

When to Harvest

There are several reliable internal and external indicators for Mango fruit maturity: external colour, appearance, pulp colour and soluble solids content.

External Colour

As the Buxton Spice mango matures, the skin colour will change from green to yellow. Normal sized fruit that have started to turn yellow are ripe and ready for immediate harvest. Fruit showing some yellow colour on the tree will have a shelf life of only a few days and must be sold in the local market. For export market, the fruit should be picked when firm and at the mature-green colour stage. Fruit harvested at the mature green stage will ripen quite rapidly after harvest and begin to turn yellow within 3 to 5 days at ambient temperature. Fruit harvested immature green will not ripen properly, will taste poor, and will soon shrivel.

Fruit Appearance

Mango fruit are mature-green and ready for harvest when the shoulder area swells and rises above the stem end. This is accompanied by the stem end sinking and forming a small pit around the stem. A dulling in the shine or waxiness of the fruit surface occurs when mangoes become mature-green.

Internal Pulp Colour

Internal pulp colour involves cutting the fruit open and therefore is a destructive test for maturity. It is used on a few randomly selected fruit to correlate fruit size with maturity. The pulp colour of mango fruit at maturity changes from light yellow to deep yellow.

Soluble Solids Content

Mangoes are ready for harvest when the soluble solids content (sugars) of mature fruit are at least 10%, and can be determined by placing several drops of juice on a hand-held refractometer.

Harvest Methods

Mango trees should be harvested several times per week once the initial fruit becomes mature. Harvest should be done

during the coolest part of the day, as mangoes are very sensitive to heat stress. The fruit bruises easily when handled at pulp temperatures above 32°C (90°F). Bruised pulp becomes soft and deteriorates quickly. Mangoes should not be picked during rain as decay will be significantly higher.



Mangoes are harvested manually and should be cut or clipped from the tree leaving at least 2 cm (0.8 in) or longer of the stem attached. The fruit should be handled gently at all times to avoid bruising. Fruit should not be allowed to drop to the ground, as it will result in severe impact bruising, mechanical injury, and surface scarring.

The recommended harvest tools include knives, clippers, or poles with a sharp-edged cutting blade attached at the end. A canvas pouch or nylon net bag is attached to a metal ring below the sharp-edged cutting blade at the end of the pole to catch the detached fruit.

After picking, the fruit should be carefully lowered to the ground and placed in a single-layer tray with the stem oriented upwards. The fruit-filled tray should be put in a shaded area to avoid sunburn. After a short period, the stems should be re-cut to a length of several millimeters extending past the shoulder of the fruit. The cut area should be oriented downward to prevent latex burn onto the fruit surface. This will help prevent latex burn resulting from the newly cut stem. After about an hour, the latex flow will stop and the fruit can be transferred to a field container then transported to the packinghouse or consolidation site.

The initial sorting of marketable and unmarketable fruit should be made in the field. The marketable fruit, whether intended for local or export destinations, should be put in a strong, well ventilated, stackable field container kept in a shaded location. No more than 18 kg (40 lb) of fruit should be put in the container in order to avoid compression bruising of the fruit. The containers should be lined with a soft material, such as

straw or poly-foam padding. The ideal field container is a durable plastic crate that is well ventilated and has a smooth inside finish.

Preparation for Market

Cleaning

The fruit surface should be cleaned by washing in a very mild detergent and using a soft cloth to remove any dirt or latex. The water used for cleaning should be sanitized with 150 ppm free chlorine and 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 0.3 liters of bleach per 100 liters of water.

Grading

Fruit should be sorted according to size, shape, firmness, external colour, insect damage, and decay. The fruit should be clean, free of dirt and latex stains, mature, firm, well-shaped, free of injury and wounds, free of sunburn, free of insect damage and decay (particularly anthracnose), and have a well-trimmed stem with a length of less than 1 cm. Visibly damaged fruit should be rejected. Export market fruit should be carefully sorted for uniformity of size and shape. The fruit should be firm and mature green in order to withstand the rigors of transportation.



Packing

The package for mangoes should be strong, well ventilated, and stackable. The durable plastic containers used for transporting the fruit from the field can also be used as the final domestic market container. The standard export package for mangoes is a single-layer carton that contains 4.5 kg (10 lb) of fruit.

Do not pack mango fruit for export in more than a single layer carton. Multiple-layered fruit suffer too much bruise damage during transport. Individual mangoes can be wrapped in tissue paper to minimize surface abrasions.

Storage Temperature

The ideal storage temperature for maximum market life of mangoes is between 11.5°C to 12.5°C (53°F to 55°F). At this temperature range, a mature-green harvested mango will have a potential storage life of about 3 weeks. Fruit kept at below these temperatures will not ripen and break down due to chilling injury. Chilling injury results in pitting and sunken lesions on the skin, uneven skin colouration, internal darkening of the pulp, off-flavour development, and decay. Fruit kept at above the recommended temperatures will ripen more quickly and become soft. Under ambient tropical conditions in Guyana, mature-green harvested fruit will ripen within 6 days and become overripe and spoiled within 10 to 12 days. The ideal storage relative humidity for mangoes is between 90% to 95%. Water loss increases with decreasing relative humidity.

Principal Postharvest Diseases

Anthracnose. Anthracnose is the worst postharvest disease of mangoes. Symptoms include small black spots on the surface of the skin. The spots may join together and pierce deep into the fruit, resulting in extensive rotting.



Mature fruit may also exhibit tearstains that result in a vertical spotting pattern. Infection generally begins on the tree when the fruit are green and rapidly develops on the weaker and softer yellow skin as the fruit ripens. Anthracnose is always more severe during the rainy season.

Proper cultural practices are necessary to avoid the build-up of high levels of inoculum responsible for postharvest decay. These practices include proper tree spacing to avoid crowding, periodic pruning to improve air movement through the canopy,

monthly foliar fungicide applications (i.e. mancozeb, benomyl, iprodione, fixed copper, etc.), and removal of fallen leaves under the tree.

Postharvest decay control methods useful in reducing anthracnose fruit rot involve submerging the fruit for 2 to 5 minutes in 50°C to 55°C (122°F to 132°F) water or 5 minutes at 48°C to 50°C (118.4°F to 122°F) water with 500 ppm thiabendazole or imazalil fungicide added. Follow the manufacturers instructions for measurements. This provides a more effective level of anthracnose control than just hot water alone.

Stem End Rot

The initial symptom of stem end rot on harvested mature fruit is a darkening of the skin around the base of the stem. The infected area may enlarge rapidly to form circular brownish-black areas of water-soaked tissue that can extend over the whole fruit within several days. Control of stem end rot can be obtained by following the same recommendations for anthracnose control.



Technical bulletins also available on Waxing Fruits and Vegetables and Hot Bath Treatment. Contact:

New Guyana Marketing Corporation (NGMC)
87 Robb & Alexander Sts., Georgetown, Guyana
Tel: 226-8255, 226-2219

National Agricultural Research Institute (NARI)
Mon Repos, East Coast Demerara, Guyana, Tel: 220 2950



With the assistance of
The United States Agency for International Development



New Guyana Marketing Corporation

MANGO

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 mangoes. A more technical and detailed bulletin is available from the New Guyana Marketing Corporation (NGMC) and the National Agricultural Research Institute (NARI).