FAQs

1:Define what is Microbial spoilage?

Microbial spoilage is caused by microorganisms like fungi (moulds, yeasts) and bacteria. They spoil food by growing in it and producing substances that change the colour, texture and odour of the food. Eventually the food will be unfit for human consumption.

Microbial spoilage by moulds and yeasts includes souring of milk, growth of mould on bread and rotting of fruit and vegetables. When microorganisms get access to food, they utilise the nutrients found in it and their numbers rapidly increase. They change the food's flavour and synthesise new compounds that can be harmful to humans. The presence of a bad odour or smell coming from food is an indication that it may be unsafe. But remember that not all unsafe food smells bad

2:What are major types of Canned goods spoilage:?

Canning is a method of preserving food in which the food contents are processed and sealed in an airtight container. Canning is a way of processing food to extend its shelf life.

Canned Foods:Thermophilic sporeformers : Can cause some types of spoilage of low acid (high pH) foods (such as corn, beans, peas) when the cans are temperature abused at 43^0C and above, even for short duration

Spoilage due to insufficients heating: *Clostridium* and some *Bacillus* spp.

Spoilage due to container leakage: Spoilage in canned foods caused by leakage can be caused by a variety of microorganisms that do not normally survive the heat treatment. These MO usually enter at the start of cooling through a faulty seam and produce a swelled can.

3: Writes short notes on Slimy spoilage and sour spoilage?

Slimy spoilage: Like other meat products, this occurs on the surface and is caused by the buildup of cells of yeasts, lactobacilli, enterococci or *Brochothrix thermosphacta*. Washing the slime off with hot water can restore the product quality.

Sour spoilage: Results from growth of lactic acid bacteria (which originate from contaminated ingredients like milk solids) under the casing. These organisms ferment lactose and other CHOs in the product and produce organic acids. Taste is adversely affected but the product is not harmful if eaten.

4: Spoilage of Fruits compositions and different rots?

Average composition

85% water

13% CHO

-low pH (1.8-5.6)

Specific Spoilage Organisms: Moulds

Blue rot – *Penicillium,* fruits

Downy mildews – *Phytophora*, large masses of mycellium (grapes)

Black rot – *Aspergillus,* onions

Sour rot – *Geotrichum candidum*

5:What is food spoilage and signs of food spoilage?

Spoilage caused by microorganisms like fungi (moulds, yeasts) and bacteria. They spoil food by growing in it and producing substances that change the colour, texture and odour of the food. Eventually the food will be unfit for human consumption. Food spoilage directly affects the colour,

taste, odour and consistency or texture of food, and it may become dangerous to eat. The presence of a bad odour or smell coming from food is an indication that it may be unsafe. Spoilage bacteria can cause fruits and vegetables to get mushy or slimy, or meat to develop a bad odor.

6:Common mould spoilage of bread:?

Bread is one of the most important staple foods in the world can be spoiled by many moulds, of which Penicillium species are by far the most common. spoilage of bread include Rhizopus sp., and Mucor ... due to mould Spoilage vary between 1-5 per cent ..... approach to prevent fungal growth of common.

7:Thermophilic bacteria and how it spoil the food?

Thermophiles prefer a warmer temperature. The optimum temperature for growth is usually between 131 °F (55 °C) and 149 °F (65 °F). Some can grow in temperatures as low at 95 °F (35 °F) or as high as 167 °F (75 °C) to 194 °F (90 °C).These grow at temperatures above 45^{o}C. Often their optimum growth temperatures is between 50^{o}C and 70^{o}C.Growth of some bacteria occur at 80^{o}C.Bacteria in this group are mainly spore formers and are of importance in the food industry especially in processed foods.

8:How canned food spoilage takes place by microorganisms, what are they?

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Canned foods are classified as (a) **low acid,** (b) **acid** or (c) **high acid** products and each group has characteristic spoilage microorganisms, whose growth is most often due to inadequate processing:

9:Cottage cheese spoilage organisms.?

Cottage cheese can be spoiled by yeasts, molds and bacteria.The most common bacterial spoilage is "**slimy curd**" caused by *Alcaligenes* spp. (G^- aerobic rod bound in soil, water, and intestinal tract of vertebrates). Like *Campylobacter*, these species do not oxidize CHOs but instead use amino acids and TCA intermediates. *Penicillum, Mucor* and other fungi also grow well on cottage cheese and impart stale or yeasty flavors.

10:Spoilage of Milk?

In milk, the microorganisms that are principally involved in spoilage are psychrotrophic organisms. Most psychrotrophs are destroyed by pasteurization temperatures, however, some like *Pseudomonas fluorescens, Pseudomonas fragi* can produce proteolytic and lipolytic extracellular enzymes which are heat stable and capable of causing spoilage.

Some species and strains of *Bacillus, Clostridium, Cornebacterium, Arthrobacter, Lactobacillus, Microbacterium, Micrococcus*, and *Streptococcus* can survive pasteurization and grow at refrigeration temperatures which can cause spoilage problems.

11:Whole Meats spoilage?

Fresh meats are among the most perishable foods.The microflora of fresh meat is composed primarily of,Gram negative aerobic rods such as *Pseudomonas, Acinetobacter* and *Moraxella,Bacillus* and

clostridia (e.g. *C. perfringens*) are also common on all types of meat.Storage temperature is the single most important control factor for meat spoilage.

Sources of Contamination: Several genera of molds grow on the surface of meat and can cause spoilage, but cannot grow on meat stored below 5°C. Usually, fresh cut meats in the refrigerator at high humidity undergo bacterial spoilage by: Gram negative aerobes like *Pseudomonas, Acinetobacter* and *Moraxella* spp.
Meat spoilage is characterized by the appearance of off odors and slime, which are manifest when surface loads exceed 10^7 CFU/cm^2.

12:composition of Vegetables and major spoilage organisms?

Composition:
-88% water
-8.6 % CHO.
-pH of most veggies is around 6.0; within the growth range of many bacteria.
G+ bacteria like lactic acid bacteria (e.g. *leuconostocs, lactobacilli, streptococci.*
Coryneforms and staphylococci (the latter coming from the hands of employees during processing.
Soft rot: One of the most common types of bacterial spoilage.caused by *Erwinia carotovora* and sometimes by *Pseudomonas* spp., which grow at 4°C

13:Source of contamination?
Sources of Contamination occur in various methods ;
1. Surface contamination – Soil, water, air, human pathogens from manure (night soil)
2. Harvesting - hand picking vs. machines.
3.High damage if crop is ripe...harvest before ripe *Geotrichium candidum* – mold on harvest or storage
4.Packaging: containers reused-sanitized
5.Processing plant
6.Markets – handling, cross-contamination

The microflora of vegetables will generally reflect on the sanitation of processing steps as well as the condition of the original raw product. Soil-borne MO such as clostridia are common on raw vegetables, and some species, like

C. botulinum, are of such great concern that they are the focus of processing steps designed to destroy MO.

14: Write notes on Flat-sour spoilage and Sulfide spoilage microorganisms?

1.**Flat-sour spoilage** by thermophilic sporeformers such as *Bacillus stearothermophilus* (strick aerobe!) and *B. coagulans* (fac. anaerobe).
Can does not bulge (flat) but pH falls and food tastes sour, off odors may be apparent.
2.**Sulfide spoilage** by anaerobic thermophilic sporeformers that produce H_2S
like *Clostridium nigrificans* and *C. bifermentans.*

15:Microorganisms that spoil and contaminate poultry? .
Microorganisms that contaminate poultry Immediately after obtaining, surface of carcasses is mainly contaminated with bacteria of the genera *Acinetobacter, Flavobacterium,* but superficial rotting is produced primarily by *Pseudomonas* (fluorescens, putide, fragi, etc.) and to a lesser extent by *Aeromonas, Acinetobacter and Moraxella*.

Ganerally,bacteria exist in higher numbers at the time of processing on the skin of chickens and in their intestinal tracts are primarily mesophiles. These bacteria do not multiply to an appreciable degree at refrigerator temperatures. Salmonella, *E. coli* and other bacteria found on chickens are mesophiles.