Draft

Report to the Pack House Action Group

Identification of Issues that impact on the Container Scheduling Efficiency at Pome Fruit Pack House Cold Stores in the Western Cape

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Foreword

Having been involved in fruit logistics for more than 30 years, I was privileged to have been part of the vast changes in logistics that took place in the South African fruit industry during this era.

In this study I found it rewarding and refreshing to talk to old friends as well as newcomers to the industry. The willingness to share information and opinions made the task so much more rewarding.

Throughout this project I tried to focus on the goal of establishing the factual situation regarding the impact of inefficient container scheduling at pome fruit pack houses. However, I set, as a secondary goal, to summarise all the activities in the total container handling chain from arrival in the port to shipment of full containers. By doing this I trust that this document can serve as a reference and training guide for those people who join the challenging fruit logistical sphere.

Johan Strydom

Scheduling Report

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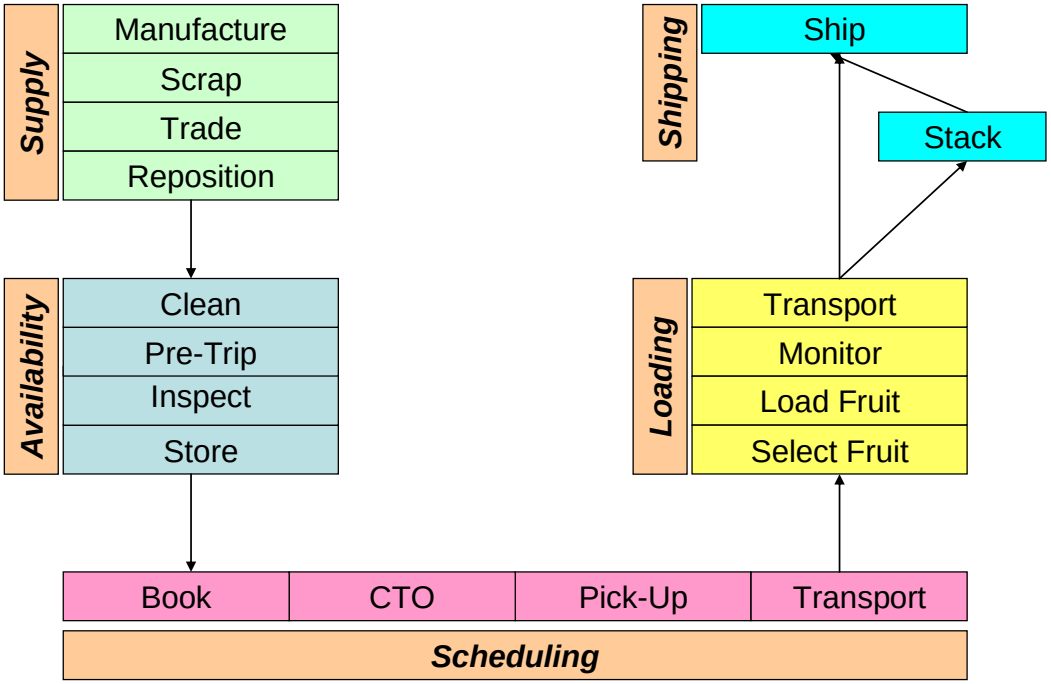
Container Flow



CONTAINER FLOW DIAGRAM

Executive Summary and Findings

Within a few years the shipping mode of pome fruit has changed drastically from mainly conventional vessels to virtually all hi-cube containers, the latter being loaded at inland cold store facilities. This rapid change found the infrastructure and procedures wanting. Inefficiencies throughout the movement process of containers are evident and put the competiveness of the South African fruit industry under pressure. Unless these inefficiencies are addressed and effective solutions formulated and implemented, the situation may deteriorate unacceptably.

This report was compiled based on opinions shared by more than 40 role-players, representing the different functional operators in the container scheduling process. The emphasis was on establishing the factual situation rather than to formulate wide speculative solutions at this point in time. With so many perceptions present, the real causes of inefficiencies can easily be clouded. Care has been taken to substantiate opinions by getting confirmation from other sources. This, however, does not rule out the possibility that some causes have not been highlighted, especially as the study was done in a specific timeslot in the 2010 season. Critical issues, which may arise later in the season, can be discussed at regular Pack House Action Group meetings.

Issues that impact negatively have crystallised throughout the information gathering process and these findings are listed below.

1. Container Supply

1.1 Communication between shipping lines and industry organisations about long term crop projections, seasonal estimates and short term crop changes is lacking and can impact on container supply, short as well as long term.	
1.2 In times of container shortages, exporters tend to inflate demands in order to stand a better chance to secure required allocations. Unfortunately this leads to late cancelations and re-allocation of containers at the last minute.	

2. Container Availability

2.1 Pick-up times of empty containers coincide with peak urban traffic, often leading to late arrival of containers at loading points.	
2.2 Recessionary trade conditions are forcing shipping lines to consider extending the lifespan of present containers with a risk to cold chain integrity should maintenance drop below acceptable levels.	
2.3 Despite efforts by PPECB to thoroughly inspect cleaned and pre-tripped containers, a percentage still slip through that are rejected at loading points.	
2.4 Poor relations with and attitude of some empty depot operators are not conducive to handling urgent requests.	

3 Container Scheduling

3.1 Fruit Specification

3.1.1	Inaccurate stock figures, due to late transfer of electronic files from cold stores or wrong assumptions regarding when fruit will be on temperature, lead to late bookings and subsequent delays.	
3.1.2	Incompatibility of IT systems is a cause for inaccurate stock records.	
3.1.3	Poor discipline regarding cut-off times puts tremendous pressure on the scheduling process.	
3.1.4	A lack of basic fruit knowledge and processes is a serious cause of poor communication and ignorance of the urgency required by fruit exports.	
3.1.5	Attitude and willingness to be available 24/7 on the part of persons making transport arrangements are attributes required to take corrective action when problems arise.	
3.1.6	Cancellation of booked containers on the last day of stack, leads to re-allocation of containers to other exporters and resultant last minute non-efficient operational arrangements. Lost shipping opportunities can also be occur.	

3.2 Contracting Transport

3.2.1	Reliability and roadworthiness of trucks used are not enforced by the parties that contract them.	
3.2.2	Incorrect cargo weight declaration is a serious problem.	
3.2.3	Overweight containers stopped at weighbridges cause delays and financial losses.	
3.2.4	Poor communication of delays encountered, prevents pro-active corrective steps.	
3.2.5	Unreliable transport contractors seriously disrupt well-planned schedules.	
3.2.6	The present CTO (Container Terminal Order) process is time consuming and outdated.	
3.2.7	Realistic loading timeslots are often lacking, despite communication with loading points.	
3.2.8	TTTs (Time Temperature Tolerances) are not always adhered to.	
3.2.9	Delays from time of loading to time of coupling containers to power points in the terminal are not monitored to any degree and threaten maintenance of the cold chain.	
3.2.10	The phenomenon of having the bulk of containers booked on the last day of stack is a major cause of poor efficiency. The skew distribution of daily volumes through the week severely impacts on transport costs and quality of service.	
3.2.11	With the increase of dual loads (a container picking up fruit at more than one cold store) special procedures and preferences are required to minimise additional costs and avoid breaks in the cold chain.	
3.2.12	Container cable theft is a serious cost and disruptive issue.	

4 Fruit Loading

4.1 Loading of fruit into containers takes place simultaneously at several loading points and PPECB officials cannot always be on time or present. Delays due to PPECB not being available can be costly. This is even more critical when pre-staging of pallets outside cold rooms is done.	
4.2 A lack of cooled airlocks at most pome fruit cold stores prevents effective pre-staging.	
4.3 Loading points are not always taking accountability for container condition and fruit protocols. This is left to PPECB.	
4.4 At most cold stores power plug points are not available to check container temperature settings.	
4.5 Cold stores are generally not geared for random access to individual pallets. With loading instructions calling for specific pallets (ID Number) delays are inevitable.	
4.6 Not all older generation cold stores have been converted to effective handling of hi-cube pallets.	
4.7 Markets requiring cold sterilisation treatment seem to be on the increase. With special procedures prior to and during loading, PPECB's presence is required. Arrangements to have this in place do not always take place timely.	
4.8 IT systems at the exporter and cold stores are not always fully compatible leading to delays.	
4.9 Poor stock management leads to costly delays.	
4.10 Quality control during the container loading process is very disruptive.	
4.11 Poor communication of delayed cooling or stock differences contribute to futile trips and/or delays.	
4.12 Training in basic fruit knowledge and processes is seriously lacking. Back-up or replacement strategies at exporters, agents and loading points do not receive the attention it should.	
4.13 Loading points do not all realise their accountability when it comes to overloading of containers.	
4.14 In the peak season cooling capacity of cold stores is put the test and allowances for longer cooling rates may have to be applied.	
4.15 When cold stores are full, locating individual pallets specified in loading instructions becomes more difficult.	
4.16 Where effective analysis of loading statistics is lacking, timely corrective steps are often not taken.	

5 Container Shipping

5.1 Drivers are not always sensitive to the cold chain integrity and stop en route resulting in the TTT being exceeded. Arriving after the stack has closed is costly and can result in short-shipment of containers.	
5.2 Despite processes in place, reaction to changed stack times is sometimes lacking, especially when such advice is given after hours.	
5.3 Late decision and notification of vessels by-passing the port due to earlier delays, disrupts well-planned scheduling.	
5.4 Excessive standing times at terminals during tea breaks and shift changes are unacceptable.	

6 General

In a process with so many different players depending on each other to successfully complete the operation, strict rules and guidelines have to be applied. However, the ultimate aim to earn the maximum income for the export crop must not be undermined by rigidity of logistical operations. It is a fine balance between applying strict discipline and having the agility to handle the challenges.

Guidelines must assist in giving direction – but still stimulate innovative thinking.

Scheduling Report

1. Introduction and Purpose

Ten years ago the bulk of the pome fruit exports was shipped in specialised (conventional) reefer vessels. However, containerisation of pome fruit gained such momentum that virtually the total volume is now exported in containers. This brought about a major adaption in procedures and practices at pack house cold stores, especially as 'shipping' now takes place at inland loading points in stead of port facilities. During the 2009 season 99% of all apples and pears, exported from South Africa, were shipped in containers. The equivalent of about 25 000 12 meter hi-cube containers were employed for this operation. Conventional vessels will nevertheless continue to feature in times of container shortages and for serving special destinations such as Iran and Russia.

This rapid change in shipping mode preference put pressure on infrastructure, procedures, systems and people. Despite positive progress during the last few years, indications are that inefficiencies in the handling chain, and in particular poor container scheduling, are impacting negatively on pack house operations.

In an attempt to address problems caused by poor scheduling at pome fruit pack houses, the Pack House Action Group (PAG) decided to determine the factual situation. The issues contributing to inefficiencies were to be identified and the key issues prioritised. Should the results indicate a necessity to address specific issues based on facts, this will be done according to priorities set by the PAG.

Rather than tackling the scheduling issue as a national fruit export problem, it was decided to reduce the scope of this investigation to Western Cape pome fruit pack house cold stores. By focussing on a smaller, but clear goal, it is believed that not only will the study lead to solutions for inefficiencies at pome fruit cold stores, but findings could give guidance to addressing national fruit containerising issues.

A process, whereby the total handling chain of containers through the South African process is evaluated in terms of service providers and customers, was followed. Although some of the links in this logistics chain may not seem relevant to pome pack house operations, activities in each of those spheres impact on container supply and movement.

Interviews with a representative sample of role-players and factual statistics of scheduling times have highlighted several crucial issues that influence a sound container loading process. Unfortunately time and budget restrictions did not allow for the inclusion of all role-player opinions but the important problem areas are believed to have been identified.

The time and valuable input from persons interviewed, are greatly appreciated.

Restraint has been applied to offer off-the-cuff solutions without evaluating all the links in the logistics chain. The purpose of this first phase study, to establish relevant facts and their impact on the pome fruit pack house cold store operations, was not to be compromised with piecemeal untested proposals.

The basic handling chain of containers can be divided into five parts, namely: (See Diagram A)

a. Container supply
b. Container availability
c. Container scheduling
d. Container loading
e. Container shipping

Container Flow

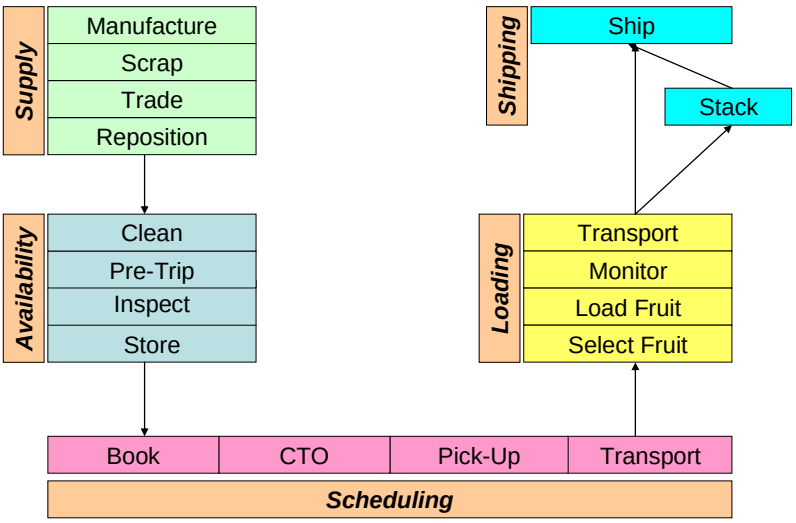


Diagram A: Container Handling Flow

Each of these five main operations has been investigated and findings are set out in the report that follows.

2. Container Supply

The size of the world wide fleet of reefer containers is a function of newly built containers and the scrapping of old containers. Over the last decade we saw a steady increase in the reefer container fleet. However, the international recessionary conditions have disrupted shipping trade routes. In some instances this has lead to shipping lines cutting back on new orders whilst still continuing with their scrapping program. This may result in a net decrease in the fleet size of a specific shipping line although others may not necessarily follow the same strategy. According to opinions of shipping line representatives the supply to the South African fruit industry may not be a problem in the short term.

A concern has been expressed that poor returns on investment during the recessionary period may result in shipping lines not renewing their reefer fleet and opting to extend the life of their present fleet by reducing their scrapping rate. Should maintenance of the fleet be neglected, this holds serious implications for the reliability of containers en route to overseas markets. Some parties in the chain have indicated that failures en route seem to be on the increase. No factual information to substantiate this statement could be established, but should this be the case, it is disturbing indeed.

More than dozen shipping lines offer reefer services to various overseas ports. However, two shipping lines dominate the scene and in particular the North West Continent route.

With the major shipping lines operating worldwide, the ability of local shipping line representatives to have a fair share of the shipping line's fleet allocated to South Africa is crucial. In this regard pressure from South American countries to have a greater share of the cake, is increasing as they are experiencing the same swing to containerisation. Some shipping lines operating in the South African trade had a poor 2009 season and this may impact on container availability in the short to medium term.

Positioning of containers in anticipation of bookings is all important. Availability of slots on container vessels to timely move reefer containers to South Africa, is a decisive factor. Imbalances in trade, demands by other trade routes and general availability of shipping opportunities are all taken into consideration to determine a stock piling strategy of a shipping line. Unnecessary re-positioning and storage costs ($50 to $60 per 12 m container per day), resulting from poor forecasting, can have long term implications.

To strengthen the hand of local representatives, accurate and reliable crop forecasts are of critical importance. Representatives rely on shippers (exporters) information. This does not necessarily reflect the total demand picture for reefer containers. Very little or no communication with industry organisations take place regarding seasonal forecasts. It is believed that trends regarding size and timing of the crop should be a regular topic between shipping line representatives and industry organisations.

Furthermore, availability of selected containers for cold sterilisation shipments can only be ensured if early and accurate forecasts are channelled to the shipping lines.

To do proper planning the shipping lines therefore need critical and timely information regarding the total crop, the weekly delivery pattern and the intended overseas market. These forecasts have to be updated regularly in order to adjust the supply of containers and to avoid unnecessary movement and storage costs.

3. Container Availability

Several empty depots for reefer containers are located near the Port of Cape Town. The SATI container depot in Killarney Gardens is the largest but caters for only Maersk and Safmarine. The other depots look after the rest of the shipping lines as well as the overflow from SATI.

Reefer containers are prepared for use at most of these depots. The preparation process includes the cleaning (hot, cold and/or chemical wash according to the condition of the container and taints present), repair of damaged containers and pre-tripping for perishable product use. The SATI depot houses the largest reefer container repair facility in the South Hemisphere.

Pre-tripping entails running the refrigeration units and testing their performance according to specific criteria. Results are recorded electronically and pre-tripping charts generated. This process lasts for 3 to 4 hours for the newer generation containers. The process for older containers and certain manufacturer models can take up to 24 hours. Containers destined for use in cold sterilisation shipments require longer testing periods (>24hrs).

Effective sanitation of containers during the cleaning process is a concern as poor sanitation can lead to infection of fruit.

Once cleaned and pre-tripped, the containers are offered to PPECB for inspection. PTI (Pre Trip Inspection) records are checked and signed off by PPECB. Once approved, containers are certified for 60 days. Despite the efforts by the depot and PPECB, about 3% of the containers received at loading points are rejected. However, these rejections are mainly due to containers arriving with wrong temperature and vent settings. This does not indicate poor inspection by PPECB at the empty depot. Few containers are rejected at loading points due to taints present and damage to structures. The presence of taints is sometimes only detected after approved containers have been stored for long periods with the doors closed.

Approved containers are sealed by PPECB with a yellow tag at the doors to indicate approval. For containers destined for cold sterilisation use a blue tag is used. A PTI sticker is attached by the depot. Adhesion of these stickers to the container sometimes causes problems when it is lost en route to the cold stores and the PPECB assessor first has to check with the depot whether the container is in fact ready for use.

It would be convenient to always have a stockpile of containers ready for use after inspection. However, a shortage of containers may force a shipping line to discharge containers from a vessel and to have these containers made available for shipment on the same vessel. This puts pressure on the pre-tripping, transport and loading procedures as containers will only become available after nominated stack days, sometimes on the planned sailing date. Shipping lines serving the Far East trade seem to be more exposed to this situation. Late availability of containers impacts negatively on container scheduling.

Based on shipping line strategy, pre-tripped and inspected containers may be stockpiled at the start of the fruit season to ensure a secured availability of containers. This is particularly important to the early grape and stone fruit exports.

Empty depots normally operate form 07h00 to 22h00 during weekdays. Although some are open as rule from 08h00 to 15h00 over weekends, others will only open on special request. A normal phenomenon is a long queue of trucks waiting outside a depot at opening time and then again around 17h00. Both periods coincide with heavy urban traffic around the port. With no special lanes for reefer containers, delays are aggravated at times.

Good relations are key to a smooth operation. Although empty depot operators have indicated that they are flexible and will accommodate late requests, some transporters have indicated that gates are closed even when a truck is standing in the queue.

The concept of an empty depot at Bellville has been offered as a solution. An opinion raised was that this concept will only be successful if empty containers can be placed cost efficiently (rail?) and the full pre-tripping and cleaning process made available.

The availability and competency of PPECB inspectors play a significant role in the container preparation process. Pre-tripping and cleaning are two different activities. In the case of pre-tripping, PPECB only audits printed records. With the pre-tripping system already catering for identifying deviations, the role of PPECB is sometimes questioned as providing good containers is believed to be a shipping line/depot accountability. However, in the final analysis it is of vital importance that sound containers are made available for scheduling. Any rejection at loading points can seriously disrupt the process. Container refrigeration that fails en route to the market also puts the integrity of the cold chain at risk.

4. Container Scheduling

The booking of containers, and the activities around it, are probably the most crucial elements in the process of ensuring efficient scheduling. The process can be broken down into two main elements:

4.1 Specification of fruit to be loaded

The exporter will, based on stock figures (including the age of the fruit and whether the fruit will be on temperature at the time of loading), consult with marketing staff/buyer on the specification of the fruit to be loaded. An acceptable date will be agreed by the loading point. The exporter will confirm this arrangement by sending a loading request (electronically or facsimile) to the loading point, as well as, the agent.

Timely and accurate stock figures are therefore vital. It is very important that the IT systems of exporter and loading point are compatible to avoid delays and/or mistakes.

The agent will then discuss a specific timeslot with the loading point and arrange transport accordingly. A loading instruction is issued electronically to the transporter and the loading point, with a copy to PPECB. A general rule is that bookings for the next day must be made by latest 14h00 (Cape Town).This in effect means that the exporter must send its loading request to the agent by latest 12h00. This guideline is often ignored with resultant delays.

Although this sounds very straight forward, several issues can disrupt the process. Inaccurate stock figures due to late advice from cold stores (transferring of stock files), incompatible systems and wrong assumptions regarding cooling rate of fruit, all contribute to the likelihood of delays in loading and even futile trips.

Compatibility and sophistication of IT systems employed by agents are crucial attributes for efficient communication and efficiency.

From interviews it is clear that each exporter has a different approach to determine when fruit will be on temperature. Some exporters assume that when the fruit is on stock, it is ready for loading. Others may follow a more scientific method of allocating ‘day categories’ to fruit according to cooling rate of a specific pack (e.g. bagged fruit 4 days, non-bagged fruit 2 days) and the capabilities of the cold store.

In most instances instructions for loading are given for specific pallets (pallet ID). However, loading points normally have guidelines regarding replacement pallets provided it is of the same cultivar/count/mark grouping. Exporters and loading points will as a rule apply the FIFO principle. The exporter may insist that ‘Must Go’ pallets are to be loaded. In this event, replacement pallets will not be allowed. Should these pallets not be readily available at time of loading, delays can occur especially if a large number of other pallets have to move to get access to the ‘Must Go” pallets. In cold stores with fixed drive-in racking, where random access is not possible, this may be a regular occurrence unless effective cold store planning is practiced.

Incidents where pallets called for are still in pre-cooling tunnels with other fruit not yet on temperature, can force a loading point to substitute pallets or having to delay the loading process. Here again communication and good cold store planning can restrict problems.

The process above involves several individuals from different organisations. For communication between parties to be successful, each individual must have basic fruit knowledge, know the process and have good relationships with other parties. The process may run smoothly for a long period but can be disrupted by replacement of an experienced person with someone who is not geared for the task. Training cannot be over-emphasised. Furthermore, persons representing the agent must also be available 24/7 as deviations can occur any time of the day and immediate action, to resolve issues, is required.

Exporter demands for containers are normally communicated to the shipping lines by the agent on a 6 week rolling plan that will be updated weekly. Bookings will be confirmed one week in advance. Container allocations are then made accordingly.

Cancelation of containers up to the last day of stack is quite common. Although some shipping lines have threatened to introduce dead freight penalties, this has not been done. A reduced allocation of booked containers may, however, be applied when an exporter continually overbooks and containers are in short supply.

4.2 Contracting Transport

A decade ago most containers were moved as Carrier Haulage by the shipping lines. They took full responsibility for arranging container transport from empty depot pick-up to delivering at stack after loading at the cold store. This situation changed significantly as more than 90% of all reefer containers are now moved as Merchant Haulage. This implies that transport arrangements are made either by the exporter or its forwarding agent or the loading point. Some of the reasons given for the change are lower rates and greater control of the scheduling.

Reefer container transport contractors fall into one of two main categories, namely brokers and transporters with own fleet of trucks. A combination of the two is quite common as brokers may have own trucks and contract the shortfall. Transporters with own trucks may, on the other hand, not have enough trucks to handle their commitments on a specific day and thus sub-contract additional transport.

With deciduous fruit as a perishable product, where integrity of the cold chain is vital and market demands strict, reliability is paramount when contracting transport. Unfortunately transporters, without the required discipline or capability, enter the scene regularly and some operate for extensive periods. Very little is done to ensure the roadworthiness of all the trucks used for moving sensitive fruit cargo.

Part of reliability is to know where trucks are at any given time. This is vital in taking pro-active steps to deal with possible delays. Satellite tracking plays an important role in this scenario and some parties consider it essential. However, disciplined drivers who communicate regularly by cell phone with their coordinators regarding deviations from schedules, can operate successfully. Poor cell phone reception may be a problem but this does not seem to be of great concern.

Two types of trucks are used for reefer containers, namely skeletal and flatbed trucks. As a rule specialised skeletal container trucks can carry heavier loads than flatbed, even if the latter are ‘light weight’ vehicles. It is of critical importance that accurate cargo mass is declared when trucks are booked. Traffic authorities are increasingly controlling overweight trucks by deploying weighbridges in strategic locations to enforce axle mass regulations. Delays at weighbridges,

fines and even removal of excess pallets are problems that must be avoided specially when comes to perishable products.

An issue that caught the limelight recently was the height of a hi-cube container load. Although these loads were moved without problems for many years, authorities in Durban decided to enforce the law in terms of height. This lead serious delays in the port of Durban. Although this issue may be raised again in future, the authorities have indicated that the container height issue will not be enforced until there have been sufficient discussions. Should the restrictions be enforced, it holds serious cost and operational implications for the fruit industry.

Established loading patterns of pallets in a container and knowledge of the actual pallet weights are important issues when loading heavy products such as pears. Here experience and dedication of loading point staff, as well as that of drivers, play a significant role.

Probably the most crucial document in the chain of events is the CTO (Container Terminal Order). This document, prepared by the transporter, is an instruction to the empty depot to supply the correct container after approval by the shipping line. The process of preparing and using the CTO is as follows:

- The transporter receives a loading instruction from the agent, exporter or loading point.
- The transporter prepares a CTO, normally with the aid of a computerised template. Details in terms of loading point, exporter, booked time, cargo, temperature settings, vent settings and vessel destined for, are spelt out.
- The CTO is taken by the transporter to the shipping line office to be stamped. This ensures that a slot will be available for the container on the specified vessel.
- With the stamped CTO in hand, the driver will pickup the correct container at the empty container depot.
- At the loading point, the supervisor will load the container according to the Q67 (load out instruction) and the CTO details.
- The PPECB official, present at the loading, will check that the container settings and CTO details correspond.
- On arrival at the container terminal, the gate official will enter the CTO details on the system

It is therefore clear that any delay in getting the CTO prepared and stamped can seriously impede the process, as will inaccurate or incomplete CTOs. Keep in mind that shipping line offices for CTO stamping are not all situated near the empty depot and have restricted working hours, mostly 08h00 to 17h00. This becomes a issue when bookings are made at the last minute.

One shipping line has already moved away from a CTO and speeded up the booking process with more electronic methods.

A phenomenon that has hampered the smooth scheduling of containers for many years, is the booking of containers on the last day of stack. It is quite normal to find 70% of the containers destined for a specific vessel to be booked on the third and last day of stack. Reasons vary from fruit not being available to buyers only making their mind up at the last moment. What ever the reason, the fact remains that scheduling on the last day of stack tends to be a nightmare. Often loads are cancelled or additional containers booked. This results in crisis procedures that disrupt what otherwise would have been a well planned operation.

Finding ways and means to deal with this problem should therefore receive special attention. The uneven spread of work over a week does not support cost

effective transport. A transporter that only moves fruit three or four days a week cannot survive in the long term unless he can compliment the reefer container work with other cargo. Substandard vehicles are sometimes employed to help move the peak volumes on the last day of stack to the detriment of the industry.

One specific area of concern regarding CTOs is the accuracy of the declared cargo mass. Incorrect mass declarations have serious consequences as far as overweight containers and vessel safety are concerned. Delays at weighbridges as well as fines can result. Shipping lines are also becoming more strict on accurate mass declarations as this impacts on vessel loading plans and possible unstable vessel conditions.

An exception to the use of merchant haulage, is the option of Carrier Haulage for cold sterilisation containers destined for 'protocol' countries i.e. countries that have bilateral agreements as far as phytosanitary procedures are concerned. This transport option is due the fact that shipping lines will not take accountability for any break in the cold sterilisation chain if merchant haulage was used. Also note that when moving sterilisation containers, gensets (power generators) are prescribed. This has another implication in that a genset adds about one ton to the load mass. In the case of pears, this may cause an overweight problem.

Containers used for sterilisation purposes are specially selected at the empty depot according to age and approved numbers. Containers are calibrated by the shipping line's technicians at the empty depot. PPECB will inspect and add a blue sealing tag on the doors. For sterilisation containers the booking must be made by latest 12h00 the day before loading and the CTO prepared and stamped by 14h00.

Shipping lines make use of approved transporters for the movement of sterilisation containers to ensure reliability. Despite this policy, subcontractors are sometimes employed by the approved transporter, with a resultant risk to the cold chain integrity.

Other than for sterilisation containers, gensets are also prescribed when the Time Temperature Tolerance (TTT) will be exceeded. The TTT is the maximum time (hours) that the load will be without cooling before the temperature of the load will increase above a set tolerance and before the container is coupled to power for cooling.

The rule of thumb used by PPECB for deciduous fruit is as follows:

Loading of the container	2 hours
Transport of the container	2 hours
Time in terminal before plug-in	2 hours
Total TTT	6 hours

Theoretically this means that gensets will be required for loads further than about 100km. However, in practice loading takes much quicker and thus most loading points in a radius of about 150km will not have to use gensets. This may be different when highly sensitive fruit like summer pears are loaded. Traffic conditions, road works and ambient temperatures must be taken into consideration when a decision is made whether a genset is required or not.

Availability of gensets in the Western Cape is normally not a problem with the exception of the period December/January when large numbers of containers are moved from the Orange River area to Cape Town.

With most bookings calling for an early load out (before 08h00) transporters pick up empty containers the evening before. Often drivers will then go home and leave again later in the evening to get to the loading point during night and then

sleep outside the loading point. Cable theft whilst trucks are parked in residential areas is a problem. Missing cables are often a cause for confrontation when the responsible party has to be determined.

A practice that is gaining in popularity is opting for dual loads where fruit is picked up at more than one loading point. This trend of more dual loads can be attributed to the discontinuing of port hole containers(2005) that took 10 pallets at a time versus a hi-cube with 20 pallets. The lack of shipping opportunities on conventional reefer vessels, where consignments were not restricted and as few as 1 pallet allowed, further accelerated the option of dual loads. It is estimated that dual loads constitute more than 3% of all deciduous loaded.

Strict rules, as far as fruit temperature is concerned, are applied by PPECB when dual loads take place. The route and distances are taken into consideration. But dual loads also impact negatively on container scheduling. When the first consignment is loaded, the loading at the second loading point cannot be delayed. This implies that a dual load has to have preference at the second loading point. This is not always possible, especially if a long queue of trucks is already in position. Where a timeslot has been agreed by the loading point it is very important that transporters stick to these times to get the preferential treatment.

5. Loading Fruit

There are more than 120 PPECB registered fruit loading points in the Western Cape of which about 40% are pome fruit pack house/cold store combinations. These facilities have to be FBO registered (Fruit Business Operator) by the Department of Agriculture. With the seasonal nature of the fruit business, these facilities do not operate simultaneously but loading at 30 points a day is nevertheless common.

As sequential use of a container vehicle is the norm, the efficiency at a particular loading point impacts directly on the container scheduling process. A delay has a knock on effect that can disrupt a well planned operation. Good communication between parties involved in the operation is vital to lessen the impact of delays. Here the relationship between loading point operator, transporter and booking agent plays a crucial role. Unfortunately some loading points are considered by transporters as 'edgy' when delays are queried. An 'open' approach seems to solve most of the recurring problems.

The sophistication of loading facilities varies substantially. Specialised airlocks and loading bays may be the ideal in most instances but many pome fruit cold stores resort to the use of mobile loading ramps. Although this may seem inadequate, ramps are usually positioned under cover near cold store doors and provided enough forklifts are available, the loading process is quite efficient with most cold stores loading a container within 30 minutes.

Most mobile ramps have hydraulic features that level the ramp with the container floor to ensure a smooth level entrance of pallets. This is important when hi-cube pallets are loaded as loading at an incline can damage pallets at the container door entrance.

With the toxic nature of diesel forklifts in confined spaces and the negative effect of carbon dioxide produced on pome fruit, electrical or gas driven (with purifiers) forklifts are used. An important feature when positioning pallets in the container is side-shift capability. This speeds up loading and causes less damage to cargo.

Most cold stores date back to the era when the bulk of the fruit exports was shipped in conventional reefer vessels. Shipping commenced at 06h00 in the port and to ensure a steady flow of fruit, inland cold stores started loading flatbed trucks from 02h00 onwards. Such early loading practices are still preferred by many loading points depending on the number of containers to be loaded the day.

A practice followed by some loading points (especially grape cold stores) and not favoured by transporters, is to have all containers scheduled at one specific time, say 03h00 or 08h00. A first-come-first-loaded principle is followed that results in long queues of trucks at starting time, whilst some trucks ending up only being loaded several hours later. This is not cost effective as far as transport is concerned and the industry ends up paying for this eventually. Good communication and practical timeslots can go along way in saving overtime and unnecessary transport costs.

A relatively new trend is exporter owned pack houses/cold stores. Preferential treatment of transporters apply as far as scheduling is concerned. This implies that when fruit destined for other exporters is to be loaded, timeslots in the middle of the day are often allocated, restricting these transporters to only one 'long' trip a day.

An issue that impacts greatly on scheduling, is the manner and timing of the loading instruction with the specification of which fruit must be loaded out. In most instances the exporter will specify per pallet ID but the loading point will be allowed some discretion. The exporter will however call for 'must go' pallets where the loading point cannot substitute pallets. This applies especially to fruit packed for supermarkets and where age of fruit is critical.

It is in this process where delays can and do happen. Most of the pome fruit cold stores do not have random access to pallets. A pallet may be scanned at the cold store entrance but the actual position of the pallet in the cold store will not be recorded on the system. The operator will thus know in which cold store the pallet is but not the exact position. With fixed drive-in racking, as opposed to mobile racking, a number of pallets often have to be moved to get to a particular pallet specified for loading.

In an attempt to minimise delays caused by looking for particular pallets when the container arrives, some cold stores resort to pre-staging. In other words, the pallets specified for loading out will be removed from their location in the cold store and the container load stacked ready for loading. As most pome fruit cold stores do not have airlocks at loading temperature, the fruit may be stored undercover but not under cooling. If the container arrives late, the fruit temperature may have increased to above the accepted carrying temperature. The result is that the fruit may have to be re-cooled or dispensation requested. In both instances the cold chain integrity will be compromised. A pallet specified but not on stock can delay the load out by several hours.

Ways and means to address this problem are considered as a priority.

Supermarket QC checks whilst loading of a container takes place, increase loading times – sometimes more than an hour.

With the total pome fruit crop being containerised, most pallets are stacked as hi-cube pallets. However, there are some cold stores not fully converted to hi-cube storing. This means that some pallets have to be handled as standard pallets up to the point of container loading. The process of building up standard pallets to hi-cube dimensions, is time consuming and result in delays at loading. The sooner cold stores are converted to hi-cube pallet handling, the better.

With statutory responsibilities, PPECB is required to be present when containers are loaded. Their duties include checking that the container is suitable for loading and settings are correct. They also have to certify that the fruit temperature is within prescribed tolerances. Should the container arrive at the booked time and the PPECB inspector not present, the loading process may be delayed. This impacts on temperature of pre-staged fruit as well as disruption of the container schedule, with knock on effect. Consent by the PPECB assessor to continue loading should not withheld without good reasons.

In the event of cold sterilisation fruit being loaded, the presence of PPECB is required because they have to fit the prescribed temperature probes. However, for normal loading their monitoring role is questioned by some role-players who suggest that PPECB should rather operate in an auditing capacity. Whatever the future role of PPECB, the loading process should not be compromised by late arrival of officials.

Although PPECB has the responsibility to oversee the loading process, the involvement of the loading point as far as monitoring the container settings and conditions has to be evaluated. At present some loading points will take an active approach whilst other leave it totally up to PPECB. Placing greater accountability on the loading point may assist in expediting a changed role for PPECB.

What ever is decided in the end, discipline by the loading point in terms of executing loading instructions correctly and handling the product according to agreed protocols, is non-negotiable.

Cold store operators have raised a concern about shipping lines claiming for damage to container structures when it is clear that the containers were received damaged or were damaged at overseas receivers' premises. One shipping line was singled out. Some cold stores have resorted to taking photo's to proof their innocence. Greater care by PPECB in identifying damage during inspection at the empty depot was pleaded.

To optimise container space, pome fruit exporters sometimes resort to loading 21 hi-cube pallets in a container. Unless the special pallets, with smaller dimensions, are used, plates in the container at the cooling unit end can be damaged, especially when force is used to fit all 21 pallets into the container.

To expedite the loading of containers the loading point should have sufficient trained staff, effective loading equipment and efficient stock systems. Good and pro-active communication with exporters and agents is vital to ensure a smooth loading operation. Fruit that is not on temperature when a container arrives because there was a power failure earlier on, causes tremendous delays when the container must wait for the fruit to be cooled. It may also result in futile trips when trucks have to return empty.

Most transporters will raise a fee for standing times when trucks arrive in time but are only loaded several hours later. The tolerances vary from transporter to transporter and also the rate per hour. A typical rate would be say R300/hour after 3 hours. In many instances the transporter will waive the standing time penalty as a sign of goodwill. Loading points, on the other hand, can also raise waiting time, especially if overtime costs are involved.

The loading point is in the best position to ensure that the declared cargo weight on the CTO corresponds with the actual weight. It is also in the best position to see that the load is correctly stacked to avoid axle mass restrictions being exceeded. The loading point must take greater accountability for correct weight declarations.

Delays and disruptions during the early part of a season escalate as seasonal volumes peak. Accommodating a deviation might be easy before the peak season, but when cold store cooling capacity is challenged and storage options decreasing, leniency in the process is restricted. All decision-makers in the supply chain have to be aware of the urgency of timely arrangements and quick reaction to deviations.

To have a smooth scheduled operation may seem to be the ideal. However, cognisance should be taken that rigorous and inflexible rules do not hamper successful export of fruit. Systems and procedures should be sufficiently agile to accommodate deviations. On the other hand, being too accommodating can find a loading point having to cater for an unacceptable level of late requests.

Some cold stores have detailed loading time records that enable them to address negative trends and to implement corrective steps in time. This is not true for all cold stores.

6. Container Shipping

With TTTs in place, the loaded containers must be moved without delay to the assigned plug point facility. This would usually be the container terminal stack but in the event of the stacks being full or for pre-stacking purposes, the container may be taken to another commercial plug-in facility. All container depots that do pre-tripping have plug points but these may not always be available. Other non-pre-tripping facilities with plug point are available in and around Cape Town.

Driver responsibility and attitude are important. Unnecessary stops or non-reporting of delays can compromise cold chain integrity and/or disrupt the planned loading schedules for the rest of the day. Effective tracking and communication are thus key elements of transporter excellence.

A special gate for reefer containers is available at the container terminal (not at the Multi Purpose Terminal) to ensure preferential acceptance. With a receiving rate of approximately 22 containers per hour, build up of containers in the queue is experienced during peak times and may result in waiting time of up to 3 hours. In a recent study the average time from arrival to connecting to power was established as 1.5 hours. This implies that a percentage of containers may be without cooling for unacceptable periods. It also impacts on transport costs and has a knock on effect on scheduling.

The terminal also has a more lenient approach to reefer containers when it comes to accepting containers after stack close. This of course only applies when stacks are not full.

According to some transporters delays are more frequent at the Multi Purpose Terminal, especially during shift changes. The position has however improved since the implementation of the NAVIS system.

A delay in the loading of fruit or delays en route can result in containers arriving after stacks have closed. The strictness of allowing late stacks is a function of relationships and also dependent on how keen the shipping line is to fill slots. When stacks or slots are full they will be less inclined to accept late stacks.

Stack times are determined by the port authorities. Normally three days are allowed and stacks will close 12 hours prior to expected time of berthing. For smaller vessels the stack days may be limited to two days. Stack times may also be limited according to plug point availability. Often weather delays result in a build up of containers in the stacks and in such an event the port may even close stacks. The 12 hour closing rule allows the vessel planners to plan allocated containers slots on a vessel. The port nevertheless continues to work 24/7.

Advice of changed stack times is initiated by the port and is communicated to interested parties by e-mail (Excel). If only one vessel is involved they may resort to sending an SMS. Stack time changes will be handled by the Navis system in future.

The container terminal in the Port of Cape Town has 1895 plug points and this usually suffices for the period when pome fruit is packed. Another 1000 plug points in Area 501 is scheduled for August 2010. The stack will accommodate containers stacked 5 high. This of course poses a problem for non-automatic temperature monitoring as PPECB officials can only reach containers stacked 3 high. Where special forklift equipment is available, temperatures of containers stacked 4 high can be monitored. The terminal is responsible for temperature monitoring and PPECB will audit readings.

However, the new Refcon stand alone system of Portnet will be integrated with the Navis system. It will therefore be possible to track containers and monitor temperatures automatically in addition to manual monitoring. Unfortunately some of the older generation containers will still have to be monitored manually.

Direct shipping, where containers are taken directly to the vessel, is a practice that originated in the days of porthole containers and the use of the Blue Store. The latter had limited capacity and to accommodate the overflow fruit containers, direct to vessel shipping was introduced. Presently direct loading only applies to shipments to Europe and during peak season. This practice is more applicable to stone fruit and grapes. The continued use of this concession is under threat if the rumoured rule of having the vessel's manifest finalised 24 or even 48 hours prior to sailing, is introduced.

A phenomenon, that is common to the Port of Cape Town during the early fruit season, is serious wind delays. Stack times are often pushed out and in some instances vessels may bypass Cape Town. This causes build up of containers in the stack and could result in the terminal closing the stack on short notice. Disruption of scheduled loading of containers and/or having to resort to plug-in of containers at alternative facilities may follow with associated costs.

7. Conclusion and Recommendations

Despite progress over the last few years to improve the efficiency of container loading at pome fruit pack house cold stores, several shortcomings have been identified. These shortcomings lead to unnecessary overtime and other operational costs.

In the report above opinions of a large number of role-players have been summarise and aspects that need to be addressed, listed

Although it is possible to formulate solutions for the deficiencies at this point in time, it was not the intention of this study. It is recommended that priorities be set for each problem areas by a Pack House Action Group workshop. Some issues can be rectified quickly whereas other may warrant special attention that involves further investigation.

APPENDIX A - Persons interviewed

The input of the persons listed below is greatly appreciated.

Name	*Co/organisation*
Charles de Koker	Safmarine/Maersk
Chris Blankenberg	MSC
Niel Carrick	DAL
Johan Dobies	SACD
Kevin Jacques	SATI
Ryan Webb	CGI
Robbie Robertson	PPECB
Peter Hoekstra	PPECB
Derick Robertson	GoReefers
Hans Benignus	GoReefers
Jacques Behm	GoReefers
Delena Engelbrecht	GoReefers
Gary van Niekerk	Aspen
Mariaan Rademan	Aspen
Anton Robertson	LCL
Chris Baard	Damco
Andy Cornell	Dole
Alewyn Mouton	Newvision Fruit
Francois Siebrits	Capespan
Jaco Oosthuizen	Capespan
Chantelle Thompson	SAFE
Stephan Viljoen	Fruitways
Lee September	Portnet
Derick Barry	MPT
Kobus Engelbrecht	D J Engelbrecht
Sam Sieberhagen	Limecoal
Harm Coetzee	Kromco
Willem Coetzee	Kromco
Dawid Malan	Two-a-Day
Cobus Conradie	Two-a-Day
Nelson De Silva	Melsetter Trust
Stan Robertson	Lourensford
Japie Swart	Vyebosch
Natho Vermaak	Die Vallei
Wynand Viljoen	Die Vallei
Colyn Murray	Vyeboom
Francois Malan	Ceres Fruit Growers