

Harvest Maturity Indices

Several different measurements that can be used to determine harvest maturity, including time after planting, external appearance, hardness of the rind, stem texture, die-back of the tendril nearest the fruit, and internal colour.

Time after Planting

Pumpkin fruit are fully mature and ready for harvest about 3 months after planting, or, approximately 45 days after flowering.

External Appearance

The fruit surface should have a good colour, characteristic of the cultivar. Immature fruit typically have a bright surface shine that lessens as the fruit matures. The rind of mature pumpkins has a dull waxy appearance. There will usually be a noticeable lighter coloured ground spot on the fruit underside.



Hardness of the Rind

As pumpkins mature, the rind tissue becomes noticeably tougher and harder. When the rind is hard enough to resist puncture from the thumbnail or from fingernail scratches, the fruit is mature enough for harvest. At this stage of development the seeds are also mature.

Stem Texture

As the fruit matures, the area of the stem attached to the fruit will change from a uniform green colour to a brownish colour with a hard dry texture.

Die-back of the Tendril

The tendril is a small curly piece which grows on the vine in the joint (node) nearest the fruit. A green actively growing tendril indicates the fruit is immature. When the tendril starts to dry from natural aging, the fruit is nearly mature. When the tendril completely dries, the pumpkin fruit nearest that node is mature and ready for harvest.

Internal Flesh Colour

Immature fruit have a cream-coloured flesh. The intensity of internal pulp orange colour will increase as the fruit matures.

Harvest Methods

Pumpkins are manually harvested. A pair of sharp pruning shears is needed to sever the stem and create an attractive, smooth, clean cut. The fruit should be carefully clipped off the vine, leaving about a 2.5 cm (1 in) stem attached to the fruit. Do not pick up the pumpkin by the stem. A short length of stem should always remain attached to the fruit. Pumpkins should be picked when the fruit surface is totally dry.

The pumpkins should be put in strong field crates for transport to the collection site or packinghouse. Sorting and grading pumpkins in the field should be done to remove those affected by disease, insects, or physical damage. Every effort should be made to not bruise or puncture the rind. Padding material, such as grain straw, should be used if fruits have to be stacked. Keep the fruit dry at all times and never store pumpkins on moist bare ground. Pumpkins stacked for transport should not be in piles more than 1 meter deep.

Preparation for Market

Cleaning

Soil in the ground spot area or other surface stains should be wiped off at the time of harvest with a soft cloth or cotton gloves. If washing is required to remove excess soil or to enhance the appearance for a particular market, the wash water should be clean and properly sanitized with 150 ppm hypochlorous acid (bleach) maintained at a pH of 6.5. This is equal to 2 oz of household bleach (such as Marvex) per 5 gallons of water, or .3 liters of bleach per 100 liters of water. Wash water will need to be changed in order to maintain the hypochlorous acid concentration. The washed fruit should be placed on a flat surface or table to air dry prior to grading.

Sorting and Grading

Pumpkins come in many different sizes, shapes, and colours; so it is difficult to have consistent uniformity of product from a single harvest. However, sameness of appearance is important for marketing. There are 3 established size categories (small, medium, large) for domestic marketing of pumpkins. Small pumpkins weigh between



1.4 kg to 3.2 kg (3 lb to 7 lb), medium pumpkins weigh between 3.3 kg to 5 kg (7.3 lb to 12 lb), and large pumpkins weigh 5.6 kg (12 lb) or more. Export markets accept a range of fruit sizes, although large sized fruit weighing between 5.6 kg to 8 kg (12 lb to 17.5 lb) are preferred. Fruit shape may vary from round, to oval, to slightly flat. Similarly, rind colour ranges from green, to blue-green, to tan. The striping pattern or mottling of the rind also varies, although the striations are typically white or cream coloured.

Only mature pumpkins should be packed and should be free of skin bruises, insect damage, or decay. The fruit must have a closed blossom end and be free of cracking. Randomly selected fruit should occasionally be cut open to check internal colour.

Packing

Pumpkins sold in the domestic market and nearby Caribbean export destinations are usually packed in mesh sacks containing from 3 to 7 fruit and weighing around 23 kg (50 lb). However, mesh sacks provide little or no protection against bruising and physical injury. Pumpkins intended for more distant export markets should be packed in strong, well-ventilated fiberboard cartons containing approximately 19 kg (42 lb) of fruit. Internal dividers should be used to separate and protect the fruit. Large wooden bulk bins holding between 360 to 410 kg (800 to 900 lb) of fruit may be used for marine transport to export destinations.

Temperature Management

The best temperature for pumpkin storage is 12°C (54°F). Healthy fruit can be stored for up to 3 months at this temperature without change in quality. Storage at average or room temperatures will result in a high weight loss, a decline in eating quality, and loss of surface colour in only a few weeks. Green-skinned cultivars will gradually turn yellow at high temperature and the flesh will become dry and stringy. Pumpkins are vulnerable to chilling injury (CI) if stored below 10°C (50°F). Injury increases the longer the fruit is exposed and the lower the temperature. For example, holding the fruit at 5°C (41°F) for only a few days is unlikely to cause much damage. However, storing pumpkins at 5°C for 1 month will result in permanent damage. Early signs of CI include pitting and the formation of sunken water-soaked spots on the rind, and development of decay. Long exposure to temperatures below 10°C can result in internal tissue browning, softening, and off-flavour.

Relative Humidity

The best relative humidity (RH) for storage and transport of pumpkins is between 85% to 90%. This RH range will minimize postharvest weight loss and avoid the growth of surface molds. Holding pumpkins at a RH above 90% will result in more decay. Storage at RH’s below 80% will result in drying out of the flesh and textural changes. Total fruit weight loss during storage should not exceed 15%.

Principal Postharvest Diseases

Pumpkins are vulnerable to a number of postharvest diseases. Decay can be controlled through good pre-harvest sanitation practices, harvesting and handling the fruit carefully, using a postharvest fungicide dip or spray treatment (500 ppm benomyl or 1000 ppm thiabendazole) following cleaning, and storing fruit at 12°C (54°F) to slow disease growth. A hot water dip treatment at 60°C (140°F) for several minutes prior to storage may also help to reduce storage rot.

Black Rot

Signs begin as roughly circular water-soaked spots on the rind, which eventually become dark, sunken, and cracked. These darkened spots may have a hardened droplet of a gummy matter in the center. A good indication of black rot is closely spaced groups of the dark brown to black spots, just large enough to be seen.



Watery Soft Rot

Watery soft rot is common after periods of extended rainfall. A watery, odourless rot and a large area of white cottony mould in which the fungus is embedded characterize the decay. Infected pumpkins become soft and eventually collapse. The decay can spread within the sack or carton of packed pumpkins.



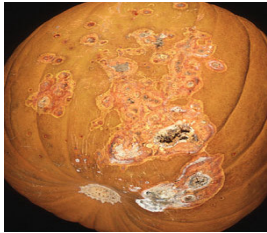
Rhizopus Soft Rot

Yellowish-brown water-soaked spots form with a fairly distinct outline. The

spots are irregular in shape and develop into holes that eventually rot. Grayish-white masses of mould develop over the wounded area and turn black. Diseased tissue is soft and the pumpkin falls into a wet rotted mass.

Dry Rot

Fruit spots begin as small corky cracks that develop into sunken holes. Internal tissue near the infection becomes off colour and corky. Fruit decay results in a firm, dry rot.



Alternaria Rot

Signs begin as circular to oval-shaped spots on the pumpkin surface that are bleached or light brown in colour. The spots soon become sunken and in humid conditions are covered by a dark mould.

Anthracnose

Anthracnose is characterized by the formation of numerous circular, black, sunken spots on the fruit surface. Anthracnose is usually confined to the skin, however, the flesh may be invaded by secondary bacteria causing a soft rot.

Bacterial Soft Rot

Bacterial soft rot infects the fruit wounds in the skin and often becomes established in areas infected with fungal disease. Soft rot breaks up the flesh, turning it into a soft mass of leaky tissue. The infected pumpkins typically have a foul odour.

For additional technical bulletins contact:

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With the assistance of
The United States Agency for International Development



New Guyana Marketing Corporation

PUMPKIN

Postharvest Care and Market Preparation Information Sheet



This information sheet provides growers and agriculture extension personnel with a summary of the recommended harvest and postharvest handling practices for pumpkin. A more technical and detailed bulletin is available from the New Guyana Marketing Corporation (NGMC) and the National Agricultural Research Institute (NARI).