

CHAPTER 11

BASIC HANDLING REQUIREMENTS FOR AIR EXPORTS OF PERISHABLE PRODUCE FROM SOUTH AFRICA

1. GENERAL COMMENTS

Airfreight of perishable products is faced with a number of very specific challenges that must be considered to ensure good arrival condition at the lowest possible costs. Some of the more important factors that may complicate airfreight of fresh produce are:

- The majority of produce offered for airfreight is highly perishable with a relatively short shelf life.
- Most of the produce offered for airfreight is delivered very warm (in excess of 25°C) to the air cargo terminal.
- The cargo terminals cannot handle each and every product at optimum storage temperatures.
- Due to certain airline procedures, products may stand for up to three hours in the sun in the loading zone before being loaded into the aircraft. This practice, specifically in the summer, may cause an increase in temperature and results in shorter shelf life of products. The recommendation is to make use of forwarding agents who use an insulated blanket "silver blanket" to keep temperature increase as low as possible during handling and loading.
- Airline cargo handling procedures do not support optimum handling of perishable cargo.
- Cargo space temperatures cannot be controlled during most of the commercial flights.
- Many people in the total supply chain of airfreight of perishable products reason that the product does not need good temperature management because it will be in the market the next day. This is not true because all perishable cargo goes into the same distribution channel.

The requirements and recommendations highlighted in this chapter were developed over many years for the airfreight of perishable products from South Africa. The procedures described in the previous chapters concentrated on sea shipments but most of the concepts are also relevant for air export. Some of these requirements include aspects such as:

- Product quality certification according to the Minimum Standards prescribed by the RSA National Department of Agriculture (Chapter 1).
- Food safety and traceability requirements according to national and international specifications (Chapter 1).
- Cold store registration, instrumentation measurement of temperature and cooling requirements (Chapter 2).
- The preparation of the cargo including specifications for refrigerated road transport (Chapter 3) cold chain maintenance (Chapter 6) and optimum product storage conditions (Chapter 8).

Some of the more important aspects directly related to the airfreight of perishable products are discussed in the following paragraphs.

2. PACKAGING AIR EXPORT

Packaging materials and packaging for airfreight must be of the same and even better standard than for sea export (despite the fact that the product is usually marketed within a few days). From a purely technical point extra attention must be given to the following aspects:

- The strength of packaging material for airfreight must be adequate to withstand lateral and vertical forces during take offs and landing. These forces can be as much as nine times more than for sea freight.
- Airfreight cargo is also more subjected to temperature and therefore humidity changes and condensation. Free water that forms in and on the packaging material during condensation can seriously reduce carton strength and stability.
- Cargo handling and loading into non-square airfreight containers and aircraft spaces are not always optimum resulting in cartons being squashed in all directions.
- The forwarding agent must take steps to precool the products to the optimum temperature before loading.

3. PRECOOLING FOR AIR EXPORT

It is essential to understand that the optimum product temperature is not determined by the transport mode but by the product itself. It is therefore important that the product is precooled to the optimum temperature given in Chapter 8 prior to dispatch under refrigeration to the airport. Research and practical experience confirmed that properly precooled produce would arrive at the final destination much colder than non-precooled produce. The same principles re temperature set point, air circulation through the cartons and total load, precooling times and product temperature apply for both sea and air freight.

4. TRANSPORT TO THE AIRPORT

It is recommended that the field temperature be removed from products by precooling it before it is transported under refrigeration to the airport. Minimum temperature increases must take place during the transport of pre-cooled perishable produce to the airport. The use of refrigerated vehicles is therefore strongly recommended (see Chapter 3). Refrigerated road transport may however be uneconomical or impractical under certain conditions. Insulated transport must then be used to maintain product temperature and to minimise condensation. Open truck transport of any perishable product is not recommended. Apart from being exposed to the elements, the product is exposed to contamination that may make it unsafe for human consumption. Non-palletised cargo must be handled and transported with the utmost care to protect the product.

5. HANDLING AND STORAGE AT THE AIR CARGO TERMINAL

5.1 Cargo mixes and taints

Cross tainting occurs rapidly and should be guarded against. Where several cold storage spaces exist at airports, reference should be made to the compatibility tables in chapter 8. The products should be stored in such a way to ensure that no cross-tainting or temperature injury takes place while awaiting stowage in the aircraft. When airfreight containers are used, care should be exercised to ensure that only temperature and taint compatible products are placed in the same container. It is also extremely important that only absolutely clean containers are used for perishable and food produce. Remains of previously carried cargo may contaminate and taint perishable produce.

5.2 Temperature requirements and compromises

It was stated that it is important to precool perishable products to the optimum product temperature. This is also very important during subsequent handling and storage at airports. Most South African airports however do not have adequate storage facilities available to cater for all the different product temperature requirements and cross-tainting separations. Although the objective is to apply the specified optimum product temperature, practical considerations dictate the use of compromise temperatures. A compromise product and temperature table was therefore compiled based on local conditions. This data is summarised in table Chapter 8 Table 7 and products must be stored according to these recommendations should the specified optimum storage temperature not be available. The cooled product must be held at the optimum temperature in the Airport Cold Store for as long as practically possible before transfer from the cold store to the aircraft. The aim must be to reduce the transfer time from a stable storage temperature to the aircraft space to less than one hour. If special aircraft containers are used these should be loaded at the optimum temperature and retained in a cold store until ready for transfer to the aircraft hold.

6. TRANSHIPMENTS

The transshipment of perishable products from national Air Carriers to International Air Carriers often occurs. It is essential to provide temperature protection during transit times at airports for such products even for very short times. Should the time between arrival of a local aircraft and departure of an international aircraft exceed three hours, the commodities should be held at 10°C in the airport cold store. When commodities have been packed into freight containers, these should be opened in order to facilitate cooling.

7. DELAYS

All perishable fruit and vegetables delayed for more than three hours at airports should be held at 10°C. If the period exceeds three hours highly perishable products should be held at the optimum temperatures indicated in Chapter 8 Table 7. Should delays at the airport exceed 48 hours re-inspection of the commodities must be undertaken prior to export. In the case of transshipments from National Air Carriers to International Air Carriers, it is the responsibility of the exporter and/or forwarding agent to inform the PPECB of such delays in order to perform the re-inspections. The owner of the produce must also be notified of all such delays.

8. TEMPERATURE CONTROL DURING THE FLIGHT

Temperature controlled holds are only available on some international flights. The temperature in such holds usually vary between minus 1°C and plus 3°C. In some instances dry ice is used to maintain the temperature of frozen produce. Temperature controlled air freight containers are always available on certain routes. These containers usually make use of dry ice and air circulation fans. The cooling capacity and air circulation rates can however only maintain product temperature. The best, most practical and cost effective procedure to maintain a fairly optimum product temperature during the flight is to:

- Ensure efficient precooling to the optimum product temperature requirement
- Use refrigerated road transport
- Keep the product at the correct temperature in the airport cold store
- Minimize time delays and product exposure to warm ambient temperature conditions during transfer from the refrigerated road truck or airport cold store
- Use temperature controlled air transport equipment

Produce properly pre-cooled and handled correctly has a very good chance to arrive in the market within an acceptable temperature to ensure adequate quality maintenance.

9. AFTER THE FLIGHT

The produce should be moved immediately and directly to the market. If the product must be stored for any length of time it must be re-cooled to and cold stored at the optimum temperature as required by the product. Any quality problem or potential problem must be immediately followed up. The procedures described for sea freight cargo (Chapter 10) also apply for airfreight cargo.