

# Marketing Channels Studied

## marketing of fresh carrots, celery and asparagus in California studied to determine channels

Jerry Foytik

California growers of fresh carrots retain 25¢ of the consumer's dollar to cover their costs; the grower's share for celery is 34¢, for asparagus 46¢. The rest goes for packaging, transportation, wholesaling, and retailing.

Sixty-six retail stores in the more densely populated and accessible areas of California were surveyed in the course of an investigation. Data obtained represented 7,000 crates of carrots, 11,000 crates of celery, and 7,000 crates of asparagus.

Carrots sold fresh in local retail stores come chiefly from the coastal area south of San Francisco. During February to June supplies are drawn primarily from Imperial and Riverside counties.

Celery comes mainly from the San Joaquin Valley and the coastal area south of San Francisco. During the later part of the season supplies are drawn principally from southern California, especially Los Angeles and San Diego counties.

Most fresh asparagus sold in retail stores comes from the San Joaquin Valley, although a large part of the sales made in southern California is obtained from near-by producing areas.

All three vegetables move mainly from producers to wholesalers to retailers. During the later part of this distributive channel, an appreciable portion of the total volume is handled by truck-jobbers who usually follow a regular truck route of delivery to retail stores.

Only a small part of the carrot supply is sold by producers directly to retailers, except in coastal northern California during October to December, and—to a lesser extent but throughout the year—in the large cities of the Central Valley. Packers handle a substantial portion of the carrots received by wholesalers.

Very little celery and asparagus are sold by producers directly to retailers, or handled by packers or truckers.

Striking variations in the sources of retailers' supplies of the three vegetables exist due to the geographical location of stores. For carrots and celery the season of the year is also important.

Retailers in large cities obtain almost their entire supply from near-by wholesalers. Exceptions are carrots in the large cities of coastal northern California during October–December; and celery for the large cities of the Central Valley dur-

ing November–January. In these cases about one-third is received from producers and packers.

Small city retailers obtain approximately 30% of their carrots from producers, packers, truckers, and truck-jobbers; 20% from small city wholesalers; and 50% from wholesalers in neighboring large cities. Retailers in towns obtain approximately 25% of their celery from producers, packers, truckers, and truck-jobbers, 25% from small city wholesalers, and 50% from wholesalers in near-by large cities.

The figures for asparagus are: 30% obtained from producers, packers, truckers, and truck-jobbers; 13% from small city wholesalers; and 57% from wholesalers in large neighboring cities.

During October–December 60% of the carrots sold in northern California come from producers in Monterey and Santa Cruz counties. The remaining supplies come from the near-by counties of the San Francisco Bay areas for retailers in coastal northern California, and from other northern California producing areas for sales in Central Valley.

Southern California retailers obtain 40% of their carrots sold during October–December from Monterey and Santa Cruz counties, 35% from producers in southern California, and 25% from other areas of northern California. Later in the season the bulk of the carrots sold in all three major subdivisions of the state come from southern California producers, especially those in Imperial County.

Southern California retailers obtain almost half of their early celery and the entire volume handled after January from producers in southern California. Retailers in northern California are supplied primarily from producing areas in northern California during November–January, and from southern California thereafter.

Almost half of the asparagus supply for southern California retailers comes from producers in southern California, and 35% from south San Joaquin Valley. Retailers in northern California are supplied primarily from producing areas in north San Joaquin Valley.

Losses due to physical waste and spoilage are small in all cases. For carrots they average 1.9 bunches from each crate

of 72 bunches—about 2.7% of the supplies shipped to retailers.

Losses of celery average 1.4 stalks from each crate of 27.5 stalks—about 5.2% of shipments to retailers.

For asparagus, waste and spoilage losses average less than half a pound from each 32-pound crate—about 1.4% of what retailers receive.

The cost of retailing is an important element in the total cost of moving the vegetables to the consumer. For carrots, about 35¢ of the retail dollar goes to cover the retailers' margin. For celery the figure is 36¢, for asparagus 27¢.

The pre-retail margin for carrots is almost 40% of the retail price. Packaging accounts for 24¢, transportation for 9¢, and wholesaling for 7¢ of the retail dollar. Thus, about 25¢ of the consumer's dollar remains for growers to cover costs of production, harvest, and field packing.

For celery, the pre-retail margin is 30% of the retail price. Packaging accounts for 9¢, transportation for 6¢, and wholesaling for 15¢ of the retail dollar—leaving about 34¢ of the consumer's dollar for growers to cover costs.

Pre-retail margin for asparagus is almost 27% of the retail price. Packaging accounts for 15¢, transportation for 3¢, and wholesaling for 9¢ of the retail dollar

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# Lemon Fruit Quality

## rootstocks affect juice content, soluble solids, acidity of Eurekas

W. P. Bitters

**Eureka lemons** to be used for processing are profitably grown on Sampson tangelo stock, while fruits from Rough lemon stock are not desirable.

Juice content and acidity—two qualities that determine growers' returns from processed lemons—are among the properties of lemon fruits influenced by rootstocks.

As a large percentage of the lemon crop is now used for juice processing, proper selection of stock is of increasing importance.

To determine the influence that rootstocks exert on the quality of lemon fruits, samples were picked from 23-year-old Eureka lemon trees at Riverside. Included in the test were fruits from trees budded on Bessie sweet orange, Rubidoux sour orange, Rough lemon, No. 343 grapefruit, Sampson tangelo, and Cleopatra mandarin. Fruits were sampled January 3, January 23, February 15, and March 12, 1951.

### Quality Compared

There was no apparent seasonal effect between the first and the last sampling dates. Fruit from trees on the Rough lemon stock was consistently lower in juice content, soluble solids and titratable acidity than fruit grown on any of the other stocks. Fruit grown on Sampson tangelo stock was generally slightly higher in juice content and soluble solids than fruit from any of the other stocks. Such fruit was also high in citric acid content. Fruit from trees on the Cleopatra mandarin stock was slightly lower in juice content and soluble solids than

fruits from the other stocks but was considerably higher than fruit from trees on Rough lemon stock. Fruit on the grapefruit stock tended to be high in citric acid. With the exception of fruit on the Rough lemon there were no marked differences between quality of fruit grown on the other stocks but the slight differences between them were consistent.

Ascorbic acid content—which was determined on only one sampling date—was lowest in Rough lemon, and tended to be highest in fruits on grapefruit, Sampson tangelo and sour orange stocks.

Fruit on the Rough lemon stock was noticeably coarser in appearance than fruits grown on the other stocks. The peel was thicker and rag more apparent. These factors probably account for the lower juice content.

The practical importance of the differences in quality of fruit from trees on the various rootstocks is increased by the relations of one factor to another.

Fruit on Sampson tangelo stock was not only 8.4% higher in juice content than fruit on Rough lemon but also 13.6% higher in citric acid content. Fruits on sweet orange and sour orange stocks were 7.1% and 7.0% higher than fruit on Rough lemon in juice content, and 11.8% and 9.3% higher in citric acid content.

### Processing Value

Fruit for by-product purposes is sold on a tonnage basis. In this experiment fruit of trees on Rough lemon stock would have yielded 40.06 pounds of anhydrous citric acid per ton. By comparison, one

ton of fruit from trees on sweet orange stock yielded 47.96 pounds, that of trees on Sampson tangelo 49.34 pounds—or 19.7% and 23.2% respectively more than one ton of fruit from trees on Rough lemon.

At the time of the tests the value of lemons for juice processing was \$65 a ton for fruit yielding 35.575 pounds of anhydrous citric acid. On the basis of their citric acid content the fruits of trees on Rough lemon stock would have returned \$73.19 per ton. The returns for fruit of trees on sweet orange stock would have been \$87.63 per ton, and for fruit of trees on Sampson tangelo stock, \$90.15.

Many lemon orchards yield 20 tons of fruit per acre. On the basis of this production, and assuming that all the fruit was utilized for juice processing, the returns per acre for fruit of trees on all the other stocks would have been at least \$250 more than for fruit of trees on Rough lemon stock. Actually these values would perhaps not be this high since—among other factors—only a part of the crop is used for juice by-products.

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which leaves 46¢ of the consumer's dollar for growers' costs.

There are significant differences among stores with respect to their spoilage loss, retail margin, and consumer price. These variations can be partly explained by differences in location, size, and type of store.

For carrots, possibly the most significant difference is the considerably lower retail price and retail margin prevailing at most cash-carry stores in the larger cities.

For celery, retail prices and retail margins are lower at cash-carry stores and in southern California. Spoilage losses are higher for these two categories.

For asparagus, retail prices and retail margins are lower and spoilage is higher at cash-carry stores and in northern California. In the large cities of the Central Valley, retail prices and especially spoilage losses are much higher in the large fruit and vegetable stores than they are in grocery stores.

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**Fruit Quality of Eureka Lemons Grown on Various Rootstocks (Riverside, California 1951\*)**

Rootstock	Per cent juice by weight <sup>1</sup>	Per cent soluble solids <sup>2</sup>	Per cent Citric acid <sup>3</sup>	Pounds citric acid/ton	Value per ton <sup>4</sup>	Ascorbic acid mg/100 ml juice <sup>5</sup>
Sweet orange . . . . .	41.56	8.76	5.77	47.96	\$87.63	46.46
Sour orange . . . . .	41.53	8.76	5.64	46.85	85.59	50.95
Rough lemon . . . . .	38.82	7.84	5.16	40.06	73.19	45.49
Grapefruit . . . . .	41.36	8.64	5.86	48.47	88.56	47.88
Samp. Tang. . . . .	42.10	8.81	5.86	49.34	90.15	48.54
Cleo. Mand. . . . .	41.40	8.54	5.71	47.27	86.37	46.87

\* Fruit sampled 1/3/51, 1/23/51, 2/15/51, and 3/12/51.

<sup>1</sup> Average 24 samples.

<sup>2</sup> Average 18 samples, corrected for temperature and titratable acidity.

<sup>3</sup> Average 18 samples, corrected for specific gravity.

<sup>4</sup> Computed at \$65 per ton for lemons containing 35.575 lbs. anhydrous citric acid per ton.

<sup>5</sup> 1/23/51 samples only.