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DEPARTMENT OF FOOD TECHNOLOGY

COURSE CODE & NAME: 19FTB302 & Post Harvest Technology

III YEAR / V SEMESTER

UNIT : I - THRESHING, MOISTURE MEASUREMENT AND PHYSICAL PROPERTIES OF AGRICULTURAL PRODUCES

TOPIC 1 : Post harvest engineering - introduction - objectives

DEFINITION

PHT is the **application of science and technology** to agricultural commodities which **acts after harvesting food** from farms for preservation, processing, packaging, storage, handling, transportation, and marketing. PHT is an actual application of food science & Technology. **It is a path through which food comes from the farm to the consumer's plate.**

Post-Harvest Technology can minimize the losses of fresh food commodities & increase the value addition to crops, horticulture, livestock & fishery sector, etc. Plays a vital role in the reduction of wastage of food.

Principals of PHT

1. Increase in productivity
2. Ensuring value addition in food
3. Increasing diversification
4. Reducing post-harvest losses
5. Commercialization of agriculture
6. Generation of employment
7. Creating surplus for export agro-business
8. Generating availability of food in any season, access particular area
9. Storage, marketing & transportation of food
10. Waste management & reduction

PHT is a very important procedure *in the agro-business chain. PHT is an actual means of Food Engineering & Technological application.* ***It is a link between farm to consumers plate.***

Objectives of PHT

- To reduce loss in quantity or volume and the product's qualitative or nutritional value.
- To maintain the excellent quality of the produce (color, taste, flavor, aroma).
- To increases the shelf life of the crops.
- To keep the fruits or vegetables or commodities free from insects and pests.
- To get vegetables and fruits fresh all year round.

Stages in PHT

1. Harvesting (Handling)
2. Threshing
3. Drying (Transport and distribution)
4. Storing
5. Processing

Primary processing (Cleaning, classification, de-hulling, pounding, grinding, packaging, soaking, winnowing, drying, sieving, whitening, milling)

Secondary processing (Mixing, cooking, frying, molding, cutting, extrusion, Product evaluation (Quality controls)

6. Packaging (Weighing, labeling, sealing)
7. Marketing (Publicity, selling, distribution)
8. Use (Recipes elaboration: traditional dishes, new dishes)
9. Consumer preferences (Product evaluation, consumer education)

Factors affecting Post-Harvest losses

1. Pre-harvest production practices

It is mainly about farming factors like
water supply
Soil fertility
Cultivation practices
Use of chemicals & fertilizers

2. Harvesting and field handling

The product can get damaged mostly during its harvesting. So, good harvesting practices and field handling is necessary. As good quality of harvesting workers or advanced harvesting machinery is used, then loss can be reduced.

3. Packing or packaging

Good packaging not just for marketing & presentation but also helps to prevent the product from both mechanical and other damages. It also helps to increase the shelf life of the product.

4. Storage

Good storage and keeping quality helps to preserve products for a longer period. Storage rooms which are clean and hygienic and free from rodents and insects helps to preserve food for a long time.

Contd.,

5. Transportation

A lot of mechanical damages and quantitative losses are occurring due to inappropriate transportation. So, transportation with good care is important.

6. Marketing

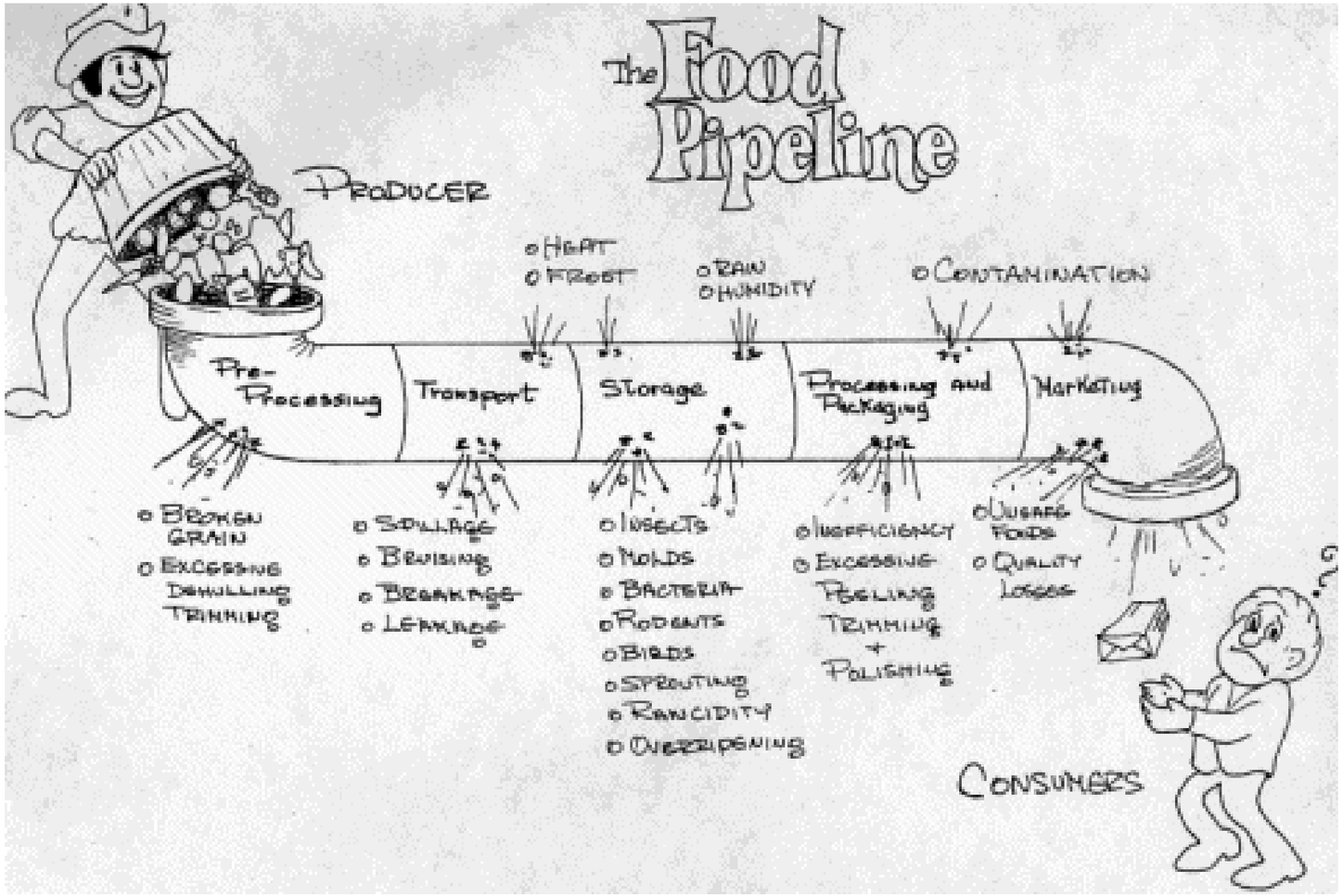
Improper handling may cause damage in crops especially in perishable products. So, it can reduces the quality also the quantity of food products which can depletes its market price.

7. Perishability of the product

Perishability simply means the amount of water present in the food. As the food is highly perishable, good practices are important to preserve food for a longer time. As the perishability of food is low its shelf life naturally increases

The Food Pipeline

(Source: Bourne, 1977, mimeo)



Importance of post-harvest technology

- Post-harvest technology is the application of technology to the post-harvest handling and storage of agricultural produce.
- Post-harvest technology can improve the quality and shelf life of agricultural products.
- Post-harvest technology can help to reduce the wastage of agricultural produce.
- Post-harvest technology can help to improve the economics of agriculture.
- Post-harvest technology is an important tool in the fight against hunger and malnutrition.

Water activity and growth of microorganisms in food

Range of a_w	Microorganisms inhibited by lowest a_w in this range	Foods within this range
1.00–0.95	*Pseudomonas*, *Escherichia*, *Proteus*, *Shigella*, *Klebsiella*, *Bacillus*, *Clostridium perfringens*, some yeasts	Highly perishable (fresh) foods and canned fruits, vegetables, meat, fish, milk, and beverages
0.95–0.91	*Salmonella*, *Vibrio parahaemolyticus*, *C. botulinum*, *Serratia*, *Lactobacillus*, *Pediococcus*, some molds, yeasts (*Rhodotorula*, *Pichia*)	Some cheeses (Cheddar, Swiss, Muenster, Provolone), cured meat (ham), bread, Tortillas
0.91–0.87	Many yeasts (*Candida*, *Torulopsis*, *Hansenula*), *Micrococcus*	Fermented sausage (salami), sponge cakes, dry cheeses, Margarine
0.87–0.80	Most molds (mycotoxigenic*penicillia*), *Staphyloccocusaureus*, most *Saccharomyces*	Most fruit juice concentrates, sweetened condensed milk,

Water activity and growth of microorganisms in food

	(*bailii*) spp., *Debaryomyces*	syrups, jams, jellies, soft pet food
0.80–0.75	Most halophilic bacteria, mycotoxigenic*aspergilli*	Marmalade, marzipan, glacé fruits, beef jerky
0.75–0.65	Xerophilic molds (*Aspergilluschevalieri*, *A. candidus*, *Wallemiasebi*), *Saccharomyces Bisporus*	Molasses, raw cane sugar, some dried fruits, nuts, snack bars, snack cakes
0 .65–0.60	Osmophilic yeasts (*Saccharomyces rouxii*), few molds (*Aspergillusechinulatus*, *Monascusbisporus*)	Dried fruits containing 15-20% moisture; some toffees and caramels; honey, candies
0.60–0.50	No microbial proliferation	Dry pasta, spices, rice, confections, wheat
0 .50–0.40	No microbial proliferation	Whole egg powder, chewing gum, flour, dry beans
0.40–0.30	No microbial proliferation	Cookies, crackers, bread crusts, breakfast cereals, dry pet food, peanut butter
0.30–0.20	No microbial proliferation	Whole milk powder, dried vegetables, freeze dried corn

THANK YOU...