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CRI Cutting Edge

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Improving Ventilation and Inspections in Bulk Bins

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A recent investigation into the use of bulk bins in cold stores has highlighted concerns regarding ineffective cooling performance (precooling and container cooling) and the DAFF inspection process. The following changes and regulations have thus been proposed, which are applicable to cold treatment and FMS markets only.

1. Bulk bins ventilation

Bulk bins, manufactured from corrugated paperboard are used to export loose fruit. Each bulk bin (J38B, J50B, J60B) is placed on a pallet base and then stacked two or three bins high for shipment (Figure 2).

Container cooling: The large opening at the bottom of bulk bins (Figure 1) is often closed by using old packaging material to stop fruit from escaping between the pallet base slats. However, this additional packaging material typically blocks all ventilation. This is particularly serious for cold treatment and FMS shipments, where the lack of ventilation can impede the success of the cold treatment protocol. To address this, only certified securing sheets will be allowed by DAFF.

Two-step implementation of new regulations

1. From the 1st of August until the end of 2019 the season, only certified securing sheets may be used with bulk bins. Securing sheets were selected based on the ventilated area. These include:
   - E07D Combo-A07D Stacker-Combo Sec Sheet RO-15722 (Houers)
   - DD04H00014 (APL)
   - R306 (Corruseal)
2. From the 2020 season onwards, only the new ventilated "bin sheets" should be used for all cold treatment and FMS shipments.

Further details of packaging can be found in the "CRI packaging material specifications guidelines".

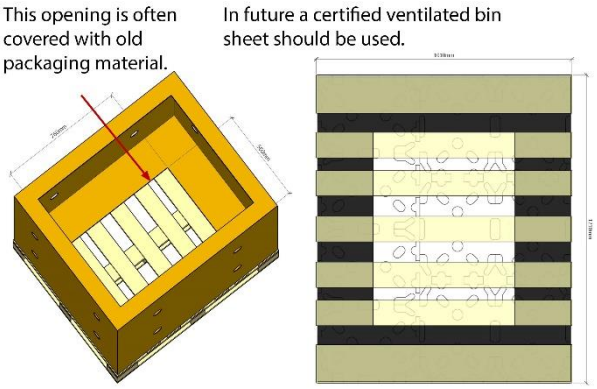

Figure 1: Illustration of the large opening under the bulk bin, which should be now covered with a "bin sheet" (left). Top view of a bulk bin, pallet base and securing sheet (right)

Ventilated bin sheet specifications:

- More than 4% of the bulk bins bottom should be ventilated (measured after all packaging material is applied).
- Openings should not be round, as they can be obstructed by fruit.
- Multiple smaller (oblong shaped) holes are preferable to fewer larger holes, as the fruit can be forced through larger openings.
- Sufficiently strong paperboard should be selected, to avoid tearing under damp conditions.

Precooling: During precooling, cold air bypasses fruit and instead flows through the open middle pallet base/s of the stack. This delays precooling and is a challenge particularly for cold treatment shipments, where set-point temperature should be reached within 48-72 hours.

As a solution, from the 1st of August, DAFF will require the middle pallet base/s of bulk bin stacks to be wrapped with plastic shrink wrap (Figure 2). Evaluations further indicate the plastic shrink wrap will also improve the precooling performance in cold store chambers and cooling performance in containers. Plastic shrink wrap should thus also be applied for FMS markets. Plastic shrink wrap should be of industrial strength and cover the pallet base/s only and not cover the ventilation holes on the sides of the bins.

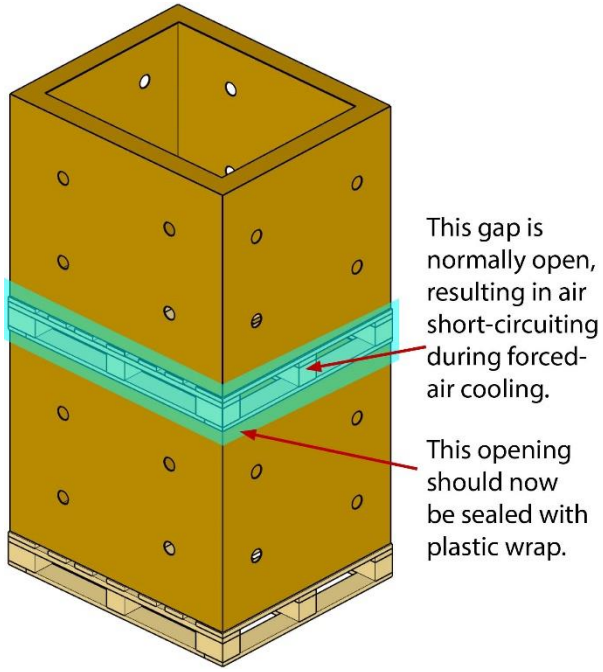

Figure 2: Illustration of a bulk bin stack and the use of plastic wrapping to seal the middle pallet base opening.

2. Securing of Bulk Bins

Bulk bins are exposed to high moisture conditions as a result of the lower temperature applications used during cold treatment and FMS shipments. It is therefore imperative that bulk bins be manufactured and assembled according to the "CRI Packaging Material Specifications Guidelines". All strapping must be in place and firmly applied to secure the integrity of the bulk bins for the duration of the voyage to market.

Furthermore, the top of each bulk bin stack should be covered with a certified pallet cap, as used in open display cartons. This is done to prevent theft and keep the fruit clean of dust throughout the supply chain.

3. DAFF inspection process at cold stores

DAFF has agreed that fruit being sampled for phytosanitary inspections will only be selected from the top bin of a stack. Therefore, only fruit from the same PUC will be allowed in a stack. This will prevent the top bin/s from being removed (disassembled) which causes a number of problems and will also ensure that the integrity of the plastic shrink wrap remains intact and is not removed.

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Verbetering van Ventilasie en Inspeksies in Massa Kratte (Bulk bins)

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'n Onlangse ondersoek na die gebruik van massa kratte in koelkamers het getoon dat verkoeling (voorverkoeling en houerverkoeling) negatief beïnvloed kan word. Dit kan ook DAFF se inspeksieproses benadeel. Die volgende wysigings en regulasies word voorgestel wat slegs van toepassing is op kouebehandelings en FMS markte.

1. Massa krat ventilasie

Massa kratte word gebruik om los vrugte uit te voer. Massa kratte (J38B, J50B en J60B) word op 'n uitvoerpalet geplaas en dan twee of drie hoog gestapel vir verskeping (Figuur 2).

Verkoeling in houers: Die groot opening aan die onderkant van massa kratte word dikwels met ou verpakkingsmateriaal toegemaak om te verhoed dat vrugte deurval (Figuur 1). Hierdie materiaal blokkeer die vertikale ventilasie. Dit is veral problematies vir kouebehandelings en FMS verskepings, waar die gebrek aan ventilasie die sukses van die koue behandelinsprotokol kan belemmer.

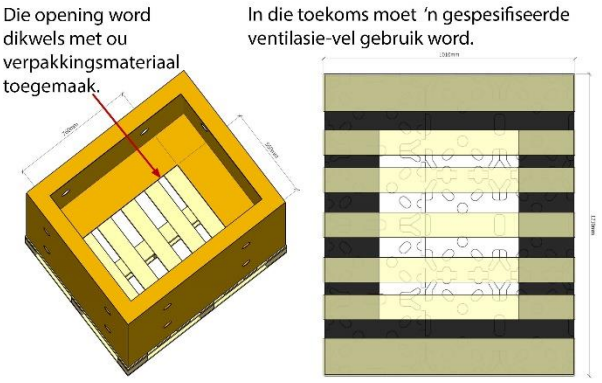
Om hierdie probleem aan te spreek sal slegs goedgekeurde ventilasie velle (securing sheets) deur DAFF toegelaat word.

Twee-stap-implementering van nuwe regulasies

1. Vanaf 1 Augustus tot en met die einde van die 2019 seisoen sal slegs goedgekeurde ventilasie velle gebruik mag word. Die ventilasie velle is gekies gebaseer op die ventilasie areas en sluit in:
   - E07D Combo-A07D Stacker-Combo Sec Sheet RO-15722 (Houers)
   - DD04H00014 (APL)
   - R306 (Corruseal)

2. Vanaf die **2020 uitvoer seisoen**, mag slegs die nuwe ventiasie velle vir alle koue behandelings en FMS verskepings gebruik word.

Verdere besonderhede oor verpakking kan in die "CRI Pakmateriaal spesifikasie" riglyne gevind word.



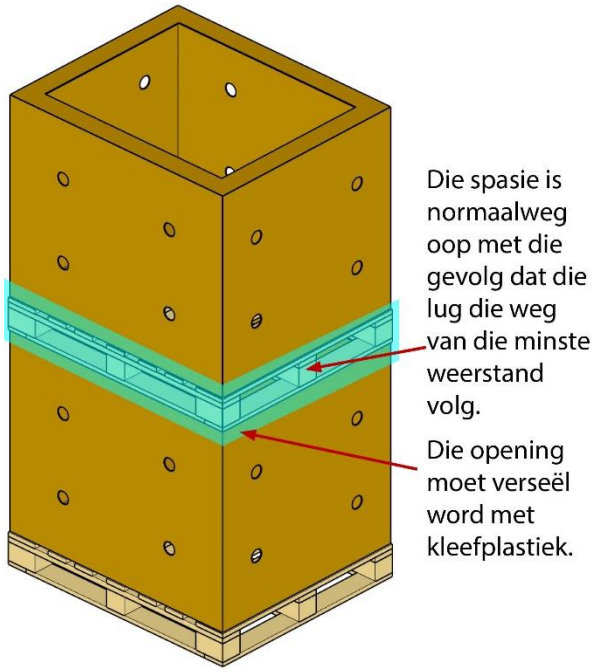
Figuur 1: Illustrasie van die groot openinge aan die onderkant van die massa-kratte, wat met 'n ventilasie-vel (links) bedek moet word. Bo-aansig van die massa-krat, bo-dek planke van die palet en ventilasie-vel (regs)

Ventilasie-vel spesifikasies:

- Meer as 4% van die massa kratte se onderkante moet ventilasie gate bevat (gemeet nadat alle verpakkingsmateriaal aangewend is).
- Openinge mag nie rond wees nie, omrede dit deur vrugte geblokkeer kan word.
- Meer, kleiner langwerpige gate word bo minder, groter gate verkies, omrede vrugte deur die groter openinge geforseer kan word.
- Om te voorkom dat dit onder vogtige toestande skeur en vrugte deurlaat moet die ventilasie-velle van dieselfde hoë gehalte papier as sitrus-uitvoerkartonne vervaardig word.

Voorverkoeling: Gedurende voorverkoeling kan die koue lug wat veronderstel is om deur die vrugte te beweeg, ontsnap en slegs deur die openinge van die palet-basis tussen die twee massa kratte deur beweeg. Dit vertraag voorverkoeling en is 'n uitdaging, veral vir koue behandeling-verskepings, waar die setpunt temperatuur binne 48-72 uur bereik moet word.

Om hierdie probleem op te los, sal DAFF vanaf 1 Augustus vereis dat die boonste palet se basis van die massa kratte se stapels met kleefplastiek bedek moet word (Figuur 2). Hierdie plastiek, wat verkoeling kan verbeter, moet van industriële gehalte wees en slegs die palet basis/se bedek, en nie die ventilasie gate aan die kante van die massa kratte nie.



Figuur 2: Illustrasie van hoe die massa-kratte gestapel word en die deurskynende kleefplastiek om die palet basis openinge tussen die massa-kratte aangewend moet word.

2. Stabiliteit van massa kratte

Massa kratte word aan hoë vogtige toestande blootgestel as gevolg van die laer temperature wat gedurende koue behandelings en FMS verskepings gebruik word. Dit is dus uiters noodsaaklik dat massa kratte volgens CRI se verpakkingsriglyne vervaardig word. Alle plastiese bande (strapping) moet in plek en stewig wees om die integriteit van die massa kratte vir die duur van die reis na die mark te verseker.
Verder moet die bokant van elke stapel met 'n goedgekeurde palet deksel (*pallet cap*) bedek word soos gebruik by oop vertoon-kartonne. Dit word gedoen om diefstal te voorkom, asook die vrugte skoon van stof tydens die voorsieningsketting te hou.

3. DAFF inspeksie prosedures by koelkamers

DAFF het ingestem dat vrugte wat vir fitosanitêre inspeksies versamel word nou slegs van die boonste massa krat in die stapel geneem sal word. Daarom sal slegs vrugte van dieselfde PUC in 'n stapel toegelaat word. Dit sal voorkom dat die boonste kratte verwyder word en sodoende word DAFF se taak heelwat ligter gemaak. Dit sal ook verseker dat die integritiet van die kleefplastiek ongeskonde bly en nie verwyder word nie.

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