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# **Post Harvest Management of Horticultural Crops**

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# INTRODUCTION

The cultivation of horticultural crops plays a vital role in global agriculture, contributing significantly to both nutrition and economic growth. However, the journey from the farm to the consumer's table is fraught with challenges that can compromise the quality and shelf life of these crops. This article delves into the essential practices of post-harvest management that farmers and stakeholders can adopt to ensure the freshness and marketability of horticultural produce.

#### **Reasons for Post-harvest losses**

Factors which are responsible for post-harvest losses vary widely from place to place and become more and more complex. The following reasons for postharvest losses are as under:-

- 1. Moisture loss causing wilting / shrinkage
- 2. Loss of photosynthates like carbohydrates, proteins occur
- 3. Physical damage through pest and diseases attack
- 4. Physiological loss causing decline in quality
- 5. Fibre development

# Some Important techniques for efficient post-harvest management are as follows along with examples

# 1. Harvesting Techniques:

The first step in post-harvest management is the careful and timely harvesting of crops. Employing proper harvesting techniques, such as using sharp tools to prevent injuries and avoiding bruising or damage to the produce, sets the foundation for quality preservation. Few examples for proper harvesting techniques are mentioned hereby:



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#### Apples:

Hand Harvesting: Pick apples by hand to avoid bruising.

Mechanical Harvesting: Use apple harvesting machines that shake the tree, causing the ripe fruit to fall.

#### Grapes:

Hand Harvesting: Preferred for wine grapes to selectively pick the ripest bunches.

Machine Harvesting: Efficient for table grapes, where machines shake vines, and grapes fall onto a conveyor.



#### Strawberries:

Hand Harvesting: Common for strawberries to ensure delicate handling and prevent damage.



#### **1.** Sorting and Grading:

Upon harvest, sorting and grading are critical processes. Sorting helps eliminate damaged or diseased fruits and vegetables, ensuring that only high-quality produce advances to subsequent stages. Grading facilitates categorization based on size, color, and quality, meeting diverse market demands. Let's take the example of apples:

# Sorting:

*Based on Size:* Apples are sorted into different size categories, such as small, medium, and large. This ensures uniformity in appearance and helps in packaging.

Color Sorting: Apples are often sorted based on color to meet market preferences. For example, red and green apples may be sorted separately.

#### Grading:

*Grade A*: This grade typically includes the best-quality apples. They are free from defects, have a uniform size, and meet specific color standards.

*Grade B:* These apples may have slight defects but are still of good quality. They may be used for processing or sold at a lower price.

*Cull Grade:* This grade consists of apples with significant defects or damage and is usually



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used for making juices, sauces, or other processed products.

# 2. Cleaning and Sanitization:

Thorough cleaning and sanitization are imperative to remove field residues, dirt, and potential contaminants. This step not only enhances the visual appeal of the crops but also reduces the risk of post-harvest diseases and ensures a safe end product for consumers.

#### 3. Packaging:

Appropriate packaging is a key factor in maintaining the quality and extending the

shelf life of horticultural crops. Different crops require specific packaging materials and techniques, including breathable materials, modified atmosphere packaging, and proper ventilation to regulate moisture.

Here are some common packaging methods for citrus:

#### Bulk Bins or Wooden Crates:

Example: Oranges are often packaged in bulk bins or wooden crates. This method allows for easy transportation and protects the fruits from damage.



#### Mesh Bags:

Example: Small mesh bags are used for packaging smaller quantities of citrus fruits, such as mandarins or clementines. These bags allow for good air circulation and visibility.



#### Cardboard Boxes:

Example: Cardboard boxes are widely used for packing various citrus fruits, providing sturdy

protection during transportation. Labels on these boxes often include information about the type of citrus and grade.





Plastic Film Wrapping:

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Here are some common packaging methods for **guavas:** 

Example: Some guavas are individually wrapped in plastic film to protect them from

physical damage and maintain freshness. This method is suitable for premium or specialty varieties.

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# Foam Padding:

Example: Guavas can be placed in packaging with foam padding to cushion the fruit and prevent bruising during transportation.



#### 4. Storage Facilities:

Investing in suitable storage facilities is crucial for preserving the freshness of horticultural produce. Cold storage and controlled atmosphere storage help slow down physiological processes, minimizing spoilage and extending the shelf life of fruits and vegetables.

#### Bananas:

Storage: Room temperature storage, typically around 57-60°F (14-16°C). Ethylene-sensitive. Example: Bananas are stored in ripening rooms at controlled temperatures to regulate the ripening process.

#### Grapes:

Storage: Cold storage with high humidity, around  $32-34^{\circ}F(0-1^{\circ}C)$ . Ethylene-sensitive.

Example: Grapes are stored in refrigerated conditions to slow down deterioration and maintain freshness.

#### 5. Temperature and Humidity Control:

Maintaining optimal temperature and humidity levels during storage is essential. This prevents the growth of pathogens, minimizes water loss, and preserves the texture and flavour of horticultural crops. Monitoring equipment, such as temperature and humidity sensors, aids in precision control. Apples:

Temperature: Cold storage at around  $32^{\circ}$ F (0°C) to slow down ripening.

Humidity: High humidity (90-95%) to prevent moisture loss and maintain crispness.

#### 6. Transportation:

Efficient transportation is a critical link in the post-harvest chain. Using refrigerated trucks, proper handling practices, and minimizing transit times are essential to



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prevent physical damage and temperaturerelated deterioration during transportation.

# Container Shipping:

Example: For international trade, horticultural crops like bananas or pineapples are often shipped in refrigerated containers to maintain the required temperature and humidity levels.

# Sea Freight in Ventilated Containers:

Example: Citrus fruits, like oranges or lemons, are often transported in ventilated containers by sea. These containers help maintain the necessary airflow to prevent moisture buildup.

# **Refrigerated Trucks:**

Example: Perishable fruits and vegetables like strawberries or avocados are often transported in refrigerated trucks. The controlled temperature helps prevent spoilage during transit.

# 7. Market

Access and Consumer Education: Ensuring market access for farmers and educating consumers about the importance of purchasing fresh, well-handled horticultural produce contributes to sustainable post-harvest management. Awareness campaigns can emphasize the value of supporting local, responsibly grown crops.

# CONCLUSION

In conclusion, effective post-harvest management is indispensable for sustaining the quality and market value of horticultural crops. By implementing best practices from harvesting to transportation, stakeholders can contribute to reducing food waste, meeting consumer expectations, and fostering a resilient and sustainable horticultural sector

# REFERENCES

- Post harvest handling of horticultural crops by Yogesh K.Sharma
- Post Harvest Technology of Fruits and Vegetables. Vol. I & II by L.R.Verma ,V.K. Joshi