

Efficient Packaging Material for Fruits and Vegetables

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SUMMARY

Packaging is one of the important considerations in vegetable and fruit market to reduce post-harvest losses and to make attractive to consumers. The use of properly designed containers for transporting and marketing of fruits and vegetables can maintain their freshness succulence and quality for longer period. The package must be capable of protecting the product from the transport hazards; preventing the microbial and insect damage; minimising the physiological and biochemical changes and losses in weight. Packaging is required not only for preservation and protection but also for safe transportation of products during storage and handling.

INTRODUCTION

Packaging of fruits and vegetables is undertaken primarily to assemble the produce in convenient units for marketing and distribution. Careful packing of fruits and vegetables is necessary to keep the produce in place with minimum shaking. Fruits and vegetables are normally packed in layers in crates and in each layer products are packed alternately placing the beak of one in between the shoulders of two. This type of packaging is quick and easy. It also provides enough room to fruits without compressing it. Considering the long-term needs of ecosystems and to achieve an overall economy of country, we will see different types of packaging material for fruits and vegetables.

Various Packages Used for Packaging of Fruits and Vegetables

1. Wire-Bound Crates

Wooden-wire-bound crates are used for packaging of those vegetables which require hydro cooling. Because, these are sturdy rigid with high stacking strength and are not affected by water, these are helpful for hydro cooling because of sufficient ventilation.

Merits: Easy for empty boxes transportation as it can be dissembled.



Wire Bound Crates

Demerits:

- Labelling of these boxes is very tough which decreases its value.
- Consumption of wood for the preparation of these boxes is not advisable.
- Cost is very high so cannot be used for cheap vegetables.

2. Wooden Crates and Lugs

These are generally used for costly fruits i.e. apples, stone fruits especially by Himachal Pradesh and Jammu Kashmir. This is very sturdy and durable even for rough conditions.

Merits:

- It has a good stacking strength which is required during long distance transportation.
- Easy for handling because of durability.

Demerits:

- Very high cost and also leads to deforestation.

- Back transportations of these materials are not possible.
- Labelling of these boxes also is not attractive which is not acceptable to consumer.
- These are totally replaced by other types of packaging.



Wooden Crates and Lugs

3. Wooden Baskets and Hampers

These are generally made up of veneer of different sizes and generally used for highly perishable commodities.

Merits: These are durable and can be easily nested for transportation when empty.

Demerits: Very costly and labelling is not possible.



Wooden Baskets and Hamper

Corrugated Fibre board

This is the most accepted with different styles and weights and is made up of paper-board manufactured by Kraft process. Paper board is generally 0.020 cm thick and is generally made from unbleached pulp with a characteristic brown colour. In addition to virgin wood fibres, Kraft paper may have some portion of synthetic fibres for additional strength, sizing, and other materials to give it wet strength and printability.



Corrugated Fibre Board

Merits:

- Cost effective as it consumes waste material of either wood or agricultural waste.
- Labelling of these boxes is very easy which attract to consumer.
- Easy to handle to the consumer.
- Stacking strength is good enough.
- It can be easy folded and re transported when empty.
- Light in weight.

Demerits:

- It cannot be used for hydro cooling
- Not fit for high humid fruit.

5. Double-faced corrugated Fibreboard

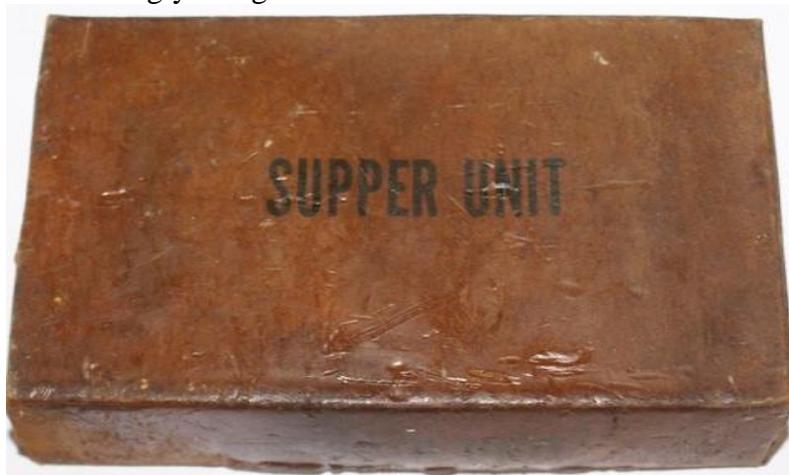
Double-faced corrugated fibre board is the predominant form used for produce containers. It is produced by sandwiching a layer of corrugated paperboard between an inner and outer liner (facing). Corrugated fibreboard manufacturer give certificates on the bottom of containers to certify certain strength characteristics and limitations.



Double-faced corrugated Fibreboard

6. Waxed Fibreboard Cartons

Waxed fibreboard cartons (the wax is about 20 per cent of fibre weight) are used for many produce items that must be either hydro cooled or iced. The main objection to wax cartons is disposal after use, wax cartons cannot be recycled and are increasingly being refused at landfills.



Waxed Fibreboard Cartons

7. Paper and Mesh Bags

Consumer packs of potatoes and onions are about the only produce items now packed in paper bags. The more sturdy mesh bag has much wider use. In addition to potatoes and onions, cabbage, turnips, citrus, and some specialty items are packed in mesh bags. Sweet corn may still be packaged in mesh bags in some markets. In addition to its low cost, mesh has the advantage of uninhibited air flow. Good ventilation is particularly beneficial to onions.



Paper and Mesh Bags

8. Plastic Bags

These are the predominant material for almost all commodities. These are easily affordable and accepted by the consumers. It is also called polyethylene film. Film bags are clear, allowing the easy inspection of the materials.

Merits:

- From economical point of view, as these are available in different sizes as per the demand of customers, the desired material can be packed.
- Consumer feels it very easy to handle these bags.
- These are available in various grades.
- These can be recycled and reused.



Plastic Bags

Demerits: Environmental pollution is the biggest hazard as they spoil the soil, the water and even the guts of domestic animals are blocked.

9. Plastic Stretch Film

These films are generally used for consumer packaging as they can be stretched retains its elasticity. It protects the package from the loss of moisture and keep it fresh for longer times. These types of films can be used for primary processed products and also helps to give rural employment as the farmer itself will do that packaging and will make available directly to consumers



Plastic Stretch Film

10. Nylon Bags

These are commonly used for consumer packaging with good strength. These can be reused and recycled. These are available in different sizes with different strength and mesh. These are good enough for storage and packaging with less water content i.e. onion, elephant foot yam and arbi etc.



Nylon Bags

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