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Western European Preferences for Sizing, Packaging, and Unitizing Selected Fresh Fruits and Vegetables

WESTERN EUROPEAN
PREFERENCES FOR SIZING,
PACKAGING, AND UNITIZING
SELECTED FRESH FRUITS AND
VEGETABLES

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Abstract

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A total of 38 major Western European receivers participated in the study by providing trade and market preferences for packaging, handling, and product presentation features for 20 selected fresh fruits and vegetables. Specific preferences are described for type of shipping container, style, construction materials, size of container, and type of closure. Acceptable physical parameters for unitized handling features were determined. Generally, corrugated-fiberboard shipping containers were preferred. Net weight per box preferred for most fruits was 5 kg, except for strawberries which was 3 kg per box. The preferred net weight per box for eggplant, green beans, green peppers, and tomatoes was 6 kg, whereas 10 to 15 kg was preferred for celery, Chinese cabbage, cauliflower, and iceberg lettuce.

KEYWORDS: shipping container; standardized packaging; fresh fruits; fresh vegetables; Western Europe; EEC; modularization, unitization, and metrification; MUM

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Contents

	<i>Page</i>
Introduction.....	1
Methodology.....	1
Results.....	2
Marketing functions of participating firms.....	2
Preferred packaging, packing, and presentation features for fruits.....	2
Preferred packaging, packing, and presentation features for vegetables.....	4
Participant use of unitization for imported fresh fruits and vegetables.....	6
Technique and parameter preferences for unitizing.....	6
Transport modes used for distribution.....	7
Conclusions and recommendations.....	7

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Western European Preferences for Sizing, Packaging, and Unitizing Selected Fresh Fruits and Vegetables

By W. R. Miller and A. J. Bongers¹

Introduction

The U.S. fresh fruit and vegetable packaging industry is currently in a major transition. The benefits obtained by a more standardized packaging and unitizing system for handling produce are recognized by the industry and are the principal factors influencing these changes. This transition involves the adoption of a rational standardized system for determining shipping container and pallet base dimensions compatible with the international system of measurements.

In the United States, the fruit and vegetable industries have adopted the term modularization, unitization, and metrification (MUM) to describe this concept. The United Fresh Fruit and Vegetable Association, Federal and State research and extension agencies, and growers, shippers, and receivers are becoming more aware of the benefits to be derived by total industry conversion. Individual firms are now developing and testing shipping containers on a commodity basis to determine the physical and economical feasibility of adapting to the MUM concept for their packaging operations.

The authors initiated a study in November 1980 to obtain Western European preferences for specific packaging features for fresh fruits and vegetables. Their findings were to provide the U.S. fresh fruit and vegetable industries with needed information for packaging changes and to provide additional input from this important export market. This study was completed in July 1981. For more than 11 years, USDA researchers stationed at the European Marketing Research Center in Rotterdam reported that packaging of some U.S. commodities was not compatible with market demands in Europe. For example, peppers and iceberg lettuce generally are marketed in the United States in shipping containers larger than those preferred in Western Europe, and consumer units generally used to market strawberries and blueberries are too large.

The purpose of this particular study is to identify specific physical packaging construction and commodity presentation features that can be described and quantified and to determine, by commodity, those features most preferred by the Western European trade. The objective of this study is to provide the U.S. fresh produce industry with information that will enhance the acceptability and salability of U.S. produce in this export market.

This publication describes construction and design features of shipping containers, such as type, style, closure method, and accessory materials, most preferred in the Western European market for 20 selected produce items. The most preferred net weights per shipping container unit, by commodity, and an indication of the importance given to factors such as uniformity of commodity size and multicolor printing on shipping containers are also provided. Finally, the preferred techniques of unitizing produce are described, and the extent to which unitized handling is currently used and preferred by the European market is explained.

According to the 1980 agricultural statistics published by the Department, exports of U.S. fresh fruits and vegetables to the European community for fiscal years 1975-79 were \$56.85, \$82.49, \$98.72, \$60.73, and \$67.26 million, respectively. For many U.S. grower/shippers, these dollar values may seem unimportant, but for some export shippers they represent a major market for their produce. In total, these exports represent an important contribution toward the balance of payments of the United States.

Methodology

Initial discussions were conducted with USDA's Foreign Agricultural Service (FAS) attaches and the counselors and major importers of U.S. produce in Western Europe to determine countries, importers, wholesalers, and commodities to be included in the survey.

Based on information received from preliminary discussions, 10 fresh fruits and 10 fresh vegetables were selected for this study. In addition, relatively minor-volume items identified as having a reasonable potential for increasing in market share were considered. The selected commodities are listed below. The number following each item represents the number of firms contacted that received the item from the United States and that provided information relative to the survey.

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Fresh Fruits

Avocados	23
Blueberries	8
Cherries	9
Grapes	11
Limes	6
Mangos	19
Nectarines	11
Peaches	10
Plums	12
Strawberries	15

Fresh Vegetables

Carrots	4
Cauliflower	2
Celery	12
Chinese cabbage	11
Eggplant	9
Green beans	3
Green peppers	7
Iceberg lettuce	16
Onions	4
Tomatoes	4

The Western European countries selected to comprise the survey market area are France, West Germany, the Netherlands, Sweden, and the United Kingdom. These countries are each a major market for U.S. fresh produce. The commodity mix imported by each country will vary on a commodity volume basis. A list of major import organizations in each country was supplied by the respective FAS office. The criteria used for selecting import firms as participants in the survey were (1) willingness to cooperate in the study, (2) current involvement in importing produce from the United States and from other major foreign supply sources, and (3) recommendations from preliminary discussions. The number of firms participating are listed below by country.

France	8
West Germany	9
The Netherlands	8
Sweden	6
The United Kingdom	7

Questions relating to specific physical packaging features, commodity presentation factors, and the extent and preference of unitization methods were assembled in question-and-answer format. An informal questionnaire was used to facilitate uniform discussions with participants and to ensure that each participant received identical information. This also provided a method to accurately record responses. This study was designed to obtain the following information from participants:

1. Participant's marketing function and sales organization.
2. U.S. commodities imported.
3. Transport mode used for inbound cargo.
4. Transport mode used for outbound cargo.
5. Extent of and preference for unitized handling.
6. Description of preferred methods and features for unitization.
7. Description of preferred construction factors and features for packaging of each commodity.
8. Description of preferred commodity presentation features, by commodity.

All information was obtained in personal interviews with the designated spokespersons of the participating firms. Interviews were completed in each country in the following sequence: The Netherlands, West Germany, France, Sweden, and the United Kingdom.

Results

Marketing Functions of Participating Firms

The principal marketing functions of the 38 firms participating in this study are listed below:

Importers	33
Wholesalers.....	22
Retailers.....	7
Packaging research organizations.....	1

Of the importers, 19 were also major wholesalers and 5 were engaged in large retail operations. The size of each firm engaged in direct retail operations, in number of individual stores, ranged from 400 to about 20,000. One principal wholesaler also was engaged in direct retailing, and one retailing firm purchased produce through other importers or secondary wholesalers only. Sixteen firms marketed imported produce only domestically, while 21 firms were involved in domestic sales as well as reexport to other Western European countries.

Preferred Packaging, Packing, and Presentation Features for Fruits

The frequency of responses of preference for specific packaging features for selected fresh fruits is shown in table 1. For some preferred factors, the number of responses exceeds the number of participants. This indicates that two or more features were equally preferred by some firms. For others, some participants chose not to respond to a particular question and the number of responses was less than the number of participants. Commodities in table 1 are listed in alphabetical order. In the discussions that follow, however, commodities are grouped in categories based on reported similarities of resulting preferences. In addition to factors listed in tables 1 and 2, other general comments that were determined important for shippers to the Western European market are discussed.

Group I. Avocados and Mangos. The preferred packaging for this commodity group was a full-telescope, corrugated-fiberboard box. Interior preformed trays were preferred for avocados. Uniformity of size within lots by count was important, and contrasting color printing of boxes was relatively more important for these fruits than for other fruits. For mangos, larger sizes of 12, 14, and 16 fruits per box

were preferred more than 18, 20, and 24 counts. Ten receivers preferred a 5-kg net weight pack for mangos and 10 receivers preferred 6 kg. For avocados, 11 receivers preferred 5 kg and 9, 6 kg net weight. A few participants preferred less than 5 kg or more than 6 kg net weight for both avocados and mangos. The most preferred counts for avocados were smaller sizes of 18, 20, 24, and 30 for single-layer boxes. Two receivers stated that under certain market conditions a 2-layer box of 30 fruit per layer (10-12 kg net weight per box) was acceptable and even preferred for some customers.

Table 1.—Preferred factors for construction of shipping containers for fresh fruits¹

Commodity	Number of receivers	Construction								Closure			Accessory items					
		Material		Type		Style				Glue	Tele-fit	Other	Pad	Liner	Divid-er			
		Wood	Fiber	Box	Tray	Telescopic			Wire-bound						Folded	er	Other	
		RSC ²	Full	Partial	Other	bound	Folded	Glue	fit	Other	Pad	Liner	er	Other				
----- Number of responses -----																		
Avocados	23	0	23	21	4	4	14	2	2	2	3	3	13	0	22	0	0	0
Blueberries	8	1	7	1	7	0	1	0	6	0	4	1	1	2	1	1	0	3
Cherries	9	2	9	5	4	1	4	0	4	0	4	3	3	0	0	6	0	4
Grapes	11	0	11	7	3	3	2	0	3	1	3	1	4	0	4	0	0	5
Limes	6	0	6	5	1	1	2	4	0	0	0	0	6	0	0	0	0	0
Mangos	19	0	19	15	3	4	13	4	0	0	4	1	13	0	2	0	0	0
Nectarines	11	1	9	9	1	2	1	0	4	0	4	2	2	1	5	0	3	4
Peaches	10	2	8	4	6	1	0	0	4	0	2	2	0	0	3	0	2	6
Plums	12	2	11	9	3	0	3	0	3	1	4	2	3	0	4	1	2	6
Strawberries	15	1	14	4	11	3	3	1	9	0	5	1	3	4	1	1	0	7

¹Total responses may not equal number of participants because of equal preference given to more than one factor item.

²RSC = one piece regular slotted corrugated.

Table 2.—Preferred factors for packing and presenting fruit in shipping containers¹

Commodity	Method of placement		Importance of size uniformity			Importance of box color			Net weight in kilograms per shipping container							
	Place	Random	No	No		No		opinion	3	4	5	6	7	8	Other	
			opinion	Yes	No	opinion	Yes									No
----- Number of responses -----																
Avocados	22	0	1	22	0	1	9	1	13	0	3	11	9	0	1	4
Blueberries	0	8	0	7	0	1	3	0	5	2	2	0	4	0	0	0
Cherries	0	9	0	9	0	0	0	0	9	2	1	0	2	0	0	2
Grapes	9	0	2	9	0	2	0	0	11	0	1	8	1	0	0	0
Limes	0	6	0	5	0	1	1	0	5	0	1	5	0	0	0	0
Mangos	18	0	1	15	0	4	7	1	11	0	2	10	10	0	1	0
Nectarines	9	0	2	8	0	3	4	0	7	1	1	5	2	0	1	1
Peaches	8	0	2	7	0	3	2	0	8	1	1	4	0	0	1	0
Plums	8	2	2	7	0	5	5	0	7	0	1	6	3	1	0	1
Strawberries	0	15	0	7	1	7	4	0	11	2	2	4	5	0	0	1

¹Total responses may not equal number of participants because of equal preference given to more than one factor item.

Group II. Nectarines/Peaches/Plums/Grapes. The preferred shipping container for this group was a corrugated-fiberboard box or tray. The highest preference frequency for style was an open-top shipping container (tray) with a separate loosely fitting top for ease in removing contents, or a box with loosely fitting, folded tuck-in flaps that can be easily opened for commodity inspection and torn off for merchandising. Interior premolded trays are preferred for stone fruits and cushion pads for grapes. Each commodity should be place-packed, and uniform size is important. Attractive color printing on shipping containers was considered important for the stone fruits by about 50 percent of the receivers but generally was not considered important for grapes. The greatest preference for net weight per box was 5 kg. Expressed preference of counts per box for stone fruit varied considerably. Size preference depended on the pricing system used (that is, piece or weight). When the market price was high, smaller sizes of stone fruits were preferred and, conversely, when price was low, larger sizes were preferred. Several receivers preferred plums, especially smaller sizes, in consumer cups of 250 or 500 g. Receivers in general preferred bunches of grapes to weigh about 500 g each, with 10 bunches per box. Several participants preferred each bunch to be individually wrapped in paper, and one preferred bunches in molded cups without overwrap.

Group III. Blueberries/Strawberries/Cherries. Corrugated fiberboard boxes were generally preferred. Two receivers considered wooden boxes to be equally suitable. A tray was preferred for berries, whereas either a box or tray-style shipping container was preferred for cherries. The preferred box design was either full-telescope or one-piece. The one-piece design should be closed by glue or tuck-in folded flaps. Tray-type shipping containers, most preferred for berries, interlock vertically by utilizing a "tabbed"² system. Uniformity of commodity size was important for this group. Color-printed boxes were less important for cherries than for berries.

There was a significant variation in preferred net weight per shipping container for this group. Most receivers preferred cherries loosely packed in a shipping container lined with polyfilm, with a net weight of 6 kg or more. Two receivers preferred cherries packed in either 250- or 500-g consumer cups, without overwrap. Most receivers preferred berries to be packed in 250- or 500-g consumer cups. Preferences in net weight per box for berries varied from 3 to 6 kg because of variations in preferences for the number of consumer cups per shipping container. Either 10 or 12 consumer cups per shipping container was most preferred, although a few

participants preferred 8 cups. The 250-g consumer cups were preferred when the price per unit was relatively high and, conversely, 500-g cups were preferred when the price was relatively low. All receivers stated that net weight per consumer unit cup must be guaranteed when the consumer unit is overwrapped.

Group IV. Limes. Limes do not conveniently fit into any other fruit grouping; therefore, they were considered separately. A full- or partial-telescope, corrugated-fiberboard box was preferred for limes. Uniformity of fruit size is important. Preferred counts per box generally were 48, 54, and 63, with 5 kg as the preferred net weight.

Preferred Packaging, Packing, and Presentation Features for Vegetables

Receiver preferences for packaging and commodity presentation for vegetables are shown in tables 3 and 4, respectively. Vegetables are separated into four groups (I - IV) according to similarities of preferred factors.

Group I. Eggplant/Green Beans/Green Bell Peppers/Tomatoes. For this group a telescopic, corrugated-fiberboard box was preferred. The highest preference frequency reported for net weight per shipping container was 6 kg. For these commodities, all participants stressed the importance of uniform sizes. Receivers of green beans preferred that a vertical divider be used to separate the box volume into two equal cells. Two firms preferred eggplant to be wrapped individually. Eggplant and green beans should be place-packed. About half the firms importing green peppers also preferred a place-pack. No strong preference for attractively color-printed boxes was expressed, except for tomatoes.

Two tomato receivers stated that fruit should be protected by using vertical dividers between each piece in a box. Participants stated that only the smallest sized tomatoes should be volume filled; medium and large sizes must be place-packed.

²Tabs projecting above the top surface of a box that are positioned to interlock into the bottom surface of the adjacent box directly above, thus vertically securing boxes in a column stack.

Table 3.—Preferred factors for construction of shipping containers for fresh vegetables¹

Commodity	Number of receivers	Construction								Closure			Accessory items			
		Material		Type		Style				Folded	Glue	Telefit	Other	Pad	Divider	Other
		Fiber	Other	Box	Other	RSC ²	Full	Partial	Other							
- - - - - Number of responses - - - - -																
Carrots	4	2	3	2	3	1	1	0	3	0	1	1	2	0	0	3
Cauliflower	2	2	0	1	1	1	0	0	1	1	0	0	1	0	0	2
Celery	12	12	0	12	0	4	6	0	0	2	1	6	2	0	0	9
Chinese cabbage	11	11	0	11	0	4	5	0	0	1	2	5	3	0	0	7
Eggplant	9	9	0	9	0	0	9	0	0	0	0	9	0	0	0	2
Green beans	3	3	0	3	0	0	3	0	0	0	0	3	0	1	3	0
Green peppers	16	15	0	16	0	0	16	0	0	0	0	13	1	0	0	0
Iceberg lettuce	16	15	0	15	0	11	3	0	0	1	0	4	5	0	0	15
Onions	4	1	3	1	3	0	0	1	2	0	0	1	3	0	0	0
Tomatoes	4	4	0	4	0	0	4	1	0	0	0	4	0	0	2	0

¹Total responses may not equal number of participants because of equal preference given to more than one factor item.

²RSC = one piece regular slotted corrugated.

Table 4.—Preferred factors for packing and presenting of vegetables in shipping containers¹

Commodity	Methods of placement			Importance of size uniformity			Importance of box color			Net weight per shipping container in kilograms									
	Place	Random	No opinion	Yes	No	No opinion	Yes	No	No opinion	5	6	7	10	12	15	16	18	20	25
			opinion			opinion			opinion										
- - - - - Number of responses - - - - -																			
Carrots	1	4	0	4	0	0	1	1	2	0	0	0	0	1	4	0	0	0	0
Cauliflower	2	0	0	2	0	0	1	0	1	0	2	0	1	0	1	0	0	0	0
Celery	10	0	2	10	0	2	1	1	10	0	0	1	4	4	1	0	0	0	0
Chinese cabbage	9	0	2	9	0	2	1	0	10	0	0	0	3	3	1	1	0	0	0
Eggplant	8	0	1	8	0	1	2	0	7	2	7	0	1	0	0	0	0	0	0
Green beans	3	0	0	3	0	0	1	0	2	2	2	0	0	0	0	0	0	0	0
Green peppers	7	9	0	11	0	5	5	1	10	3	12	0	1	0	0	0	0	0	0
Iceberg lettuce	15	0	1	15	0	1	3	1	12	0	2	1	0	1	3	0	1	0	0
Onions	1	3	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	1	3
Tomatoes	2	2	0	4	0	0	3	0	1	0	1	0	0	0	0	0	0	0	0

¹Total responses may not equal number of participants because of equal preference given to more than one factor item.

Group II. Celery/Chinese Cabbage. A one-piece regular slotted (RSC) or full-telescoping corrugated-fiberboard box was preferred by all receivers. Closure of the nontelescopic box may be by folding, gluing, or stapling. Most participants preferred that these commodities be placed individually in a polyfilm sleeve. Uniformity of size was considered important. The frequency reported for net weight per box for both celery and Chinese cabbage was almost equally divided between 10 and 12 kg. Most receivers stated that 20 and 24 heads per box were most preferred. Several importers supplying celery to large chainstores preferred 30 or 36 heads per box with a net weight of 15 kg. Individual heads should weigh 500 to 600 g each and be trimmed to about 27-cm length.

Group III. Iceberg Lettuce/Cauliflower. For these commodities, a one-piece RSC or telescopic corrugated-fiberboard box was preferred. Most receivers preferred individual wrapping of iceberg lettuce. Two receivers preferred individual wrapping of cauliflower. Uniformity of head size and weight was considered important. Few stated that attractive color printing of boxes was important. There was an apparent preference for two net weights, 6 and 15 kg. This reflects the preference of large chainstore operations for 30 to 36 heads per box. Other receivers specifically stated that a 12-head pack of 6 heads per layer is needed for successful marketing of iceberg lettuce in Europe. The preferred per-head weight for iceberg lettuce is about 500 g, and for cauliflower, from 500 to 600 g.

Group IV. Carrots/Onions. Carrots were preferred packed in 500- or 1,000-g consumer packages of polyfilm bags. A corrugated-fiberboard box and mesh bag were about equally preferred for use as the master shipping container. Uniformity of carrot size within packaged lots is important. One receiver stated that attractive color-printed boxes were important.

For onions, a mesh bag was the most preferred shipping container. Uniform size was considered important, but attractive color printing on packaging material was not.

A net weight of 15 kg per shipping container was most preferred for carrots, and 25 kg for onions. Consumer units of 1,000 g of onions were preferred by one receiver, 5,000-g units by the other receiver. Consumer units should be shipped in a master shipping container.

Participant Use of Unitization for Imported Fresh Fruits and Vegetables

The extent of unitization currently in use for the distribution of imported fresh fruits and vegetables in Western Europe is described in table 5.

Most of the fresh fruits and vegetables handled by importers are unitized on arrival. No effort was made to determine

the degree of unitization by commodity; however, participants generally stated that fruit tended to be shipped unitized, whereas vegetables generally were not. Fresh fruits and vegetables initially nonunitized at arrival were unitized immediately and remained unitized to the first customer's facilities. When first customers were supermarkets that required unitization on mobile carts for in-house distribution, products were categorized as being unitized.

Table 5. Extent of unitization used by European receivers

Question	Number of responses			
	Some ¹	Most ²	All	None
1. Is produce now unitized on arrival?	7	14	14	1
2. Is produce unitized at first transfer point?	-	5	31	-
3. Is produce unitized in your storage facilities?	-	2	34	-
4. Is produce delivered unitized to first customer?	-	4	32	-
5. Is produce unitized at first customer's facilities?	-	2	34	-

¹Less than 50 percent in volume.

²50 percent or greater in volume.

Technique and Parameter Preferences for Unitizing

Fresh fruits and vegetables must be shipped unitized according to all participants. They also reported that most of their customers would not accept produce delivered nonunitized.

Of 33 firms reporting, 28 preferred the unit base dimensions of 120 × 100 cm as established and recommended by the Organization of Economic Cooperation and Development (OECD), and 5 firms preferred the base dimension of 120 × 80 cm. Ten firms reported that either size base was acceptable. Four participants stated that other base dimensions used by some U.S. shippers were currently acceptable.

Wood was the most preferred material for pallets; 26 firms preferred a pallet designed for 4-way access, 8 firms a 2-way access, and 4 firms showed no preference for construction material or access. Thirty-one firms preferred use of disposable bases for imported produce, and two firms reusable pallets. Reusable pallets were preferred only if they were constructed to meet the requirements of the European Economic Community Standards for use within a European pallet pool system.

Use of acceptable securing techniques to stabilize shipping containers rigidly on pallet bases is important to European importers and handlers of produce. The most preferred securing technique is 2 or 3 horizontal, nonmetal straps. Of

25 firms preferring straps, 9 preferred the additional use of 4 vertical corner boards. Wrap-around netting materials were preferred by 12 firms, of which 7 equally preferred the strapping technique. The tabbed box system as used by South African packers was preferred by three participants. One firm preferred using polyfilm wrapping. Seven firms had no preference for a particular securing technique but stated that methods used must rigidly contain shipping containers on the pallet base.

For produce, excessive weight per palletized unit is generally not a problem for handlers and stevedore operations. Maximum gross weights per palletized unit of less than 1 metric ton were recommended by 3 participants, 1 metric ton by 14 participants, and more than 1 metric ton by 6 participants.

Twenty-one firms participated in an established European pallet pool organized for outbound distribution. The remaining importers made deliveries on either new or reused pallets.

Transport Modes Used for Distribution

Inbound. Participants were asked to list modes of transport used for the initial delivery of imported produce to their facilities. Twenty-one firms used both surface (sea) and air transport, and 10 firms used surface transport only. Three wholesalers used only over-the-road truck-trailers for deliveries from principal importer operations. Van-container deliveries were considered as sea deliveries, even though van containers were transported over the road for inland delivery. Sea, air, and truck-trailer deliveries were used by two firms.

Outbound to first customer. Of the participants, 36 delivered to their first customer by truck and 12 by either truck or rail; one reported that some deliveries required sea transport.

Fourteen firms indicated that the distance to most customers varied from 100 to 250 km. The delivery distance for seven firms was generally local or less than 100 km, while two firms indicated the delivery distance ranged from 250 to 500 km. Seven firms transported most imported items more than 500 km to their first customer.

Conclusions and Recommendations

Exporters need to be aware that Western Europe is a major market for fresh produce from many exporting countries. As such, the Western European trade is continually exposed to a wide variety of packaging methods for most commodities. During this study, European importers reiterated that this market demands that produce be packaged and unitized

for efficient handling and for optimal presentation of the commodity. General construction factors for shipping containers such as material, type, and style, are important features to provide proper strength for adequate protection of the product and influence the type of closure incorporated. Type of closure is most important to the European trade because many product observations are made during marketing, and when necessary, produce is regraded to cull out undesirable items without discarding initially used shipping containers. Shipping containers that can be opened and reclosed easily without showing signs of disturbance are most preferred. The method of placement of a commodity in the shipping container is influenced by the use of interior packaging and the state of technology used for product flow during packaging operations. The main consideration is to protect fresh fruits and vegetables against bruising and exterior blemishes during distribution operations. Physical blemishes downgrade produce condition and seriously reduce the salability of fresh products in the European market.

Produce must be well graded and sized. Commodities marketed domestically in the United States with general size designations, such as small, medium, and large, are not usually acceptable in the European trade. European importers must market in Europe according to European commodity regulations.

Current European Economic Community and individual country regulations for each commodity may be obtained by contacting the USDA's FAS office within the country of interest.

Attractive, contrasting-color printing of shipping containers is important for many commodities for the Western European trade. All participants stated that shipping containers should have a base color other than kraft brown.

Net weight preferences per shipping container are of utmost importance to shippers supplying this market. Importers generally expressed a strong preference for a particular net weight for a given commodity. Shippers should consider a 6-kg pack for commodities listed in group I, a 10- or 12-kg pack for vegetables and 5-kg pack for fruit in group II, 6- and 15-kg packs for group III and, finally, a 15-kg pack for carrots and 25-kg pack for onions. For some commodities, the normal U.S. commercial pack equals the preferred net weight; for others, changes in shipping container net weight and size are required.

The European preferences for packaging described in this report should be considered by research organizations, advisers, and consultants to U.S. fruit and vegetable industries. The ultimate benefit will be realized in U.S. commodities' maintaining or increasing their share in future marketing seasons.

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