

MANAGING CRIPPS PINK HARVEST AND STORAGE FOR OPTIMUM FRUIT QUALITY AND OUT TURN

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Preparing The Crop For Harvest

Light open canopy exposing fruit sites to 50% or better light levels as harvest approaches, is required to enable satisfactory early colour development.

Thin fruit to preferably ones and no more than bunches of two fruit.

Remove any shading, unwanted annual shoot growth - NOTE Cripps Pink fruit is very sensitive to sunburn so do not over prune during periods of high light and temperature.

Laying down reflective mulch three to four weeks prior to harvest will hasten fruit colour development in the lower canopy where colour development is often slow.

Retain®

Retain® has been extensively trailed in both South Africa and Australia on Cripps Pink. Cripps Pink is considered a medium response variety whereas Gala is a very responsive variety, so the Retail® response will not be quite as obvious as in Gala. .

Applied 21 to 28 days before harvest it may delay harvest maturity by up to seven days or by about two picks, i.e. first pick Retain® treated fruit happens at time of third pick of untreated fruit.

South African studies report:

- Improved colour due to harvest delay into weather conditions more conducive to colour development
- Bigger fruit size - fruit grows 1mm/week through harvest
- Greener background colour
- Firmer fruit in storage
- Fewer incidences of greasy fruit
- Reduced pre-harvest drop

It may have potential as a risk management tool to move harvest period of part of the Cripps Pink block into a different weather pattern and enable the harvest to be spread over a longer period.

Maturity Parameters

Cripps Pink is a premium variety harvested to tight maturity and quality standards.

For longer-term storage it has to be harvested during the relatively short optimum harvest maturity period. Objective maturity monitoring needs to be commenced two to three weeks before expected start of harvest.

Minimum maturity parameters for commencement of harvest are:

- SPI 3.5 on European 10 point scale* = 1 to 1.5 on 0 to 6 SPI chart
- Commence harvest as soon as clear area moves outside of core area.
- Brix > 12.50
- Pressure > 8kg f for long term storage
- > 7.5kg f for medium term storage
- Background colour F3 to F5 on Pink Lady™ colour swatch blush > 40%
- Over colour intensity - R3 to R5 on Pink Lady™ colour swatch = bright pink.

* 10 point SPI chart is available from the Pink Lady™ Group.

Studies of maturity advancement in South Africa indicate that:

- Fruit grows 1mm/week through harvest
- Fruit pressure declines about 0.3kg/week
- Sugar lifts 0.3 to 0.5 Brix/week

Sugar levels increase during storage. For optimum maturity first harvest fruit 1.5 to 2.0 Brix lift is possible. Later picked fruit with more advanced starch degradation may only lift 0.5 to 1.0 Brix during storage.

Maturity needs to be regularly monitored through harvest. It is recommended that export quality Cripps Pink be harvested over a 10 to 14 day period in three or more picking passes. Fruit showing SPI > 3 on the New Zealand SPI chart are considered over mature for medium term storage.

Fruit for long-term storage need to be picked in the first half of the harvest window - i.e. within seven to eight days of the go date.

Bruising

Although a firm fruit, Cripps Pink is easily bruised. It needs careful handling. Do not harvest while fruit wet and temperatures cold.

Selective Picking

Cripps Pink needs to be selectively picked by colour every four or five days to minimise mixed maturity within the line.

Storage

Internal Browning Disorder (IBD)

IBD has become a serious problem in fruit that has been stored for medium or longer terms. There is a comprehensive international research programme investigating IBD.

Preliminary findings indicate:

- There are possibly three different types of IBD, definitely two.
- Expression appears to be harvest maturity dependent. The more advanced the harvest maturity the higher the risk of IBD.
- Dwarf rootstock fruit, and fruit from trees that have been girdled are more prone to IBD - perhaps fruit from these trees has more advanced maturity than SPI readings suggest.
- Fruit from cooler growing districts is more at risk.
- Fruit from low crop load trees has higher risk (lower crop load tree fruit reaches harvest maturity earlier than heavier crop trees).
- There is a tendency for high N or high N : P ratio fruit to show higher risk (too much N suppresses colour development leading to more advanced maturity harvest at export colour).
- Low fruit density less risk than fruit with high density - lopsided fruit more at risk than uniform shaped fruit. Anecdotal evidence suggests that "off" type "Fat Lady" strain fruit more at risk than normal Cripps Pink fruit.
- CO₂:O₂ ratios > 1 in storage increases IBD risk. O₂ levels in storage should be 1% to 1.5% above CO₂ level with CO₂ < 1%. Optimum storage atmosphere maybe CO₂ 1%, O₂ 1.5% to 2%.
- IBD expression increases with longer storage for "at risk" fruit.

Greasy Fruit

Cripps Pink grown in cool climates is susceptible to the development of greasy fruit during storage or shipping. This fruit is unacceptable to the market. Development of greasy fruit increases as harvest maturity advances. Pre-harvest treatment with Retain® may reduce risk "SmartFresh™" is reported to reduce risk.

Managing Cripps Pink to achieve export colour specification early in the harvest window will minimise the greasy fruit problem.

Scald

Harvesting Cripps Pink at maturities required to minimise IBD and greasy fruit will pre-dispose fruit to superficial scald expression in medium and long-term storage. Post-harvest treatment will be necessary for scald control.

The options are:

- DPA drenching
- Pre-storage SmartFresh™ treatment

Storage Conditions

In normal air storage Cripps Pink fruit will lose fruit quality, particularly fruit pressure. Air storage is only suited to short term storage. CA storage is recommended for fruit stored 12 weeks or more, and will improve out turn compared with air-stored fruit for fruit held for 6 weeks to 12 weeks.

Cripps Pink is susceptible to chilling injury so needs a step wise chilling programme to lower to long-term storage temperatures gradually. Hold at 2-3 degrees celcius for first two weeks

then drop to long-term storage temperature of 0.50C to 1.0C. Optimum storage atmosphere 1% CO₂, 1.5% to 2% O₂.

Smartfresh™

When applied, within seven days of harvest provides excellent superficial scald control and could be an alternative to DPA drenching.

Trials show fruit treated with SmartFresh retains greener background colour longer, are firmer, and will be less greasy.

Fruit needs to be at the correct maturity at harvest - for best results the correct maturity is close to that which would normally be stored using CA.

Information Sources

- · 2003 Colloque on Pink Lady™ - CD available from Pink Lady™ group
- · South African Pink Lady™ Handbook - Revised December 2002 by Richard Hurndall - Deciduous Fruit Producers Trust.
- · Jane Turner (2004) AgroFresh NZ. Personal communications.