related to the probability of transmission of Porcine Reproductive and Respiratory Syndrome virus (PRRSv) to naive pigs via fresh meat. EFSA J. 3: 239.


Physiological disorders in mangoes

In the past season the incidences of physiological disorders were observed in most regions where mangoes are cultivated. The early season fruit was the worst affected, and the cultivar most susceptible was ‘Tommy Atkins’. Internal quality is of utmost importance for marketability and storage potential of fruit. The question was raised what the contributing factors were that caused this unusual occurrence of physiological disorders.

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SUBTROP

**It is well known** that the last season was not the best for mango growers, mainly due to extreme climatic conditions as well as severe drought at the time of flowering and fruit development. Severe conditions during this time had a detrimental effect on the yield and quality of the fruit, come harvest time.

Although most internal defects are not visible on the fruit before cutting into them, there are some specifically placed lesions that could indicate that there is some internal problem. It is important to correctly identify symptoms that may indicate internal defects and remove these fruit from the batch on farm or in the packhouse to prevent any rejections by processors or markets.

Another disorder that caused a lot of concern in the last season is “stem-end cavity” or “varkhart” as it is known. It causes a lot of fruit losses, especially in ‘Tommy Atkins’. Not a lot is known about the disorder or what exactly causes it, but according to Mead and Winston (1989) there are several factors that influence its occurrence.

The first sign is a grey-brown sunken area on the fruit (Photo 1). At advanced stages, a blackish sunken area develops that splits open (Photo 2) and there is internal damage (Photo 3).

Other signs are a sunken area opposite the suture near the stem attachment. This results in premature ripening of the flesh around the seed and the cavity, formed by the breaking of sap pressure due to vascular fibres connecting the stem to the top of the seed, snap or tear. Photo 4 shows the internal damage.

Factors that may influence incidence of “varkhart” include:
- Wet, windy conditions at the end of the season;
- Cultivar susceptibility (‘Tommy Atkins’, ‘Kent’ and ‘Sensation’ are highly susceptible);
- Harvesting when fruit is ripe; and
- High leaf nitrogen and low calcium levels.

Photo 1. The first sign of “stem-end cavity” or “varkhart” is a grey-brown sunken area on the fruit.
‘Sensation’. Look out for softness of the flesh to the touch, especially on the distal or nose end of the fruit as well as yellow colouring on green fruit at the nose end.

These disorders may be caused by deficiency of especially calcium that causes the breakdown of the flesh. It may also be due to excessive nitrogen levels, but conclusive evidence is still not available due to so many other factors that may have an influence on the disorder. A recent study on calcium sprays to alleviate jelly seed was conducted by Bitange et al. (2020) in Kenya, using 10-year old ‘Van Dyke’ cultivar trees. The study showed that calcium plays an important role in enhancing the firmness and tissue stability in mango fruit, thus reducing cell disintegration. The authors compared calcium chloride, calcium nitrate and Easygro at different rates of 1.0%, 1.5%, 2.0% and 0% (control) at fruit set and later in the fruit development stage.

Data collected included: jelly seed occurrence, calcium distribution (exocarp, mesocarp, endocarp and cotyledon) and fruit weight. Jelly seed occurrence and calcium distribution were determined at the ripe stage. All the calcium sources invariably suppressed the occurrence of jelly seed. Calcium chloride (2.0%) that was applied during fruit set resulted in a lower incidence of jelly seed than later applications, and this was also the treatment with the best overall results.

Internal quality will always be an issue and a struggle in mango cultivation. Although the climate and factors beyond growers’ control play a major role, certain steps must be taken to try and improve quality, as well as understand the causes of the disorders.

REFERENCES

