

Title:

POST HARVEST MANAGEMENT

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Summary:

The only post-harvest treatment required for the long storage of bulb onions is a thorough curing

Keywords:

Shorting ,grading, packing of fruits and vegetables, Reefer logistics, Reefer trucks , Temperature

Article Body:

Curing

The only post-harvest treatment required for the long storage of bulb onions is a thorough curing

If onions cannot be dried in the field, they can be collected in trays, which are then stacked

In cool, damp climates, onions in bulk ventilated stores are dried with artificial heat blown

Onions can also be cured by tying the tops of the bulbs in bunches and hanging them on a horizontal

Grading

Onions after curing are graded manually before they go in to storage or for marketing. The thi

For local market the onions are graded based on their size.

Extra large onion (>6 cm dia.)

Medium (4-6 cm dia.)

Small (2-4 cm dia.)

The extra large onions have great demand and fetches very good price.

General Characteristics

The bulbs shall:

- be reasonably uniform in shape, size colour and pungency of the variety /type
- be mature, solid in feel, reasonably firm with tough clinging skins.
- be throughout cured and dried.

- be free from dust and other foreign material.

- be free from defective, diseased, decayed and damaged bulbs caused by seed stems, tops
- oots, moisture, dry sun scald burn, sprouting, mechanical or other injuries and staining

- be free from moulds, soft rot and insect attack.
- % of seed stem or bolted bulbs shall not exceed 20% in Nasik kharif onions.

Bangalore and Krishnapuram onions will be free from bottle necks or doubles.

Grade designations and definitions of quality for export of onions:

Different size but not below 15

1. Tolerance for size in big onions: For accidental errors in sizing, not more than 5 % by wei

2. Defective, diseased and damaged shall mean malformed bulbs and the bulbs internally or externally. General: The grade shall be allowed to be packed only against irrevocable letter of credit.

NS grade: This is not a grade in its strict sense but has been provided for the onions not covered by the above grades.

Packaging

Packing should be small for easy handling during transit and may vary according to market demand.

Bangalore Rose and multiplier onions are packed for export in 14-15 kg wooden baskets. Nylon mesh bags are used for other grades.

Handling

Bulbs intended for storage must be free from cuts and handled with extreme care. Onions should be stored in a cool, dry place.

Storage

Proper storage of bulbs is necessary both for consumption and also for seed production. Onions should be stored in a cool, dry place.

More the relative humidity, more is rooting. Weight loss is more when temperature is above 35°C.

Sprouting is checked effectively if Maleic Hydrazide at 2500 ppm is sprayed at 75-90 days after harvest.

The salient features of improved storage structures are as below

- Construction of storage godown on raised platform helps in reduction of moisture and disease.
- Use of Mangalore tiles roof or other suitable material prevents built up of high temperature.
- Increased centre height and more slope is better for air circulation and preventing humidity.
- Bottom ventilation provides free and faster air circulation to avoid formation of hot spots.
- Avoid direct sunlight on onion bulbs to reduce sunscald, fading of colour and quality.
- Restriction on width of each stack to 60-70 cm for cool humid weather, 75-90 cm for mild weather.
- Restriction of stacking height to 100 cm for small and multiplier onion and hot weather.
- Cubicles should be made instead of continuous stack leaving sufficient space for ventilation.

One cubic metre area of store accommodates about 750 kg onions.

Transport

Onion stocks are transported in bullock carts, tractor trolleys and trucks as also railway wagons.

2.1 Pre-harvest Operations

The condition of onion leaves is a good indicator of the maturity and general state of the bulb.

Spring onions mature for harvesting after 35-45 days from sowing. Harvested crop should be allowed to dry.

2.2 Harvesting & Transport

Manual harvesting is the most common practice in most developing countries. This is normally done by cutting the leaves.

The following steps are followed during two-phase harvesting of onions: (a) mowing the leaves and (b) harvesting the bulbs.

Harvested bulbs are placed in containers (basket, bins) or tied into bunches and placed directly in the transport vehicle.

2.3 Curing & Drying

Both curing and drying remove excess moisture from the outer layers of the bulb prior to storage.

In traditional small-scale operations, onion drying is carried out in the field in a process of natural drying.

Harvested bulbs can also be taken straight from the field and dried artificially either in a sun-drying rack or in a mechanical drier.

2.4 Cleaning

Freedom from any impurity, which may materially alter the appearance or eating quality, is essential for onion storage.

Care should be taken to avoid physical injury on the bulb during these operations.

2.5 Packaging

General Information

Good packaging for onions must meet the following criteria: (a) strong enough to retain the required shape and weight.

There are many traditional methods of holding onions for transportation and/or storage that do not meet these criteria.

Ventilation (natural or forced) is usually achieved by passing air over the shelves. To achieve this, the shelves must be spaced.

Onions are also stored loose bulk (instead of containers) by heaping the bulbs directly on the floor of a store.

However, where bulk storage is to be implemented, the retaining walls must be strengthened when storage is to be long.

Onions can be packaged and stored in a variety of containers such as boxes, cartons, bags, bulks, etc.

Onion Bags

Sacks and nets used for onion packaging fall into three groups: (i) general-purpose jute sacks, (ii) sisal sacks, and (iii) open-mesh nets.

Sisal sacks are made from sisal-like hard fibres and have an open weave, with thick threads spaced widely.

Open-mesh nets are the most widely used package for onions, and they are normally red or orange in colour.

Rigid Packages

A range of rigid containers is used to package onions for transportation, marketing, and/or storage.

Stacking of containers must be carried out with care and to ensure that the ventilation air is not blocked.

Onion Pre-packs

Onions are commonly sold in retail outlets in pre-packs with a capacity of 0.5-1.5 kg. Pre-packs are usually made of plastic or paper.

2.6 Bulk Storage

General Requirements

The objectives of onion storage are to extend the period of availability of crop, maintain optimum quality, and to reduce losses.

Careful harvest and pre-storage treatments with minimal mechanical loads are important to achieve these objectives.

Storage at Low Temperature

For successful low temperature storage, good ventilation and a low level humidity in the range 70-80% are essential.

Ventilation must be carefully applied inside the store to achieve the required temperature and humidity.

Onion Storage at High-temperature

Onions can be stored at high temperatures of over 25°C at a range of relative humidities (75-85%). Storage at temperatures of 25-30°C has been shown to reduce sprouting and root growth compared to lower temperatures.

`Direct Harvest` Storage

The need to cure onions can pose considerable challenges in situations where the climatic conditions are not ideal. CA storage is used in combination with coldstorage to extend the storage life of onions. Recommended air circulation is 0.5-1.0 m/s.

Onion response to CA storage varies among cultivars. Therefore, experiments should therefore be conducted to determine the best storage conditions for each cultivar.

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2.7 Processing

Onion bulbs are generally chopped into desired sizes and shapes using a knife. Many commercial processors use mechanical choppers.

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