



Stone Fruit Disorder Guide

Reference guide to common
South African stone fruit disorders

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Acknowledgements

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The author acknowledges information sourced from the Postharvest Stone Fruit App, which can be found on Hortgro's webpage link below, and which supplements this guide by expanding on the causes and remedies for the different disorders.

<https://app.hortgro-science.co.za/>

Foreword

This booklet has been compiled to assist the South African stone fruit industry with a handy guide to common defects and disorders in stone fruit.

When identifying a problem fruit, it is important to have as much case history as possible to ascertain if the defect was already present on or in the fruit before harvest, resulted from poor handling during harvesting, is a progressive storage disorder, or an ailment that occurred through poor quality control during shipping and marketing. Many factors may provide valuable clues to the cause, such as a heatwave or rain just before harvest, fruit harvest maturity, the type of packaging used, breaks in the cold chain, the gas concentrations surrounding the fruit, or the length or type of storage.

That said, the expression of disorders may result from multiple factors or a sequence of events. Some defects look very similar, but may be caused by very different factors, making the cause much harder to identify.

Generally, disorders may be grouped into mechanical, physiological, chemical, nutritional, pathological, or entomological defects. The latter two categories have not been extensively covered by this guide.

Key to symbols



Peaches and nectarines



Plums



Apricots

Internal

Int

External

Ext



Seasonal influence (spring temperatures)



Mechanical damage (rub marks, wind marks, bruises etc.)



Weather damage (heatwave, rain, hail)



Chemical damage (spray, drench, flume)



Physiological disorder



Nutritional factors



Harvest maturity



Temperature factors (heat stress, chilling injury)



Gas concentrations (MAP, CA)



Pre-harvest



Postharvest



Progressive storage disorder



Pathological disorder

Layout

Chilling Injury (Pages 9-11)

- Pulpiness
- Woolliness
- Internal Browning Chart

Chilling Injury + Senescence (Pages 12-14)

- Internal Browning
- Gel Breakdown and Aerated Tissue

Chilling Injury + Extreme Weather (Pages 15-17)

- Flesh Bleeding
- Gel Breakdown

Environmental Stress (Page 18)

- Aerated Tissue

Senescence (Pages 19-22)

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- Slip Skin
- Bladderiness

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- Heat Damage Slight
- Heat Damage Severe
- Heat Damage - Pitting
- Frost Damage

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- Carbon dioxide

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- Carbon dioxide

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- Pitting due to Coating

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- Visible Split-pip
- Broken Stones

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- Wilting

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- Rub Marks -Slight
- Rub Marks - Severe
- Skin Punctures
- Damaged Tips
- Bruising
- Freezing Damage
- Rain/Water Damage

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- Curly Leaf on Fruit
- Xanthomonas
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- Plum Marbling (Viroid)

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Pulpiness

Chilling Injury



Diagnostic Features:

- Less advanced form of woolliness
- Texture of flesh tissue is semi-dry, because while juice can be expressed by hand, there is very little free juice available
- Pulpiness often an indication that fruit are either still going to develop woolliness, or that fruit have passed through the woolly phase and are developing a normal tissue again

Nectarine



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Int



HM

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PH

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Woolliness

Chilling Injury



Diagnostic Features:

- Physiological abnormality that occurs during ripening of susceptible peach & nectarine fruit after prolonged cold storage
- Typical chilling injury
- Characterised by flesh tissue with a dry, mealy texture from which no juice can be squeezed
- Accompanied by a loss of flavour
- Cultivar dependent, although late-season cultivars are more susceptible
- Less mature fruit more susceptible after storage

Arctic Wolf Nectarine



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Int



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Internal Browning Chart

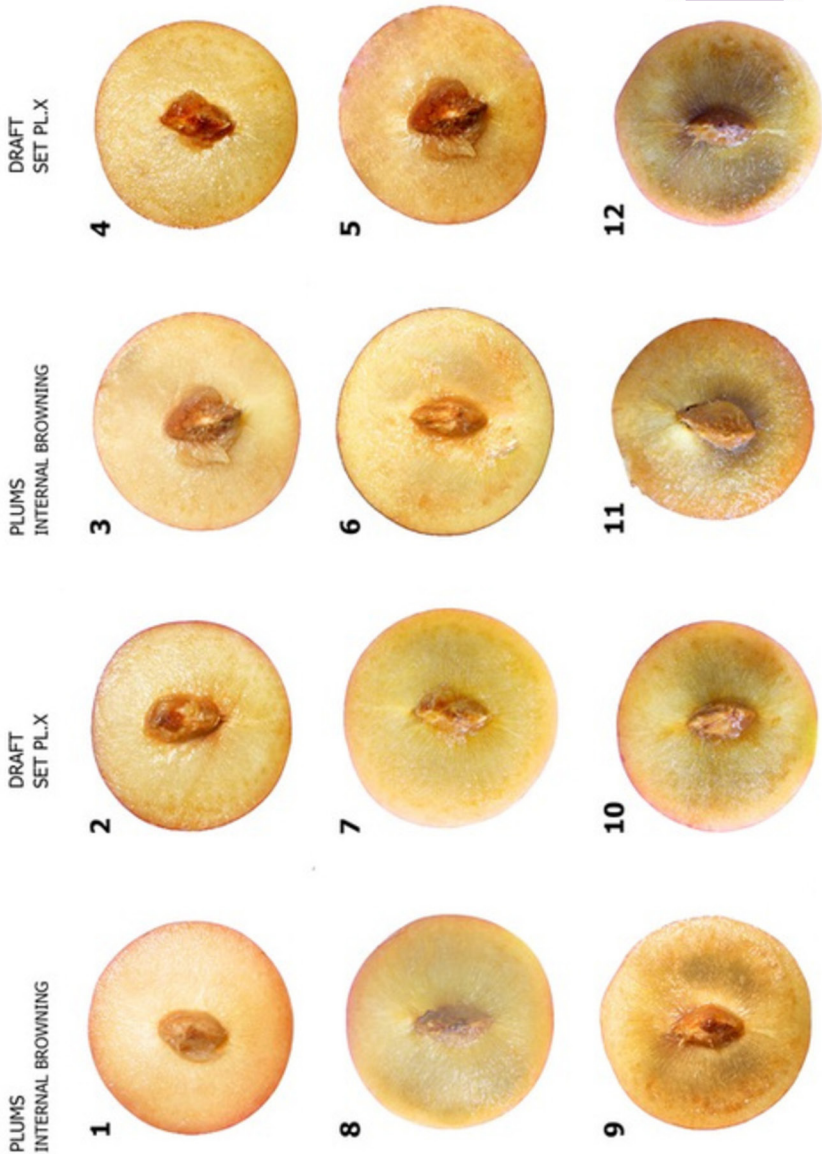
Chilling Injury



Industry Chart for Internal Browning

Plum

Int



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Internal Browning

Chilling Injury + Senescence



Diagnostic Features:

- Normal external appearance
- Brown discolouration of flesh tissue, becoming darker with increasing severity
- Associated with loss of juiciness, alcoholic taint
- Typically starts just below the fruit's skin and spreads inward towards the stone in plums
- In peaches and nectarines, associated with senescence, and usually visible in fruit stored for extended durations
- In plums, associated with chilling injury, and may co-occur with GB in the same fruit

Fortune Plum



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Int



HM

°C

PH

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Internal Browning

Chilling Injury + Senescence



Diagnostic Features:

- Symptoms include brown, firm, or mealy flesh, and other issues like flavor loss, lack of juiciness, and a black pit cavity can also occur

Int

August Red Nectarine



© RENATE SMIT

Laetitia Plum



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GB + Aerated Tissue

Chilling Injury + Senescence



Diagnostic Features:

- Normal external appearance
- Presence of numerous bubbles in the cortical tissue, extending from the pip to the epidermis
- Gelatinous breakdown of the inner flesh tissue surrounding the stone
- Sign of senescence

Int

African Delight Plum

Ruby Star Plum



© IAN CROUCH

Flesh Bleeding

Chilling Injury + Extreme Weather



Diagnostic Features:

- Concentrated accumulation of red pigments, specifically around the fruit's pit
- Does not affect the taste or texture of fruit
- Sometimes accompanied by translucency or mealiness, but fruit texture normally remains normal
- Expresses when plums, peaches, and nectarines are grown under high light exposure or are stored at temperatures between 2-8 °C
- May occur on the tree

Nectarine



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Int



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Pre

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Gel Breakdown (GB)

Chilling Injury + Extreme Weather



Diagnostic Features:

- Gel breakdown is a physiological disorder in plums and apricots
- Normal external appearance, but gelatinous breakdown of inner flesh tissue surrounding the stone; develops outwards towards the epidermis
- Outer flesh tissue healthy appearance, turning brown in advanced stages with loss of juiciness
- Visible after a heatwave, followed by forced-air cooling of fruit that experienced heatwave conditions just before or during the harvesting period, after long-term storage at low temperatures, or after too rapid forced-air cooling with extended storage

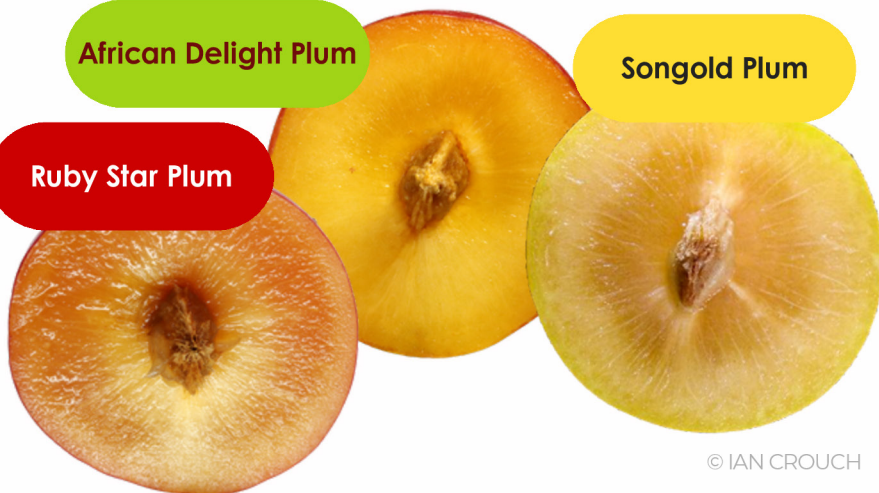
Int



African Delight Plum

Songold Plum

Ruby Star Plum



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Gel Breakdown (GB)

Chilling Injury + Extreme Weather



Diagnostic Features:

- Results in a dry, gelatinous, and bland-tasting flesh that can be translucent or discoloured
- Typically, affected areas have no free juice
- Aggravated by cold storage, especially when temperatures are not managed properly
- Can also develop in the orchard, especially during heatwave conditions
- Severity of gel breakdown is influenced by factors like the fruit's cultivar, extreme weather, maturity, and handling during storage and transit

Int



Imperial Apricot



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Aerated Tissue

Environmental Stress



Diagnostic Features:

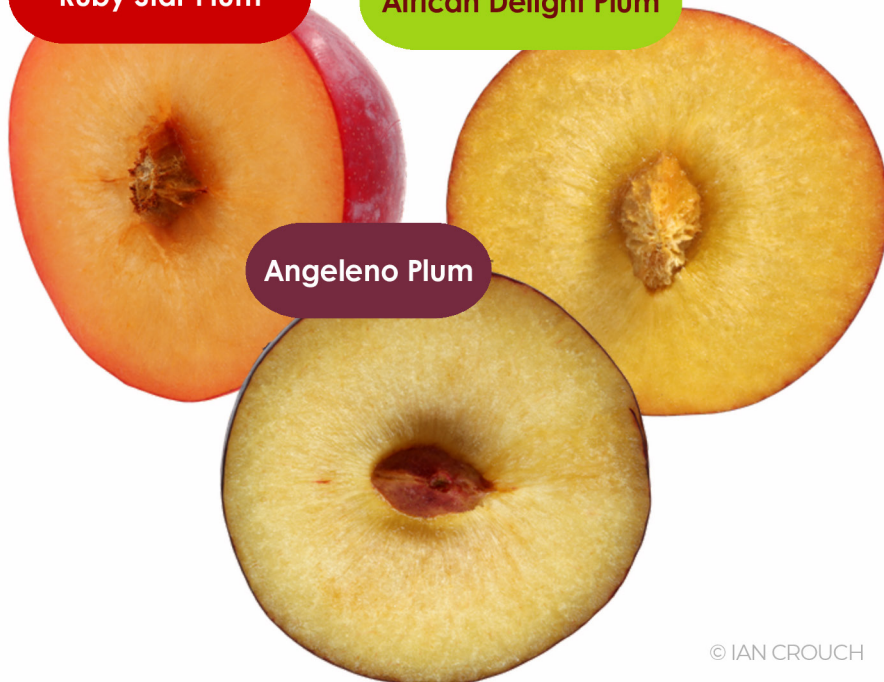
- Normal external appearance
- Presence of numerous bubbles in the cortical tissue, extending from the pip to the epidermis
- May be associated with stress factors like heat damage
- Often occurs in fruit from young orchards or orchards with more sandy soils or stress conditions
- Eating quality of fruit not affected

Int

Ruby Star Plum

African Delight Plum

Angeleno Plum



© IAN CROUCH

Overripeness (OR)

Senescence



Diagnostic Features:

- Ripe and soft external appearance
- Translucent breakdown of the flesh tissue below the skin, which spreads inwards towards the stone
- Cell fluids can be readily expressed
- Fruit abnormally soft to the touch with excessive amounts of juice
- When trying to wring open the halves of a cut fruit, it loses its shape with the flesh separating easily from the skin

Int

Ext

Laetitia Plum

Songold Plum



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S

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Overripeness (OR)

Senescence



Diagnostic Features:

- Ripe and soft external appearance
- Translucent breakdown of the flesh tissue below the skin, spreading inwards towards the stone
- Cell fluids can be readily expressed
- Fruit abnormally soft to the touch with excessive amounts of juice
- When trying to wring open the halves of a cut fruit, it loses its shape with the flesh separating easily from the skin

Int

Ext

Supergold Apricot



HM

°C

PH

S

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Slip Skin Senescence



Diagnostic Features:

- A disorder where the fruit skin detaches easily (sloughs off) from the flesh during handling
- Peaches and nectarines are highly susceptible due to relatively weak adhesion between the skin and the flesh of the fruit, especially as the fruit ripens
- Caused by over-mature fruit at harvest, senescence caused by prolonged storage periods, or high humidity with free moisture on the fruit surface during storage. May start as small cracks
- Increases susceptibility to mechanical damage and decay

Ext



HM

Honey Treat Nectarine



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Bladderiness

Senescence



Diagnostic Features:

- Complete translucent breakdown of the flesh tissue between the stone and the skin
- In severe cases, the disorder may be visible through the shoulders (stem-end) of the fruit
- Associated with excessive softness and juiciness

Sound plums on top and plums showing translucency on the bottom

Plum



© CARLOS CRISOSTO

Int



HM

PH

S

Sunburn

Extreme Weather



Diagnostic Features:

- Sunburn is a common defect of plums, usually occurring as a reddish discolouration of the skin
- The colour of the sunburned area is permanently affected, and the colour contrast increases as the fruit ripens
- Advanced stages may appear as flattened areas of the fruit, the skin may blister or crack, or the flesh beneath the affected skin may show a noticeable brownish discolouration

Ext



HM

°C

Pre

Sapphire Plum



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Sunburn

Extreme Weather



Laetitia Plum



Ruby Sun Plum



Ext



HM

°C

Pre

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Sunburn Index - Plum

Extreme Weather



Sunburn Chart for African Delight Plums

African Delight Plum



Ext



Severe Sunburn

Extreme Weather



Diagnostic Features:

- Sunburn necrosis is the most dramatic form of sunburn
- Affected fruit have dark brown or black areas of dead tissue on their surface
- The damage can penetrate the flesh for several millimeters and is the ideal growth medium for spoilage organisms

Ext



African Delight Plum



HM

°C

Pre

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Heat Damage - Pit Burn

Extreme Weather



Diagnostic Features:

- External symptoms not always visible
- Develops during heatwave conditions, or if fruit are subjected to postharvest heat treatment
- Can be observed at time of harvest by cutting fruit
- Pit burn occurs when the fruit become so hot that the flesh cooks around the pit
- Susceptible cultivars: Laetitia and Fortune plums
- Also develops in apricots, peaches and nectarines

Fortune Plum



© IAN CROUCH

Int



Heat Damage - Pit Burn

Extreme Weather



Int

Fortune Plum



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Heat Damage - Slight

Extreme Weather



Diagnostic Features:

- Discoloured areas on the surface of the fruit, typically caused by direct sun exposure
- Affected areas tend to sink in during storage
- Heat damage may manifest as yellow/red skin discolouration which can turn brown during cold storage
- Susceptible cultivars include Songold, Laetitia and Fortune plums

Ext



Laetitia Plum



HM

°C

Pre

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Heat Damage - Severe

Extreme Weather



Diagnostic Features:

- Discoloured areas on the surface of the fruit, typically caused by direct sun exposure, or if the fruit receives a postharvest heat treatment
- Affected areas tend to sink in during storage
- Susceptible cultivars include African Delight, Laetitia, and Fortune plums

Laetitia Plum



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Int

Ext



HM

°C

Pre

Heat Damage - Severe Extreme Weather



Diagnostic Features:

- Expressed as gel breakdown (GB) following heatwave conditions
- Not normally visible at harvest but can develop within 19 days cold storage at -0.5°C
- In severe cases, may be visible at harvest, or after forced-air cooling (FAC)
- Cut fruit at harvest and after FAC to determine incidence before export
- Mid and late season cultivars are more susceptible

Laelitia Plum



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Int



Heat Damage - Pitting

Extreme Weather



Diagnostic Features:

- Small, dark, sunken pits on the surface of the fruit
- Not caused by direct sun damage, but rather by high temperatures within the tree canopy
- May also be found in bins when harvested fruit are not protected from direct sunlight
- Mid and late season cultivars can be more susceptible

Ext



Fortune Plum



© IAN CROUCH

HM

°C

Pre

PH

Frost Damage

Extreme Weather



Diagnostic Features:

- Occurs when freezing temperatures harm developing buds, flowers, or young fruit
- Severity depends on the temperature, duration, and developmental stage of the plant
- Symptoms express as withered petals, blackened styles and ovaries within a flower bud, and young fruit dropping prematurely

Int

Ext



°C

Pre

Nectarine



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Carbon Dioxide (IB)

Carbon dioxide

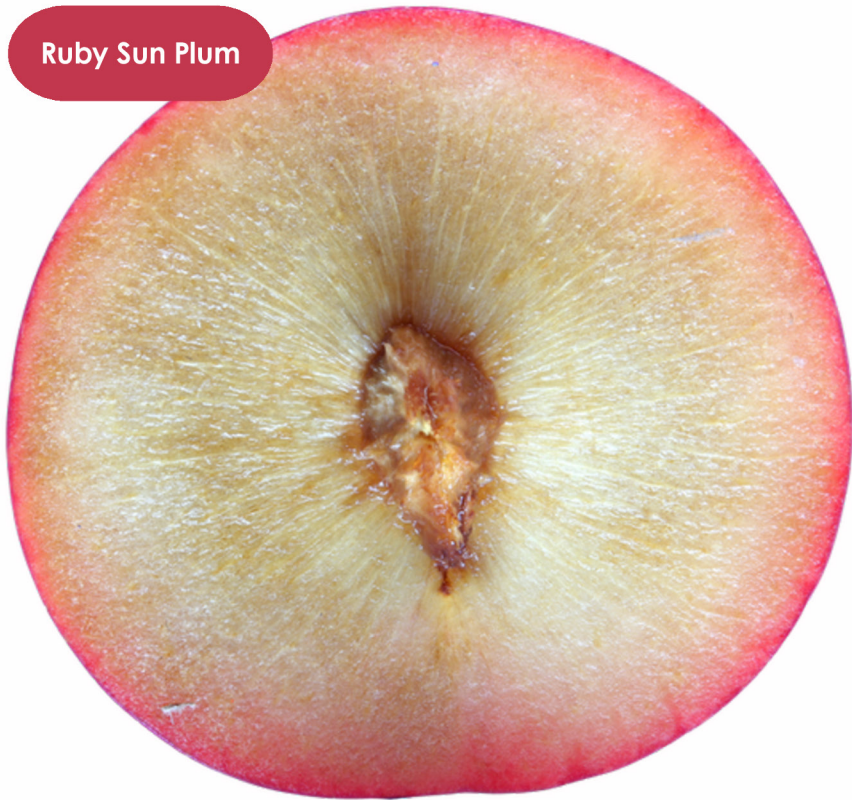


Diagnostic Features:

- Expressed as Internal Browning (IB)
- Breakdown of the flesh tissue between the skin and the stone
- Pre-optimum fruit may be more susceptible
- Susceptibility differs between cultivars
- Affects eating quality, including taste

Int

Ruby Sun Plum



GAS

PH

S

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Cork Spot Callus

Mineral Deficiency



Diagnostic Features:

- Normal external appearance
- Reason for this is unclear and can be cultivar-specific
- Thought to be linked to a boron deficiency

Int

Laelitia Plum



Pre

PH

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Essential Oil Lenticel Burn

Chemical Phytotoxicity



Diagnostic Features:

- Application of essential oils for use against pathogens may result in phytotoxicity
- Evident as irritation to lenticels, resulting in black speckles on the skin surface

Ext

Songold Plum



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PH

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Pitting due to Coating

Chemical Phytotoxicity



Diagnostic Features:

- Small, dark, sunken pits on the surface of the fruit following coating application
- Actual cause not clear, may be lenticel burn or barrier over-modification

Ext

African Delight Plum



© IAN CROUCH



Diagnostic Features:

- Defect in plums, peaches and nectarines that occurs when rapid fruit growth commences before stones are completely hardened
- Peaches with split pits are flattened at the blossom end of the fruit
- The pit is torn apart or split along the dorsal-ventral suture
- In certain peach and nectarine varieties, it occurs more if thinning is done too severely and/or too early
- Often symptoms are not seen until the fruit is cut open

African Delight Plum



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Int



Pre

PH

Visible Split-pit

Spring Temperature and Fruit Growth



Diagnostic Features:

- Defect in peaches and nectarines that occurs when rapid fruit growth commences before stones are completely hardened
- The pit is torn apart or split along the dorsal-ventral suture
- In certain peach and nectarine varieties, it occurs more if thinning is done too severely and/or too early, or if crop load is light
- May lead to decay

Int

Ext

Alpine Nectarine



Pre

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Visible Split-pit

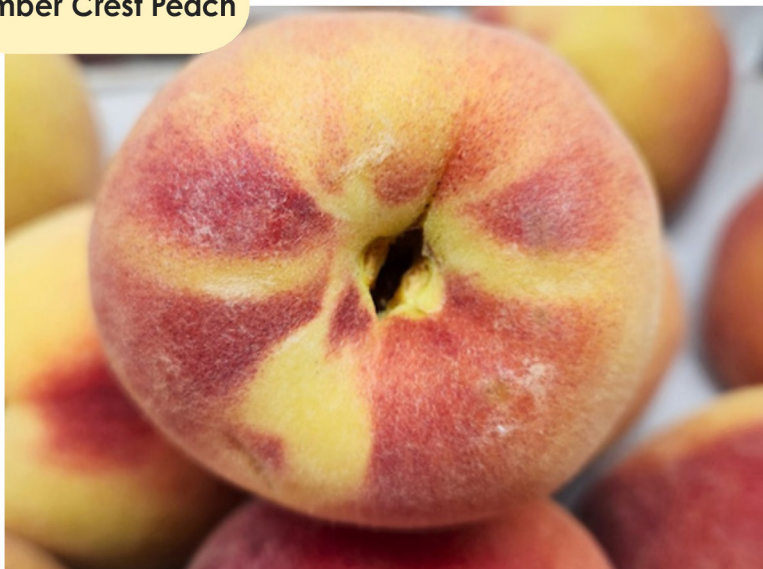
Spring Temperature and Fruit Growth



Nectarine



Amber Crest Peach



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Int

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Pre

Broken Stones in Apricots

Spring Temperature and Fruit Growth



Diagnostic Features:

- Also known as pit shattering
- Caused by environmental conditions during the fruit's development
- Occurs during the rapid fruit growth period, especially if the fruit swells significantly before the pit has fully hardened
- Contributing factors include: Over-watering, late frosts during bloom, excessive thinning or fertilizing
- Some varieties more susceptible than others

Imperial Apricot



Int



Pre

PH

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Broken Stones in Plums

Spring Temperature and Fruit Growth



Diagnostic Features:

- Defect in plums, peaches, and nectarines
- Caused by environmental conditions during the fruit's development
- Occurs during the rapid fruit growth period, especially if the fruit swells significantly before the pit has fully hardened
- Contributing factors include: Over-watering, late frosts during bloom, excessive thinning, or fertilizing
- In susceptible cultivars, incidence is usually higher in seasons with warm spring temperatures
- Symptoms are not seen until the fruit is cut open

Songold Plum



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Int



Pre

PH

Broken Stones in Plums

Spring Temperature and Fruit Growth



Int

Sapphire Plum



Pre

PH

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Cracking due to Coating

External Coatings



Diagnostic Features:

- Cracked skin caused by coating application
- Caused by over modification and breakdown of skin tissue

Ext



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Scalding due to Coating

External Coatings

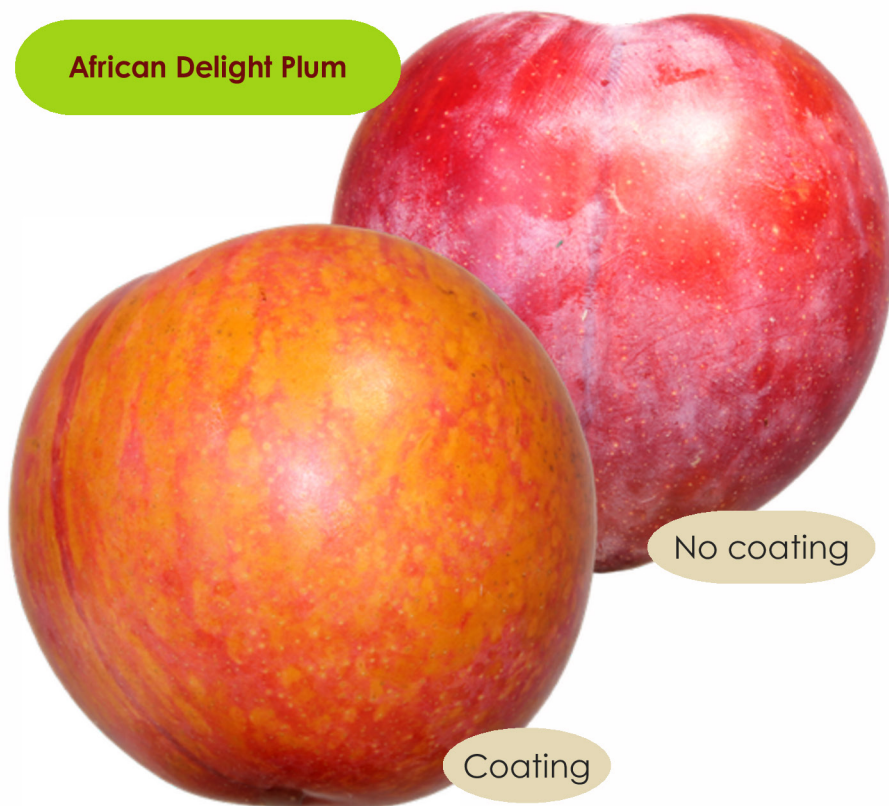


Diagnostic Features:

- Application of coating results in over modification of internal atmosphere and skin damage expressed as orange mottled scalding

Ext

African Delight Plum



GAS

PH

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Concentric Skin Cracks

Peel Cracking



Diagnostic Features:

- The cause of concentric skin cracks is not known but is mostly cultivar specific
- May be due to an imbalance between wax production, growth of the fruit pulp, and the cuticle, especially following rapid fruit growth
- Usually visible at the stem-end of fruit
- Micro-cracks may lead to secondary infection, spoilage, and moisture loss

Ext

African Delight Plum



© KARIN VAN RENSBURG



Pre

Concentric Skin Cracks

Peel Cracking



African Delight Plum

Ext



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Pre

Skin Cracks

Peel Cracking



Diagnostic Features:

- Skin cracks caused by rain before harvest, or high relative humidity/ free moisture in unperforated or micro-perforated bags, especially after extended storage durations
- CA storage of susceptible cultivars may lead to skin cracks after storage

Ext

© RENATE SMIT

Honey Treat Nectarine

Ruby Star Plum



HM

PH

S

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Calyx-End Cracks

Peel Cracking



Diagnostic Features:

- Calyx-end cracks on stone fruit are caused by rapid, uneven growth, often triggered by inconsistent watering or high humidity, which puts too much stress on the fruit's skin
- Contributing factors include over-maturity, poor nutrition (especially calcium deficiency), and high crop load
- Creates entry points for fungi and pests in apricots

Ext

Supergold Apricot



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Pre

Calyx-End Cracks

Peel Cracking



Diagnostic Features:

- Calyx-end cracks on plum is a common physiological disorder
- Caused by the fruit rapidly absorbing a large amount of water after a dry period, which forces the skin to burst at its weakest point
- Cracks typically appear during the final rapid growth stage (Stage III) of fruit development

Ext

Plum



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Shrivel / Wilting

Moisture Loss



Diagnostic Features:

- Wrinkled skin caused by loss of moisture which is visible on the shoulders and/or cheeks of fruit
- More prominent on the shoulders where it typically appears as lines radiating out from the stem onto the shoulders
- In severe cases stretches over the shoulders onto the cheeks
- In the case of plums, some varieties are more susceptible than others

Ext

Fortune Plum



Pearl Time Nectarine



HM

PH

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Wilting

Moisture Loss

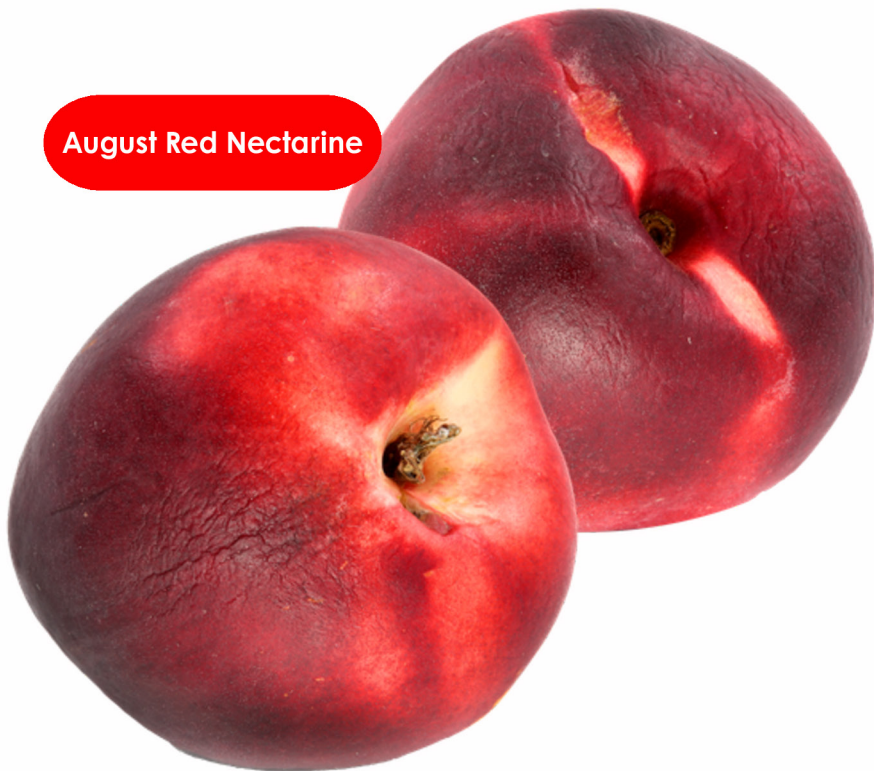


Diagnostic Features:

- Water loss results in wilting of the fruit and in severe cases may be expressed as extensive shriveling on the surface of the fruit
- Fruit harvested too immature are more susceptible to wilting as their cuticles have not developed sufficiently to protect against moisture loss.

Ext

August Red Nectarine



HM

PH

S

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Rub Marks (Slight)

Mechanical damage



Diagnostic Features:

- Cosmetic defect
- Rub marks are typically caused by physical friction during harvest, packing, and transportation, especially if the turgor of the fruit is high after wet conditions in the orchard
- Certain environmental and physiological issues can also weaken the fruit's skin and contribute to scuffing

Ext



HM

Pre

PH

S

Imperial Apricot



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Rub Marks (Severe)

Mechanical damage



Pioneer Plum



Ext



Imperial Apricot



HM

Pre

PH

S

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Skin Punctures

Mechanical damage



Diagnostic Features:

- Cosmetic defects caused during harvesting and packing process
- May express as rub marks or skin punctures caused by fingernails or stems
- May develop and become more visible during storage

Ext

Pioneer Plum



PH

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Skin Punctures

Mechanical damage



Sun Supreme Plum



Ext



Laeitia Plum



Pre

PH

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Damaged Tips

Mechanical damage



Diagnostic Features:

- Cosmetic defect
- Mechanical damage to the fruit tip, most likely occurring during packing
- Wounded tissue is susceptible to pathogen infection, resulting in decay
- Susceptible peach and nectarine cultivars may develop a prominent tip under warm winter conditions
- Special handling and packing requirements for injury prone fruit

Ext



Laetitia Plum



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Bruising

Mechanical damage



Diagnostic Features:

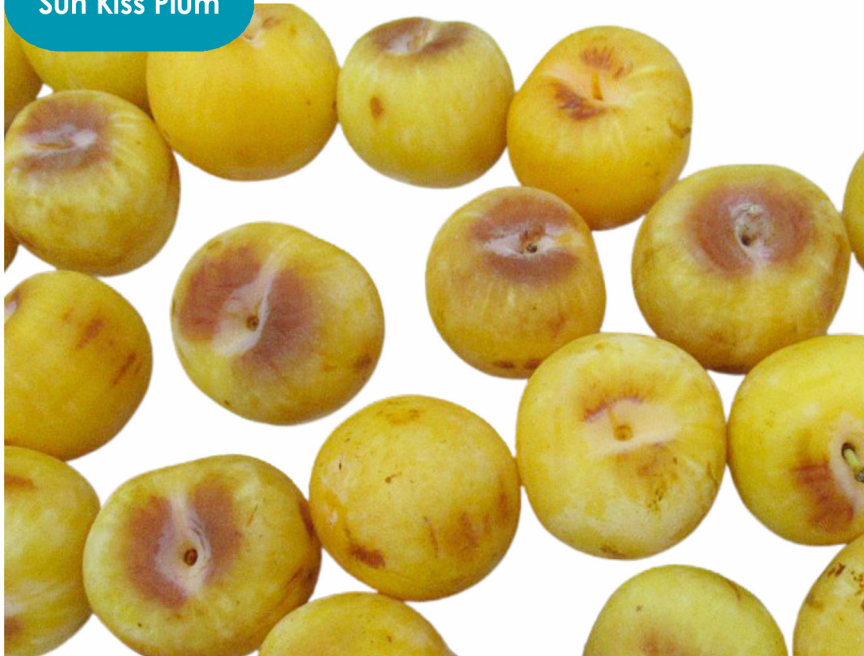
- Damage to fruit caused by impact or compression
- Leads to cell breakdown and often resulting in discolouration and softer texture
- Bruises can accelerate ripening, increase moisture loss, and make the fruit more susceptible to microbial spoilage and rot, compromising its quality

Int

Ext



Sun Kiss Plum



PH

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Freezing Damage

Mechanical damage



Diagnostic Features:

- Postharvest storage disorder that can occur if the pulp temperature drops below -0.5°C
- Freezing temperature depends on the TSS (%) of fruit. The higher the TSS (%), the lower the freezing temperature to cause damage
- Results in poor texture and flavor loss
- Symptoms often become more apparent after the fruit has been removed from cold storage and exposed to room temperature (shelf life)

Plum



© KARIN VAN RENSBURG

Int

Ext

$^{\circ}\text{C}$

PH

S

Freezing Damage

Mechanical damage



Diagnostic Features:

- Occurs when ice crystals form and rupture the cell walls and membranes, causing a loss of texture and moisture
- Leads to a mushy, watery consistency after thawing, along with potential browning and discolouration due to enzymatic oxidation
- While taste and nutritional value are often preserved, physical changes may make fruit unappetizing
- Fruit is more susceptible to decay

Int

Ext

Apricot



°C

PH

S

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Rain / Water Damage

Mechanical damage



Diagnostic Features:

- Preharvest skin streaking in peaches and nectarines is linked to rain falling one to two weeks before harvest, followed by a dry period of about 10 days
- Appears as faint yellow, solid yellow, or brown (necrotic) streaks on the skin, typically running from the stem-end to the tip of the fruit
- May result in secondary decay
- Risk depends on the cultivar and the stage of ripeness at the time of the rain event

Ext



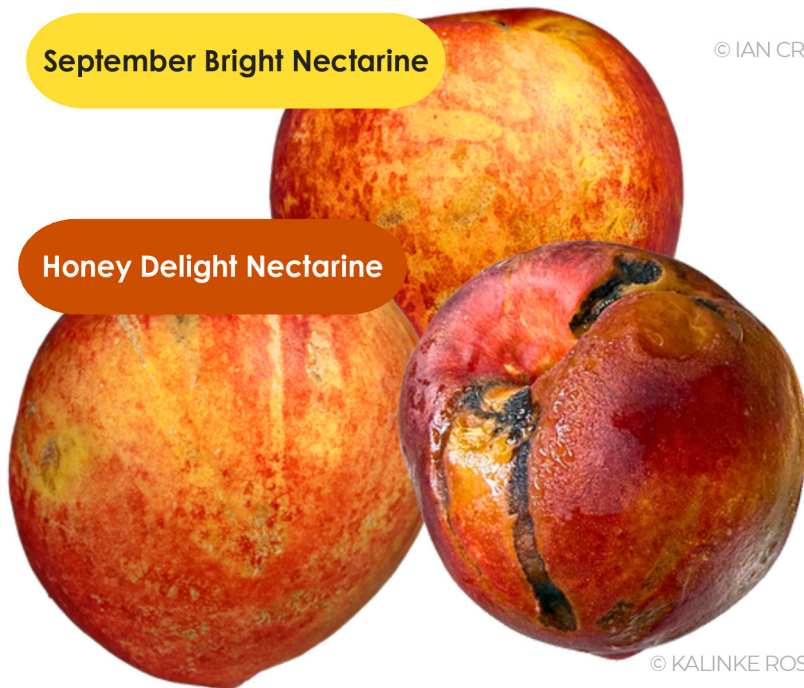
September Bright Nectarine

© IAN CROUCH

Honey Delight Nectarine

HM

Pre



© KALINKE ROSSOUW



Curly Leaf on Fruit

Pathological



Diagnostic Features:

- Most commonly caused by an infestation of the leaf curl plum aphid, a pest that sucks fluids from new leaves, causing them to curl and deform
- Less likely causes include adverse weather conditions and water stress

Ext

Plum



Pre

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Xanthomonas

Pathological



Diagnostic Features:

- Bacterial spot or bacterial canker
- Most dark brown to black, sunken spots with a water-soaked margin that often crack
- A yellow halo may surround these spots
- Small, sunken, cracked spots on the fruit surface
- Symptoms similar to *Pseudomonas* spp

Ext

Apricot



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Pre



Lenticel Freckles

Pathological

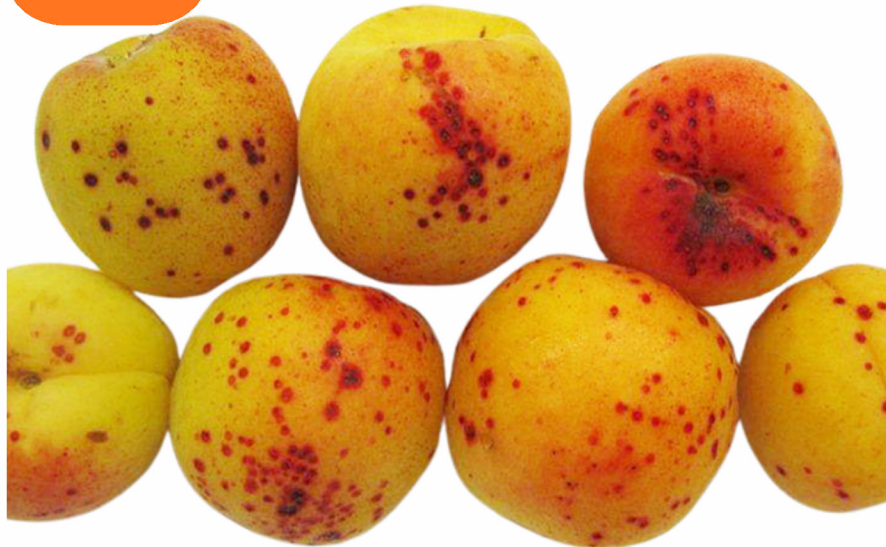


Diagnostic Features:

- Fungal (*Cladosporium carpophilum*) or bacterial infection early in spring or after fine ice rain
- Dark brown to black, sunken spots with a water-soaked margin that often crack
- A yellow halo may surround these spots
- Small, sunken, cracked spots on the fruit surface
- *Pseudomonas*-like symptoms

Ext

Apricot



Pre

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Plum Marbling

Marbling (Viroid)

Pathological



Int

Ext

African Delight Plum



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Plum marbling is an infectious disease on Japanese plums caused by the plum viroid I (PVd-I). A viroid is a small circular RNA molecule that replicates and circulates throughout the host plant. All parts of infected trees contain the viroid, but no other abnormalities have been observed. Symptoms of plum marbling only occur on fruit.

Symptoms

- Infected plums show irregular skin colouration or marbling that can range from light marbling to severe, where the fruit is completely unmarketable.
- Plums can be small and hard with an irregular shape and uneven surface.
- Plums may have so-called corky flesh (in both yellow-skinned and red-skinned fruit).



Pre



Plum Marbling



Transmission

- PVD-I is not transmitted through seed. This is important as it means that it cannot be transmitted by the fruit. Symptoms of plum marbling only occur on fruit
- Primary spread of marbling is through the planting of infected plant material
- Mechanical transmission of PVD-I during routine practices, such as pruning, is also highly probable

Control Strategies

- Mark, remove and burn all infected trees.
- Disinfect pruning equipment
- Purchase nursery trees from tested mother blocks (certified material under the Deciduous Fruit Plant Certification Scheme identified by a blue label)
- For any on-farm budding or grafting, secure certified and tested material must be obtained from a Plant Improvement organisation

The presence of PVD-I can be confirmed by laboratory testing at SAPO Trust or the Plant Disease Clinic, at Stellenbosch University.

TESTS – CONTACT POINTS

SAPO Trust 021887 6823 Wendy Bailey - wendy@saplant.co.za

Plant Disease Clinic, Department of Plant Pathology SU

Sonja Coertze: 021 808 3222

Plantsiekteliniek@ Stellenbosch.onmicrosoft.com

Plum Marbling



African Delight

SYMPTOM DESCRIPTION:

- Mild to severe marbling
- Often small fruit and, in some cases, hard fruit
- One report of corky flesh



Black Pearl

SYMPTOM DESCRIPTION:

- Moderate to severe marbling
- Irregular fruit surface



Lady Red

SYMPTOM DESCRIPTION:

- Severe marbling
- Often smaller fruit



Plum Marbling



African Rose

SYMPTOM DESCRIPTION:

- Mild to severe marbling
- Sometimes irregular surface



Laetitia

SYMPTOM DESCRIPTION:

- Mild to moderate marbling
- Fruit often hard



Ruby Crunch

SYMPTOM DESCRIPTION:

- Severe marbling



Plum Marbling



Ruby Star

SYMPTOM DESCRIPTION:

- Severe corky flesh
- Almost always associated with small and hard fruit
- Often with irregular fruit surface



Fortune

SYMPTOM DESCRIPTION:

- Moderate to severe marbling
- Irregular fruit surface



Sun Breeze

SYMPTOM DESCRIPTION:

- Very mild marbling
- Severe corky flesh
- Fruit small and hard
- Often with an irregular surface



Plum Marbling



Songold

SYMPTOM DESCRIPTION:

- Very mild marbling
- Severe corky flesh
- Fruit small and hard
- Often with an irregular surface



Ruby Sun

SYMPTOM DESCRIPTION:

- Severe marbling
- Often with irregular fruit surface



Pioneer

SYMPTOM DESCRIPTION:

Severe marbling



Plum Marbling



Similar Symptoms.
BUT NOT CAUSED BY PVd-I

Pioneer



Laetitia



Angeleno



Plum Marbling



Fruit Symptoms

Cultivar	Marbling	Corky Flesh	Hard	Small	Irregular
African Delight	*** ***	*	*	**	
Black Pearl	***				***
Lady Red	***			**	
Laetitia	***		**		
Pioneer	***				
Ruby Crunch	***				
Ruby Star		***	***	***	**
Ruby Sun	***				**
Songold	***	***	***	***	**
Sun Breeze	***	***	***	***	**

Indicates the approximate frequency of the symptom.

(*<25%, ** 25-75%, *** >75%)

Colour indicated the severity of the symptom

(Mild, Moderate, Severe)