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Scenario of food spoilage in India

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Abstract

Food spoilage refers to “any sensory change (tactile, visual, olfactory or flavour)” which the consumer considers to be unacceptable. Spoilage may occur at any stage along food chain. Spoilage may arise from insect damage, physical damage, and indigenous enzyme activity in the animal or plant tissue or by microbial infections. Most natural foods have a limited life. Perishable foods such as fish, meat and bread have a short life span. Other food can be kept for a considerably longer time but decomposes eventually. Enzymes can bring about destruction of polymers in some foods while chemical reactions such as oxidation and rancidity decompose others but the main single cause of food spoilage is invasion by microorganisms such as moulds, yeast and bacteria. Food loss, from farm to fork, causes considerable environmental and economic effects.

Keywords: Food spoilage, perishable foods, causes of damage, remedies to avoid food spoilage

Introduction

Causes of Food spoilage: India comes in second place in the world behind China and Brazil for production of fruits and vegetables. It makes up 14% of the world's vegetable production and 10% of the world's fruit production. Because of their nature and composition, fruits and vegetables are more likely to spoil than grains.

The spoilage of food happens during the harvesting, handling, shipping, storage, marketing, and processing stages, which results in waste. In addition to reducing the risk of contamination, effective handling of these wastes can lower the cost of producing processed meals and preserve th e essential components in our foods and feeds.

The India Agricultural Research Data states that there are about thirty percent losses in fruits and vegetables. Assuming that 150 million tonnes of fruits and vegetables are produced annually in India, 50 million tonnes of garbage are produced overall. Post harvest technologies for perishable horticulture products are a useful tool for improving produce returns and reducing waste at the production and distribution sites, which will assist control the infrastructure of the market.

Fruits and vegetables are susceptible to microbiological deterioration from bacteria, yeast, fungus, and molds much like any other meal. Fruit and vegetable losses during the post-harvest phase are largely ascribed to bacterial and fungal infections. Fruits and vegetables are easily attacked by these organisms because of their succulent nature. These microbes affect canned and processed goods in addition to fresh fruits and vegetables. Numerous severe post-harvest illnesses spread quickly, severely deteriorating the commodity and occasionally ruining the entire package.

Soft rot bacteria are thought to be responsible for 36% of vegetable deterioration. In a similar way, fruit rot brought on by fungi in aonla and other soft fruits can be quite harmful. Regarding vegetables, the field, water used to clean the surface, contact with equipment, and storage conditions are naturally the sources of infection.

The most frequent pathogens responsible for fruit and vegetable rots are fungi, including Pencillium, Fusarium, Alternaria, Botrytis, Diplodia, Monilinia, Phomopsis, and Rhizopus. Ervinia, Pseudomonas, and other bacteria are highly damaging. Relative humidity and high temperatures encourage the growth of microbes that cause post-harvest deterioration.

Fungi often target more acidic tissue, but bacteria are more likely to attack fruits and vegetables with a pH of above 4.5. Examples of this include water soft rot of carrots caused by

Sclerotinia sclerotium and bacterial soft rot of potatoes produced by Ceratocystis fimbriata. Because the country's climate is so ideal for growing a wide variety of fruits and vegetables, India offers a great deal of opportunity for year round fruit and vegetable cultivation in one or more regions. Despite being the most perishable food items, fruits and vegetables are essential for human nutrition because of their high nutritional content.

For human consumption, they are the most affordable and reliable source of protective food that is available year-round in fresh, processed, or preserved form.

As a result, the situation across the country will greatly improve. Vegetables and fruits are only abundant at specific seasons and in certain locations. Approximately 20 to 25% of fruits and vegetables are spoiled in various stages during peak season as a result of poor handling procedures, poor marketing, and storage issues.

Remedies to avoid food spoilage

As they breathe, fruits and vegetables are living goods. For horticultural crops, therefore, appropriate post-harvest handling and processing is necessary. The ideal agro-climatic conditions in India allow for the abundant availability of a wide variety of fresh fruits and vegetables. For this reason, there is no derth for processing raw materials.

India is now developing a product profile that is restricted to a few fruits and vegetables, such as mango, pineapple, grapes, etc. Nonetheless, processing options for papaya, bananas, jackfruit, guava, aonla, carambola, and other little fruits.

In a similar way, processing cauliflower, carrots, bitter gourd onions, garlic, watermelons, muskmelon, etc., has more possibilities. Fruit and vegetable post-harvest losses are minimized by careful handling, packing, shipping, and storing. Every 1% decrease in loss will result in the annual saving of 5 million tons of fruits and vegetables. Technology for processing and preservation is helpful.

Only approximately 2.5% of all fruits and vegetables are processed in the nation's about 4000 small and big processing facilities, compared to 40–85% in wealthy nations.

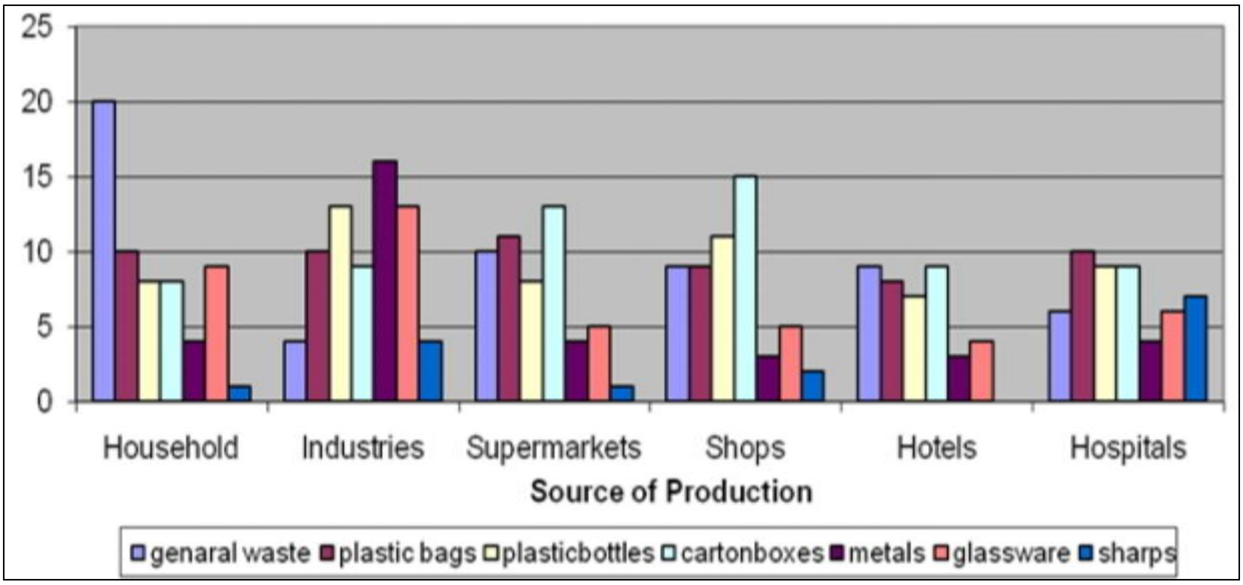

Fig 1: Wastes & their source of production

Conclusion

Efforts to mitigate food spoilage in India are crucial given its significant role in global fruit and vegetable production. With 30% losses reported in these perishable items annually, amounting to about 50 million tonnes of waste, effective post-harvest technologies and management practices are essential. Microbial infections, primarily from bacteria and fungi, are major contributors to spoilage, affecting both fresh produce and processed goods. Addressing these issues through improved handling, storage, and processing techniques not only reduces waste but also enhances food safety and nutritional retention. With India's diverse climatic conditions supporting year-round cultivation, strategic investments in preservation technologies can significantly bolster food security and economic sustainability.

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