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FLOWERS AND LIVING PLANTS TRANSPORT

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Introduction

In spite of fact that Slovak republic is characterized with rich representation of free growing vegetal and flowery varieties, the foreign trade with this commodity is not very large. In the statistic of foreign trade, which is lead by Statistic Office of Slovak Republic, is following the price development in foreign trade with flowers and living plants a part of the chapter 06 of harmonised system. The chapter Nr. 06 in the price indexes in foreign trade is named: Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage.

Even though that the Statistic Office of Slovak Republic follows a movement of this commodity, in resulting reviews the chapter Nr. 06 is absent, because the export of flowers and plants from Slovak Republic is very small in numbers. In the import to the Slovak Republic is Netherlands with its well known flower stock exchange in Aalsmeer where are the fresh flowers immediately after the auction moved into refrigerating road trains expressly dominant. Pictures Nr. 1 presents living flowers in the stock exchange in Holland.

Picture 1 Flowers in the stock exchange in Holland.
Source: http://mesta.orbion.cz/amsterdam

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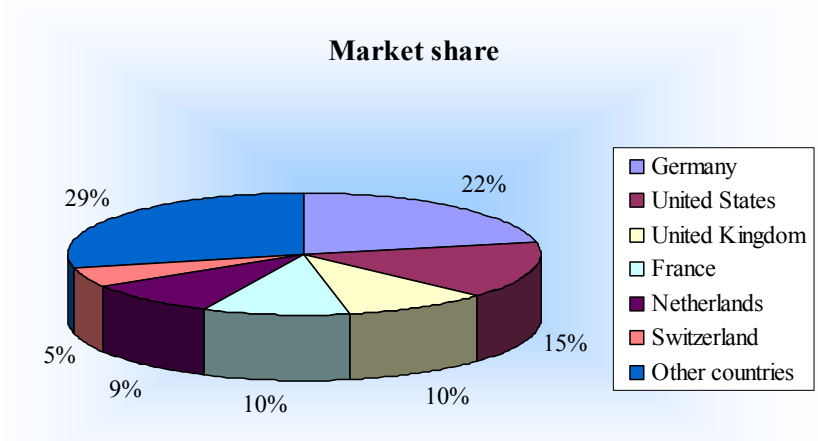
Estimates of the annual consumption of commercially grown flowers worldwide vary by source and range from $40 - $60 billion. On the demand side, 80 percent of consumption is accounted for by six countries, including Germany, the United States, the United Kingdom, France, the Netherlands, and Switzerland. [2]

The market share of world imports is presented at the picture Nr. 2.



Picture 2 Market share of world imports of flowers and plants
Source: http://www.iadb.org/intal/aplicaciones/uploads/ponencias/Foro_LAEBA_2008_06_01_Paper_Vega.pdf

Quality aspects in flower and plant transport

There are many studies abroad that are aimed on quality aspect by transport of flowers and living plants.

The first problem that is much discussed is a length of time necessary for the transport chain from the producer to a customer. For example a study named "Transportation costs of fresh flowers: a comparison across major exporting countries" by the Center for Transportation Policy, Operations, and Logistics in George Mason University studied a supply chain of transportation of flowers from Ecuador – one of the biggest flower producer in the world.

Given the lack of data on incremental value contributed by each member of the flower supply chain, here an effort is made to complement the analysis by offering insight into the variability in the length of time flowers remain with each member of the supply chain. With the goal of obtaining as much consistency as possible in the data, a questionnaire was sent to the individuals responsible for operations at major cargo agencies in Quito, and their

responses were used to fill in some of the blanks that emerged in the information found in published sources. [2]

Table 1 provides a summary of the amount of time that a shipment of flowers spends under the control of different supply chain members. In terms of the variation in the time used for each process, it is apparent that producers' demand for reliability and adequate interface with other modes has clearly not been met. From the moment of harvest until the time the product arrives to the U.S. retailer, the trip can take anywhere from 44 ½ hours to almost 13 days. Assuming that roses can last up to 14 days in good condition if handled properly after harvesting and a modest retail shelf life expectancy of seven days, it is reasonable to state that from the seventh day in transit onwards, the cost of time increases as each additional travel day lowers the quality and consequently the price of the product. [2]

Table 1 Potential to Affect Quality throughout the Supply Chain [2]

Process	Time	Potential to affect quality
Post-harvest on farm, Ecuador	4 - 8 hours	Medium
Storage on farm	12 - 72 hours	Low - Medium
Transportation to cargo agencies	1 - 6 hours	Medium
Storage at cargo agency	4 hours	Low
Palletizing, Quito	6 hours	Medium - High
Customs clearance, Quito	0.5 hours	Low
Loading to aircraft, Quito	1 - 2 hours	Medium - High
Flight UIO-MIA nonstop	4 hours	High
Customs clearance, Miami	4 - 12 hours	Low
Depalletizing, Miami	2 - 4 hours	High
Storage at cargo agency, Miami	4 - 72 hours	Low - Medium
Transportation to U.S. retailer	2 hours - 5 days	Medium

The time lengthening of plant or flower delivery from grower to the customer is not the only problem that is related to this specific transport. The quality of this good is beyond dispute influenced by suitable transport vehicle solution or the necessary transport conditions observance, e. g. suitable packaging, palletizing, constant temperature keeping, flowers of plants nutrition…

There is no unified regulation that would regulate the transport of this commodity in compliance with recognized principles of the nature or living environment protection in Slovak Republic. The area of the flowers transport is related only to the Ordinance of Ministry of Agriculture of Slovak Republic from 27th January 1999 Nr. 2785/1998-100 about phytosanitarian conditions in import, export and transfer of plants, plant products, also the things what would be the harmful organism carriers.

The Ordinance is aimed on phytosanitarian condition for import, export and transfer of plants, plant products and things what would be the harmful organism carriers' allowance.

Following it regulates the places for a control performance, which is interested in hygienic conditions of imported, exported and transferred goods and in the control of sensorially detected plants and plant products quality. Also it regulates specialities about circumstances of qualification and examination of phytoinspector.

Presented Ordinance lists the living plants and flowers into the goods that is necessary to be liable to the phytocontrol in the Annex Nr. 2. The system of controls is listed presented in table 2. There is described the hygienic condition control of some flowers as following: The rose, chrysanthemum, clove, gerbera and other flowers must not content the living vermin and must not be effected by illnesses what could endanger their quality; they must not be frozen, slack, putrescent and broken.

Table 2 System of phytocontrols in Slovak Republic

If the transported amount is:	Amount of controlled flowers/plants
to 500 pieces	at least 20 pieces
more than 500 pieces but less than 1 000 pieces	at least 10 pieces
more than 1 000 pieces	at least 15 pieces.
When the earth is in shipment, there will be vinegar worm control performed.	

We can claim that in Slovak Republic there are no defined demands on transport vehicle or climate kept inside.

The transportation of flowers and living plants under controlled temperature

In many countries of European Union the flower and living plant transportation is liable to more strict control. As the example we can present Netherlands what is the European great power in the production and trade with flowers and ornamental plants. In the practise in Holland there are existing so-called "VBN-standards".

The VBN (Vereniging van Bloemenveilingen in Nederland)is the umbrella organisation for the Dutch cooperative floricultural auctions. The VBN coordinates the joint activities of these auctions. The VBN employs work together in clusters dedicated to a certain subject, such as quality, market promotion of interests, logistics, legal affairs or communication. Decisions are taken by the VBN Board, which consists of the chairpersons and general directors of the associated auctions. [3]

Picture 3 Palletized flowers ready to transport

Source: *http://mesta.orbion.cz/amsterdam*

Flowers and plants are available in numerous different shapes, volumes and stages of maturity. In order to enable transparent trade in flowers and plants in spite of this great diversity, the products are grouped into uniform batches with the same characteristics. Each

characteristic has its own grade code. The unambiguous grade codes enable growers, the auctions and purchasing traders to tell at a glance which product is being traded.

The picture 3 presents flowers in Dutch auction that are ready to transport.

The grade code provides information on a limited number of sales-determining product characteristics. In the case of cut flowers, for example, the grade code provides information on the stem length, the weight and one other product characteristic. In the case of indoor plants and garden plants the grade code provides information on the pot size, the plant's height or diameter, the number of plants or cuttings per pot and one other product characteristic. The other characteristic may vary per product group and may provide information on for example the product's maturity or thickness. [3]

This organisation defines exactly according to the codes all important information for safe and quality transport of flowers, so as regulation of material where the plants and flowers could be packaged by transportation. For example: the code 612 define that flowers Gerbera with a calibre of flower head of 12 cm should be transported in carton box with parameters 100x30x12 cm. At the picture 4 is introduced an example of right packaging of flowers.

Picture 4 Packaging of flowers due the transport

Source: http://www.flowercare.net/uitpakken.pdf

The transport vehicle selection is also and important problem of living flowers and plants transportation. There are existing transporters in abroad that are specialized for transportation of these commodities. Here is the temperature during transport control necessary.

Presently more abroad studies are aimed on problem of keeping constant temperature during storage and transportation of flowers. Unfortunately, Slovak Republic is kept behind also in this area. The result of study named: "Quality flowers are cooled flowers" by New Zealand King Research Institute was the experimental definition of optimal storage time and an ideal storage temperature. In the table 3 is listed an example of some selected plants storage.

Table 3 Optimum storage temperatures for selected cut flowers

Flower species	*Storage temperature C°*	*Maximum period of storage*	*wet/dry*
Astra	0-4	1-3 weeks	-
Chrysanthemum	1	3 weeks	-
Cyclamen	0-1	3 weeks	-
Orchid	5-8	4 weeks	-
Dahlia	4	3-5 days	-
Delphinium	4	1-2 days	-
Gerbera	4	3-4 weeks	wet
Gladiolus	2-5	1-4 weeks	dry
Freesia	0-0,5	10-14 days	-
Narcissus	0-0,5	1-3 weeks	-
Lily	0-1	4-6 weeks	dry
Rose	0,5-3	2 weeks	dry
Strelitzia reginae	8	4 weeks	-
Tulip	-0,5-0	2-3 weeks	dry
Zinnia	4	5-7 days	-

Conclusion

A steady development of floriculture industry, specialisation of growers in the production of particular species as well as a great concentration of cultivation areas led to developing free markets for flowers, in large cities and urbanized centers.

All of these changes created a temporary overproduction of flowers and great losses of the produced commodities. In order to limit these losses growers and scientists initiated the

research toward the elaboration of suitable methods for the preservation of flowers after harvest and for their long distance transportation to marketing centers. They soon found low temperature treatment to be the most important factor enabling the preservation of freshly cut flowers for days and even weeks without a great loss of their quality. In the next step the cold has been used in refrigerated trucks and containers applied for long distance transportation of floriculture plants. [6]

Literature

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