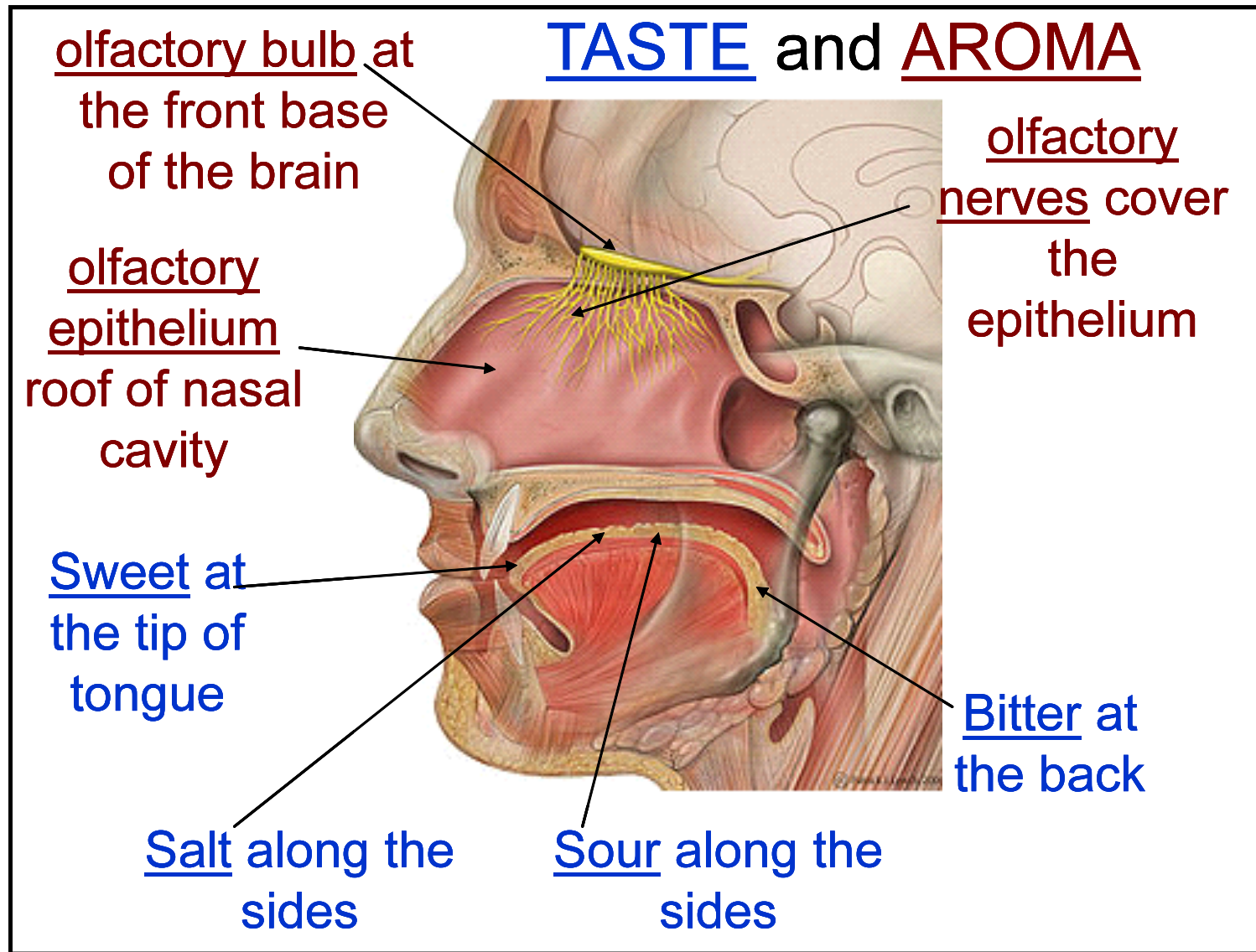
Umami - a basic taste

Our sense of taste has developed to detect key components in food which are important for healthy development, and those which we need to avoid. There are five basic tastes.

The fact that we have evolved to taste glutamate is not surprising once we realize that it is an amino acid found abundantly in food. It indicates the presence of protein, a source of amino acids we need for healthy growth and development throughout life.

Specific taste receptors on the tongue recognize each of the five basic tastes. For example, when glutamate comes in to contact with the umami taste receptors, this information is relayed to the brain where the umami taste is then recognized.

Map of Human Sensory Anatomy





Screen for Tasters

- Prospective candidates to become tasters should be screened from candidate pool and must be able to participate on a regular basis in your Sensory Program.
- Conduct a short interview to determine the degree of interest and time actually available for tasting.



Qualifying Tasters

- Coordinate a program and tracking methods
- Establish who will be your resources - panelists
- Determine major characteristics that may develop naturally during your beer making process
- Train tasters to recognize those characteristics and maintain panel attendance for maintenance
- Maintain regular requalification and refreshers for your tasters on characteristics of interest



Conclusions:

- Off-flavors have a variety of origins.
- Once in the marketplace, losses can be substantial including the loss of consumer confidence.
- Costs are incurred trying to salvage a situation, but rarely can taints be satisfactorily removed.
- Brewery preventive strategies to minimize the chance of developing flavor problems include:
 - Monitor raw materials
 - Monitor in-process samples
 - Monitor final product
 - Rigid enforcement of process and product specifications

A vertical strip on the left side of the page shows a portion of an old, sepia-toned map. It features various geographical details, including lines representing rivers and roads, and some handwritten or printed text in a cursive or old script. The map is partially obscured by a white shadow effect.

THANK YOU

