THE NURSERY INDUSTRY OF SAN DIEGO COUNTY, CALIFORNIA

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San Diego County covers approximately 4,255 square miles, and nearly 51 percent of this area is owned by federal, state, or county government. The remaining land held by private ownership is nearly the size of the state of Delaware. It would appear that in this vast amount of space there would be plenty of room for greenhouses, growing grounds and shade houses. However, much of the area is undesirable for nurseries, and there is high competition for the desirable area.

Desert Area — In the desert area during the months from May through September, the temperatures are frequently over 100°F., and humidity is very low. These high temperatures are too hot for propagation of many ornamentals. The area is rather isolated from the market and lacks a good means of transportation. Desert palms and ornamental olive trees are raised in Borrego Springs. One would think that cactus and other succulents would be raised in an area where they grow naturally, but most of the cactus nurseries are located over the mountains, west of the desert, in a strip of land 7 to 15 miles from the ocean. This area has warm, sunny days most of the year, but not the extreme heat of the desert.

Mountain Area — The high mountains have too short a growing season for most ornamentals and the late spring frost has wiped out crops. A few nurseries raise cold hardy conifers and deciduous trees and shrubs in these high elevations.

Brush and Rock Land — Another large area is occupied by brush that exists on steep, rocky slopes or mesas. Plants growing are not lush in the area because of the low rainfall and the porous and rocky soils which permit the water to escape the plant roots. This land will probably never be used for horticulture because of the high cost of importing water to this isolated area.

Marine and Coastal Zone — This zone, approximately 25 miles wide, is ideal for propagation of plants. The western end, adjacent to the ocean, is covered by low clouds part of the day, while further inland the days are usually sunny and warm, even during the winter. The plant propagators near the coast may raise plants that do well in a cool, cloudy climate, or move inland and raise plants that do best in the sunshine. This zone also has metropolitan water, natural gas, readily available supplies, good transportation and labor supply. However, this area has one major drawback — the competition for space. People also like the climate. Many industries have moved to San Diego because of its

climate and available labor, and more people move to San Diego because of the available work and the climate. Those who have fairly level land have no problem of finding buyers who wish to develop the land for housing projects or industry. The agriculture industry offers no real competition for land use; the developers have too much money and can affort to pay high prices and taxes for land. The agricultural industry simply moves to a site where it would be too costly for the land developer to construct houses or factories.

The avocado and citrus is being grown on extremely steep and rocky slopes in this marine-coastal zone. The cost of establishing such an orchard is high, but is far cheaper than the huge cost and taxes of land more level near urban areas. The nurseryman cannot operate a nursery on such steep, rocky land; instead, he must buy expensive land that is more level.

San Diego nurserymen produce a wide range of ornamental plants, from azaleas to zygocactus. Table 1 gives the dollar value of nursery crops in San Diego County:

Table 1. Nursery products and market flowers: acres, sales and value.

Item	Year	Acres	Quantity Sold	Unit	Total Value
Citrus & Subtropical Fruit Trees	1973	110	414,000	Plant	$ 1,405,000
	1972	110	479,000	Plant	$ 1,607,000
Ornamental Trees & Shrubs	1973	510	6,448,000	Plant	6,975,000
	1972	350	4,550,000	Plant	5,086,000
Bedding Plants	1973	60	(a)	xx	5,811,000
	1972	50	(a)	xx	2,637,000
Herbaceous Perennials	1973	60	(a)	Plant	454,000
	1972	65	(a)	Plant	358,000
Cactus & Succulents	1973	30	(a)	xx	1,033,000
	1972	27	(a)	xx	788,000
Bulbs, Corms, Rhizomes, Roots, Tubers	1973	xx	xx	xx	788,000
	1972	xx	xx	xx	723,000
Subtotal, Nursery Stock	1973	(770)	xx	xx	(16,664,000)
	1972	(602)	xx	xx	(11,199,000)

Some growers' entire production is shipped to other states or countries. Other growers depend entirely on local sales. The size of nurseries range from ¼ acre to 150 acres. Some nurserymen specialize in growing only one kind of plant, but the trend is in diversification.

Who is in This Industry? — Old, established nurseries. The operators of these nurseries were in business before San Diego became so densely populated. The nursery is usually located in the

heart of the city. The land value has increased and taxes are very high. Many of these nurseries have expanded their operation into multi-purpose sales — florist, landscaping, tropical fish, and other items the modern household uses. Some of these nurseries have sold part of their valuable land and established a new growing grounds in a rural area.

Relocation of Nurseries From Other Counties — Many nurseries in Los Angeles and Orange Counties have relocated in San Diego County because of the pressure of urbanization, and were able to sell their property at very high prices. Usually these nurseries maintain sales offices or a holding area in Los Angeles or Orange County.

Outside Capital — Other industries or businesses apparently have a surplus of money and have invested in the nursery industry. Sometimes they purchase a nursery and retain the management, or buy land and hire experienced nursery personnel to manage the operation.

A Change of Profession — This group is represented by professional people such as electrical and aerospace engineers and others who are discontented with their profession and wish to start a new career. These people go to horticulture classes, read the literature, and work in a nursery to gain experience.

A Second Business — This group of people is represented by engineers, doctors, lawyers, and businessmen who have not given up their profession, but wish to invest in another enterprise. Usually these people do not attend horticulture classes, but will read the literature. These people usually do not hire professional horticulturists with experience or schooling, but like nursery work and are willing to learn horticulture.

Retired People — Retired business people, craftsmen, and military personnel want a task to occupy their time. They soon grow tired of fishing and golfing. Often they invest most of their capital in the business. They lack the energy and drive they once had. Profit return is slow, and frequently their savings disappear and they borrow. The outside income isn't enough to support their business and home. The professional person who changed careers can go back to work in his profession if the business is doing badly, but a retired person finds his age is handicap in returning to work.

The Young Set — This is a courageous group. They have tremendous drive to work and much enthusiasm. The young set has very little capital and often the wife or husband works at another job. This group is often very well educated in non-horticulture, but know how to find out what they need to know.

The Schools — Three community colleges offer courses in horticulture, and two of these schools give a degree in ornamental horticulture. Some of these people continue their education by at-

tending the University of California or California Polytechnique Institute. Several graduate from these schools and are now working in the horticulture industry of San Diego County.

MODERATOR WEIDNER: Thank you, Jim. I would now like to introduce Chuck Klein, Horticulturist at Sea World, which you will visit on your tour tomorrow.

LANDSCAPE HORTICULTURE PROBLEMS AT SEA WORLD

CHARLES L. KLINE[1]

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Coming from a background of botanical work, retail nursery, and landscape contracting, I have found many of the problems and challenges at Sea World to be unique.

Sea World is a marine-oriented park which entertains approximately two million people every year in its San Diego operation. We also have a park in Ohio and one in Florida. Both our Florida and San Diego parks operate 365 days of the year and are often open for night parties and special events.

The entire San Diego Mission Bay area is built on a reclaimed estuary. Dumping of every sort of material has gone into the creation of the land area that Sea World is on, although the major part of the fill came from mud that was pumped out to create the land areas. As the years have gone by, most of the salts have leached out of the soil leaving mostly a sand base requiring constant fertilizing. We do have a few large areas where a clay layer exists that is impervious to water. On top of these areas has been pumped bay fill that is rich in organic material, and on top of this we have topsoil and plantings. Anaerobic bacteria have started growing in some of these areas. We have consulted with the experts, we've drilled holes and put in drainage to no avail, but the bacteria keep spreading, producing noxious odors, and killing plants.

Even though I still enjoy finding new plants to add to our Sea World plantings, now numbering over 400 species, I have learned

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[1] Park Horticulturist