

Please note that this information is for guidance and not regulatory.  
Specific circumstances may dictate deviations.

# BEST PRACTICE GUIDELINES

# SUMMER PEARS



Summer Pears are grouped for their specific characteristics of high respiration rates, sensitivity to breaks in the cold chain and consumer preference for a sweet, soft and juicy product.

Should best practice guides not be followed meticulously, serious defects, such as internal browning, unsightly scuff marks and over ripeness, will follow.

Because cooling plays such a crucial role in the handling chain of summer pears, planning for sufficient cooling capacity is vital, especially in times of loadshedding.

## SUMMER PEARS ARE HIGHLY SENSITIVE TO ETHYLENE. THEREFORE:

- Pick all summer pear cultivars within the prescribed harvest maturity parameters, and
- Take precautions to ensure that the fruit are not exposed to any unnecessary sources of ethylene.

## 1. CULTIVARS

- a. Flamingo
- b. Rosemarie
- c. Cheeky
- d. Bon Rouge
- e. Williams Bon Chretien
- f. Early Bon Chretien
- g. Celina
- h. Cape Blush

## 2. HARVEST MATURITY

- Firmness is the main maturity indicator when it comes to pears. Use DALRRD's regulation as a guideline.
- Add 0.9 kg (2 pounds) to the minimum firmness to lower the risk of overmature fruit coming into the packhouse.
- Use own discretion to start harvesting – pears close to the maximum of the “firmness window” tend to be very susceptible to developing rub marks through the handling chain.
- Don't forget about your market's TSS requirements.

## 3. HARVEST

- Avoid harvesting fruit with high turgidity after rain.
- Avoid harvesting during periods with high ambient temperature as far as possible.
- Prevent dust to settle on the fruit during harvest and transport as it can cause scuff marks on the fruit.
- Cover the bins with wet blankets during transport from the orchard to bin off-loading area.
- All fruit must be transported from the orchard to the packhouse (cold store) on the same day as harvest.
- It is of critical importance to remove field heat as quickly and efficiently as possible. Serpentine cooling is often used.

## 4. FRUIT RECEIVING

- Measure the temperature of incoming fruit.
- Consider the use of a chlorine drench and/or a suitable, registered fungicide treatment.
- Keep chlorine concentration between 75 -100 ppm at pH 6-8.
- Apply fungicide at recommended concentrations as per label and check concentrations throughout the day.
- Send samples to lab to monitor active ingredient in fruit (minimum residue levels, ARfD limits, number of active ingredients etc.)
- If fruit are packed dry, do no drench.

## 5. FRUIT COOLING BEFORE PACKING

- Insert thermocouples\* to measure the core temperature of the bins during the cooldown period.
- Room set point: -1.0 °C DAT.
- Calculate room capacity (based on 40 °C fruit temperature). Stick to your room's designed cooling capacity.
  - If it's 200 bins per day, don't load it with 300, rather put the last 100 in another room.
  - Keep loadshedding in mind – this will have a negative effect on your cooling capacity.
- Fruit must reach a pulp temperature of -0.5 °C within 48 hours from harvest. Monitor core temperatures with thermocouples to ensure sufficient cooling.
- The next day's fruit must be kept in a separate room.

## 6. SMARTFRESH OR 1-MCP PROTOCOLS

- The use of 1-MCP can be considered for colour and firmness retention in sensitive markets. Treatment should ideally be conducted within 3-4 days after harvest and no later than 7 days.
- The recommended dose must be linked to harvest maturity. A 'half dose' of 325 ppb is typically recommended for pears but in the later part of the picking window a full dose of 625 ppb can be considered. The designated target market's colour and firmness requirement will also influence the 1-MCP treatment plan.

## 7. PACKING

- Only use the specially designed SuperVent carton for summer pears.
- Do not change packaging (bags/cartons) without proper trials to test the impact on quality.
- Fruit with a temperature above +2.0 °C should not be packed.
- When packing wet, maintain a chlorine concentration of 100 ppm.
- Generally, pack in 20-micron non-perforated bags to maintain humidity and fruit weight.
- Temperature after packing, palletizing and inspection should be kept below 12 °C.
- Plan inspections with PPECB to minimize temperature increases to maintain the cold chain.

## 8. RE-COOLING

- Forced air cooling (FAC) after packing is non-negotiable.
- FAC @ -2.0 °C. After 24 hours rotate pallets in tunnels 180 degrees – the inside wall will now be on the outside wall of the tunnel.
- Final fruit temperature of -0.5 °C should be reached within 48 hours after packing.

## 9. LOAD OUT

### 9.1 CONTAINERS

- Load pallets directly from cold room/tunnel into the shipping container – don't let it stand outside.
- Load out temperatures must not exceed +1.5°C.
- Container temperature set point between -0.5 to -1.5 °C.
  - Thicker bag = lower set point
  - Thinner bag = warmer set point
  - 37-micron bag ideally @ -1.0 °C
- Container temperature set points between -0.5 °C to -1.5 °C depending on target market and fruit maturity.  
Set points:
  - DP1: Minus 1.0 ° C (summer pears in bags only)
    - Carry at minus 1°C for the full duration of the voyage. Closed Vents.
  - DP2: Minus 1.5 ° C (summer pears in bags only)
    - Carry at minus 1°C for the full duration of the voyage. Closed Vents.
  - D05: Minus 0.5 ° C (summer pears without bags)
    - Carry at minus 0.5°C for the full duration of the voyage. Closed Vents.

### 9.2 REFRIGERATED TRANSPORT FOR SUMMER PEARS DESTINED FOR SHIPPING IN CONVENTIONAL VESSELS

- Summer pears destined for shipping in conventional vessels must be transported to the port in refrigerated trucks.
- Refrigerated trucks must be pre-cooled to 0 °C (RAT) before loading begins.
- Load pallets directly from the cold room/tunnel into the refrigerated truck – do not allow them to stand outside.
- Load-out temperatures measured in the center of the pallets (using thermocouples\* or penetration probes) at the time of loading into refrigerated trucks must not exceed +1.5°C.
  - PPECB only measures pulp temperatures when the fruit arrives at the port. It is, therefore, the responsibility of the packhouse manager/ cold room manager to ensure that the correct load-out procedures are followed and that fruit pulp temperatures are on target.
- Consider DP2, DP1 or DP05 (especially when co-loading with other fruit kinds) for ALL conventional shipments. Only one temperature setting per deck is possible!
- Since pulp temperatures may not exceed +1.5 °C when the fruit is off-loaded at the port and no re-cooling facilities are available there, the fruit may remain without cooling for up to 16 hours while the decks are loaded. It is critically important that the centers of the pallets are cooled to the desired shipping temperature at the inland cold store.
- It is recommended to keep a record of the pallet numbers, the temperature of the center of the pallets at the time of truck loading, and the time of truck departure.
- To prevent delays and warming up of fruit at the port, only fruit destined for one port of discharge may be loaded in a single refrigerated truck.
- Truck set points: 0 °C DAT.
- Due to the weight of the pallets, the loading pattern inside the truck must alternate as 1, 2, 1, 2, etc., to comply with axle mass limitations at weighbridges. Single pallets must be securely supported to avoid falling over.
- Since summer pears have a high respiration rate, and temperature management is critical for storage life and quality retention, it is best to load trucks for transit during the cool hours of the night or early morning.
- To avoid significant delays at the port, trucks must arrive according to the schedule received from FPT. Traffic delays should be considered when planning truck loading and departure from the cold store.
- It is critically important to negotiate with the transport contractor to ensure the truck's refrigeration system remains active during transit and any delays at the port. Refrigeration must only be switched off when the truck doors are opened at the port by PPECB.
- No re-cooling facilities are available at the port. If a load is rejected due to pulp temperatures exceeding +1.5 °C upon truck door opening, it is the exporter's responsibility to arrange re-cooling at a nearby cooling facility.

## 10. TRANSPORT OF CONTAINERISED FRUIT

- With high ambient temperatures during the early months of the year, gensets should be used when traveling time to the port terminal exceeds 1 hour. This is one hour less than PPECB's Time Temperature Tolerance (TTT) regulations for deciduous fruit, but due to the sensitivity of summer pears for breaks in the cold chain, especially during January to March, this guideline is considered as necessary.
- Take note that a genset adds about 1 ton to the vehicle mass and problems may occur at weighbridges with axle mass limitations.



### \* NOTE REGARDING THE USE OF THERMOCOUPLES:

1. Only buy from reliable sources.
2. Use the blue/white thermocouple.
3. Use the recommended instrument to take readings: C42F, KM22 or C22 thermometer – all have a Lumberger connection to be able to read the thermocouple.
4. The accuracy of the thermocouples is approx. 0.25 °C.
5. Calibrate the instrument before use.
6. Check instrument weekly in distilled water cooled to 0 °C (ice sludge).
7. The thermocouple must be properly inserted into a fruit to measure the pulp temperature.
8. Thermocouple readings tended to fluctuate in cold stores with temperatures near 0 °C.
9. Apply the warning sticker (yellow) to indicate that the wires are thermocouples for temperature reading purposes.
10. Remove the thermocouples just before loading containers (thermocouples are not acceptable in certain markets). Leave in pallets when loading refrigerated trucks.

