Post Harvest Practices in Watermelon

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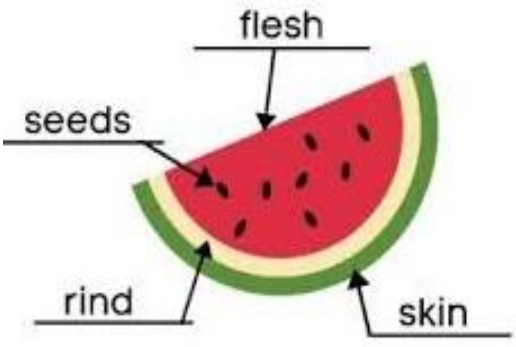
Introduction

India produces approximately 4, 11,500 metric tons of watermelon accounting for 0.40 percent of the worlds share (FAOSTAT, 2017). According to the National Institute of Industrial Research, Delhi watermelon is cultivated in Uttar Pradesh, Himachal Pradesh, Rajasthan, Orissa, Gujarat, Punjab, Haryana, Assam, West Bengal, Karnataka, Orissa, Andhra Pradesh, Maharashtra, and Tamil Nadu. India grows approximately 25 commercial varieties, a few of which are "New Hampshire midget," "Madhuri 64," "Black Magic," and "Sugar Baby" (Horticultural Statistics, 2017).

Watermelon is found to contribute significantly to human health. Fresh watermelon may be eaten in a variety of ways and is also often used to flavor drinks and smoothies. As with many other fruits, it is a source of vitamin C. It is not a significant source of other vitamins and minerals unless one eats several kilograms per day. Watermelon contains vitamins A, C, B6, and potassium. It is fat-free, and high in energy. Watermelon is 92 percent water by weight. It is also mildly diuretic and contains large amounts of beta carotene. Watermelon with red flesh is a significant source of lycopene and contains about six percent sugar by weight, the rest being mostly water. It also contains more lycopene than other fruits or vegetables (https://www.itfnet.org/v1/2016/05/watermelon-nutritional-value/ cited on 19/09/2024).

Fig. 1



Watermelon fruit parts

Watermelon varieties are separated by seeded and seedless types, shape, size, and by rind or flesh colour. Fig 1 shows the parts of water melon fruit There are at least 1000 named watermelon varieties, with some of these originating 50–80 years ago. Fig 2. shows the sixteen major varieties grown worldwide. In India, hundreds of watermelon cultivars have been developed by farmers and horticulturists over the years; they vary widely in taste, texture, and colour (Leskovar *et al.*, 2004). Twelve major watermelon cultivars grown in India Asahi Yamato, Special No.1, Arun, Kiran, Vandana, Sugar Baby, Sultan, Improved Shipper, Madhubala, Arjun, Kareena, Durgapura Meetha and Durgapura Kesar are found to be the most promising ones with highest lycopene content, antioxidant capacity and colour index. A number of varieties and hybrids have been developed and released in India for commercial cultivation (Chawla, and Ranote, 2008). They are

a. **Sugar Baby:** It is a variety introduced from USA which produces round shape fruits having green skin and black stripes and contains about 8-12 per cent total soluble solids. It is very popular in northern India.
b. **Arka Jyoti:** It is a F_1 hybrid having light green skin with regular dark green stripes with a total soluble solids range of 11-12 per cent.
c. **Arka Manik:** It is hybrid between IIHR 21 X Crimson Sweet. Fruit is light green in colour with dull stripes. The flesh is deep red and very sweet in taste. The total soluble solids content of the fruit is 11-12 per cent. (Swarup, 2006).

Watermelon post-harvest practices

Watermelons need warm climate for growth. It can be grown all through the year in places like Tamil Nadu, Karnataka, Andhra Pradesh, Orissa, West Bengal and Rajasthan. It is very sensitive to frost and hence it should be only cultivated after the frost in places like Haryana. Otherwise, these must be grown in greenhouses that have adequate protection from frosts (Chawla, and Ranote, 2008).

Watermelons are harvested in the afternoon by cutting the stem with a sharp knife rather than pulling the fruit out. Afternoon harvest reduces the risk of cracking if the field has received abundant water during the previous night. Watermelons do not ripen after they are picked from the vine. Holding them for 7 days and over at room temperature improves flavour and colour in seeded varieties.

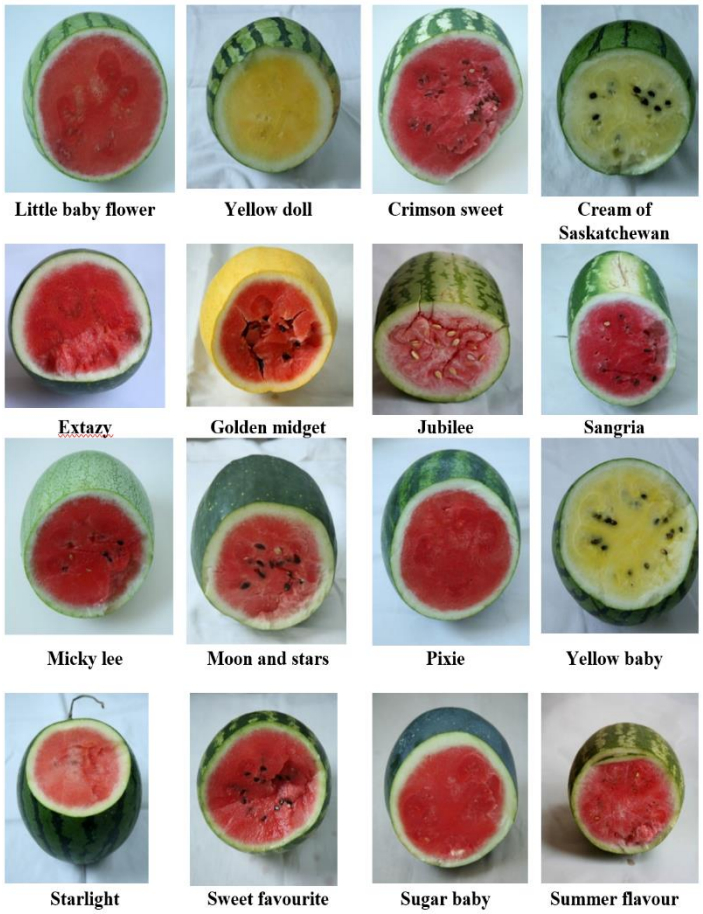


Fig. 2 Sixteen major cultivars for watermelon in world (Source: USDA, 2010)

After harvesting, watermelons are stacked in the field itself, on the side rather than on end to reduce the risk of cracking. Placing them in a shaded area allow minimizing the build-up of heat and avoiding quality reductions. Watermelon should be cooled to 12-15°C within 24 hours of harvesting; if they are to be stored for long periods of time.

Watermelons do not store well as they are susceptible to chilling injury and are subject to decay at higher temperatures. Watermelons may lose crispness and colour during prolonged storage. Temperatures below 10°C can result in chilling injury to the fruit. They should be held at 10-15°C and 90 per cent relative humidity. Under the ideal conditions of 7°C and a relative humidity of 80 to 90 per cent, melons can be stored for up to three weeks.

Watermelons are graded according to their size for local market. Distinction among grades is based on external appearances. They are packed in cardboard bins to avoid sharp objects and surfaces which may damage the fruit. Seeded melons are sorted and packed in large, sturdy, tri-wall fibre-board containers. The fruits are transported by road in bulk by stacking them on dried grass in trucks. The containers are covered to prevent sunburn in transit.

Watermelon is a seasonal fruit and it is not available all year round. Extraction of the pulp in different forms can be applied to turn the watermelon juice and smoothies and create availability of natural fruit juice and smoothies in the market or at home for intake. A number of value-added products could be produced from the watermelon flesh.

Watermelon rind constitutes nearly one-third of the watermelon weight. More than 90 per cent of the rind is discarded indiscriminately into the environment thereby constituting environmental challenges. This waste rind is not presently being utilized for any value added processes due to limited research activities focusing on the possible conversion of the waste to other valuable products. Chemically rind has moderate total phenolic content and a much higher content of the citrulline (3.34 and. 2.33 g/kg respectively), which have potential bioactive properties. Several possibilities exist for the use of watermelon rind to produce value-added products. It is possible to juice just the rind for extraction of pectin and citrulline, an amino acid that helps to remove nitrogen from the blood for conversion to urine (Other utilization of the rind as an ingredient in products including pickle, candy and development of dehydrated cubes/flakes/shreds for curry purposes. The feasibility of producing dehydrated watermelon flakes/shreds/cubes for culinary purposes and dried powders for bakery industry can be studied in future. Watermelon seeds are rich in fat and protein, dehulled water melon seeds are edible and are used as snack product and also as one of the ingredients in sweets.

Conclusion

Post-harvest handling of watermelons was very important to prevent damage. All parts of the watermelon fruit are used by people, including the fleshy interior, the seeds, and the rind. The fresh may be eaten fresh or used to flavour drinks, and is an excellent source of vitamins C and A, as well as a good source of vitamin B6 and vitamin B1 and various minerals. The seeds are eaten as a snack or added to other dishes, and may be roasted and seasoned. They are a good source of fat and protein.

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