

Physiological Disorders of Cucurbits

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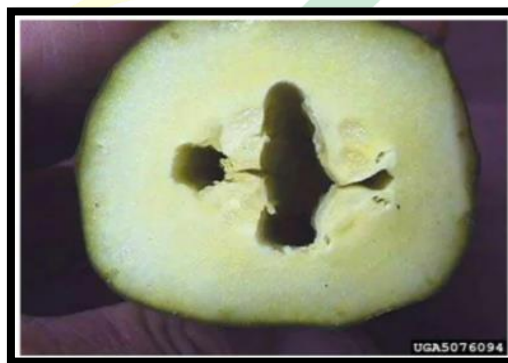
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Introduction

Physiological or abiotic disorders are distinguished from other disorders in that they are not caused by living organisms (viruses, bacteria, fungi insects etc), but are caused by non-living, abiotic situations and cause a deviation from normal growth. They are physical or chemical changes in a plant from what is normal and generally caused by an external factor. Most of the physiological disorders are not reversible once they have occurred. Physiological disorders have a major role in hampering the yield and quality of fresh vegetables.

Pillow

It is a fruit disorder of processing cucumber due to low calcium level in the tissue. In this disorder, an abnormal white styrofoam like porous textured tissue is formed in the mesocarp of the fleshy harvested fruits. Vascular tissue with some pillow areas may collapse and become necrotic. Apply calcium adequately to control this disorder.



Leaf Silvering

It is a physiological disorder of summer squash (cucurbita pepo). This disorder occurs due to moisture scarcity. The leaves become silver coloured and contain less chlorophyll. Photosynthesis is hampered in the silvered leaves. For control, Apply adequate and frequent irrigation.

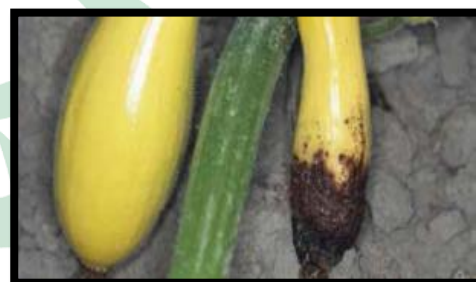
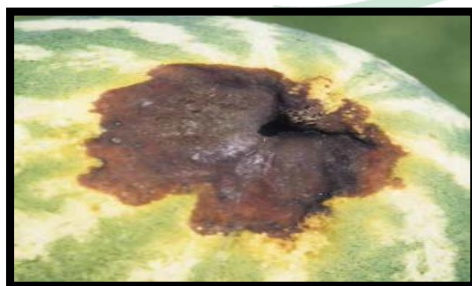


Unfruitfulness in Pointed Gourd

Pointed gourd is a dioecious cucurbit. So, male and female plants are separate. A common problem is met with where pistillate flowers in female plants are shed due to lack of pollination and fertilization. In some cases, ovary of the unfertilized flower may flow a bit due to parthenocarpic stimulation which also abscise after a few days. Male plants must be grown in the field along with the female plants at the rates of 10-12 male plants per 100 female plants to ensure adequate pollination and fruit set. Hand pollination may be done successfully to achieve fruit set. Hand pollination to the female flowers should be done in the early morning hours because stigma receptivity decreases with an advancement of the day.

Blossom-End Rot

The blossom end of the fruit develops a dark leathery appearance. Symptoms may progress until the entire end of the fruit turns black and rots. This disorder is associated with insufficient calcium uptake and alternating periods of wet and dry soil. Damage to the root system may also account for decreased calcium uptake and the development of blossom-end rot. It can be minimized by mulching to maintain constant soil moisture, applying calcium fertilizers and avoiding high levels of nitrogen. Drip irrigate crop to control water management.



Hollow Heart

Cracks in internal watermelon fruit flesh can occur due to accelerated growth in response to ideal growing conditions. There is a genetic component to this disorder, but growing conditions can account for much of the variation observed. It appears to be associated

with conditions that result in poor pollination followed by rapid fruit growing conditions. Avoid watermelon varieties with a tendency to exhibit hollow heart. Implement best practices for irrigation and fertilization programs.



Light Belly Color

This disorder is characterized by the undersurface of cucumber fruit remaining light in color instead of turning dark green. Commonly occurs on fruit lying on cool, moist soil. It can be partially controlled by avoiding luxuriant vine growth. Avoid excessive nitrogen.



Measles

Most evident on smooth-skinned melons and cucumbers. Small brown spots are scattered over the surface of the fruit, leaves and stems. The spots are superficial and do not penetrate beyond the outer epidermal layers of the fruit. It is favored by guttation. The guttation droplets develop high concentrations of salts which burn the epidermis. Measles spots occur where a guttation droplet had formed. Control measles by reducing irrigation frequency and duration as fruit approach maturity in fall-harvested crops. Irrigation reduction at the later stages of fruit development has not shown any adverse effects on fruit size and soluble solid content.



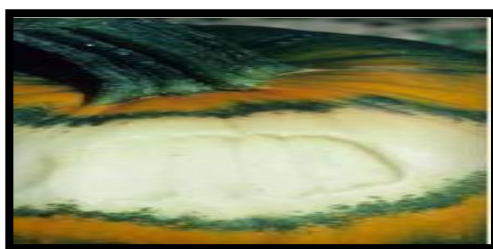
Rind Necrosis

It occurs in either cantaloupe or watermelon as dead, hard, dry reddish-brown to brown spots or patches of tissue in the fruit rind. Affected areas vary in size from spots to extensive dead areas throughout the entire rind. In watermelon, symptoms are not visible from the outside and are rarely found in the flesh. In cantaloupe, dead tissue may extend into the flesh of the fruit. Circular, water-soaked depressions also develop on the cantaloupe fruit surface. It is not well understood. However, it is thought that environmental conditions which place stress on the plants may trigger the onset of this disorder. Genetic tolerance has been identified in watermelon. Avoid drought stress in melon.



Sunscald

In this disorder, papery white areas develop on fruit. It mostly develops during hot summer weather when fruit are suddenly exposed to direct sunlight. It is minimized by maintaining strong vine growth to ensure the fruit is covered.



Delay in Fruit Ripening

This problem is particularly important in muskmelon and watermelon. Delay in ripening is sometime associated with less sweetness and cracking of fruits which occur due to high moisture level and temperature fluctuation at ripening stage. Irrigation should be stopped at the ripening stage to hasten ripening. Sowing time should be adjusted in such a way that fruits ripe in hot and rainless condition which hastens ripening and at the same time improve sweetness of the fruits. These non-infectious physiological disorders are sometimes difficult to identify. Further, once symptoms are recognized, corrective measures often are not economically viable. Therefore, focus on prevention. A number of steps may be taken during pre as well as post-harvest operations to minimize the occurrence of abiotic disorders. The preventive steps may include proper time of sowing, management of uniform soil moisture, supply of balance nutrients, harvesting at proper stage and accurate post-harvest handling and storage conditions.