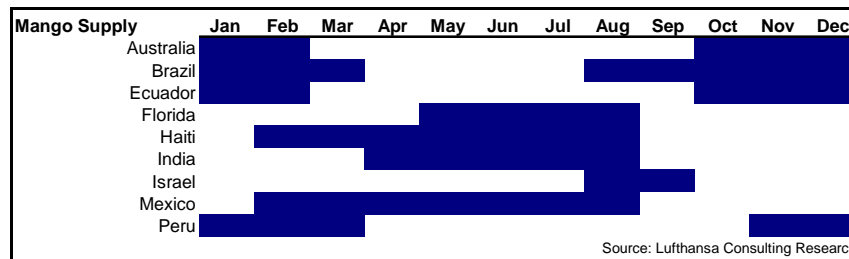


**Does perishable-transport really require freighter traffic?  
 What are the perspectives of a growing perishable market for the top retailers?  
 Are there alternatives to the way things are done today?**

Tomatoes from Spain, tomatoes from the Netherlands, or homegrown tomatoes fresh from the garden - European customers know the differences in price, quality and taste. But are customers that aware when it comes to tropical fruit? Maybe, but they are certainly not aware of the extensive worldwide logistics behind the cross-seasonal delivery of fresh food to their markets twelve months a year.

There is no question on our globe about the fact that “South feeds North” with regard to many perishables. The strong correlation between per capita income and total perishable imports of a country is proven in developed countries. The availability of fresh flowers, exotic fruit and special kinds of meat, fish or seafood has become common place and customers have quickly got entirely used to this fact. Even highly seasonal products are available all year round. Associated customer expectations are now firmly in place and are likely to stay, very much to the approval of airlines and specialist forwarders. Consumers expect the highest quality, i.e. long remaining shelf-life of ideally ripened products, immaculate physical condition and excellent taste, no matter what season of the year. One example of a seasonal product that is guaranteed through logistical services is the supply for the world market of mangoes.



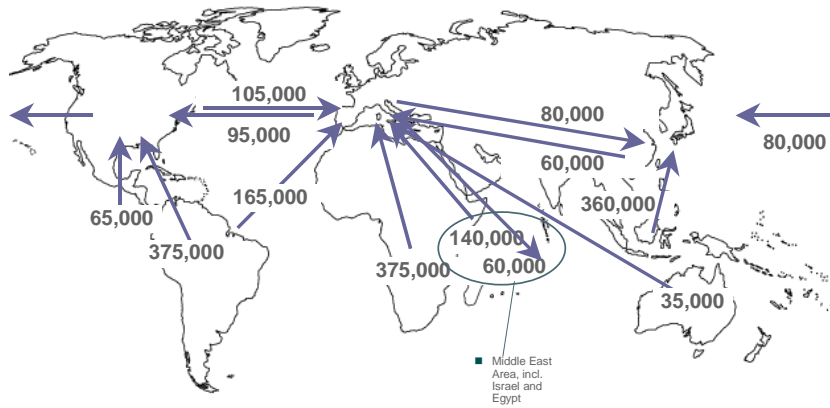
Worldwide availability of mangoes

**Gained importance**

And this is exactly where business opportunities develop through the optimization of logistic chains for shippers, forwarders, airlines, or on the demand side for wholesalers and supermarket chains. Professional logistics, warehousing and distribution pay off. There may be only a short season for homegrown tomatoes during summer in Central Europe, but throughout the remainder of the year, somewhere around the globe, it will be the right season for fresh tomatoes. The same applies to strawberries, other types of berry, grapes, mangoes, papayas, avocados, star fruit, beans, peas, as-

paragus, and many more fruit and vegetables. This is also true for flowers, meat and fish with a lesser degree of seasonality.

Nothing new? However, it is noteworthy how the perishables business has gained importance worldwide. Once considered a seasonal, low rate fill-up commodity by most airlines, today approximately 15% of total worldwide air cargo are perishables. 80% are classical perishables like flowers, fruit, sea-food, fish or meat. For some countries in Southern America and Africa (for example Sudan), more than 80% of their total exports consist of fruit or flowers. Other countries would like to become more engaged in the production of perishable products for export but for now lack adequate, competitively priced air cargo uplift capacities.



Source: Boeing, YDL, ITC Stats, FAO, USDA, Airports Data, Customs, Kaiser Associates, Lufthansa Consulting

**Estimate of worldwide perishable flows 2005 in tonnes**

**Common distribution platform**

By definition, perishables deteriorate over a given period of time, or if exposed to extreme temperatures (heat or cold), humidity or other environmental conditions. Therefore, it is of utmost importance to handle, store and cool them properly along their entire journey through the logistics and value chain from harvesting to the retailer’s shelf. To minimize spoilage and cost, they need to reach the consumer as quickly as possible in the best possible condition.

Today, up to 40% of perishable products are wasted or spoiled between production and reaching the consumer. Every percentage point of this rate that is reduced adds one percentage point to margins.

Looking at Europe’s supermarkets today, most of the perishable products, which are sold, share a common distribution pattern. Flowers, vegetables and fruit are grown mostly in central and southern American or African coun-

tries, fish and seafood are imported from Asia or northern America. At their point of origin they are collected, consolidated and shipped by sea or air to Europe in large quantities and respectively large units, e.g. ISO Reefer Container or large aircraft Unit Load Devices (ULD). Air transport is mostly carried out by freighter aircraft that fly large, often consolidated consignments from the place of origin to a few selected locations providing specialist infrastructure and services, such as the Netherlands' huge flower markets. Fish is mainly distributed via Frankfurt Airport's Perishable Center or Vitoria Airport in Spain. From there, a trucking based distribution network guarantees overnight delivery to retailers and consumers in most European cities.

"Classical" distribution channels with wholesalers accumulating purchasing power for each perishable commodity have developed and gained importance over the recent years. Designated infrastructure has been built for the handling and trading needs of perishable goods. The market power of wholesale markets has grown and customers now pay a premium included in the retail price for all of these services provided. But is that really necessary? Given the large quantities of perishable products shipped and consumed nowadays, are there no opportunities to reroute some of the wholesalers' premium into the pockets of other industry stakeholders?

#### **Who needs wholesalers?**

Definitely, such opportunities exist and first attempts to change some of the current business structures have already been made.

Whilst, again in the case of flowers, perishable centers have earned good money with value adding services like cutting or bundling, producing countries have recently begun to operate their own facilities close to airports or even within the airport facilities, offering the same specialized services yet at a different step along the value chain. Taking advantage of their normally lower costs, the business prospects and cost saving potentials for retailers are appealing.

Great Britain's supermarket chains already question whether it is generally necessary to incorporate wholesalers in their value chain and these supermarket chains have started to purchase directly from the producer, thus circumnavigating traditional points of entry while obtaining excellent conditions in price and quality. With the increasing demand for perishables in Europe, overall amounts rise and retailers' purchasing power is becoming great enough to bypass the wholesaler.

When value-adding activities can be shifted along the value chain, is it then still necessary to ship perishable goods in great amounts and in large units through the classical distribution chain?

Yes, there are good reasons why the need for mass transportation of perishable goods continues. Furthermore, the wholesale concept still pays off

for small traders and retailers as long as their purchasing power remains insufficient to justify bringing wholesalers' service capabilities in-house.

### **Seasonality increases costs of transportation**

Freighter transport, for example, is necessary in central regions of Africa. There, the low demand for passenger transport does not justify scheduled passenger services with sufficient frequency and aircraft types suitable for the transportation of perishables. Without adequate passenger flights, freighters are the only remaining option for the transport of perishable goods out of these regions.

The high seasonality in production of some perishables also necessitates their use. This is exacerbated by monocropping, resulting in huge amounts of single products needing to be shipped out of certain areas within a short period of time. Besides raising the risk exposure of producers to crop diseases, harvest shortfall and drops in world market prices, this seasonality increases the overall cost of transportation since short-term charter of freighter aircraft is the only viable response to this demand peak but aircraft availability, especially in the fourth quarter of the year, tends to be low and rates accordingly high.

Generally, large production quantities seem to justify the charter of freighters. The apparent bonus of full-charters is then that these can fly directly to a designated port-of-entry for certain goods. Again in the case of flowers, certain Dutch airports achieved attractiveness for perishable transport with low landing fees, low fuel prices and below average handling costs. Additionally, these airports are usually very well connected to the rest of Europe via extensive truck-based distribution networks, even better than for example Amsterdam Airport itself.

But is this distribution system really the best solution for all perishable goods and for all kinds of customers?

### **Point-to-point transport worth consideration**

Lufthansa Consulting's research proves that the answer is "no". Good opportunities exist for large retailers of perishable goods to develop alternative solutions outside of the classical distribution chain. The larger the retailer, the more attractive it is to rethink purchasing behavior.

The wholesaler accumulates market power by consolidating demand, both in purchasing the perishables and additional services such as transportation and keeps a sizeable share of the savings obtained through economies of scale to pay for his services and profit margin.

This is where it becomes interesting at least for large retailers. With their existing and anticipated future purchasing power in a growing market, the need to use wholesalers as intermediaries, i.e. the need to pay for an addi-

tional element in the distribution chain decreases. In fact, the wholesaler does not add value for the consumer.

The cost savings achieved through point-to-point transport compared to routing via a European trucking hub and wholesaler are worth consideration. As remaining shelf-life is the primary driver of a perishables' value, faster, more direct distribution pays off. Losing time through handling and warehousing by wholesalers means increased spoilage and therefore an increase in cost. In contrast, direct distribution of perishable goods to the point of sale to the consumer reduces spoilage rates and also capital cost. Our research has shown that two to three days can be gained by using innovative distribution channels.

### **The belly alternative**

The opportunity therefore is to use the combination of intercontinental passenger services with their seamless connection to continental airline networks more extensively for distribution purposes. Not using these existing high frequency scheduled passenger flights as a network for perishable distribution means neglecting opportunities.

Thinking about shipping smaller units directly to the end customer opens another option. Why not use belly capacities on inter-continental routes of passenger airlines more frequently instead of pure freighters? The first airlines already practice this option successfully on transatlantic connections from India or Africa.

Using the whole extent of passenger airline networks from the point of production to the end customer allows for good deals as regards the transportation costs as there is strong competition in this market. So instead of flying a freighter full of roses from Columbia via Miami to Amsterdam and then trucking a few tons of them trimmed and bundled to Munich, why not prepare them in Columbia and load them onto a direct flight to Munich in Miami? Then, the independence of just one distribution line and one provider for the transport will allow market mechanisms to lower the cost involved.

### **More flexibility and diversity**

Current technologies such as controlled atmosphere warehousing are a necessity especially for developing countries. An increased shelf life of up to 50% through the use of ethylene control in storage will allow particularly fruit and vegetables to be provided in the countries of origin even outside of the peak season. This enables peaks driven by crop cycles to be smoothed/spread while making products available for just-in-time delivery to the consumer markets in immaculate, fresh condition throughout a longer period of time.

	Common Warehousing		Controlled Atmosphere Warehousing	
	Temp. °C	Storage time in days	Temp. °C	Storage Time in days
<b>Fruit</b>				
Golden Delicious	1	120	3	240
Bananas	12	14	12	60
Avocados	10	21	5-13	42
Kiwi	0-5	180	1	240
Mangoes	10	14-25	13	14-25
<b>Vegetables</b>				
Tomatoes	8	10	12	25
Broccoli	0	14	0	28
Cucumber	7-10	14	12	21
Asparagus	2	14	2	42

Source: Dantzer, Hermann; Lufthansa Consulting Research

### Controlled Atmosphere Warehousing

The key to success in the future of perishable logistics will be more flexibility and diversity in transport, storage, and distribution. While not amounting to a paradigm shift, Lufthansa Consulting's analyses have revealed a shift of value adding activities in the logistics chain.

Perishable transport and distribution is demand driven. The utilization of highly frequent, high-density networks allows retailers to order commodities to be delivered right on time. This keeps stock levels and prices at planned levels and demand is satisfied without waste, spoilage or loss of revenues and profits. The producers' benefit increases with extended periods where perishable products can be provided in the right amount and quality.

The use of controlled atmosphere warehousing improves shelf life of products and ensures extended availability of perishable products in the country of origin. With regard to the efficiency of transport, freighter traffic should not be the only choice in perishable transportation.

### Check your supply chain!

Opportunities exist for every link in the chain, from producer, shipper, forwarder, airline, wholesaler, supermarket chain to the retailer as final recipient of the shipments. An unbiased assessment, which is one of Lufthansa Consulting's successful services, of a whole supply chain is essential to detect optimization potential and the implementation of quality oversight and management systems. Improvements are beneficial not only for all the companies and organizations involved, but also to a significant extent for trade balances of exporting countries.

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