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International Agricultural Trade and Policy Center

**GROWER PERSPECTIVES ON THE POTENTIAL IMPACT OF
EXPANDED INTERNATIONAL TRADE OF SELECTED
PLANTS IN THE U.S. NURSERY INDUSTRY**

By

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**GROWER PERSPECTIVES ON THE POTENTIAL IMPACT
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EXPANDED INTERNATIONAL TRADE OF SELECTED PLANTS
IN THE U.S. NURSERY INDUSTRY**

Sponsors

California Association of Nurseries & Garden Centers; Florida Nursery, Growers and Landscape Association; Hawaii Export Nursery Association; Texas Nursery & Landscape Association

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EXECUTIVE SUMMARY

The floriculture and environmental-horticulture sector, encompassing nursery plants such as trees, shrubs, ground covers, vines and fruit and nut plants, as well as bulbs, sod (turfgrass), and unfinished plants and propagative materials, ranks as the second-most important segment of US agriculture. To guard against the possibility of the influx of exotic pests and diseases that may evade inspection, plant quarantine regulation Q-37 is a longstanding federal quarantine procedure that regulates the importation of nursery stock, plants, roots, bulbs, seeds and other plant products. With only few exceptions, it prohibits the importation of plants established in soil or growing media.

The Government of Mexico requested a relaxation of quarantine regulation **Q-37** to allow up to ten plant genera in growing media to be exported to the U.S. The request calls for allowing shipment of plants in soil related to the following ten plant genera and families:

Bougainvillea (Nyctaginaceae)

Ficus (Moraceae)

Codiaeum (Euphorbiaceae)

Lantana (Verbenaceae)

Dipladenia (Apocynaceae)

Mandevilla (Apocynaceae)

Dracaena (Agavaceae)

Pelargonium (Geraniaceae)

Euphorbia pulcherrima (Euphorbiaceae)

Scindapsus aureus (Araceae)

A survey, developed by researchers of the University of Florida and supported by producers' associations of the industry, was conducted among producers of the major producing states to characterize the industry. The survey was intended to provide a preliminary assessment of the potential economic impact of any possible relaxation of the federal quarantine regulation Q-37 on the trade in selected nursery plants imported from Mexico

Taking into consideration the survey data and the supplementary comments provided by respondents, it can be concluded that the industry is very competitive with competitor firms being located mainly within a local radius of 50 miles or within the state. This suggests that any relaxation of the **Q-37** could lead to even greater competition and possibly economic losses for some firms. No one market channel appears to be dominant with distribution being spread relatively evenly among retailers, landscape contractors/government agencies, and wholesalers. Demand is greater during the first half of the year than during the latter period. General competition was a major concern for all producers and, in this regard, market share expansion was seen as a significant constraint by all categories of firms.

Any relaxation of the Q-37 will trigger concerns for the impacts of three issues, namely: the impact of exotic pests/diseases on competition, competition from Mexican firms or competition from US-based firms established in Mexico, with plant health issues being of paramount concern when the prospect of any relaxation of Q-37 is considered.

It could be concluded that the relaxation of the Q-37 quarantine rule for shipment of live plants in growing media will have significant impacts on U.S. growers. The highly competitive nature of the producers for the plant genera identified in the proposed relaxation of Q-37 indicates that U.S. growers will suffer from the increase in competition this will cause.

In addition to the increase in competition that is expected from relaxation of Q-37, growers also expressed concerns over the introduction of pests and diseases that could result. Baron (2003) suggests that this concern may be misplaced, but his work is limited to only those pests and diseases associated with these plant genera identified in the literature. Other invasive pests and diseases that could be associated with the 10 plant genera could pose additional problems for the growers of these plants and other plants in the U.S.

Background

The Economic Research Service (ERS) of the United States Department of Agriculture (USDA) indicates that the United States is the world's largest producer of greenhouse and nursery crops, with net farm income for growers being among the highest of all specialty crops. When assessed by total economic output or the value of the industry and its business activities, the floriculture and environmental-horticulture sector ranks as the second-most-important segment of US agriculture. In this context, environmental horticulture includes nursery plants such as trees, shrubs, ground covers, vines and fruit and nut plants, as well as bulbs, sod (turfgrass), and unfinished plants and propagative materials.

Plant quarantine regulation Q-37 is a longstanding federal quarantine procedure that regulates the importation of nursery stock, plants, roots, bulbs, seeds and other plant products. With only few exceptions, it prohibits the importation of plants established in soil or growing media. This is because of the possibility of hidden pests and diseases that may evade inspection and the risks those pests may pose not only to nursery crop production, but to production of other agricultural crops, landscapes and natural areas. The Government of Mexico requested a relaxation of quarantine regulation **Q-37** to allow up to ten plant genera in growing media to be exported to the U.S. The current regulations only allow entry into the U.S. of plants from foreign countries such as Mexico, free of soil. The request calls for allowing shipment of plants in soil related to the following ten plant genera and families:

Bougainvillea (Nyctaginaceae)

Ficus (Moraceae)

Codiaeum (Euphorbiaceae)

Lantana (Verbenaceae)

Dipladenia (Apocynaceae)

Mandevilla (Apocynaceae)

Dracaena (Agavaceae)

Pelargonium (Geraniaceae)

Euphorbia pulcherrima (Euphorbiaceae)

Scindapsus aureus (Araceae)

In theory the relaxation of Q-37 as requested by Mexico could allow the conditions for the introduction of exotic pests and diseases from Mexico into the U.S. In light of the increasing pressure on the nursery industry to limit the use of pesticides, any introduction of invasive pests – insects, weeds, nematodes and diseases- could have severe economic impacts.

Those potential circumstances occasioned an extensive literature review to ascertain the pests associated with each of the ten genera listed above (Baron 2003). All pests found associated with the 10 plant genera worldwide were sourced from published literature and then categorized with respect to their being present within the US and Mexico. In addition their endemic status in each country was ascertained.

Baron (2003) indicates that there are in excess of 400 known pests and diseases associated with these ten plant genera, worldwide. Of these, the U.S. had more pests found per plant genera (235) than Mexico (132). A few of these pests and diseases are regarded as quarantine pests, one being the Pink Hibiscus Mealy Bug which is not endemic to either country. However, all of the known soil borne pests were reported to be common and endemic to both the U.S. and Mexico (Baron

2003). It must be emphasized, however, that there may yet be undetected and unreported pests and diseases associated with these ten genera.

As a consequence of the Mexico request, Nursery Operators in the State of Florida, and elsewhere within the United States, expressed concern that the granting of the request would impact negatively on their industry. This concern prompted a survey of the nursery industry in the major producing States to assess the likely economic impact of trade in the target species between Mexico and the United States.

A survey was conducted to characterize the nursery industry in relation to these ten genera. The survey instruments were developed by researchers at the University of Florida and were pre-tested using owners and operators from the Florida Nursery Growers and Landscape Association (FNGLA). Following refinement of the survey instrument, the FNGLA administered the survey that was conducted in the major producing states of California, Florida, Hawaii and Texas. Producer associations in these states were relied upon to provide guidance on the sample frame. Approximately 1,600 questionnaires were sent out to growers and 260 of the questionnaires were completed and returned, giving a response rate of 16 percent.

The survey was conducted among those nurseries which produced the above plants in 'liners' or 'plugs' or as finished plants and was supported principally by the Florida Nursery Growers and Landscape Association with collaboration from the Producer Associations in the states surveyed. This report provides an analysis of the responses. Section I describes the purpose, objective, scope and methodology of the survey while Section II contains data and information on gross industry sales for 2001. Section III contains demographic information on the respondents and the industry. This is followed by Section IV with production related information followed by Section V on markets and marketing related issues. Section VI addresses some general competition issues. In addition, several respondents voluntarily provided comments and the thrust of these are reflected in Section VII, with a summary and implications of the survey results in section VIII and concluding comments in Section IX.

I. Purpose, Objective, Scope and Methodology

This survey was intended to provide a preliminary assessment of the potential economic impact of any possible relaxation of the federal quarantine regulation Q-37 on the trade in selected nursery plants imported from Mexico.

The objective was to develop a profile and database on the production, consumption and trade in the selected nursery plants in order to:

- i. assess the production and marketing costs in the major producing areas and markets of the U.S.;
- ii. identify and characterize the issues pertaining to trade;
- iii. provide an estimate of the potential impact of unrestricted trade between Mexico and the U.S., in the absence of any specific consideration of agricultural health issues.

The survey was conducted in the major producing states of California, Florida, Hawaii and Texas, and targeted primarily those nurseries that produced the above plants, whether in ‘liners’ or ‘plugs’ or finished plants. One thousand six hundred questionnaires, a copy of which is provided in the appendix, were distributed through the respective Associations and two hundred and fifty responses were received. These responses have been aggregated in the analysis that follows.

II. Gross Product Sales in 2001

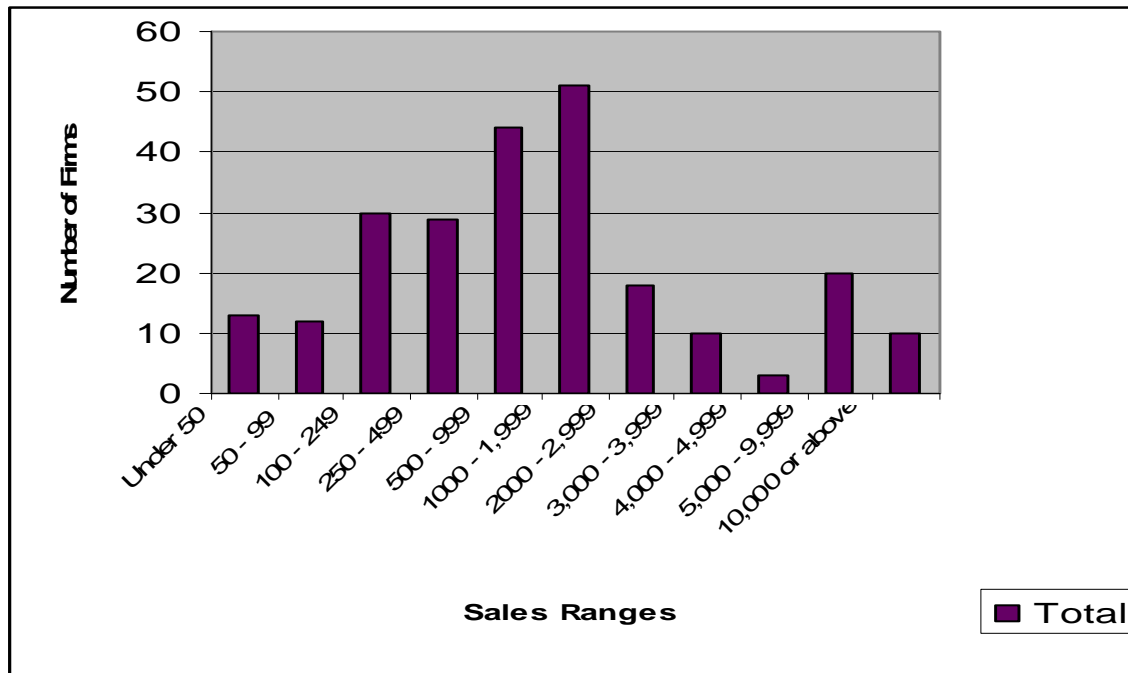
Respondents were asked to indicate their gross product sales in the year 2001, by indicating their sales volume in one of eleven categories. The responses are summarized in table 1.

Table 1. Responses to Gross Sales Range by State

Gross Sales Range (\$000)	CA	FL	HI	TX	Total
Under 50	5	7	1	0	13
50 - 99	1	8	1	2	12
100 - 249	3	21	3	3	30
250 - 499	0	22	2	5	29
500 - 999	3	33	2	6	44
1000 - 1,999	7	37	1	6	51
2000 - 2,999	2	12	2	2	18
3,000 - 3,999	0	8	0	2	10
4,000 - 4,999	1	2	0	0	3
5,000 - 9,999	6	13	1	0	20
10,000 or above	4	3	0	3	10

Viewed across the industry an excess of 65 percent of the firms indicated gross sales in the year 2001 ranging from \$100,000 to \$ 2,999,999 as reflected in figure 1.

Figure1. Industry Profile-Sales Ranges



III. Industry Demographics/Characterization

The Floriculture and Nursery Crops Yearbook (2003, Table 001) ranking of states by grower cash receipts lists California (\$ 3.06 billion) , Florida (\$1.63 billion) and Texas (\$1.34 billion) in the first, second and third positions. Hawaii ranked 26th (\$90.0 million). The same source listed large floriculture growers in 2003, by state, with annual sales greater than \$100,000¹. Florida headed this group with 642 growers followed by California (536), Texas (197) and Hawaii (135) (Table B15). For the year 2003, the average sales at wholesale, per grower, by state were: California \$1.84 million, Florida \$1.25 million, Texas \$1.45 million and Hawaii \$ 0.47 million (Table B16).

With respect to the survey the majority of the respondents, (69 %), were from Florida, with 13 percent coming from California and 12 percent from Texas. Within Florida, nurseries could be found in 38 counties with 28% percent of the responding nurseries being located in Dade County and 11 percent in Orange County. In California the nursery operations were found in 15 counties with 21 percent in Los Angeles County, 18 percent in San Diego County and 12 percent

¹ Crops of these growers include: cut flowers, cut cultivated greens, potted flowering and foliage plants, bedding and garden plants, and propagative materials.

in Stanislaus County. The nurseries in Texas were more evenly distributed across 19 counties with Smith County hosting 10 percent of the operations. Within the state of Hawaii where nurseries are distributed across four counties, Hawaii County is home to the majority of the operations. Among the respondents, thirty had operations in another state.

In the survey instrument the nursery operations were grouped into three categories based upon their annual sales volume of their businesses. Large operations were those with a sales volume exceeding \$10 million; medium sized operations were those with a sales volume in excess of \$3.5 million but under \$ 10 million and small operations were those with a sales volume of less than \$3.5 million. Among the respondents 80 were in the small category, 15 percent were in the medium category and 4 percent in the large group. This profile is graphically depicted in the figure 2.

Figure 2. Distribution of All Firms by Sales Volume

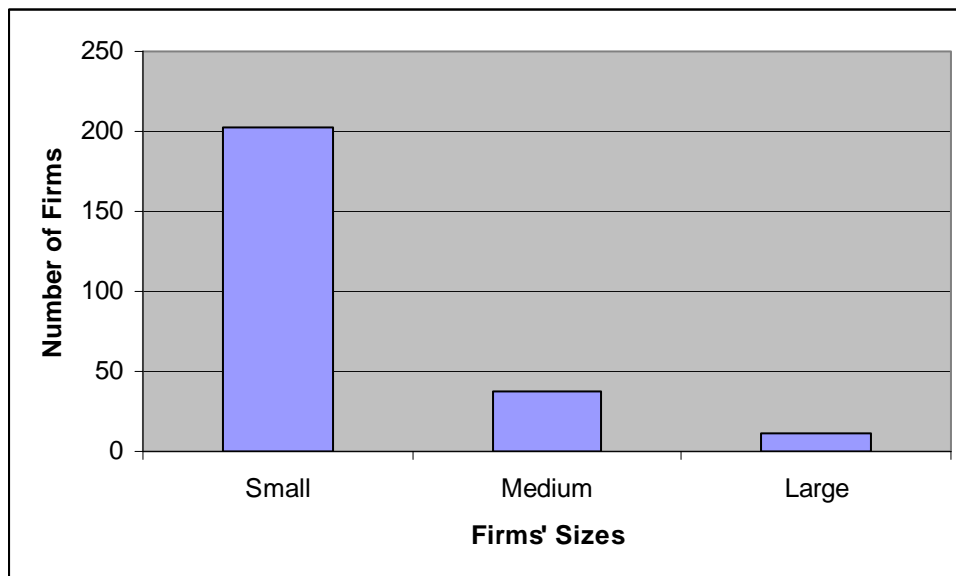


Figure 3. Distribution of Small Firms across States

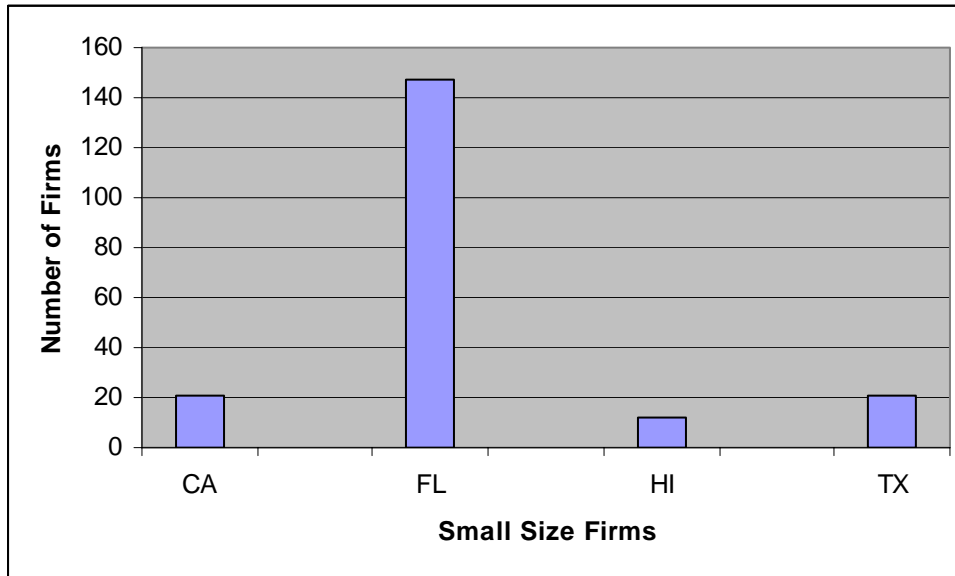


Figure 4. Distribution of Medium Firms across States

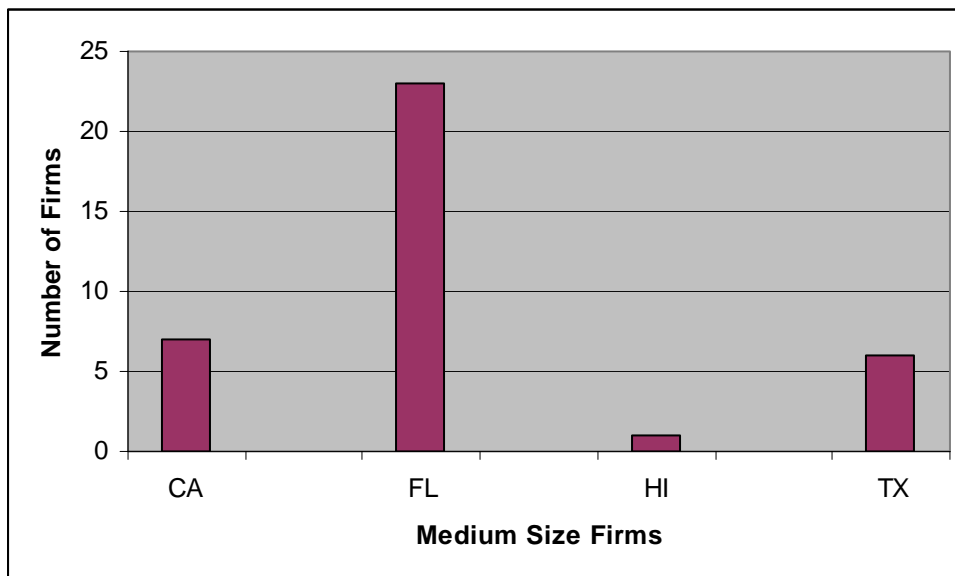
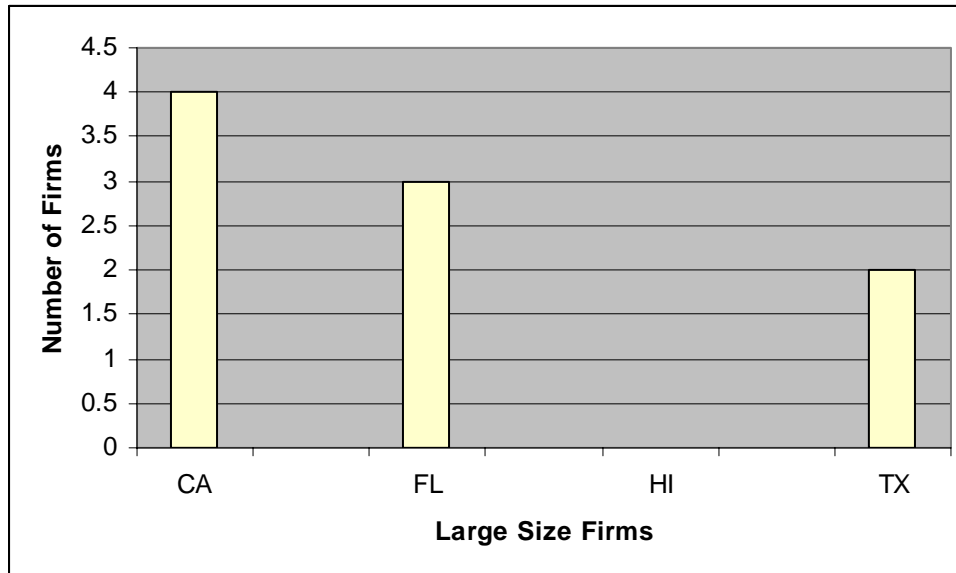


Figure 5. Distribution of Large Firms across States



Large operations were found primarily in California or Florida while the majority of the medium-sized businesses were located in Florida as were the majority of the small operations. The data collected did not allow the determination of the total sales for each size class.

Across the industry the respondents employed approximately 12,000 full-time workers year-round together with 2,600 part-time year-round workers and four thousand six hundred 4,600 full-time seasonal workers. The large operations employed 59 percent of the full-time year round workers while the medium and small firms each employed 20 percent of this type of worker. The large firms employed the majority of the part-time year round workers while Florida was the leading state in the employment of full-time seasonal workers.

IV. Production Profile

Products

Across the four states Florida led in the ranking with respect to both volume and value of production, followed by Texas, California and Hawaii, for each of the categories. Looking specifically at the volume of output overall, production volume was higher in plugs/liners (26,768) as opposed to units of finished plants (18,838). The value of output for finished plants totaled \$73,469 compared to \$11,395 produced as plugs/ liners (table 2).

Table 2. Estimated Production by Type and Value of Target Genera

Target genera	Plugs/Liners		Finished Plants	
	Units ('000)	Value (\$'000)	Units ('000)	Value (\$'000)
Bougainvilleae	548 (7)	604 (6)	784 (9)	4612 (8)
Fiscus	2185 (4)	1258 (4)	3285 (1)	11538 (2)
Codiaeum	1483 (5)	532 (7)	939 (8)	7242 (5)
Lantana	7421 (2)	1713 (2)	2879 (2)	5020 (7)
Dipladenia	1291 (6)	4075 (1)	450 (10)	2293 (10)
Mandevilla	2625 (3)	1438 (3)	2171 (5)	10452 (3)
Dracaena	484 (8)	449 (8)	2818 (3)	15563 (1)
Pelargonium	192 (9)	132 (9)	1430 (7)	3211 (9)
Euphorbia	99 (10)	108 (10)	2212 (4)	7759 (4)
Scindapsus	10440 (1)	1086 (5)	1870 (6)	5779 (6)
Total	26768	11395	18838	73469

[Rank order indicated in parenthesis]

The output by type and firm size in the state of Florida indicates that large firms produce only finished plants, small firms rank first with respect to the volume of output in finished plants (7,541), followed by large firms (4,484) and then by medium firms (4,342). Small firms produce more plugs/liners (8,372) than medium firms (7,903) (table 3).

Table 3. Production in Florida by Type and Firm Size

Target genera	Small -size Firms		Medium-size Firms		Large-size Firms	
	Plugs/Liners	Finished Plants	Plugs/Liners	Finished Plants	Plugs/Liners	Finished Plants
Bougainvilleae	89	280	210	48		86
Fiscus	2096	1530	50	1029		468
Codiaeum	1334	472	150	203		240
Lantana	3162	3281	4084	537		1141
Dipladenia	140	102	1150	256		19
Mandevilla	419	326	2206	1032		114
Dracaena	484	342		934		863
Pelargonium	162	79		0.05		13
Euphorbia	46	64	53	200		1040
Scindapsus	440	1065		103		500
Total	8372	7541	7903	4342.05		4484

The production profiles varied by firm size with respect to the ten genera however as indicated in the figures 6 through 10.

Figure 6. Florida Small Firms Plugs/Liners Production Profile

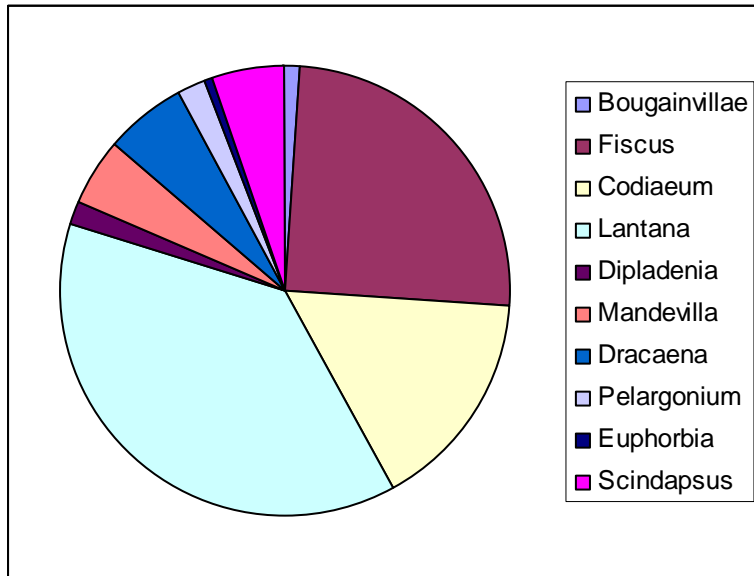


Figure 7 Florida Small Firms Finished Plants- Production Profile

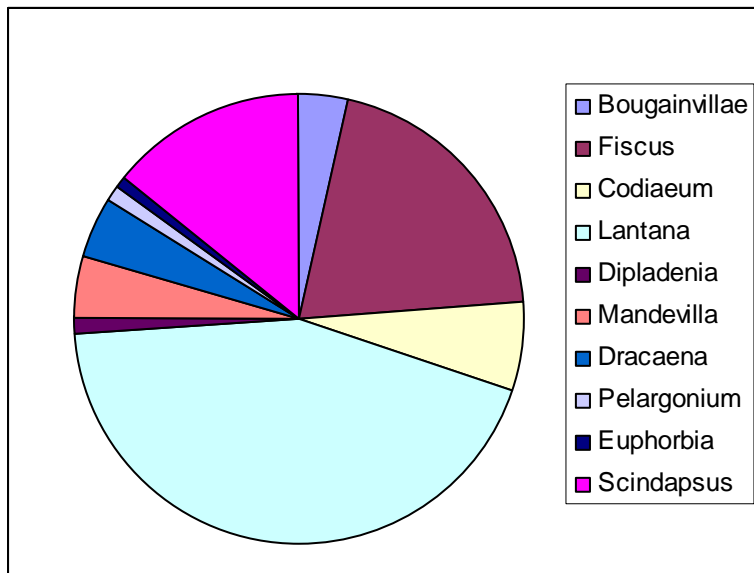


Figure 8. Florida Medium Firms Plugs/Liners Production Profile

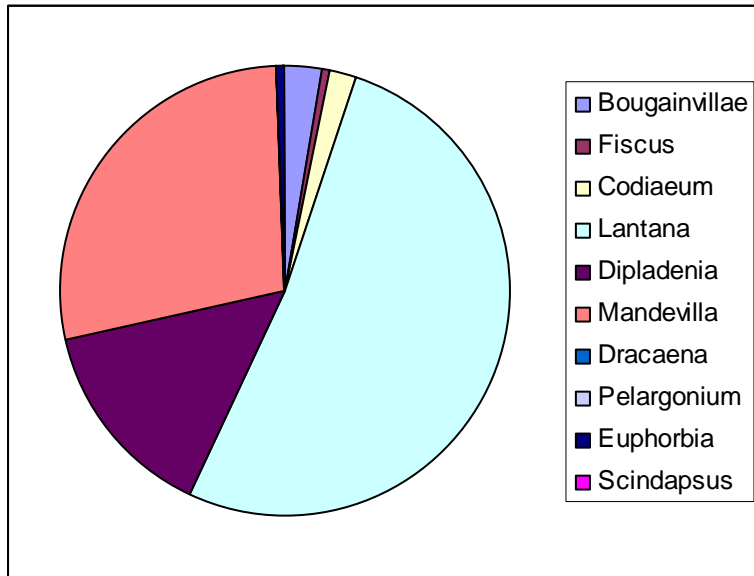


Figure 9. Florida Medium Firms Finished Plants- Production Profile

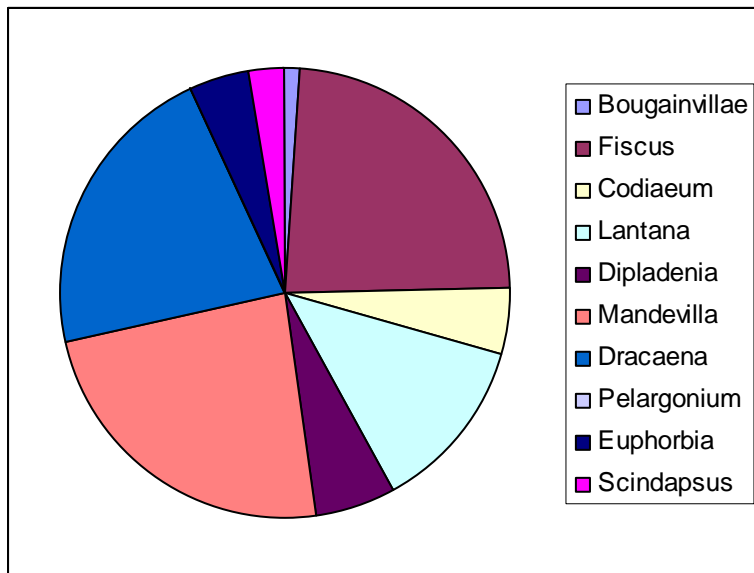
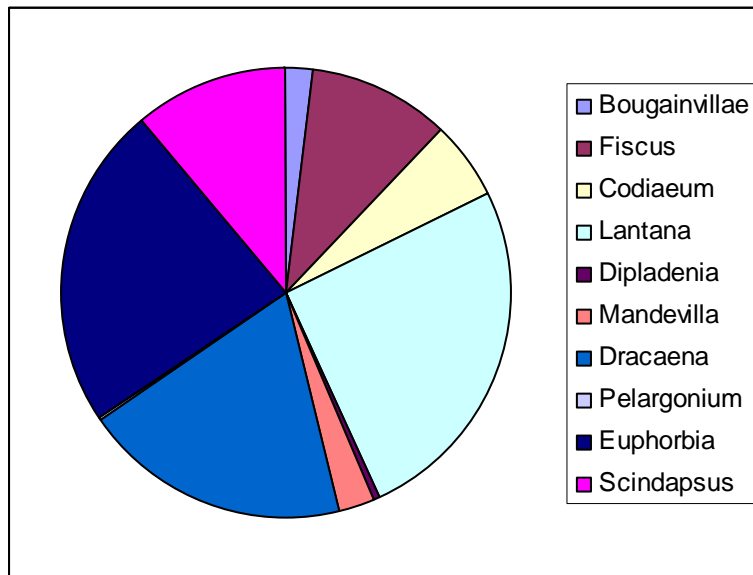


Figure 10. Florida Large Firms Finished Plants- Production Profile



The respondents were asked to rank the perceived difficulty in shifting production to an alternative crop on a scale of 1 to 5 with 1 indicating considerable ease and 5 indicating great difficulty. The general ranking was above 4 for all states but California. Looking at this issue across firms it was seen that medium-scale firms perceived the greatest ease in changing (3.2). In contrast, small-scale firms anticipated greater difficulty (4.1) and large-scale firms the greatest difficulty (4.6).

Pest and Disease Control Costs

Information was sought from the respondents in relation to the percentage of their production costs spent on pest and disease control, including costs of labor and materials and weed control. Overall 73.4 percent of the firms spent less than 20 percent of their production costs in this manner while 18 percent of the firms spent between 20 and 40 percent of their production costs on controlling pests and diseases. This is reinforced when the data are examined by firm size and state as indicated in table 4.

Table 4. Distribution of firms, by firm sizes and state, for percentage of production costs spent on controlling of pests and diseases.

Estimated Expenditure		Firm Size			State			
Percent of Total Production Costs	All Respondents	Small (%)	Medium (%)	Large (%)	CA (%)	FL (%)	HI (%)	TX (%)
0%-20%	146	114	25	7	18	98	5	23
21%-40%	36	31	2	3	3	27	3	2
41%-60%	5	3	2		2	3		
61%-80%	10	10				10		
Above 81%	2	2				2	1	

Location of Competitors

The respondents indicated that their competition was primarily located within a fifty-mile radius of their nursery or within their state. This applied to all the major producing states except Hawaii where the competition was somewhat evenly distributed within the state (28%), in another state (24%) and outside the U.S. (32%) (table 5).

Table 5. Location of Major Competitors by State

Location	CA		FL		HI		TX	
	# Respond	%	# Respond	%	# Respond	%	# Respond	%
Local area	21	44.7	96	40.7	4	16	14	27.4
Within state	20	42.6	110	46.6	7	28	23	45.1
Other state	4	8.5	7	3	6	24	12	23.5
Out of US	2	4.2	23	9.7	8	32	2	4

Texas and Hawaii were the only states to indicate major competition in another state, both at 24 percent. Hawaii was the only state to indicate a significant level of competition outside the country (32%).

V. Markets and Market Profile

The information collected in this section of the survey was intended to characterize the markets to which the target nursery products were supplied, with respect to consumer type, location, both within and outside the U.S. and seasonality of demand.

Market Channels

Sales from all survey respondents were relatively evenly distributed across all market outlets—wholesale markets (26.6%), landscape contractors or government agencies (24%) and retailers (22.6%). A relatively small percentage (10.7%) was sold directly to consumers or end-purchasers, and there was some supplied to other growers (16.1%), as indicated in table 6².

Table 6. Market Channels for All Respondents and by Firms and States (%)

Market Channels	All Respondents	Firms			States			
		Small	Medium	Large	CA	FL	HI	TX
End Users	10.7	9.02	9.91		18.8	11.1	8.1	3.3
Retailers	22.6	33.65	35.44	74.46	17.5	18.1	11.9	45.1
Landscape Contractors/Government Agencies	24	22.35	16.54	13.82	15.7	25.6	2.9	26.4
Wholesale Markets	26.6	20.46	25.52	9.6	7.8	26.1	48.2	16.8
Other Growers	16.1	14.51	12.59	2.12	40.2	19.1	28.9	8.4

Consumers or end-users were equally supplied, entirely, by small-size or medium-size firms. The output of these firms was also somewhat evenly spread across the other market segments as

² Within the industry, horticultural distribution centers purchase from growers and sell to landscape and retail firms, municipalities et al. In the absence of other distribution outlets, some growers sell to ‘other growers’ and may regard such sales as being to ‘wholesale markets’.

indicated in table 5. Large firms concentrated their supply to retailers with 74.6 percent of their output going to that market compared with 14 percent going to landscape contractors or government agencies.

State data indicate that other growers is the major market outlet for California (40.2%). Florida growers are more evenly spread across wholesale markets (26.1%), landscape contractors /government agencies (25.6%), other growers (19.1%), retailers (18.1%) and consumers/ end purchasers (11.1%). Wholesale markets are dominant in Hawaii (48.2%) and retailers are the largest market (45.1%) for Texas growers.

General Location of Markets

The markets are located primarily within a fifty-mile radius of the nurseries (38.2%). Approximately the same percentage of markets can be found within the home state of the nursery (29.7%) and in another state (29.1%) with only 3 percent of the market located outside the U.S., as shown in table 7.

Table 7. Market Location for All Respondents and by Firms and State (%)

Location	All Respondents	Firms			State			
		Small	Medium	Large	CA	FL	HI	TX
Local Area	38.2	62.4	22.2	5.1	52.8	37.5	7	41
Within State	29.7	18.4	33.4	50.5	36	25.1	27.1	49.8
Other State	29.1	17.3	41.1	40.4	10.2	33.9	56.6	9.2
Out of US	3	1.9	3.3	4	1	3.5	9.3	

When the data are examined within firm groupings it is observed that the main market location for small firms is within the local area (62.4%). The largest market for medium size firms is in another state (41%) while large firms primarily supply markets within their state (50.5%) and in other states (40.4%). The export market is small comprising only 4 percent of the market of large firms, 3 percent of that of medium firms and 2 percent of small firms. Viewed across states, California nurseries primarily supply markets in the local area (52.8%) followed by those in state (36%). Florida nurseries supply three main locations namely the local area (37.5%), other states (33.9%) and within the state (25.1%). Hawaii nurseries ship to other states (56.6%) and also within the state (27.1%). Nurseries in Texas mainly supply within the state (49.8%) and the local area (41%). Hawaii leads in exports that account for 9 percent of that state's output, tripling the export percentage of Florida.

US Regional Market Location

For convenience of analysis, the US national market was sub-divided into five regional groupings, by States. These were Southeast (FL, GA, AL, NC, SC, MS, VA, WV, TN, KY, LA); Southwest (TX, AZ, NM, OK, AR); Northeast (NY, NJ, CT, MA, VT, MD, ME, PA, RI, NH, DE); Midwest (NE, IL, MN, IA, KS, ND, SD, MO, IN, OH, WI, MI, NM); West (NV, CA, AZ, CO, WA, OR, MT, WY, UT) and the ‘Islands Group’ of Hawaii, Puerto Rico, and US Virgin Islands. The survey data with respect to these six regional markets are presented in table 8.

Table 8. Shipments to US Regional Markets for All Respondents, Firms and States (%).

Destinations	All Respondents	Firms			States			
		Small	Medium	Large	CA	FL	HI	TX
Southeast	49	53.5	30.1	32.2	2.5	68.4	4.2	4.5
Southwest	16.6	14.3	24.5	24.1	3.1	6.4	1	90.5
Northeast	8.2	7.6	12.1	8.1	4.1	10.9	2.1	0.4
Midwest	6.4	6.1	7.8	6.9	4.1	7.1	9.4	2.3
West	17.8	16.3	24	27.6	85.6	5.8	62.5	2.3
HI, PR, USVI	2	2.2	1.6	1.1	0.6	1.4	20.8	

When looking at the shipping destinations across the industry, it can be observed that the SE region is associated with the majority of the shipments (49%). This is followed by the West (17.8%), Southwest (16.6%), Northeast (8.2%), and Midwest (6.4%). The grouping of Hawaii, Puerto Rico and US Virgin Islands is associated with only 2 percent of shipments.

When viewed within firm categories it can be seen that the shipments of small firms occur primarily in the Southeast (53.5%), while for medium firms the major shipments occur in the Southeast (30.1%) and Southwest (24.5%). For large firms the major shipments occur in the Southeast (32.2%), West (27.6%) and Southwest (24.1%).

When the data are examined by State they show that shipments out of California are destined mainly for the West (85.6%), those from Florida to the Southeast (68.4%), and those from Hawaii to the West (62.5%) and the ‘Islands Group’ (20.8%). The shipments from Texas go almost exclusively to the Southwest (90.5%).

Seasonal Demand

Across the industry the demand is greater during the first half of the year with that in the first quarter being estimated at 28.5 percent while that in the second quarter was 34.1 percent. The demand in the latter two quarters was approximately equal with that of the third quarter being 18.1 percent and in the fourth quarter 19.3 percent, as depicted in table 9.

Table 9: Seasonal Demand for All Respondents and by Firms and States (%).

Period	All Respondents	Firms			States			
		Small	Medium	Large	CA	FL	HI	TX
Jan.-Mar.	28.5	28.3	28.9	31.2	26.2	28.4	33.7	29.2
April-June	34.1	32.8	36.2	48.4	35.4	35.6	27.5	35.2
July-Sept.	18.1	18.6	17.8	10.7	19.9	17.9	23.5	16.8
Oct.-Dec.	19.3	20.3	17.1	9.7	18.5	20.1	15.3	18.8

Within firm groupings the demand by quarter varied but the pattern of a stronger demand in the first and second quarters was replicated across all firm groups. Variation is also observed looking at the quarterly demand by state, although in each instance the demand is also skewed towards the first half of the year.

VI. General Competition Issues

With respect to general competition issues, responses were sought on the ease of expansion of market share, the likely impact of the relaxation of the Q-37 regulation for imports from Mexico and the potential influence of plant health issues.

Market Share Expansion

Five specific possible difficulties to market share expansion were identified in the survey and the respondents were asked to indicate on a scale of 1 to 5 the significance of each difficulty, with 1 indicating 'no constraint' and 5 indicating 'significant constraint' (table 10). The likely difficulties identified were : 'production capacity', 'capital for expansion', 'access to markets', 'regulations for inspections and certifications of product', and 'pest and disease concerns'. Respondents were also invited to indicate other challenges to expansion, as they perceived it. Across the industry, the issue of 'capital for expansion' received the highest rating (3.2), followed by 'production capacity' (2.9) and then 'access to markets' (2.8). The matters of 'pests and

disease concerns’ and ‘regulations for inspections and certification’ were of least concern, jointly receiving the lowest rating (2.4). Respondents specified other concerns to expansion that are reflected in the following qualitative section. Across the industry this ‘others’ group received a rating of 2.5.

Table 10. Ranking of Likely Obstacles to Expansion.

Obstacles to Expansion	All Respondents	Firms			States			
		Small	Medium	Large	CA	FL	HI	TX
Production Capacity	2.9	2.9	2.6	2.8	3	2.8	3.2	2.9
Capital	3.2	3.2	3.1	3.7	3.2	3.2	3.5	3
Market Access	2.8	2.7	2.7	3.3	2.4	2.7	3.5	2.9
Regulations/Certification	2.4	2.5	2	3.4	2.8	2.4	3.4	1.9
Pests/Diseases Concerns	2.4	2.5	2.2	3.2	2.5	2.5	2.7	2
Others	2.5	4.1	3.5	5	5	3.6	4.3	4.9

(1=no constraint; 5=significant constraint)

When viewed within firm size groups the potential obstacles to expansion of market share were ranked differently. Small-size firms identified the ‘Others’ category as the most significant constraint to expansion (4.1) followed by ‘capital for expansion’ (3.2), ‘production capacity’ (2.9), ‘access to markets’ (2.7), ‘regulations for inspections and certification’ (2.5) and ‘pest and disease concerns’ (2.5). Medium-size firms followed a similar trend to small firms with ‘Others’ (3.5) identified as the largest constraint, followed by ‘capital for expansion’ (3.1), ‘access to markets’ (2.7), ‘pests and disease concerns’ (2.2), and ‘regulations for inspections and certification’ (2.0). Large firms also identified ‘Others’ (5.0) as the largest constraint, followed by ‘capital for expansion’ (3.7), ‘regulations for inspection and certification’ (3.4), ‘access to markets’ (3.3), ‘pests and disease concerns’ (3.2), and ‘production capacity’ (2.8). A similar trend, with ‘Others’ being the dominant obstacle, was reflected across all of the states.

Respondents listed a broad set of issues under the category of ‘other obstacles’. Foremost among these are competition within the industry as well as from other countries, availability of labor as well as managerial staff, transportation and distribution challenges, and excess supply on the market.

Relaxation of Q-37 and Imports from Mexico

The opinion of respondents was sought regarding the extent to which the possible relaxation of the quarantine regulation Q-37 posed a concern in relation to the likely impact of exotic pests and diseases on current production or the loss of market share, either to Mexico or to US-based producers with production facilities in Mexico. Responses were requested on a five-point scale with 1 indicating 'no concern' and 5 signaling 'greatest concern'. The data are presented in table No.11.

Table 11. Ranking of Concerns about the Relaxation of Q-37 (1=no concern; 5=greatest concern).

Concerns over the Relaxation of Q-37	All Respondents	Firms			States			
		Small	Medium	Large	CA	FL	HI	TX
Impact of exotic pests/diseases on competition	3.6	4.3	4.1	4.3	4.5	4.3	4.3	3.8
Competition from Mexican Firms	3.8	3.8	3.6	4	3	3.9	4.5	4
Competition from US-based Firms established in Mexico	3.9	4	3.8	4.2	3.5	3.9	4.5	4.2
Impact of exotic pests/diseases on competition	3.6	4.3	4.1	4.3	4.5	4.3	4.3	3.8

When all respondents are taken together, competition from US-based producers with production facilities in Mexico was the highest concern (3.9), followed by competition from and loss of market share to Mexico (3.8), then 'likely impact of pests and diseases on competitiveness of current production' (3.6).

For small firms the order of ranking was 'likely impact of pests and diseases on current production' (4.3), followed by 'competition from US-based producers with production facilities in Mexico' (4.0), then 'competition from and loss of market share to Mexico (3.8). For medium and large firms the order was the same as with small firms but the weighting was different. Collectively, the issues were all weighted between (3.) and (4.5) when viewed across the states.

Rating of Plant Health Issues

The respondents were asked to indicate their level of concern for four plant health issues, namely: the introduction of exotic pests and diseases; the availability of effective pesticides to combat /control exotic pests and diseases; development of pesticide resistance by pests now under control; and the existing differential in the use and availability of pesticides in Mexico and the U.S. The responses were requested on a five-point scale with 1 indicating ‘no concern’ and 5 signaling ‘greatest concern’.

Introduction of exotic pests and diseases received the highest ‘concerned’ ranking (4.5), followed by ‘existing differential in the use and availability of pesticides in Mexico and the United States’ (4.4), ‘development of pesticide resistance by pests now under control’ (4.1) and ‘availability of effective pesticides to combat /control exotic pests and diseases’ (3.8) (table 12).

Table 12. Ranking of Concerns related to Plant Health Issues

Concerns over Plant Health Issues	All Respondents	Firms			States			
		Small	Medium	Large	CA	FL	HI	TX
Introduction of exotic pests and diseases	4.5	4.5	4.3	4.7	4.8	4.5	4.7	4
Availability of effective pesticides to combat / control of exotic pests and diseases	3.8	3.8	3.6	4	4.4	4.2	4.7	4.1
Development of pesticide resistance by pests now under control	4.1	4.1	4	4.2	3.8	4	4.3	4.1
Existing differential in the use & of pesticides in Mexico and the U.S.	4.4	4.4	4.2	4.4	4.4	4.3	4.8	4.1

Within firm groups as well as across states the general level of concern and the rank ordering was similar to that exhibited across the industry.

VII. Thrust of Supplementary Comments

Many of the voluntary supplementary comments made reference to the view that the industry was extremely competitive to the point where there was an oversupply on the market in some instances. Under these circumstances it was suggested that a relaxation of the Q-37 regulations would lead to the failure of some firms and the loss of full-time jobs. In this regard some

respondents were strongly opposed to any relaxation of Q-37. An extreme view was that the relaxation of Q-37 could lead to the demise of the industry.

VIII. Summary and Implications

The data indicate that the majority of the firms have gross annual sales ranging between \$ 100,000 and \$3million. with the majority of these being small firms. The number of full-time labor employed was three times that of part-time labor and more than twice the number of seasonal workers, with large operations employing the majority of workers. The rank order of the genera varied with respect to their importance in the production profile. From the perspective of value of production *Dipladenia* and *Lantana* were ranked at the top for plugs/ liners while *Dracaena* and *Fiscus* were in the top position for finished plants. Finished plants were projected as being six times more valuable than plugs/liners and large firms produced only finished plants. All firms perceived great difficulty in shifting production lines, indicating some rigidity in their production profile.

Taking into consideration the survey data and the supplementary comments provided by respondents, it can be concluded that the industry is very competitive with competitor firms being located mainly within a local radius of 50 miles or within the state. This suggests that any relaxation of the **Q-37** could lead to even greater competition and possibly economic losses for some firms. Possible sources of the increased competition would be indigenous Mexican firms wishing to export to the US or US firms with production facilities in Mexico, seeking to benefit from possibly lower production costs, and exporting to the US. Either scenario would result in a loss of jobs.

No one market channel appears to be dominant with distribution being spread relatively evenly among retailers, landscape contractors/government agencies, and wholesalers. Small firms supply markets mainly within their local areas while medium and large firms ship to more distant clients. Demand is greater during the first half of the year than during the latter period.

General competition was a major concern for all producers and, in this regard, market share expansion was seen as a significant constraint by all categories of firms. Foremost among the constraint to market expansion were capital for expansion, the availability of labor as well as managerial staff, transportation and distribution challenges, and the excess supply on the market. It should be noted that ‘pests and disease concerns’ were given the lowest ranking of concern in relation to market share expansion. In contrast, the introduction of exotic pests and diseases (as a result of any possible relaxation of Q-37) was given the highest ‘concern’ ranking when plant health issues were rated. The respondents appear to be conveying an inherent confidence in the plant health systems within the U.S. and a lack of confidence in that of the trading partners of the U.S.

Any relaxation of the Q-37 indicates concerns for the impacts of three issues, namely: the impact of exotic pests/diseases on competition, competition from Mexican Firms or Competition from US-based Firms established in Mexico. On plant health issues, the respondents indicate great concern about the introduction of exotic pests and diseases, existing differential in the use and

availability of pesticides in Mexico and the United States, and the development of pesticide resistance by pests now under control.

It is evident though that the plant health issues are of paramount concern when the prospect of any relaxation of Q-37 is considered. In this connection the likely introduction of pests and diseases that can affect a wider cross section of agricultural crops in the United States in general and the surveyed states in particular seems to be the main worry. However, research indicates that known pests and diseases associated with the ten genera are more problematic within the US than Mexico, and that all of the known soil borne pests are endemic to both countries (Baron, 2003). This might imply that the probability of introduction of known exotic pests from Mexico, were the Q-37 to be relaxed in relation to these ten genera, is minimal. However, three issues call such a conclusion into question and support the continued concern about the plant health risks posed by any possible relaxation of Q-37. First, Baron's investigation was confined to published literature and there may yet be undetected and/or unreported pests and diseases associated with these ten genera, more so with respect to Mexico than with regard to the U.S. Second, this research project does not take into consideration any level of risks posed by any specific pest or disease. In this context the introduction of an unknown or new single foreign pest or disease could pose an undetermined level of risk and environmental consequences to natural areas, landscapes, and nursery and/or other agricultural crop production.

Third, the responses to the competition issues in the survey indicate that there is a greater concern over the likely increased competition from indigenous Mexican firms or US-based firms that would establish in Mexico following any relaxation of Q-37. This concern is heightened by the highly competitive structure of the industry.

XI. Conclusions

The relaxation of the Q-37 quarantine rule for shipment of live plants in growing media will have significant impacts on U.S. growers. The highly competitive nature of the producers for the plant genera identified in the proposed relaxation of Q-37 indicates that U.S. growers will suffer from the increase in competition this will cause.

In addition to the increase in competition that is expected from relaxation of Q-37, growers also expressed concerns over the introduction of pests and diseases that could result. Baron (2003) suggests that this concern may be misplaced, but his work is limited to only those pests and diseases associated with these plant genera identified in the literature. Other invasive pests and diseases that could be associated with the 10 plant genera could pose additional problems for the growers of these plants and other plants in the U.S.

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