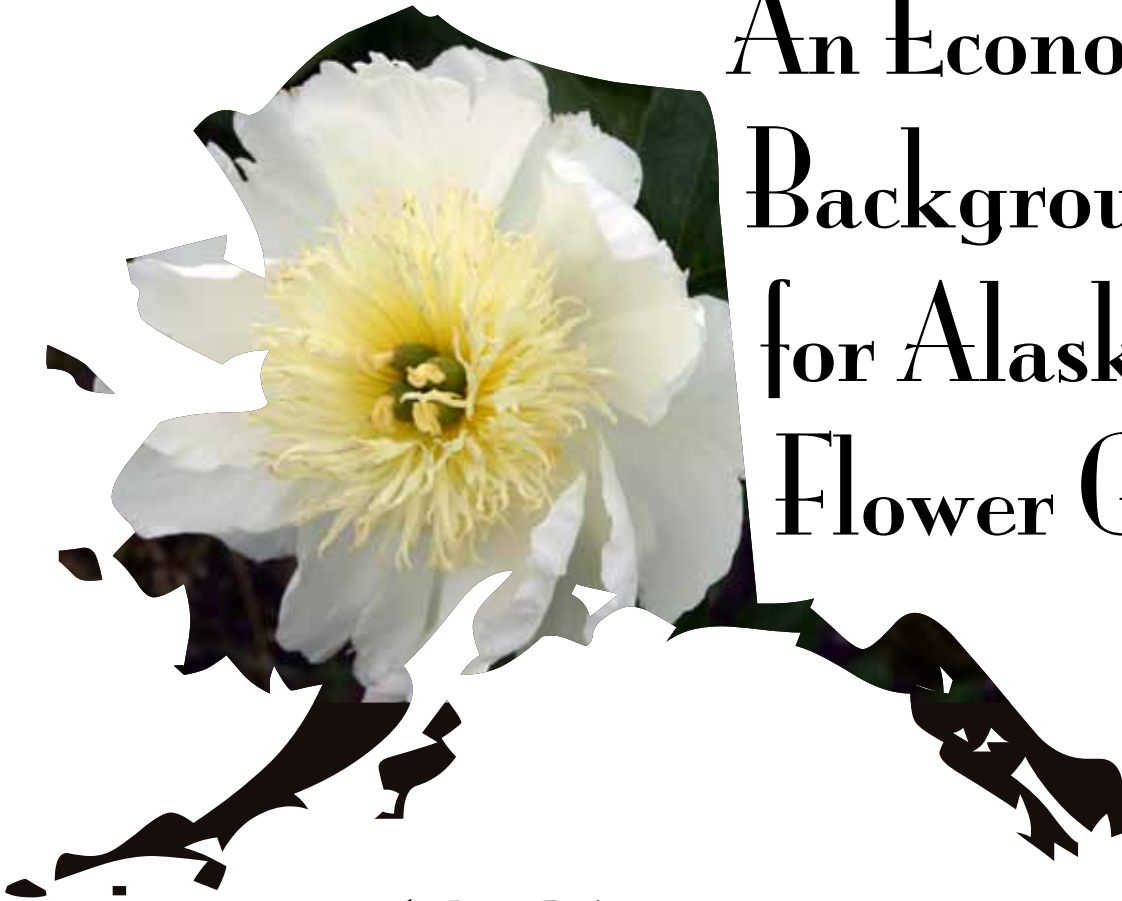


Peonies:

An Economic Background for Alaska Flower Growers



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Above: Cheddar Gold peony at
the Georgeson Botanical Garden.
Photo by James D. Auer

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1. Introduction to Alaska Peonies

Over the last several years there has been growing interest among Alaskans in the commercial production of cut flower herbaceous peonies (*Paeonia* sp.). Much of the interest in cut flower peonies can be traced to the Georgeson Botanical Garden (GBG) of the University of Alaska Fairbanks, where field trials ongoing since 2001 have shown that peonies grown in interior Alaska bloom at dates later in the year than in any other areas of the world where the flowers are currently produced on a large commercial scale. The timing at which Alaska grown peonies would reach market is when, historically, the flowers have been out of season. The cut flower industry on an international scale is very large and well integrated across the globe, and peonies are a popular flower within it. With many Alaska flower growers' fields quickly approaching maturity it is a necessity that Alaskans learn as much as they can about the industry they are entering. Knowledge of the cut flower as a whole and the peony industry within it is necessary to ensure that Alaskans reap the full benefits of the product they have to offer. This study provides an economic background of the cut flower and peony industries in the United States, as well as an overview of the current state and trends in the world and United States cut flower peony industry.

Presented here first is a brief description of the plants in the genus *Paeonia*, its cultivation, and use. Section two is an examination of the economics of the cut flower industry as a whole, how the industry came to its present state, how it operates world wide, and the current trends in the United States cut flower trade. Section three uses United States Department of Agriculture (USDA) data to examine the economics of the peony industry in the United States. Finally, general conclusions about the current status of the peony industry and Alaska's role therein are offered.

2. Peonies: The Flower

2.1. Description and History of Peonies

The name peony commemorates Paeon, a physician to the Greek gods, and mentioned by Homer (Halda, Waddick et al. 2004). Peonies are one of the oldest cultivated ornamental plants, dating back nearly 1,400 years in China (Dole and Wilkins 2005) where they are known as a symbol of prosperity, wealth, and sensuality (Goody 1993). Early records are of the flowers' medicinal use dating back to 200 B.C., although their specific use as a treatment is not known (Rogers 1995). However, Halda and Waddick et al. (2004) point out that the flowers are quite toxic and children and pets should not ingest any part

of them. In the United States Allan Rogers (1995) traces the origins of the peony industry to 1884, when Amasa Kennicott began selling the flowers to florists on Chicago street corners for a few pennies per stem.

Although peonies come in three general forms, the name generally refers to herbaceous (a.k.a. bush) varieties. The two major forms of the plant are herbaceous and tree, while the third form, known as Itoh or intersectional hybrids,¹ is a result of crosses between herbaceous and tree peonies. These Itoh hybrids take their name from Toichi Itoh who first successfully hybridized them in 1948 (Page 2005). Crossing the herbaceous and tree forms of peonies allows hybridizers to create plants taking the bush form of the more commercially popular herbaceous varieties, but in colors seen only in tree varieties². All three of these peony types are of the genus *Paeonia*, the only member of the *Paeoniaceae* family of value as an ornamental (Dole and Wilkins 2005). The focus of this study is on herbaceous peonies, which are the most popular commercially in the United States, and have been most extensively studied in Alaska. Thus the term peony in this work refers to herbaceous peonies unless otherwise specified.

Common modern herbaceous peony hybrids are largely the result of crosses between *P. lactiflora* and *P. officinalis* (Nau 1996). All forms of peonies are perennials, with herbaceous types blooming once per year, while tree and Itoh varieties potentially bloom twice in a season. In herbaceous varieties stems emerge in the spring with renewal buds originating on the crown. In the fall the plant's leaves senesce and die, and the plant enters dormancy. Herbaceous peonies are very long-lived, potentially producing flowers for thirty years or longer before it becomes necessary that roots be divided and replanted.

3.0 Cut Flower Economics

There are three key factors that, in concert, have shaped the face of the world cut flower industry: 1) the perishability of cut flowers, 2) the need for climates suitable for flower production, and 3) the search for inexpensive factors of production. Because the perishability of flowers necessitates that flowers travel quickly between grower and buyer, and good flower growing climates are often located far from major flower markets, transportation has been the key force shaping the cut flower industry. Thus, by following the history of advancements in popular modes of transportation, much of the current structure of the modern world floral industry can be understood.

Over the last century, flower growing operations have progressively moved farther and farther from their customers,

1. Itoh is the name formally recognized by the American Peony Society.

2. Such as yellow.



Shanon Pierce harvesting peony flowers at the Georgeson Botanical Garden, School of Natural Resources and Agricultural Sciences at the UAF campus. Photo by James D. Auer.

predominantly in the direction of the equator. The areas of the world where mass production of flowers takes place in today's market are both more suitable to the production of flowers, as well as having lower labor costs than where the industry had its beginnings. One further result of these shifts in location of flower production is the ability of flower growers to offer many cut flowers year-round, regardless of the flowers' natural growing season.³ The explanation for the structure of the peony industry is somewhat different from that of the cut flower industry as a whole, largely due to peonies' need for low winter temperatures to undertake their dormancy. This need for cool winter temperatures makes most areas of the world where major production of cut flowers takes place unsuitable for growing peonies. Further, because the bloom time of peonies is highly correlated with the temperature in the location in which they are grown, most areas where new peony production is initiated are selected based on their microclimate, which allows the grower to diversify the product based upon the timing at which that flower will reach market. Thus, when peony growers set up operations in New Zealand and Chile it allowed the growers to supply peonies to the Northern Hemisphere during the winter months, filling a major gap in the supply of the flowers during the Northern Hemisphere's winter. Alaska grown peonies, because of the cold

climate in which they are grown, will reach market at later dates in the peony marketing season than those flowers grown in other major production areas.

3.1 Transportation and Industrial Shifts

In the United States, the use of greenhouses for cut flower production has dated as far back as 1764 (Kaplan 1976). The industry began among the large population centers in the northeastern regions of the country. In the early development of the cut flower and greenhouse industries available modes of transportation technology did not permit growers to ship flowers long distances, so it was necessary that growing operations be located near their consumer base to avoid major losses of product in shipping. During this early period, most growing operations were small and flowers were subject to extreme seasonal variation in availability. Production expenses were high because the cold weather in the northeastern U.S. made it necessary that growers have heated, glass greenhouses. Further, locating cut flower operations near population centers meant higher land and labor costs for producers (Nelson 1995).

3. E.g., roses in February.

This situation of high production costs persisted until the beginning of the twentieth century when automobiles and trucks became the common mode of transportation. The availability of cheap personal transportation allowed flower growing operations to move to areas away from cities where factors of production were cheaper. Also, growers could supply larger areas by including smaller rural areas that had once been ignored. The result of this was an increase in size and centralization of cut flower growing operations (Nelson 1995).

By the 1950s, the intrastate highway system and refrigeration technology had evolved to the point where flowers could be safely shipped long distances by truck (Nelson 1995). However, the 1950s were also a period of change for the floral industry, with the emergence of airline transportation. This change created a shift in flower production to locations with climates more suited to growing flowers. Growing operations began to be located in Florida and California where land and labor were even cheaper than the more northern rural areas where flower growers had been located. The climates in these areas allowed flowers to be produced year-round with only the help of cheap plastic greenhouses, or hoopouses, as opposed to the expensive insulated glass greenhouses needed in more northerly climates. Another factor that hastened the movement westward was that at the time most air shipments to the west, after delivering their cargo, returned to the East Coast virtually empty, providing an inexpensive method of shipping product from west to east (Nelson 1995). During this period between 1950 and 1970, the number of flower growing operations dropped by half, and there was a shift in the type of flowers grown from specialty cuts (subject to seasonal availability) to major cuts (available in large quantities year-round) which made up over 80% of U.S. cut flowers by 1970 (Ziegler 2007).

In the early 1970s came the greatest change to the cut flower industry, when a group of investors set up a growing operation in Colombia, South America. The company, Flores Colombianas, growing mainly carnations for shipment to Miami, completely changed the cut flower industry. Colombia's location near the equator provided consistent levels of daylight, and its high elevations helped provide intense sunlight, making it ideal for growing most flowers (Ziegler 2007). Further motivating the shift were the labor and land costs, which were both lower than those of Florida and California. Following the success of Flores Colombianas, the 1970s and 1980s saw major exporters of flowers spread to northern South America and into Central America. Flowers from these regions quickly came to represent over half of flowers sold in the United States (Reid 2005). This change led United States flower growers to shift their production away from the major cuts they had largely adopted in the 1970s to more exotic, seasonal flowers. However, during the 1980s, in addition to the growing competition from Central and South America for major cut flowers, competition began to arise with exotic flowers from the Netherlands. This competition from the American equatorial countries and the Netherlands led U.S. growers to move largely away from the production of cut flowers,

shifting their focus to potted plants. Growing potted plants allowed growers to take advantage of governmental restrictions on importing products containing soil into the United States (Brumfield 1988).

3.2 World Markets

Internationally there is a high level of integration in the cut flower industry. A large part of this integration can be credited to the large auction houses of the Netherlands. These auctions serve a major role as clearinghouses for the world cut flower industry, and further they serve a large role in setting prices for cut flowers sold at all levels of the industry. Illustrating the role of these auctions, U.S. wholesalers and brokers interviewed for this study were all well informed of current flower prices in the Netherlands, and quick to point out that if prices for domestic flowers were to reach too high a level, flowers could be easily imported from the Netherlands.

Van Liemt (2000) grouped countries participating in the world cut flower industry into three basic categories defined by the role the country plays in the world market:

- ▶ **Net importers:** these are predominantly European countries where per capita consumption of cut flowers is very high when compared to the rest of the world. Most notable among these net importers is Germany where very large quantities of imported flowers are required to fill demand.
- ▶ **Net exporters:** These countries are large producers of flowers, but have little domestic demand. Consequently, flowers are produced almost entirely for export. Two prime examples of these countries are Colombia and Kenya.

Table 1. Per capita cut flower expenditure by country in 2005 U.S. dollars (NEHA 2005)

Country	Per Capita Cut Flower Consumption (2005)
Switzerland	\$51.70
Netherlands	\$33.00
Germany	\$20.90
United Kingdom	\$22.00
Italy	\$18.15
France	\$18.15
United States	\$14.30
Spain	\$10.45
Poland	\$3.85
Russia	\$1.65
China	\$0.14

- **Import/export neutral:** the two most major examples of these types of players in the industry are Japan and the United States, where flowers produced domestically fill a large amount of that country's demand, and while some trade does take place, exports are relatively minor.

The relations between these groups can largely be defined by geography, with South and Central American countries exporting the majority of their flowers to the United States, and African countries primarily supplying European flower buyers. The roles of countries are subject to constant change, with, for example, the U.S. transitioning to being a net importer, and new countries continually developing as exporters; China should be the most closely watched country in terms of developing exporters.

The role of countries in the cut flower industry can also be observed through the cut flower expenditure of a country (Table 1). As of 2005, the top six per capita flower consuming countries by expenditure were all in Europe, followed by the United States. The per capita flower expenditures in the United States were less than one quarter of the leading nation, Switzerland.

3.3 Cut Flower Trends in the United States

The analysis presented here is primarily derived from data available in the USDA's Floriculture and Nursery Crops Yearbook (Jerardo 2007), the definitive source of data on the

U.S. cut flower industry. Cut flower sales in the United States in 2006 were 3% less than in 2005, continuing a trend of declining sales since 2002 (Figure 1). In spite of the 3% decrease in total sales, the value of flowers sold at wholesale by large growing operations decreased by just short of 1% (Figure 2). In 2006 and 2007 there were only two countries to which more than \$1 million total value of cut flowers and bouquets (H.S. code 0603) were exported, Canada and Japan (Table 2). Of the cut flower and bouquet exports in 2006 over 93% in total value went to Canada. This large level trade with Canada can primarily be

Table 2. Total value of U.S. exports of cut flowers and buds for bouquets, etc. (HS code 0603) in 2006-2007 (TSE 2008).

Partner	Value (Million \$s)		% of total exports	
	2006	2007	2006	2007
Canada	43.00	70.00	93.89	94.66
Japan	1.41	1.15	3.08	1.56
Mexico	0.29	0.17	0.63	0.23
Colombia	0.25	0.51	0.55	0.69
Germany	0.13	0.25	0.28	0.34
All others	0.72	1.87	1.57	2.53
Total Exports	45.80	73.95	-	-

Figure 1. Total quantity of flowers sold at U.S. wholesale markets, 1997–2006 (Jerardo 2007).

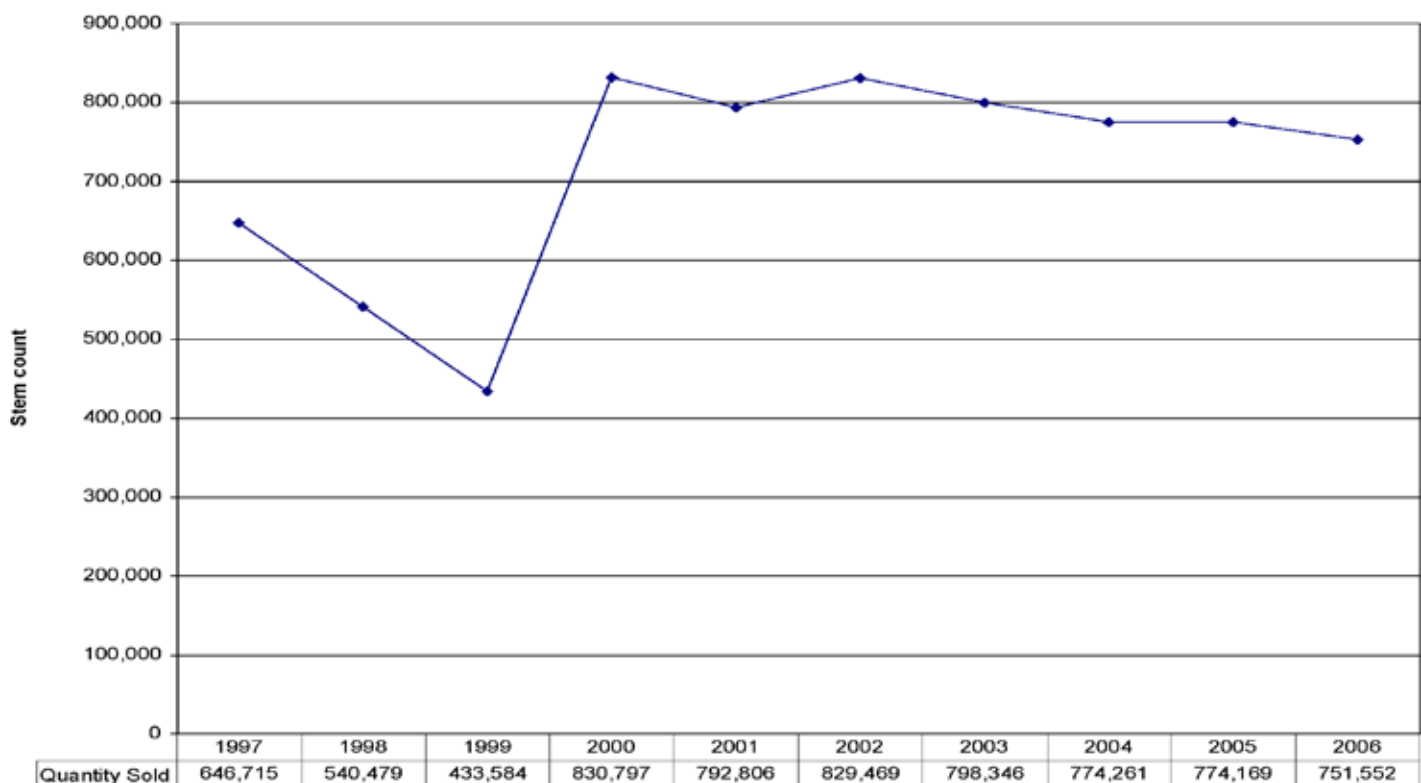


Figure 2. Total value (in thousands) of all cut flower sales at U.S. wholesale markets by large growers, 1997–2005 (Jerardo 2007).

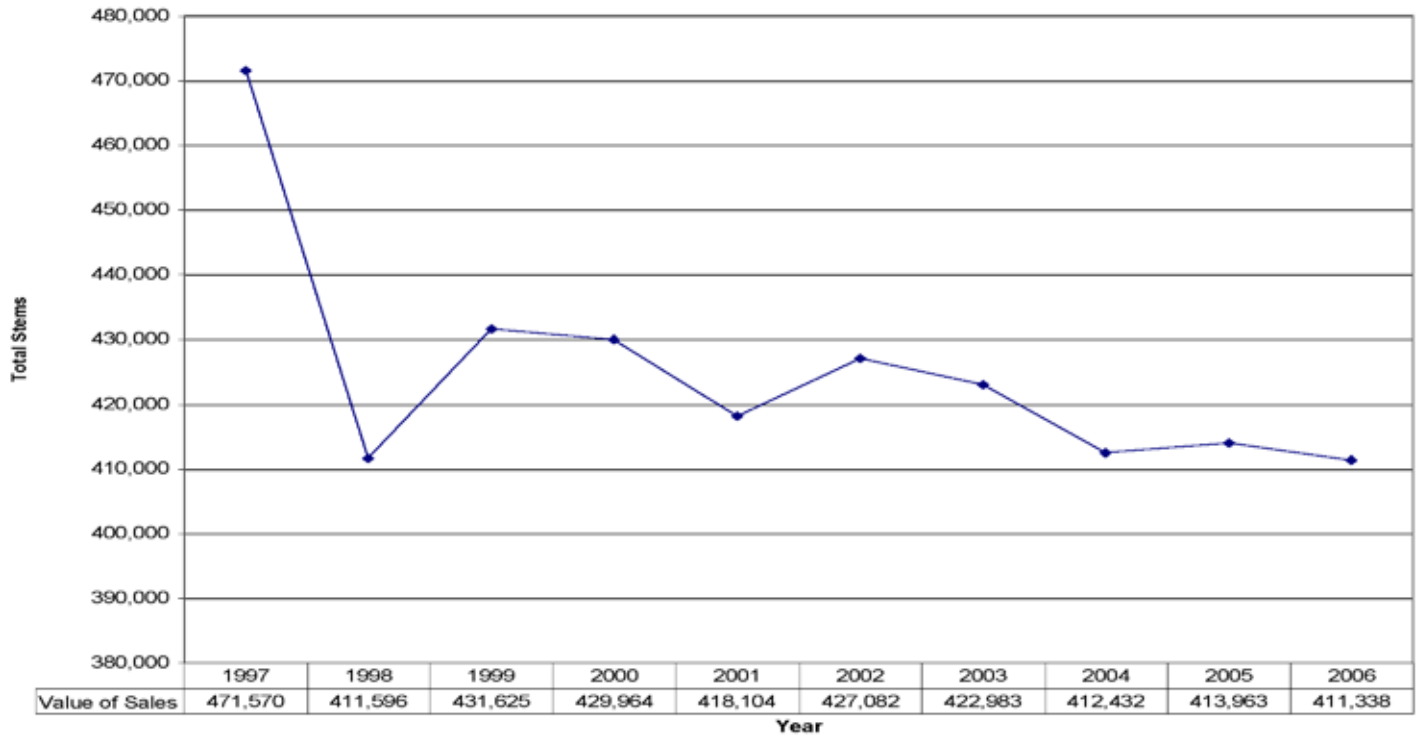


Figure 3. The United States in world cut flower trade during 2006. Red letters represent import, blue letters represent exports. (TSE 2008).



Table 3. Total value of U.S. imports of cut flowers and buds for bouquets, etc. (HS code 0603) in 2006-2007 (TSE 2008).

Partner	Value (Million \$s)		% of total	
	2006	2007	2006	2007
Colombia	418.35	507.70	54.47	61.06
Ecuador	141.41	145.19	18.41	17.46
Netherlands	72.57	69.19	9.45	8.32
Costa Rica	29.87	30.97	3.89	3.72
Mexico	21.60	23.03	2.81	2.77
Canada	14.28	16.17	1.86	1.94
Thailand	6.94	7.39	0.90	0.89
New Zealand	5.28	5.71	0.69	0.69
All other	57.76	26.07	7.52	3.14
Total Imports	768.06	831.42	-	-

viewed as a function of geography, and the fact that as of 1998 there have been no tariffs on cut flowers shipped across the border (Brunke 2002). In 2007, total exports of cut flowers and bouquets from the United States increased by nearly 60% from \$45.83 million in 2006 to \$73.95 million in total value (TSE

2008). Of this increase, 95% went to Canada (Table 2). The surprising increase in exports during 2007 is likely attributable to the declining position of the U.S. dollar relative to other major currencies that year, making the price of U.S.-produced flowers less expensive for foreign buyers.

Sixteen different countries supplied the U.S. with greater than a million dollars total value of flowers in 2006. Exporters to the United States were led by Colombia with over \$400 million total value (Table 3). In total, the United States imported nearly \$700 million more in total value of floral products than it exported in 2006; this gap widened to more than \$750 million in 2007 even though U.S. exports increased. Figure 3, which illustrates U.S. imports and exports during 2006, shows the importance of South and Central American flower production in supplying the United States.

4. Peony Economics

4.1. Peony Production Economics

Although not the focus of this thesis, there has been some research on the economics of the commercial production of peonies. The monetary values used in these works are certainly

Peonies at the test plots of the Georgeson Botanical Garden. Photo by James D. Auer.



dated, and not of direct use to Alaska growers, but they do provide information on the necessary inputs for flower production, and provide a general template for estimating production costs.

Sell (1993) considered the cost of production for a one-quarter-acre peony plot in North Dakota. Assuming 50% of funds are borrowed at a rate of 9.75% and an opportunity cost of 4% over a 15-year lifespan, he found the venture to be profitable.

Klingman (2002) completed a similar analysis to Sell's, with a focus on growing in Alaska. In her analysis she assumed that all operations are self-funded, and the lifespan of production at 25 years. Klingman finds that under these conditions a significant positive cash flow can be generated from a one-acre peony field in Alaska. Brumfield (1988) also examined the cost of producing cut flowers, but from a more general perspective than other works. Although the dollar figures used may be dated, the analysis is very thorough. The costs associated with hired labor are examined closely by Brumfield.

4.2 Roots Market

Herbaceous peonies, when sold as roots, are generally categorized based on three characteristics:

- ▷ **Bloom type**, with four commonly recognized forms: single, Japanese, semi-double, and double; some groups recognize a fifth bloom type as anemone or bomb but this is less common.
- ▷ **Bloom period**, classified as early, mid, or late. This is a classification of the relative time during

the growing season, of the given location, at which the flowers will bloom.

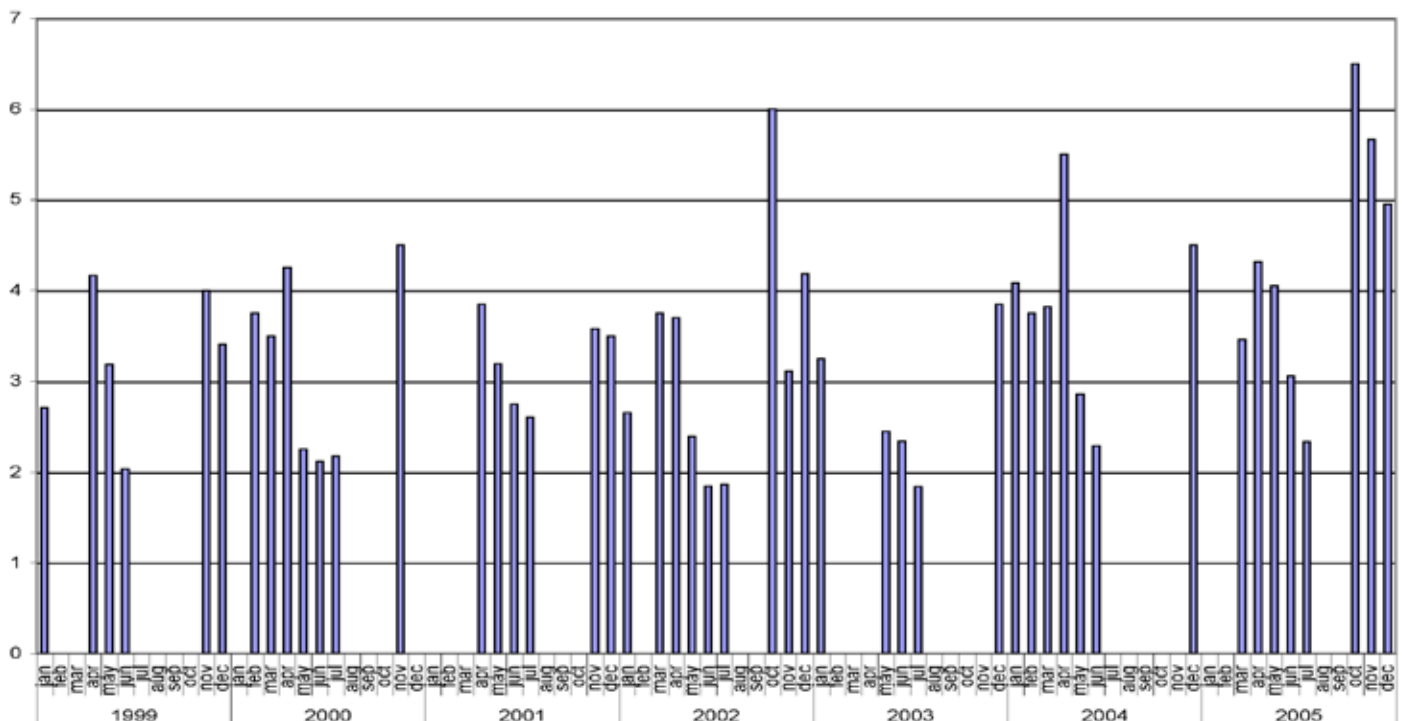
- ▷ **Cultivar name**, of which there are over 7,000 unique flowers recognized by the American Peony Society, only a few of which are available for purchase, and/or are suitable for use as cut flowers.

Root prices vary greatly among cultivars, largely as a function of how recently the blooms were hybridized. For instance, the Adelman Peony Gardens 2008 catalog offers cultivars Sarah Bernhardt and Duchess De Nemours, both old, popular varieties, for \$12 and \$18 per root, respectively, whereas the cultivars Hillary and Morning Lilac, both Itoh varieties and first made available for sale in 1999, sell for \$150 and \$120, respectively. The explanation for why these recently hybridized cultivars sell at such relatively high prices has largely to do with the supply of the root stock. When a new cultivar is hybridized and deemed worthwhile for production, new plants are created by separating and replanting the roots of the originally hybridized plants. Because it takes several years for roots to grow large enough to split, it takes a very long time to increase the stocks of roots for new cultivars.

4.3 Peony Seasonality

In the cut flower industry, flowers are often categorized as either major cuts or specialty cuts. Major cuts are flower varieties that are available in large quantities year-round. Peonies are

Figure 4. Average monthly price (in USD) of peonies sold as single stems at U.S. wholesale markets 1999–2005 (USDA 2007).



considered a specialty cut, meaning they are subject to seasonal availability and large fluctuations in quantities available to consumers. Peony supplies and prices follow a regular intra-year pattern; this stems from the production season in the major peony-producing regions of the world, and the respective quantities those regions produce. In the course of a year there are essentially two marketing seasons for peonies, that of the Southern Hemisphere and that of the Northern Hemisphere. The marketing season for the Southern Hemisphere begins in late September or early October, with flowers coming from New Zealand and Australia. The season lasts through January, with flowers primarily coming from South American countries. The marketing season for the Northern Hemisphere begins in April, with production from California and Israel, lasting into mid-July. These two marketing seasons, to a degree, mirror each other in prices with the highest prices seen at the beginning of the season, then declining with average prices reaching their lowest point at the end of the marketing season. Figure 4 illustrates this point, showing the average price of all peonies sold as single stems at U.S. wholesale markets in Boston and San Francisco between the years 1999 and 2005. Between the two marketing seasons for peonies the quantity of flowers available, much like prices, follows similar trends. In the Northern Hemisphere peony supplies peak in June, while peony supplies from the Southern Hemisphere peak in December. Figure 5 illustrates this, displaying the average count of price observations at U.S. wholesale markets in San Francisco and Boston. From this data it



Peonies in bunches of ten, prepared for shipping in boxes. Photo by James D. Auer.

Figure 5. Average box counts by month at U.S. wholesale markets 1999-2005 (USDA 2007).

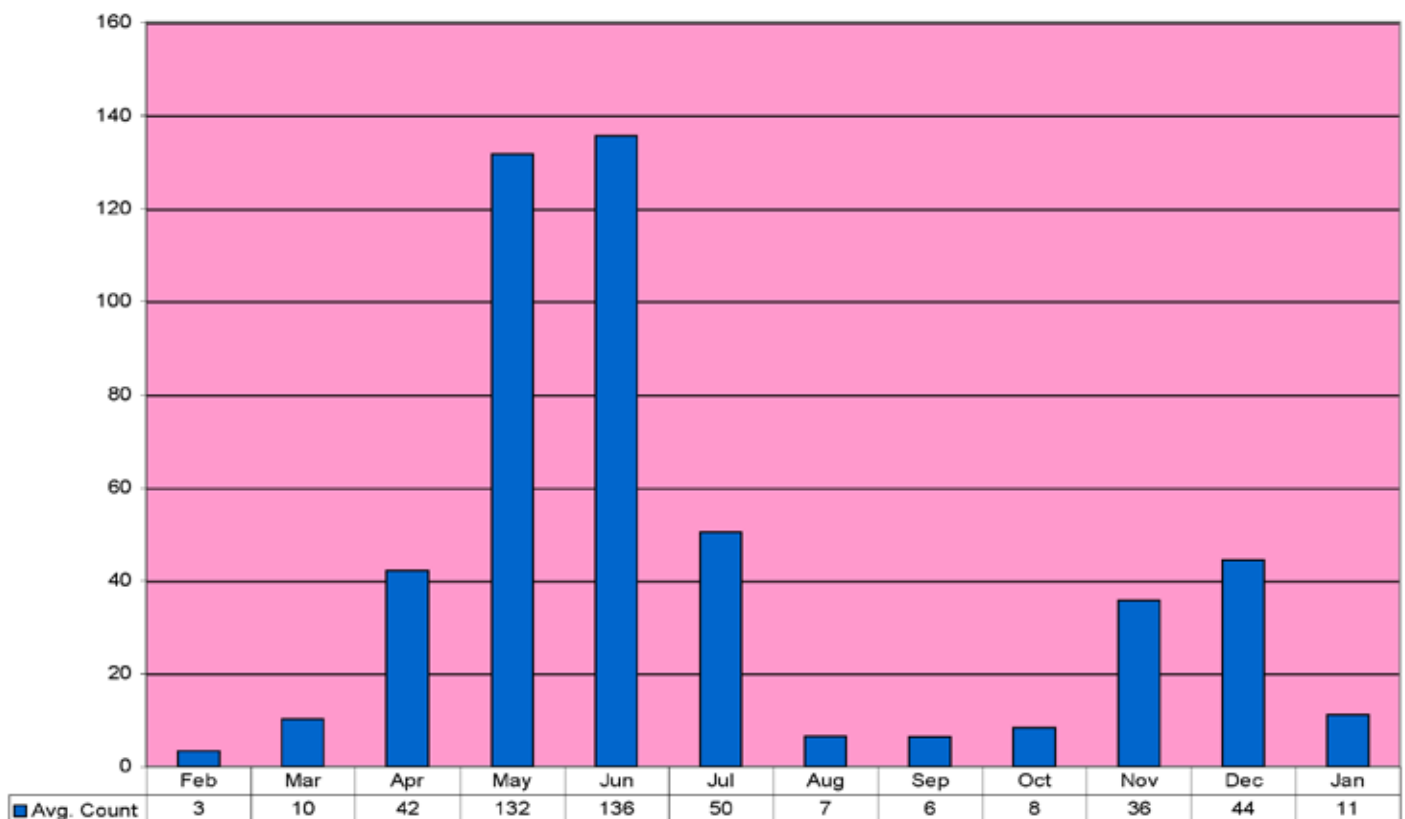
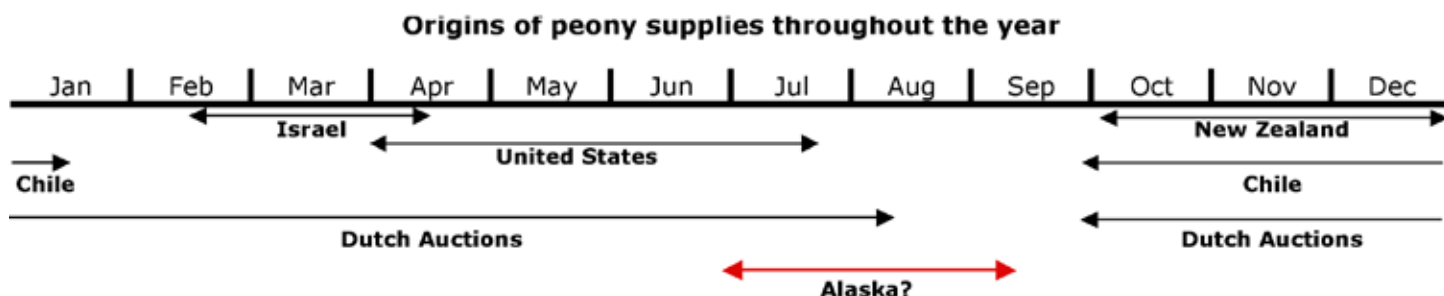


Figure 6. Origin of peonies cut for commercial sale throughout the year (collected through interviews with peony growers and sellers).



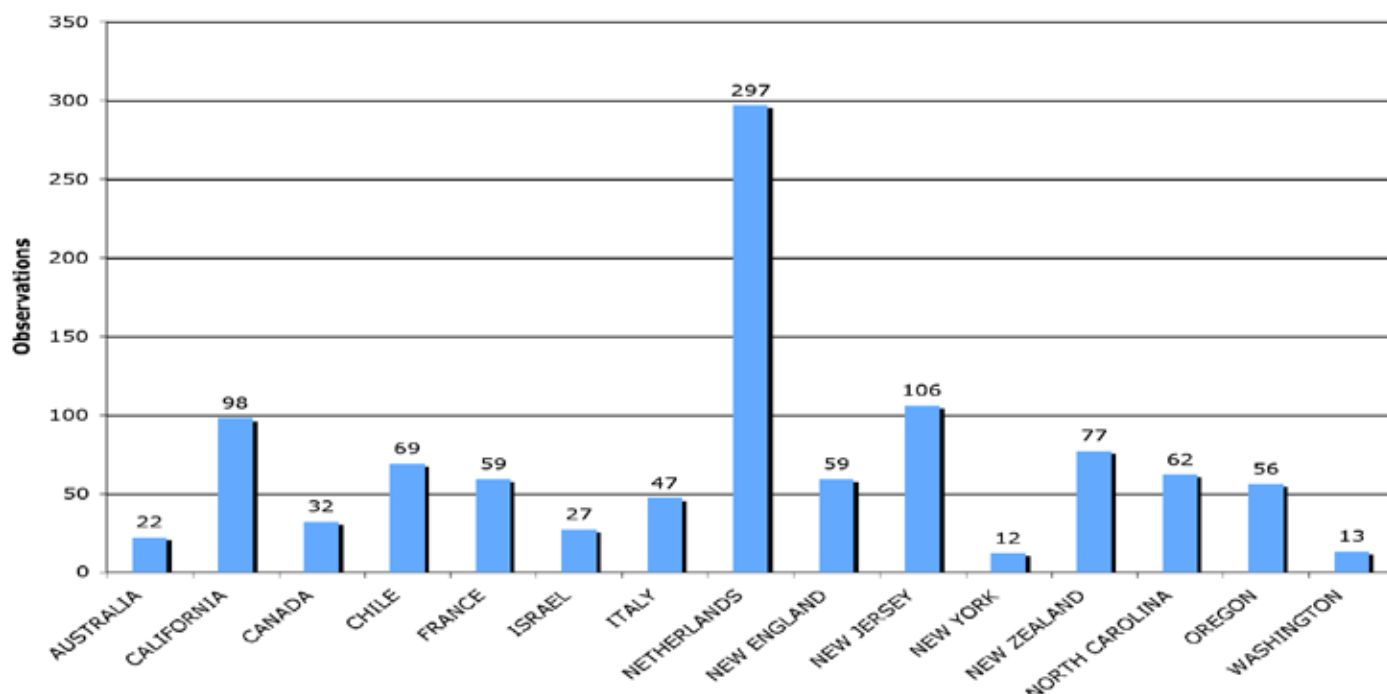
can be seen that there are two distinct peaks in supplies available to consumers.

Peonies grown in the United States are available in markets beginning in April, when flower growers in California force plants into early bloom through the use of greenhouses, hoop houses, or transportable flower pots, through mid-July when the harvest season ends for the North Central areas of the United States. Flowers that are available in or after mid-July have with rare exception been held in cold storage to make them available at these late dates. These stored blooms often diminish in quality over the time they are stored, especially in terms of vase life, incidence of mold, and disease. Once all of these stored blooms have been sold, few flowers are available until late September when major suppliers from the Southern Hemisphere begin harvesting flowers. Figure 6 provides an approximate yearly timeline, based on interviews with members of the peony

industry, of where peony supplies originate throughout the year. There are no readily available data on production of peonies by individual countries, however. Figure 7 shows the average count of price observations at U.S. wholesale markets broken down by country, or state when in the U.S., for flowers sold as single stems. Figures 6 and 7 illustrate the prominence of the Dutch floral industry. However, it should be noted that this does not necessarily, nor likely, represent production solely from Dutch growers. Rather the Dutch prominence is better interpreted as representing production from growers across the globe who sell flowers through the large auction houses in the Netherlands to world markets.

In trial plots at the GBG the average date when peonies first emerge from bud is June 17 (Holloway, Hanscom et al. 2005). Early blooms from the GBG do overlap production in northern areas of the United States, such as Michigan and Wisconsin.

Figure 7. Total count of observations, each representing a vendor selling peonies in U.S. wholesale markets in Boston and San Francisco, by country or state 1999–2005 (USDA 2007).



However, when Lower 48 production begins to decline in July, flowers at the GBG are just reaching peak production. It is also worth noting that by Alaska standards peonies grown at the GBG bloom very early in the year. Southern areas of Alaska outside of its interior, where year-round temperatures are moderated by their proximity to the ocean, are currently producing peonies on an increasing scale as late as mid-August. Further, with the proper use of cold storage, Alaska grown cut flower peonies have the potential to fill entirely the flowers' off-season between mid-July and September.

4.4. Price and Quantity Trends in Peonies

By and large, there are no published statistics for individual varieties of specialty cut flowers; this is the case with peonies. The statistics presented here are based upon data gleaned from the USDA's Agricultural Marketing Service Terminal Market commodity Report: Peonies (USDA 2007). The USDA compiles data from select wholesale markets as well as from phone interviews with large flower producers. The two largest markets included in this dataset are Boston and San Francisco. These markets represent an intermediary step in the marketing chain. Wholesale florists, who buy flowers from growers, sell flowers in these markets to retail businesses and other final market destinations.

Between 1999 and 2005 peonies showed an increasing trend in terms of real prices. Figure 8 shows the yearly average of price per stem, in December 2005 dollars, of peonies sold in United States wholesale markets in bunches of fives and tens. The price for peonies in bunched tens increased from \$1.89 to \$2.70 per stem between 1999 and 2005, while the price of flowers in bunches of five increased from \$2.50 to \$4.41 per stem over the same period. Figure 9 shows the count of price observations, each representing a seller carrying a unique type of flower, from



Stems of Alaska-grown peonies hydrating in buckets prior to sale. Photo by James D. Auer.

Figure 8. Average per-stem price of peonies sold in U.S. wholesale markets as bunches of five and ten from 1999 through 2005 in December 2005 dollars (USDA 2007).

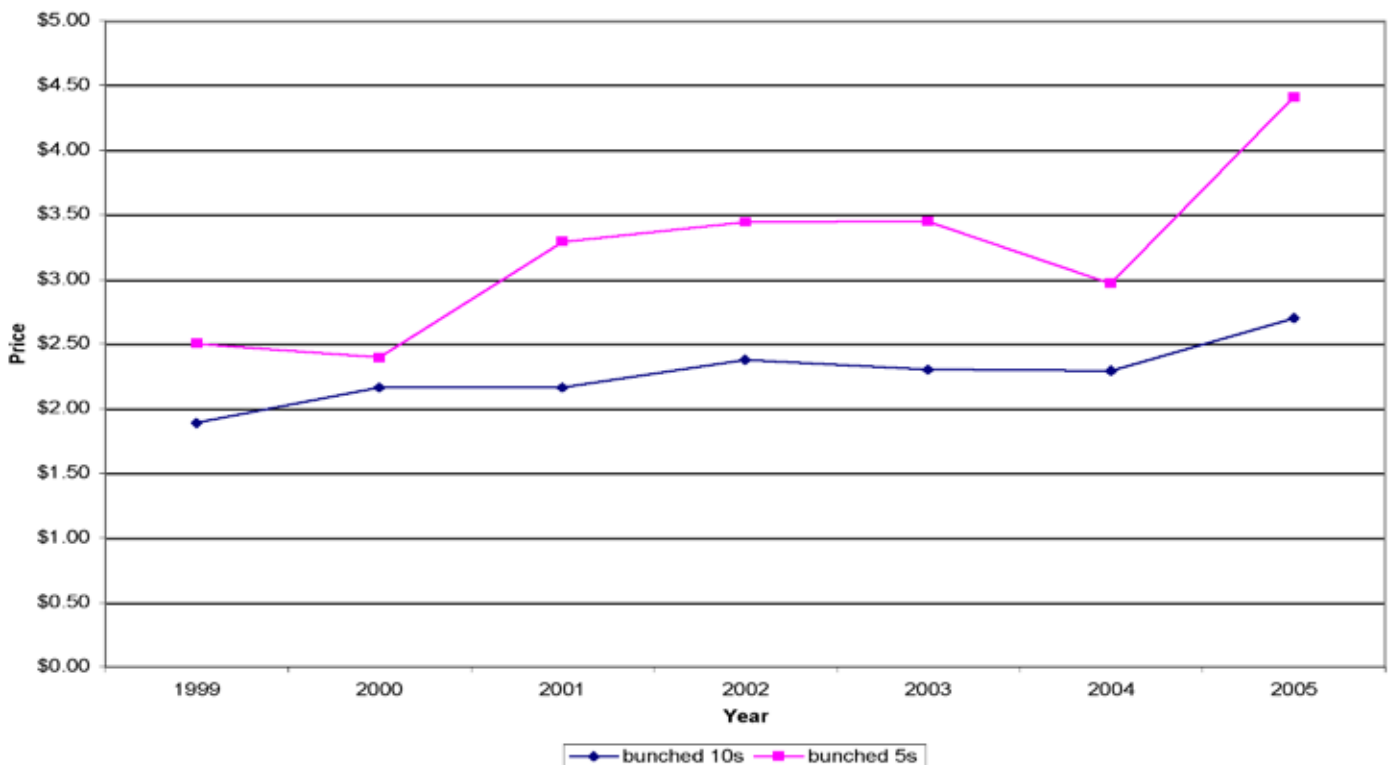
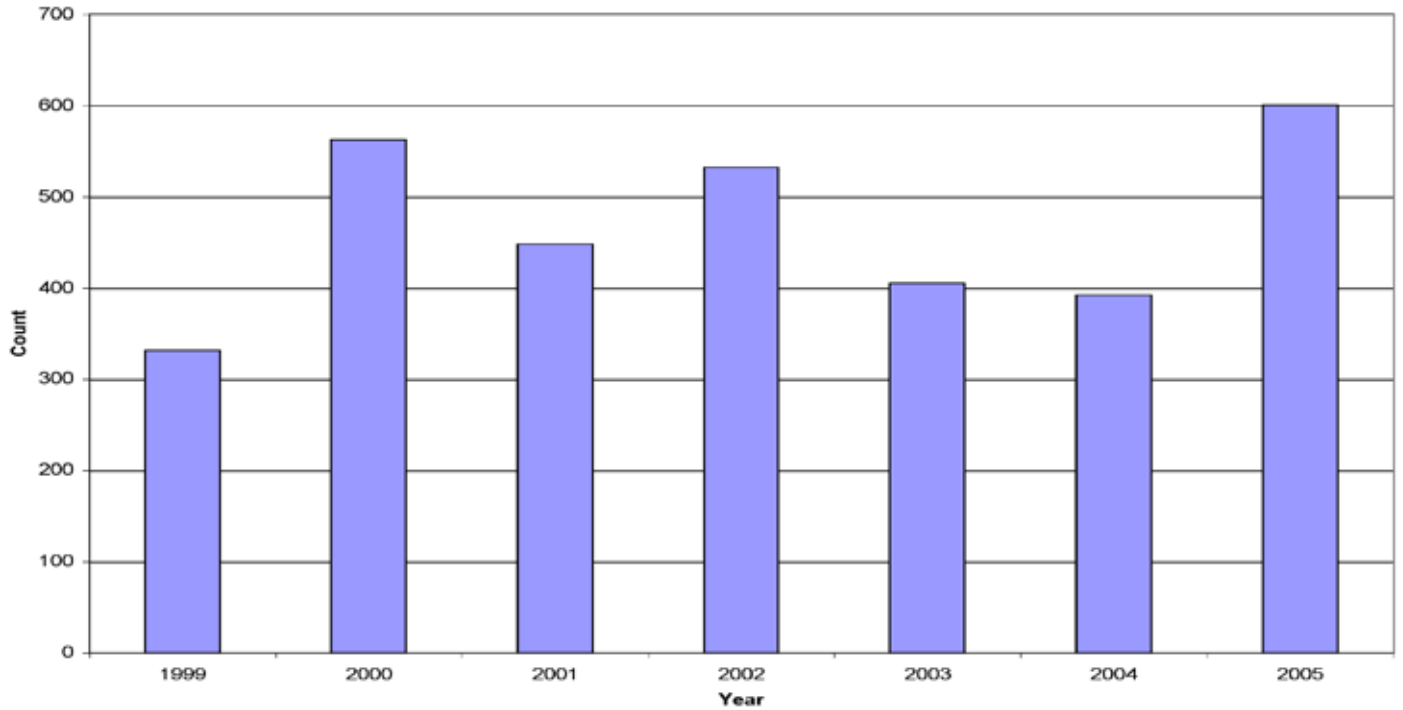


Figure 9. Count of observations for peonies in all package sizes at U.S. wholesale markets in Boston and San Francisco 1999–2005 (USDA 2007).



Peony Karl Rosenfeld at the Georgeson Botanical Garden testing plots. Photo by James D. Auer.



5. Conclusions

In the modern cut flower industry, trade takes place in nearly every country of the world. This high degree of geographic diversity in the cut flower industry can be credited to two factors: the constant search by flower producers for areas of the world where weather conditions are better suited for growing flowers, and the costs of production are low. As a result of working to optimize these two factors history has seen the regions where major cut flower production takes place shift steadily in the direction of the equator. The primary factor facilitating the movement of cut flower operation to more remote regions, farther from areas of high cut flower consumption, has been the improvement of available modes of transportation. The peony industry has seen the areas where major production takes place change throughout time, but not in the same way as the rest of the cut flower industry. Because peonies need cold winter temperatures to undergo dormancy, locations near the equator by and large do not work for the production of the flowers. This has led peony producers to locate their operations in areas of the world not usually thought of for the production of cut flowers. Further, beyond the usual factors contributing to the motivation of flower producers to relocate, peony growers seek out new regions of the world for their farms to affect the time at which peonies bloom. Because the bloom time of peonies is highly correlated with the microclimate in which the flowers are grown, flowers produced in differing climates provide blooms at different times throughout the year. So, by finding areas of the world with unique climates peony growers can diversify their product in terms of the timing at which the flowers reach their harvest stage. In today's industry peony production now comes from many countries, including Israel, New Zealand, Chile, the Netherlands, and the United States.

In terms of the United States cut flower industry as a whole current trends show decreasing flower production. However, the total value of stems sold has increased in recent years suggesting that flower growers in the United States are moving production toward higher value cuts. In 2006 and 2007 Canada and Japan were the only countries to which more than \$1 million total value of U.S. grown cut flowers were exported. Between the years 2006 and 2007 a large increase in the total value of cut flowers exported from the United States to Canada was seen; this is, as mentioned above, possibly due to the decreasing position of the dollar relative to other world currencies. Over the last several years cut flower peonies have shown an increasing trend in per stem prices, but no discernible trend can be found in quantities sold based upon the analyzed data. The data collected for this study clearly shows that a niche does exist in the peony market for flowers grown in Alaska. With the unique timing of their blooms Alaska flower growers will be able to provide a product never seen at this season by the cut flower industry.

U.S. wholesale markets in Boston and San Francisco from 1999 to 2005. Because each observation represents an individual seller with peonies available, this is taken as a representation of the quantity of stems available, although nothing can be said of the quantities available from each of these sellers. No definitive trend is visible in this data; however, it can be noted that the count of observations reaches its highest point at the end of observed data in 2005. This high point in observation counts during 2005, combined with the prices being at their highest in the same period, may be an indication of peonies increasing in popularity.

4.5. International Competition

Competition for Alaska peonies could come from a number of areas around the globe at similar latitude to Alaska. The most direct competition may likely be from areas of northern Canada where, although not on a mass scale, peonies are already being produced. The primary barrier to Canadian or other foreign growers in competing directly with Alaskans for United States market share is the additional cost that must be incurred for flowers to meet the phytosanitary standards required for flowers to cross the border. To meet these standards flowers must be fumigated to remove all pests, as well as thoroughly cleaned to remove any soil, both adding significantly to the cost of flower export to the U.S. Other countries where competition for Alaska peony growers could originate are mainland China and Russia. Neither of these are large producers at present but, especially in China, their industries are expanding rapidly. However, given China and Russia's relative proximity to the large per capita flower consuming economies of Europe, and the currently high relative value of Euros to United States dollars, Chinese and Russian growers may be more apt to focus their marketing on Europe.

Peony Gay Paree at the Georgeson Botanical Garden testing plots. Photo by James D. Auer.





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Some of the many varieties of peony grown at the Georgeson Botanical Garden.

Opposite: top, Largo peony; bottom, Orlando Roberts peony.

Below: Solange.

Back cover, clockwise from top: Cheddar Gold, Felix Crouse, and Early Scout peonies.

Photos by James D. Auer





Other publications from the Agricultural and Forestry Experiment Station about peonies:

- **An Introduction to Harvesting and Selling Alaska Cut Flower Peonies**, by James D. Auer and Patricia S. Holloway
- **Peony—A Future Crop for Alaska?** by Doreen Fitzgerald
- **Production and Transportation Considerations in the Export of Peonies from Fairbanks, Alaska**, by Marie Klingman
- **Research Progress Report #44 - Peonies for Field Cut Flower Production**, by Patricia S. Holloway, Janice T. Hanscom, and Grant E.M. Matheke
- **Research Progress Report #43 - Peonies for Field Cut Flower Production Second-Year Growth**, by Patricia S. Holloway, Janice T. Hanscom and Grant E.M. Matheke



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