

Characteristics of Texas' Nursery and Greenhouse Industries

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Table of Contents

Table of Contents.....	2
Introduction	3
General Characteristics	4
Employees	6
Plant Types Sold.....	7
Product Forms	9
Markets and Marketing Channels.....	10
Sales Methods and Marketing Practices	12
Advertising Expenditures	15
Integrated Pest Management Practices	16
Water Sources and Irrigation Methods.....	18
Factors Affecting Price, Geographic Expansion and Business	21
Summary and Implications	24
References.....	24

Introduction

The Texas environmental horticulture industry, or commonly termed green industry, is comprised of wholesale nursery, greenhouse, and turfgrass sod producers, landscape design, construction and maintenance firms, and wholesale and retail distribution firms comprising of garden centers, home stores, mass merchandisers (with lawn/garden departments), brokers and re-wholesale distribution centers and allied trades suppliers of input to the industry. Though there have been fluxes the environmental horticulture industry in Texas has seen a recovery that has surpassed pre-recession employment, which is also reflected in national employment data for the industry (Hall et al., 2020).

This report summarizes the production and marketing practices and trade flows for the Texas ornamental plant grower and dealer firms based on a national mail and online survey in mid-2019. The Green Industry Research Consortium, a multi-state research project under the USDA-National Institute for Food and Agriculture (NIFA), conducts a survey of the United States nursery and greenhouse industry every five years. The most recent survey collected information on business practices for the fiscal year 2018-2019 in all 50 states. The full report was published Southern Cooperative Series Bulletin #421 (available at <https://saaesd.org/wp-content/uploads/sites/5/2020/08/National-Green-Industry-Survey-Summary-Report-2019-final-08.30.2020-1.pdf>).

The data for the State of Texas has been extracted from the principle study and compared to the two previous survey responses for Texas firms in 2014 for the production year 2013 and 2009 for the production year 2008. Texas' nursery and greenhouse firms were identified through the Dun & Bradstreet commercial database, available through the university library system. Questions in the survey asked respondents to indicate the percentage share of the total activity for each specific item (with all items totaling 100 percent), to indicate items on checklists, provide Yes/No answers, fill-in open-ended blanks, or rate factors using Likert scales or sliders. Results of the 2008 and 2013 national survey were published as Southern Cooperative Series Bulletins #404 and #420, available at <https://saaesd.org/bulletins/>.

This report documents changes in business practices over time and provides useful information to industry stakeholders on Texas' plant types and forms grown, labor, irrigation methods, water sources, and pest management, along with marketing practices (distribution channels, selling methods, in-store advertising practices, and social media presence), and a

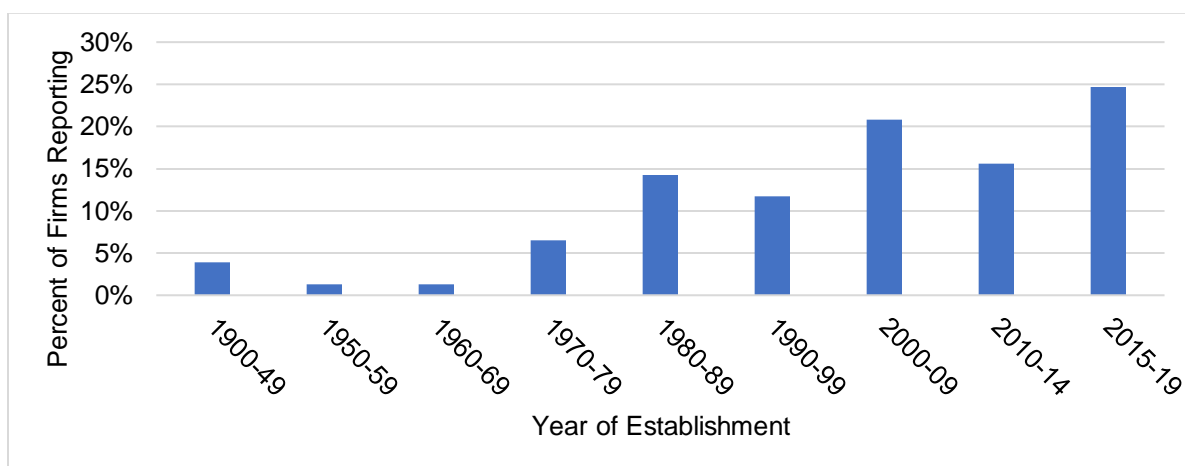
range of factors affecting pricing strategies and overall business growth and opportunities. This report also expands its focus on point-of-sale (POS) and digital marketing strategies.

General Characteristics

The survey was completed by 80 firms: 12 dealers, 47 growers, 16 dealer/growers, and 5 unspecified. Two (2.5%) firms completed the survey through the online instrument. Seventy-eight (97.5%) firms completed the survey by a printed survey sent in the mail.

As shown in Figure 1, most of the firms that answered the survey were established between 1980-2019. Approximately 13 percent of firms were established before 1980. Twenty-five percent of firms were established between 2015-2019, 16 percent between 2010-2014, 21 percent between 2000-2009, 12 percent between 1990-1999, and 14 percent that were established between 1980-1989.

Figure 1. Distribution of Surveyed Texas Green Industry Firms by Decade Established in 2018

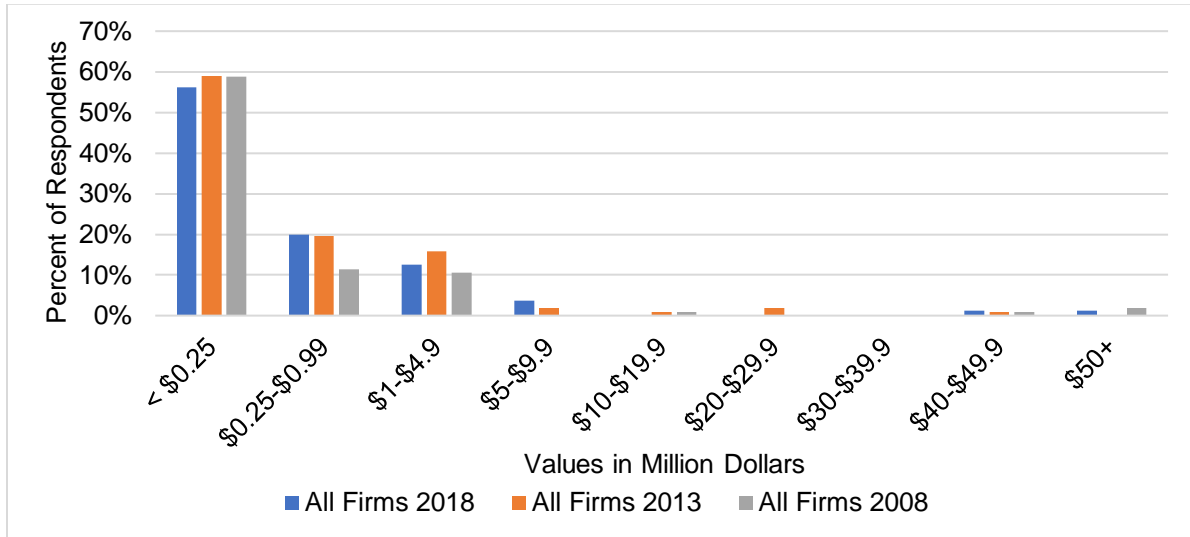


Annual sales were reported in the survey either as a specific amount or as a range, from less than \$250,000 to more than \$50 million (Mn) (Figure 2). A little over half of the responding firms (56.3 percent) had less than \$250,000 annual sales while 20 percent of firms had sales between \$250,000 and \$999,999. Approximately 12.5 percent of firms have between \$1 to \$4.9 Mn in sales and 6.3 percent have sales above \$5 Mn.

Comparing to the distribution of sales in 2008 and 2013, there are approximately the same number of firms in the less than \$250,000 and \$250,000 to \$999,999 annual sales range. There are less firms with sales in the \$1 million to \$4.9 million annual sales ranges than in 2013,

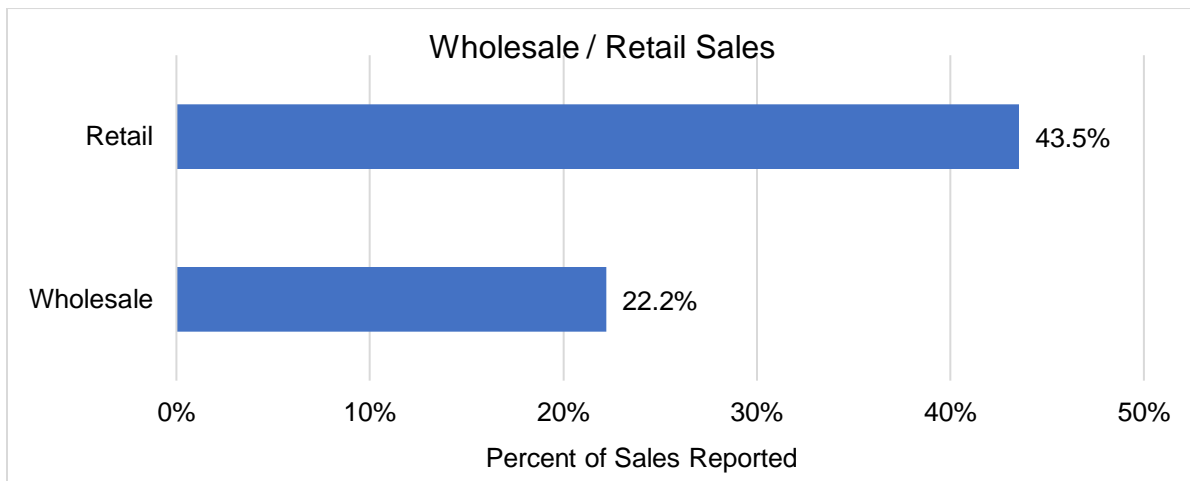
but slightly more than in 2008. The percentage of firms above \$5 million is approximately the same across the span of time.

Figure 2. Annual Sales Distribution From 2008 to 2018



Annual sales for 2018 totaled \$147 Mn and averaged \$1.84 Mn per firm. Sales through wholesale market channels totaled \$49.81 Mn (33.8% of total) and averaged \$0.79 Mn per firm, while sales at retail totaled \$97.6 Mn (66.2%), averaging \$3.5 Mn per firm (Figure 3).

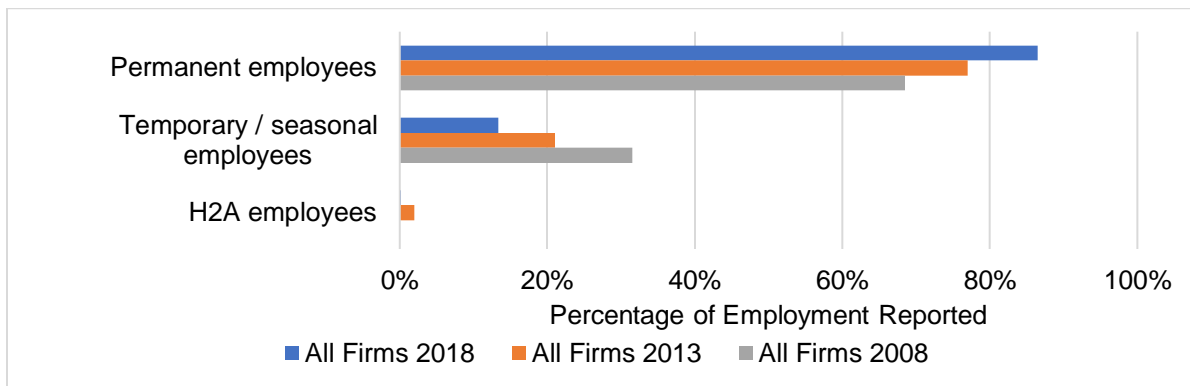
Figure 3. Annual Sales by Wholesale and Retail Channels in 2018



Employees

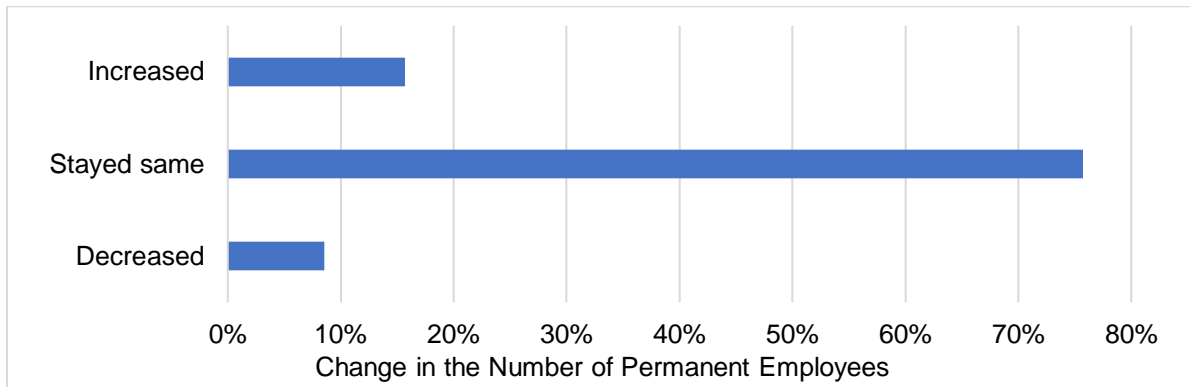
Overall, the 80 firms employed 1,458 employees. Eighty-six percent employees in 2018 are permanent employees while 13.4 percent are temporary employees and 0.1 are H2A employees. From 2008 to 2013 the number of permanent employees increased by nearly 10% every 5 years (Figure 4 **Error! Reference source not found.**). The number of temporary employees has steadily decreased from 2008 to 2018 from 31.5 percent to 13.4 percent. The average number of permanent employees per firm is 51.7 employees. The average number of temporary employees per firm is 30.2 employees. The reported number of foreign national employees authorized to work in the U.S. under the H2A visa program dropped from 2.0 percent in 2013 to 0.1 percent in 2018 (H2A not included in 2008 survey).

Figure 4. Type of Employment Reported From 2008 to 2018



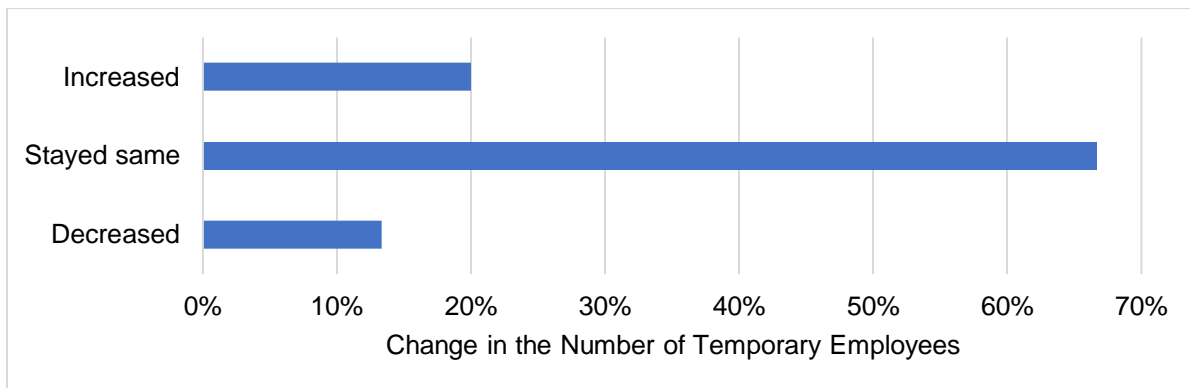
Looking at the percentage of change from 2013 to 2018, more than three-fourths, 76 percent, of firms kept the same number of permanent employees while 16 percent of firms had an increase and 9 percent saw a decrease in the number of permanent employees in their firm as shown in Figure 5.

Figure 5. Change in Number of Permanent Employees Over the Last 5 Years (2013-2018)



The same trend of change in permanent employees held true with temporary/seasonal employees. Most firms, 67 percent, kept the same number of temporary or seasonal employees from 2013 to 2018, 20 percent had an increase and 13 percent had a decrease in the number of temporary employees (Figure 6).

Figure 6. Change in Number of Temporary Employees Over the Last 5 Years



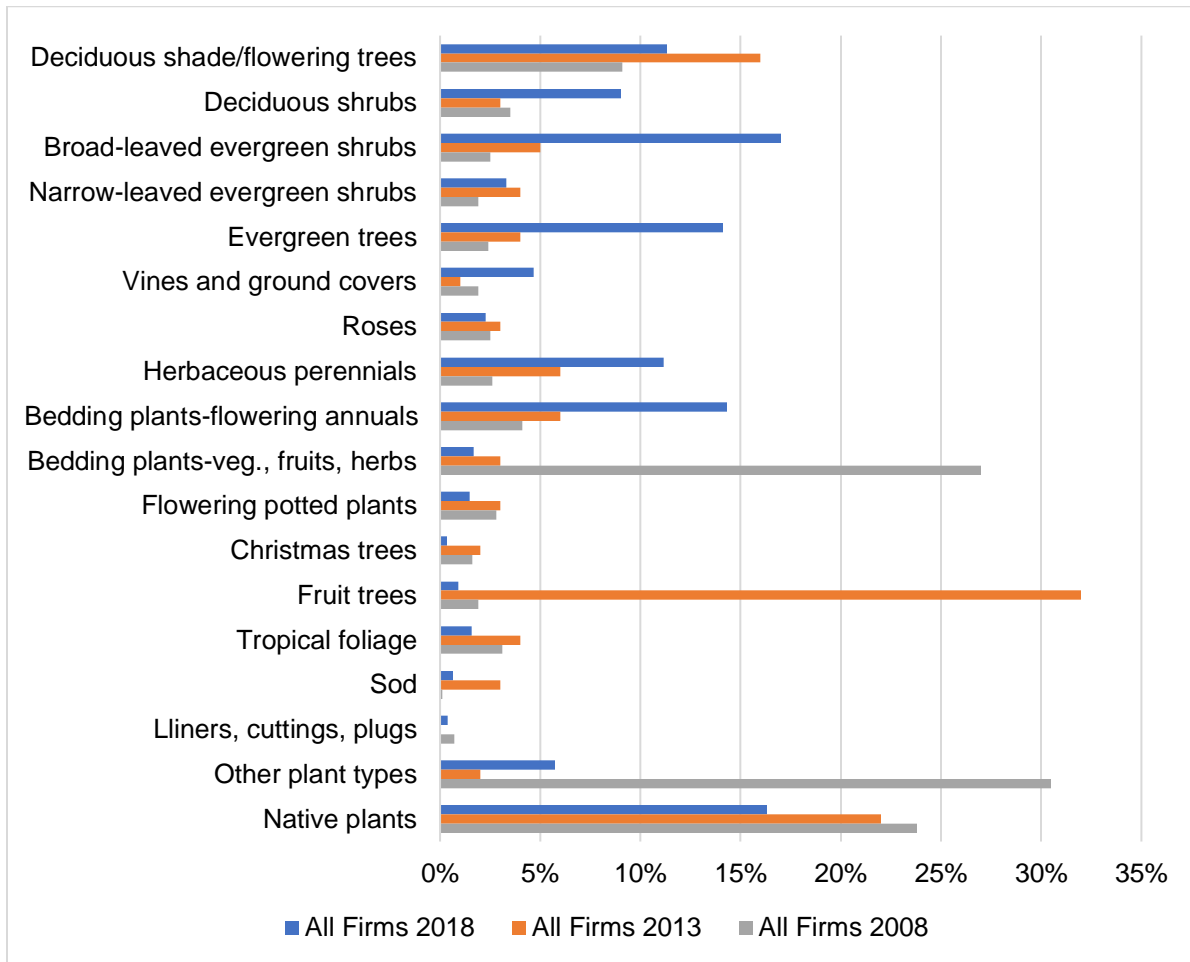
Plant Types Sold

The distribution of eighteen major ornamental plant types sold in 2018 by Texas Green industry firms is summarized as the share of total sales reported in Figure 7 **Error! Reference source not found.** The top three plant categories in 2018 are broad-leaved evergreen shrubs (17.0 percent) and evergreen trees (14.1 percent), and bedding plants (flowering annuals) (14.3 percent). The second tier of plant types included deciduous shade/flowering trees (11.3

percent), flowering potted plants (5.1 percent), bedding plants (flowering annuals) (6.2 percent), deciduous shrubs (9.0 percent), and herbaceous perennials (11.2 percent). The third tier of plant types sold in Texas include narrow-leaved evergreen shrubs (3.3 percent), vines and ground covers (4.7 percent), roses (2.3 percent), bedding plants (vegetables, fruits, and herbs) (1.7 percent), flowering potted plants (1.5 percent), Christmas trees (0.4), fruit trees (0.9 percent), tropical foliage (1.6 percent), sod (0.6 percent), liners, cuttings, and plugs (0.4 percent), and other plant types (5.7 percent). The type of plants sold has changed slightly over the past ten years. In 2008, bedding plants (vegetables, fruits, and herbs) were the dominate type of plant, but this dramatically decreased in 2013 and 2018. In 2013, fruit trees were the top plant category in sales but this was not true for 2008 and 2018. Deciduous shade/flowering trees, flowering potted plants, Christmas trees, tropical foliage, and sod have also seen this u-shape curve in sales, but not as dramatically. Broad-leaved evergreen shrubs, evergreen trees, herbaceous perennials, and bedding plants (flowering annuals) have seen incremental increases in sales from 2008 to 2018. Bedding plants (vegetables, fruits, and herbs) and other plant types had an incremental decrease in sales from 2008 to 2018.

Native plants are commonly defined as plants that were present in a state or local area before European settlement. In recent years, there has been increasing emphasis on using native plants for landscaping because they may be well adapted to the prevailing environmental conditions, require less maintenance, and are less likely to become invasive. Approximately 16.3 percent of Texas firms' sales are in native species. This is a slight decrease from 2008 and 2013 where native plant sales consisted of 22.0 percent and 23.8 percent of sales.

Figure 7. Distribution of Ornamental Plant Types Sold From 2008 to 2018

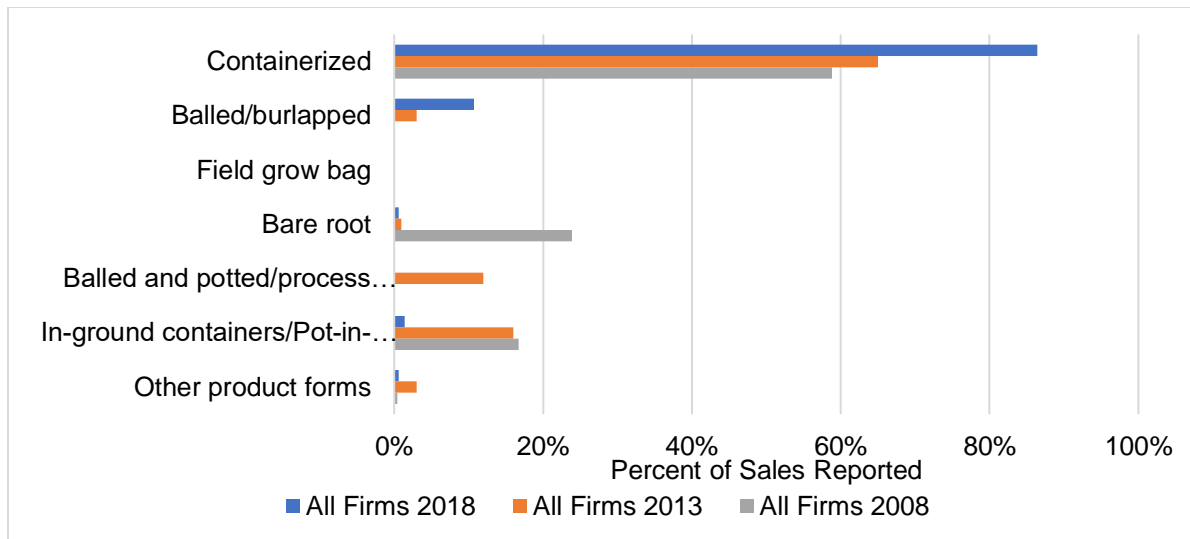


Product Forms

Respondents were asked to indicate the percentage distribution of their sales by product form (root packaging media), including containerized, balled and burlapped, field grow bag, bare root, balled and potted/process balled, in-ground containers (including pot-in-pot), and other types (e.g., cut trees, budwood, scions, seeds, tissue culture plantlets, unrooted cuttings). Most product form sales in 2018 were containerized (86.5 percent) as shown in Figure 8 **Error! Reference source not found.** The rest of the product forms fall well below containerized with balled/burlapped consisting of 10.8 percent, field grow bag at 0.1 percent, bare root consisting of 0.6 percent, balled and potted/process balled at 0.1 percent, in-ground containers/pot-in-pot consisting of 1.4 percent, and other product forms (e.g. cut trees, budwood, scions, seeds, etc.)

consisting of 0.6 percent of sales. Yet, the containerized products category has been increased over time. Balled/burlapped, the second most popular product form in 2018, has increased from under 0.1 percent in 2008 to over 10 percent in 2018.

Figure 8. Distribution of Ornamental Plant Product Forms Sold From 2008 to 2018

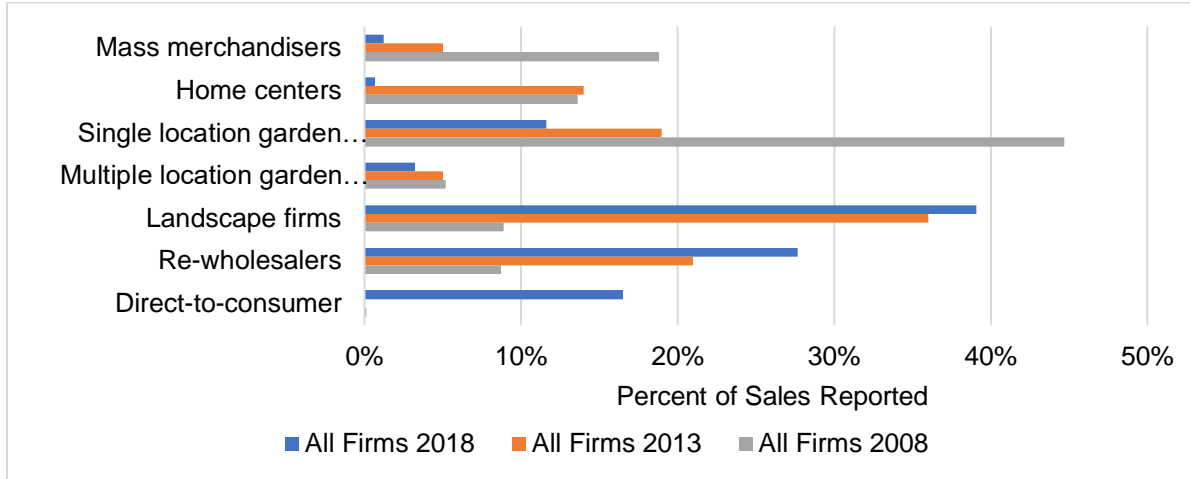


Markets and Marketing Channels

Respondents were asked to specify the percentage of total sales to different wholesale market outlets, including mass merchandisers, home centers, single location garden centers, multiple location garden centers, landscape firms, re-wholesalers, and others. Most firms sell their products through the landscape firms market channel (39.1 percent) (Figure 9). This channel is followed in decreasing order by re-wholesalers (27.7 percent), direct-to-consumer (16.5 percent), single location garden centers (11.6 percent), multiple location garden centers (3.2 percent), mass merchandisers (1.2 percent), and home centers (0.7 percent). Landscape firms and re-wholesalers had an increase in sales from 2008 to 2018. In fact, each of these categories saw a decrease in overall sales from 2008 to 2018. Single location garden centers had a decrease from 44.7 percent in 2008 to 11.6 percent in 2018. This was also true for mass merchandisers (18.8 percent to 1.2 percent) and home centers (13.6 percent to 0.7 percent). This is the first year the survey has included direct-to-consumer as a market channel option which accounted for approximately 16.5 percent of sales and which had an increase in sales

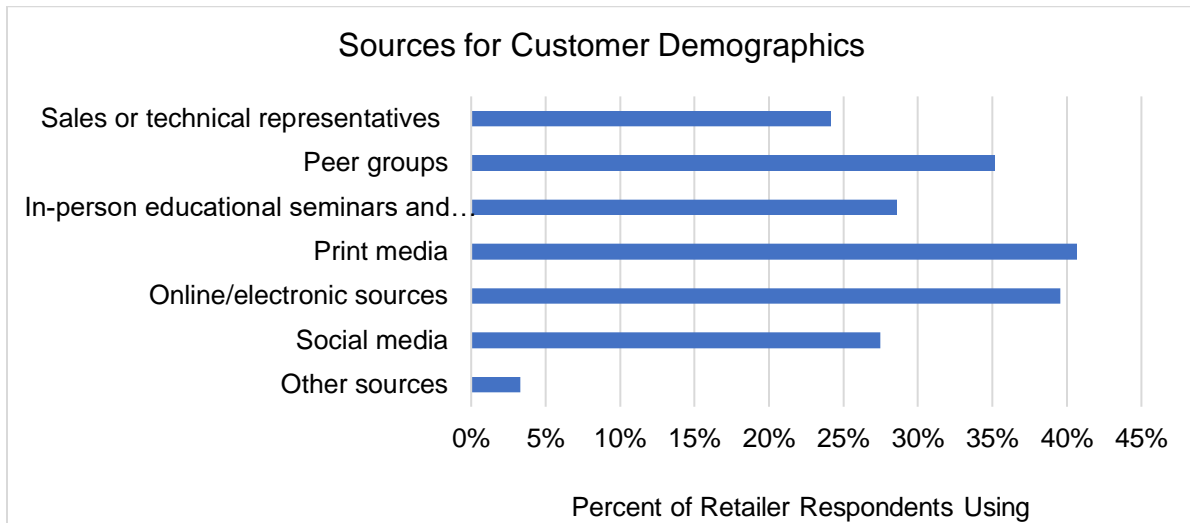
from 0.1 percent in 2008. This category could continue to increase as technology becomes more deeply used by consumers and the green industry becomes more omnichannel.

Figure 9. Distribution of Wholesale Market Channel Sales From 2008 to 2018



This report is the first in the series of the Green industry surveys that incorporated information about use of social media platforms by retail nursery and garden centers. With generally increased reliance on consumer data analytics and predictive modeling in consumer goods sectors, Green industry firms are gradually increasing their online presence and digital marketing strategies to attract more customers and retain their existing customer base. Print media is the number one source of customer demographic information for firms (40.7 percent). A close second is online/electronic sources (39.6 percent). Approximately 35 percent of firms get their customer demographic information from peer groups, 28.6 percent get their information from in-person educational seminars and workshops, and 27.5 percent from social media. Twenty-four percent of firms use sales or technical representatives as a source for their customer demographics. Three percent use other sources (Figure 10).

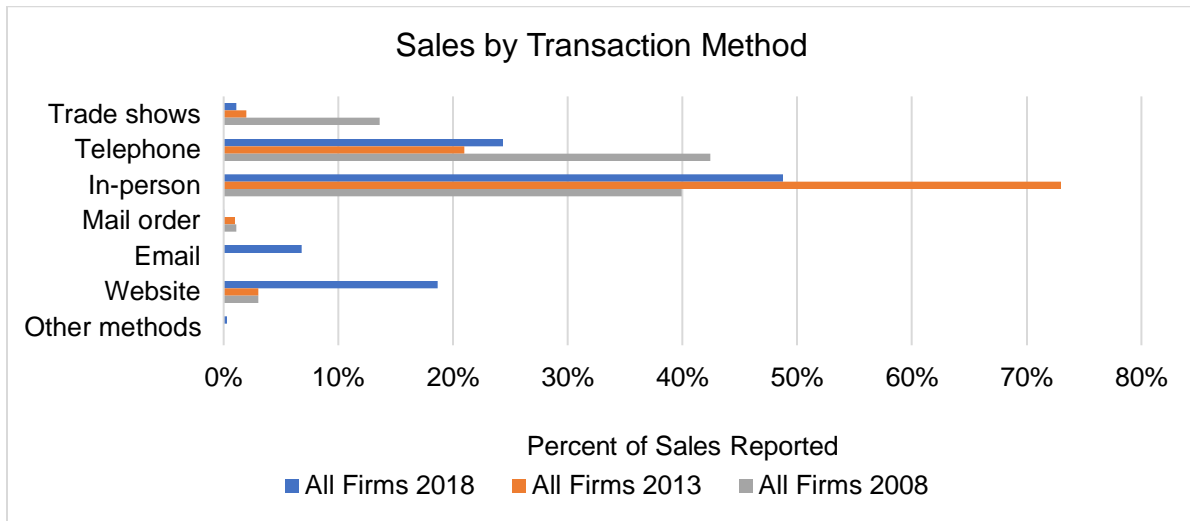
Figure 10. Sources for Customer Demographics in 2018



Sales Methods and Marketing Practices

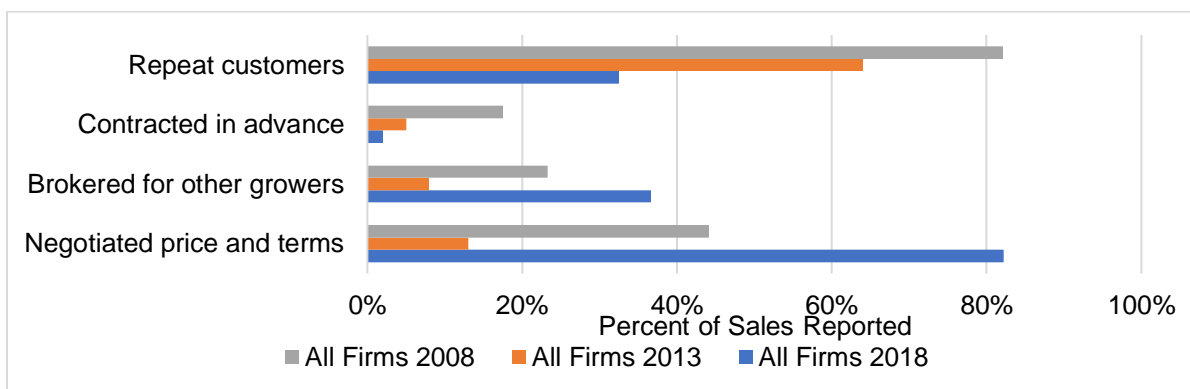
Respondents were asked to indicate the percentage of annual sales attributable to various transaction methods, including trade show orders, telephone orders, in-person orders, mail orders, website orders, email orders, and other types. The top transaction method (by sales) in 2018, as shown in Figure 11, was in-person (48.8 percent) followed closely by telephone (24.4 percent). The second tier of transaction methods include websites (18.7 percent) and email (6.8 percent). The third tier, consisting of less than 5% of firms' sales consists of trade shows (1.1 percent), mail orders (0.0 percent), and other methods (0.3 percent). When looking at the trends, though, telephone sales has decreased from just over 40 percent in 2008 to just over 20 percent in 2018. Trade shows, telephone, and mail order transactions have decreased from 2008 to 2018. In-person, website, and email transactions increased from 2008 and 2013.

Figure 11. Distribution of Sales by Transaction Method From 2008 to 2018



Survey results for several common marketing practices are shown in Figure 12. Marketing practices saw an interesting transition. In 2018, negotiating price and terms was the most used market practice (82.2 percent). Thirty-six percent of firms broker through other growers. Repeat customers, which used to be the most used marketing practice, sharply decreased from 2008 to 2018 to the third place out of four used practices (32.5 percent). Contracting in advance consisted of 2.0 percent of firms' marketing practices.

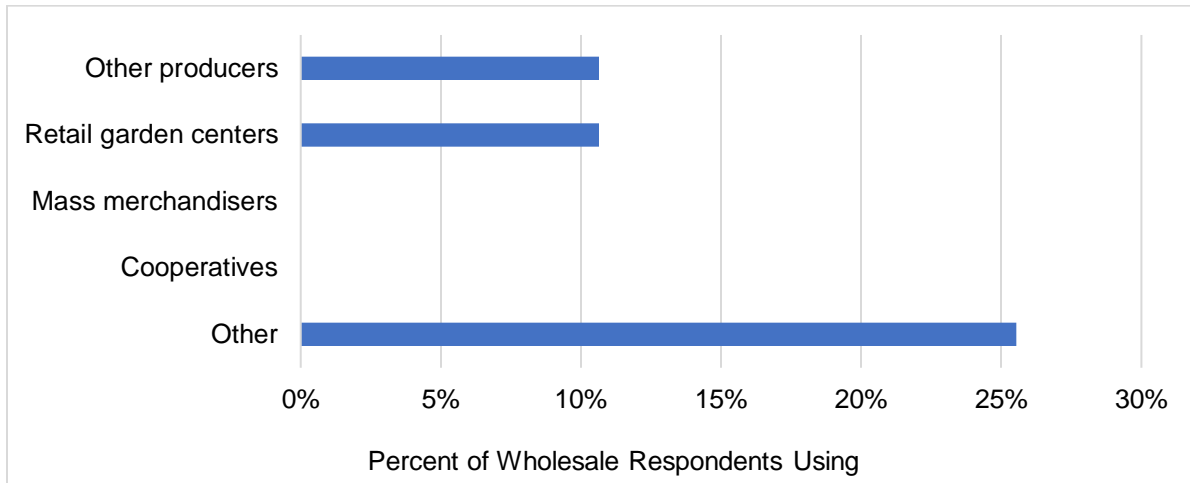
Figure 12. Customer Types From 2008 to 2018



Forward contracting is an important marketing practice that many producers use as a risk management tool. Forward contract sales accounted for 19 percent of the overall sales in

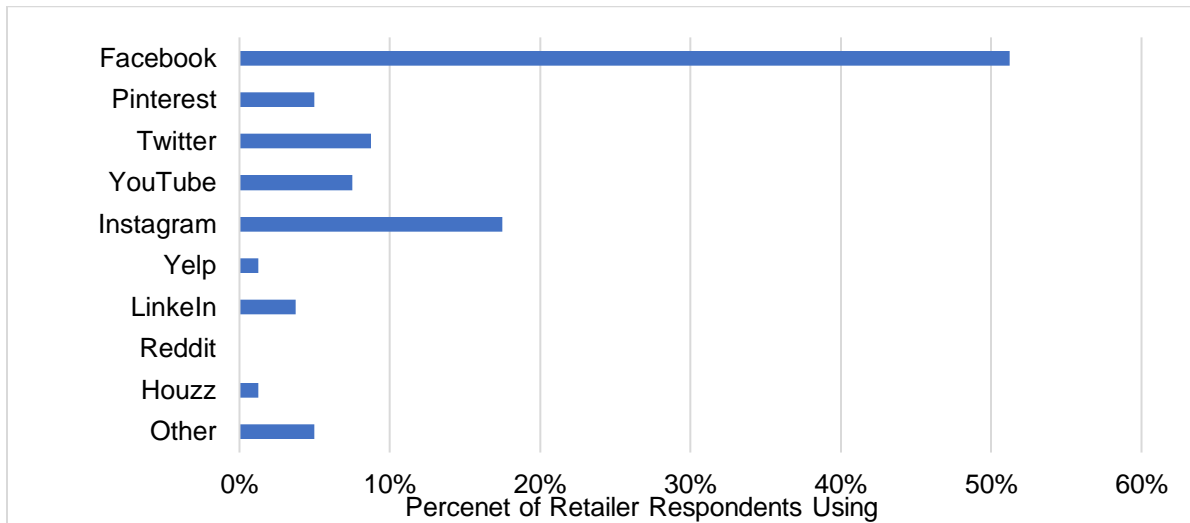
the United States in 2018 (Figure 13). The most common type of buyer for forward contracting is other buyers (25.5 percent), other producers (10.6 percent), and retail garden centers (10.6 percent). Mass merchandisers (0.0 percent), and cooperatives (0.0 percent) were not used by buyers.

Figure 13. Contracting Practices in 2018



With generally increased reliance on consumer data analytics and predictive modeling in consumer goods sectors, Texas Green industry firms are gradually increasing their online presence and digital marketing strategies to attract more customers and retain their existing customer base. One such digital marketing strategy is using social media (Figure 14). Facebook is the most popular social media platform used by firms (51.3 percent) followed by Instagram (17.5 percent). Other platforms that firms use include Pinterest (5.0%), Twitter (8.8 percent), YouTube (7.5 percent), Yelp (1.3 percent), Yelp (1.3 percent), LinkedIn (3.8 percent), Houzz (1.3 percent), and other (5.0 percent). None of the Texas Green industry firms use Reddit.

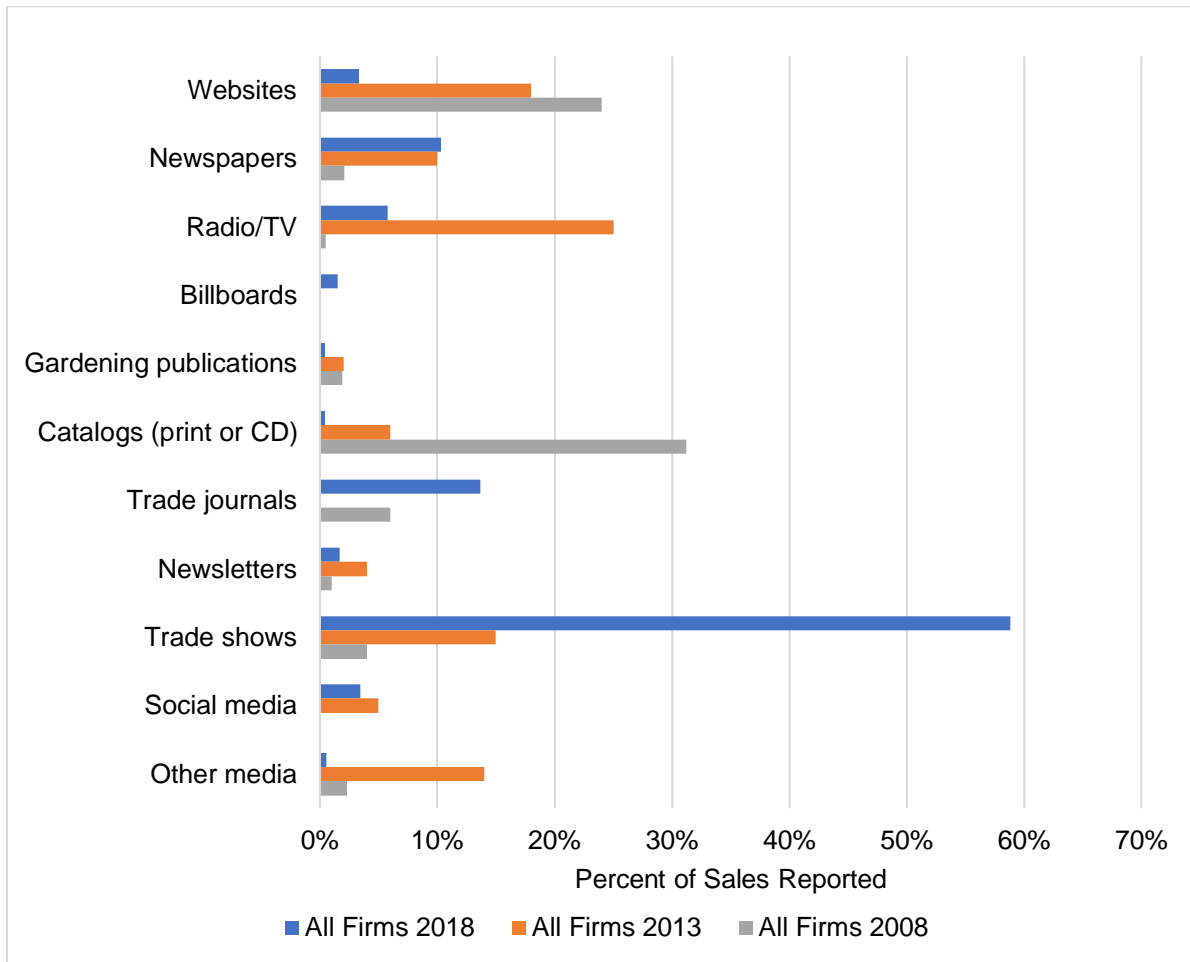
Figure 14. Social Media Platform Use in 2018



Advertising Expenditures

Respondents were asked to report the percentage of their total sales allocated to advertising and the percentage of their advertising budget spent on various media forms. Trade shows (58.8 percent), trade journals (13.7 percent), and newspapers (10.3 percent) were the top advertising media expenditures in 2018 (Figure 15). Lesser used medias include websites (3.3 percent), radio/tv (5.7 percent), billboards (1.5 percent), gardening publications (0.4 percent), catalogs (print or CD) (0.4 percent), newsletter (1.7 percent), social media (3.4 percent), and other media forms (0.6 percent). Trade shows have increased over time from 6 percent in 2008 to 14 percent in 2018. Newspaper advertisement expenditures has also increased from 2008 to 2018. Gardening publications and other media forms have a u-shaped curve with a slight overall decrease from 2008 to 2018. Websites, catalogs, and social have decreased from 2008.

Figure 15. Distribution of Advertising Media Expenditures From 2008 to 2018

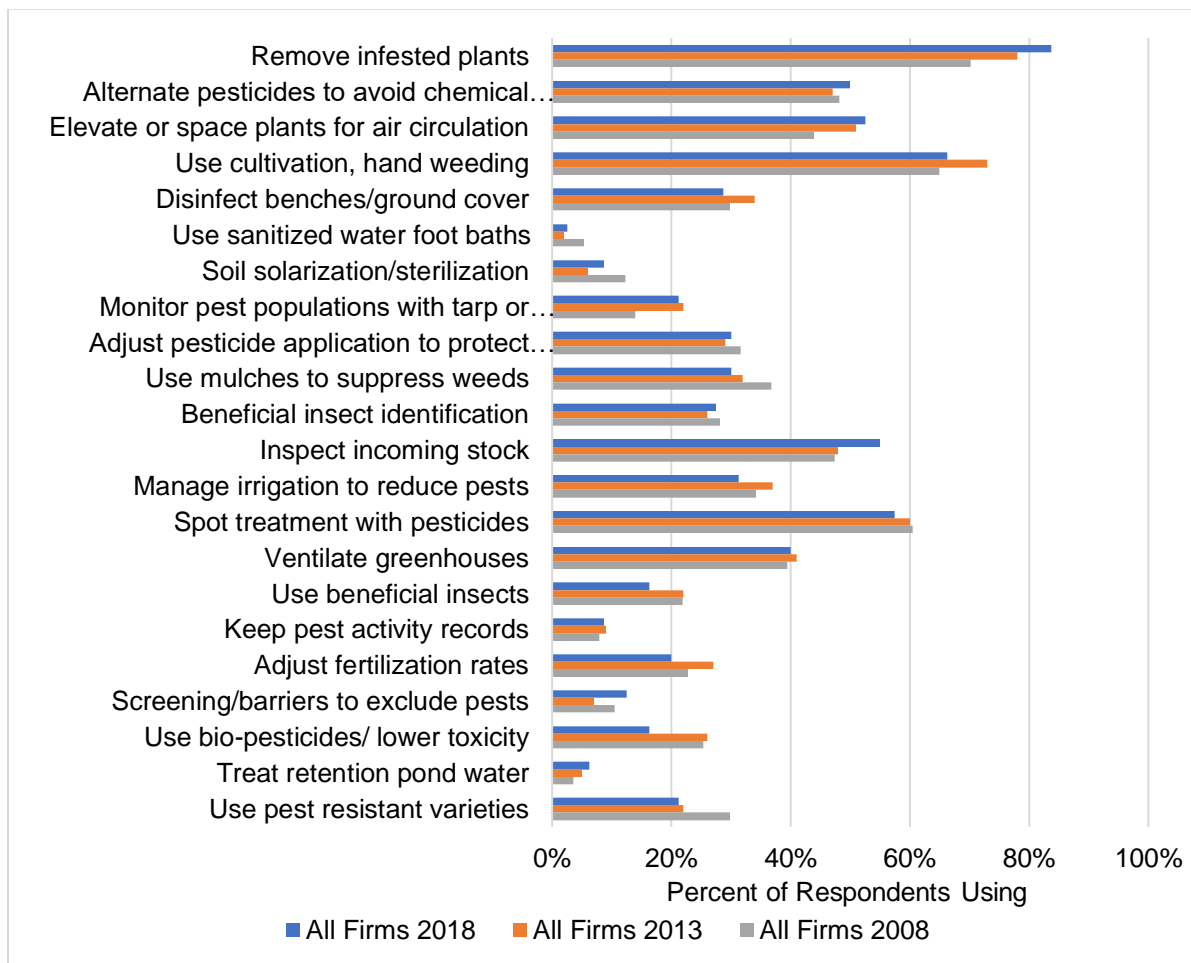


Integrated Pest Management Practices

Green industry firms routinely use Integrated Pest Management (IPM) as part of their Best Management Practices that seek to minimize the application of chemicals, decrease disease/pests, and reduce impacts on beneficial insects or non-pest organisms. Respondents were asked to select from a list of 22 possible IPM practices that they routinely follow. The percentages of Green industry firms who reported using these practices are shown in Figure 16. The top tier of practices used include 83.8 percent of Texas firms remove the infested plant as part of their pest management strategy, 50 percent of firms alternate pesticides to avoid chemical resistance, 52.5 percent elevate or space plants for air circulation, 66.3 use cultivation and/or hand weeding and 55 percent inspect incoming stock. The second tier of practices

utilized are disinfecting benches/ground cover (28.8 percent), monitor pest populations with tarp or sticky boards (21.3 percent), adjust pesticide application to protect beneficials (30 percent), use mulches to suppress weeds (30 percent), beneficial insect identification (27.5 percent), manage irrigation to reduce pests (31.3 percent), ventilate greenhouses (40 percent), adjust fertilization rates (20 percent), use bio-pesticides/lower toxicity (16.3 percent), and use pest resistant varieties (21.3 percent). The third tier of pest management practices, practices that less than 15 percent of firms use, include using sanitized water foot baths (2.5 percent), soil solarization/sterilization (8.8 percent), keeping pest activity records (8.8 percent), and treating retention pond water (6.3 percent). The same top strategies in 2018 were also the top strategies in 2008 and 2013. All of the potential pest management strategies are being relatively the same amount as 10 years ago.

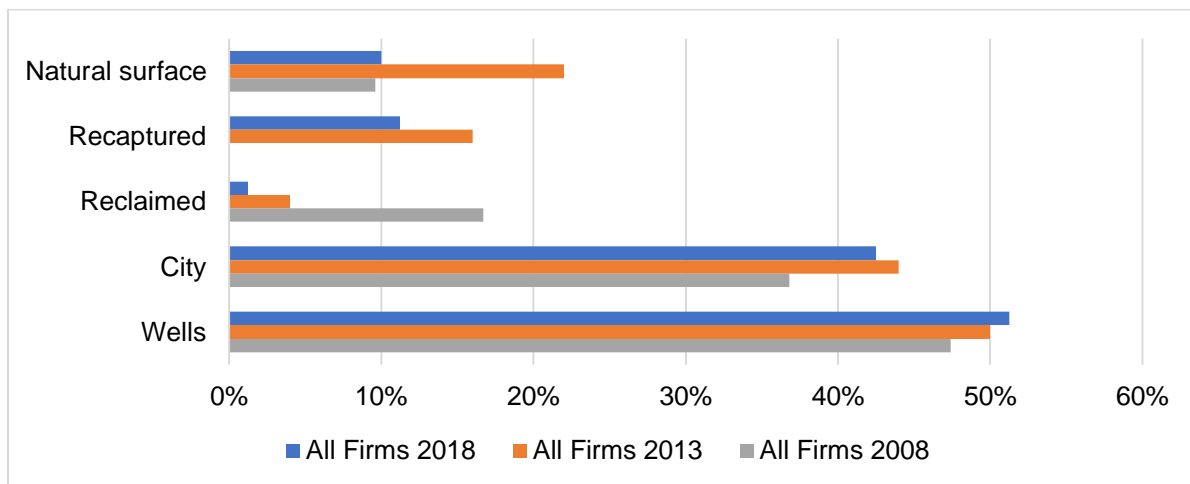
Figure 16. Integrated Pest Management (IPM) Practices Used From 2008 to 2018



Water Sources and Irrigation Methods

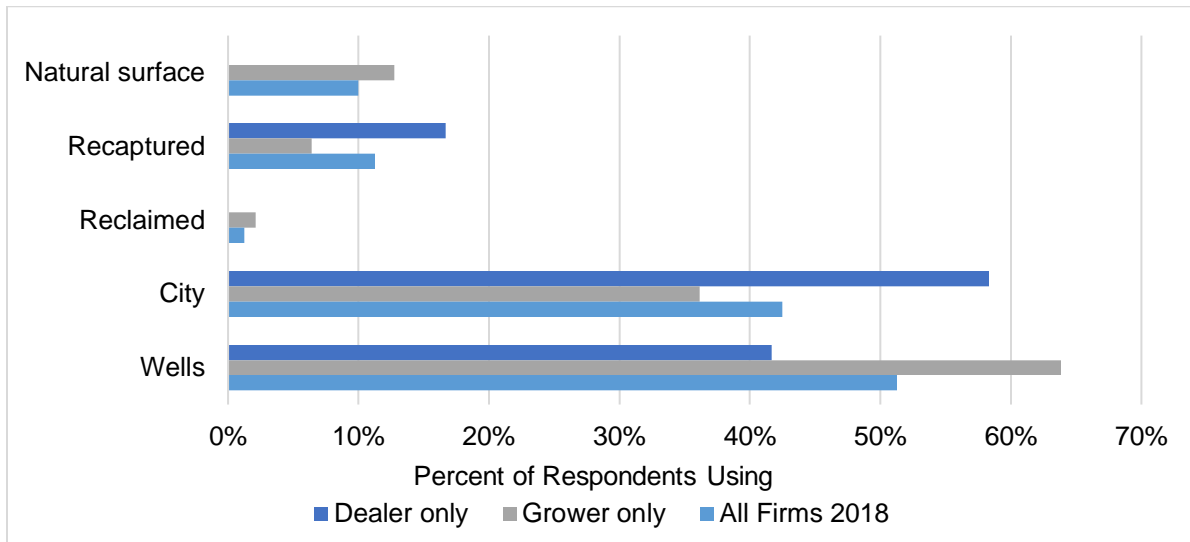
Respondents were asked to indicate the percentage of water used for irrigation that was obtained from the following sources: natural surface, recaptured sources, city (municipal) water supplies, and groundwater wells. Overall, 51.3 percent of firms indicate that well water is their water supply source (Figure 17). This was also true for 2008 and 2013. Approximately 42.5 percent of firms indicated that they use city water, making it the second most utilized water source. Eleven percent of firms indicated they use natural surface water, ten percent use recaptured water, and 1 percent uses reclaimed water. Firms have increased usage their usage of well water and city water from 2008. The number of firms using natural surface water has remained the approximately the same since 2008, but there was a surge in users in 2013. The percentage of firms that indicated that they use recaptured or reclaimed water decreased from 2008.

Figure 17. Irrigation Water Sources Utilized From 2008 to 2018



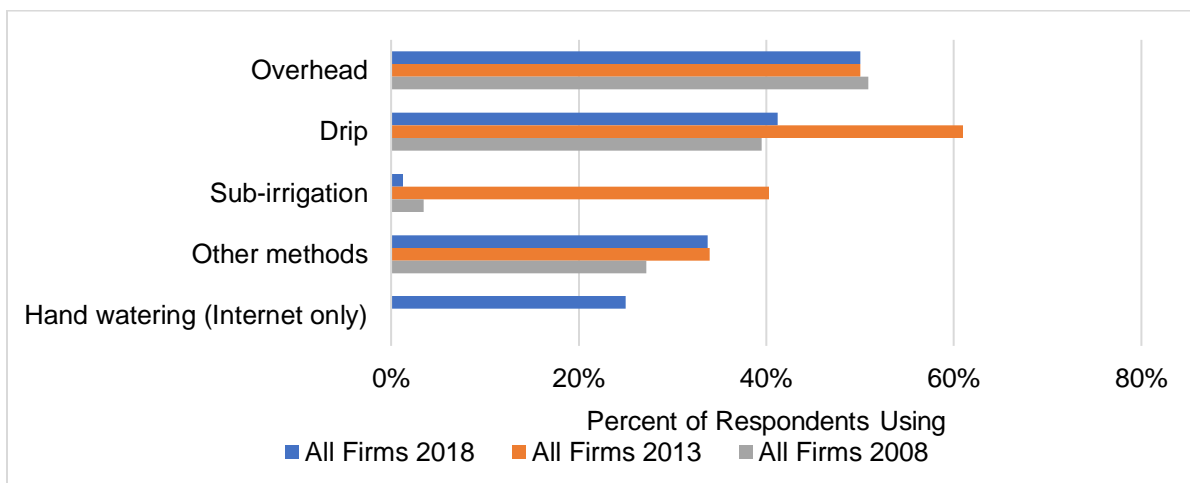
When accessing by the type of firm in 2018, 63.8 percent of growers use well water, 12.8 percent use natural surface water, 6.4 percent use recaptured water, 2.1 percent use reclaimed water, 36.2 percent use city water (Figure 18 **Error! Reference source not found.**). Forty-two percent of dealers use well water, 58.3 percent use city water, none use reclaimed water, 16.7 percent use recaptured water, and none use natural surface water. Well water is the dominant source used for growers and city water is the dominant source for dealers. Dealers use more city water supply (58.3 percent) than growers (36.2 percent).

Figure 18. Irrigation Water Sources Utilized by Growers and Dealers in 2018



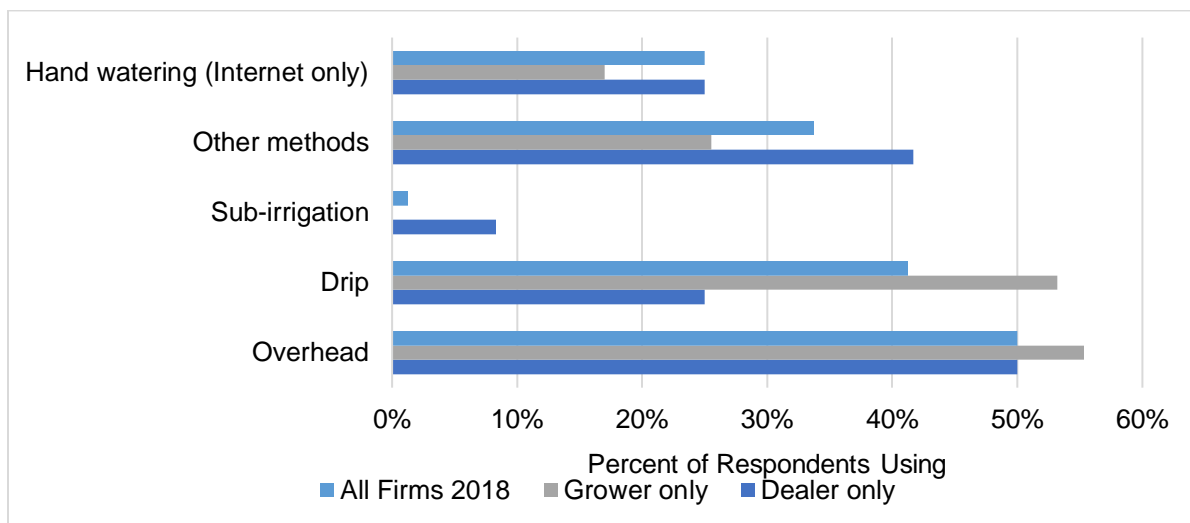
Survey respondents were also asked about irrigation water application methods used, including overhead sprinklers, drip, sub-irrigation (ebb/flood), hand watering, and other methods (Figure 19). Overhead watering (50 percent) is the most used water method followed by drip irrigation (41.3 percent), other methods (33.8 percent), hand watering (25.0 percent), and, lastly, sub-irrigation (1.3 percent). The usage of overhead irrigation and drip irrigation has maintained the same over time from 2008. The usage of sub-irrigation has decreased, and other methods has increased from 2008 to 2018.

Figure 19. Water Application Methods Utilized From 2008 to 2018



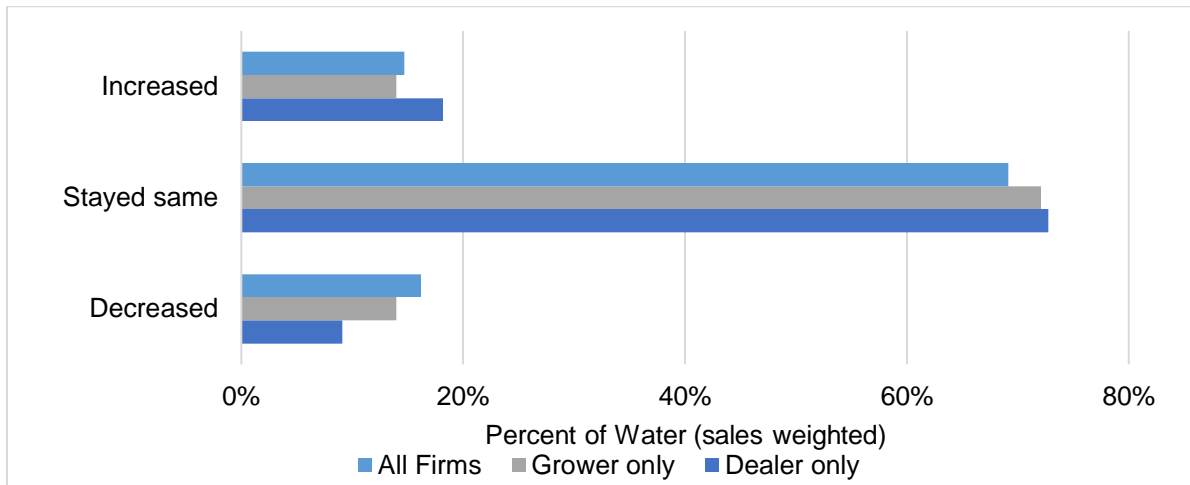
When comparing growers and dealers in 2018, growers do more overhead (55.3 percent versus 50 percent) and drip irrigation (53.2 percent versus 25 percent) than dealers (Figure 20). Dealers engage in more sub-irrigation watering (8.3 percent versus 0 percent), hand watering (25 percent versus 17 percent), and other irrigation methods (41.7 percent versus 25.5 percent) than growers. Overall, overhead watering is the dominant watering method by both growers and dealers.

Figure 20. Water Application Methods Utilized by Growers and Dealers in 2018



Trends over time in water use for irrigation are also important for measuring efforts toward resource conservation in the industry. On average, 14.7 percent of firms increased in their water usage in from 2013 to 2018 (Figure 21). Dealers increased their water usage more than growers did (18.2 percent versus 14.0 percent). Sixty-nine percent of firms used the same amount of water from 2013 to 2018 no matter if they were a grower or a dealer. Approximately 16.2 percent of firms decreased their water usage with slightly more growers decreasing their water usage than dealers (14.0 percent versus 9.1 percent).

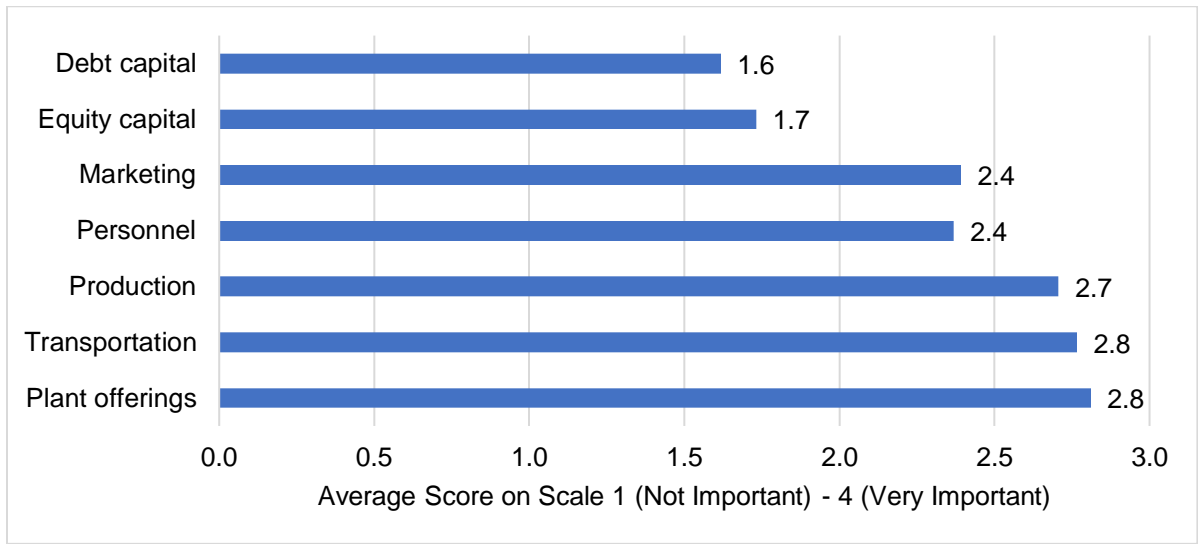
Figure 21. Water Usage Change by Growers and Dealers in 2018



Factors Affecting Price, Geographic Expansion and Business

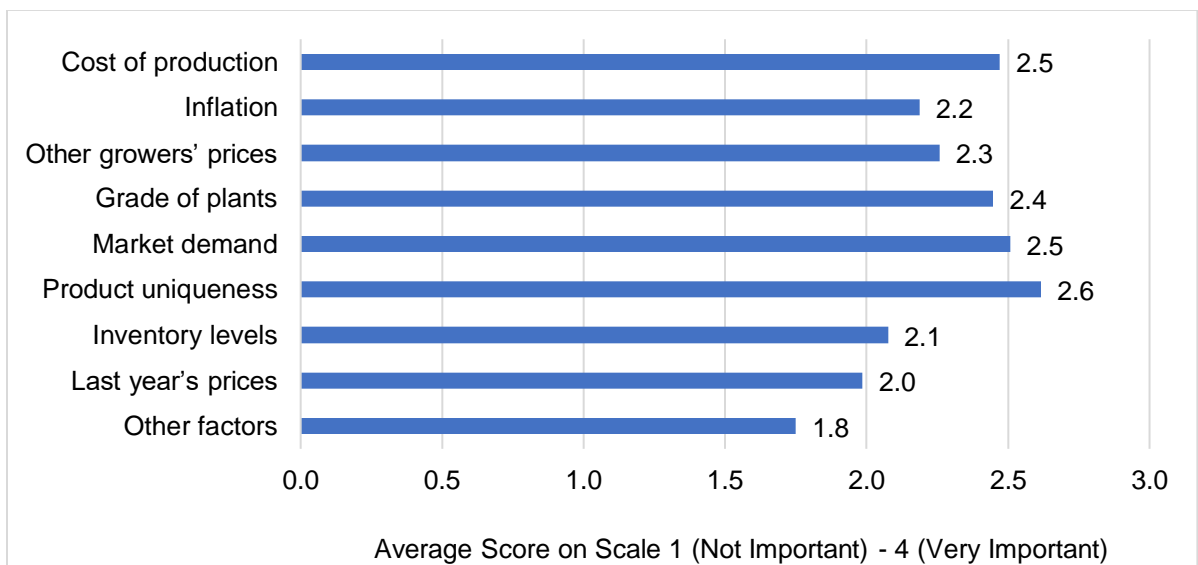
Green industry managers’ expectations and subjective considerations of factors affecting business performance are important considerations in assessing key areas of strengths, weaknesses, and opportunities. Survey respondents were asked to indicate the importance of various factors potentially affecting price determination, geographic expansion, and issues affecting the industry in general, by rating each of the factors on a scale of one to four, with four representing “very important,” three representing “important,” two representing “minor importance,” and one representing “not important.” Each of the factors were averaged as shown in Figure 22. The potential factors limiting the geographic range or trading area for Texas Green Industry firms include plant offerings, transportation, production, personnel, marketing, equity capital, and debt capital. Plant offerings and Transportation (2.8 out of 4.0) are the highest-ranked factors followed by production (2.7), personnel (2.4), marketing (2.4), equity capital (1.7), and debt capital (1.6).

Figure 22. Factors Affecting the Geographic Range in 2018



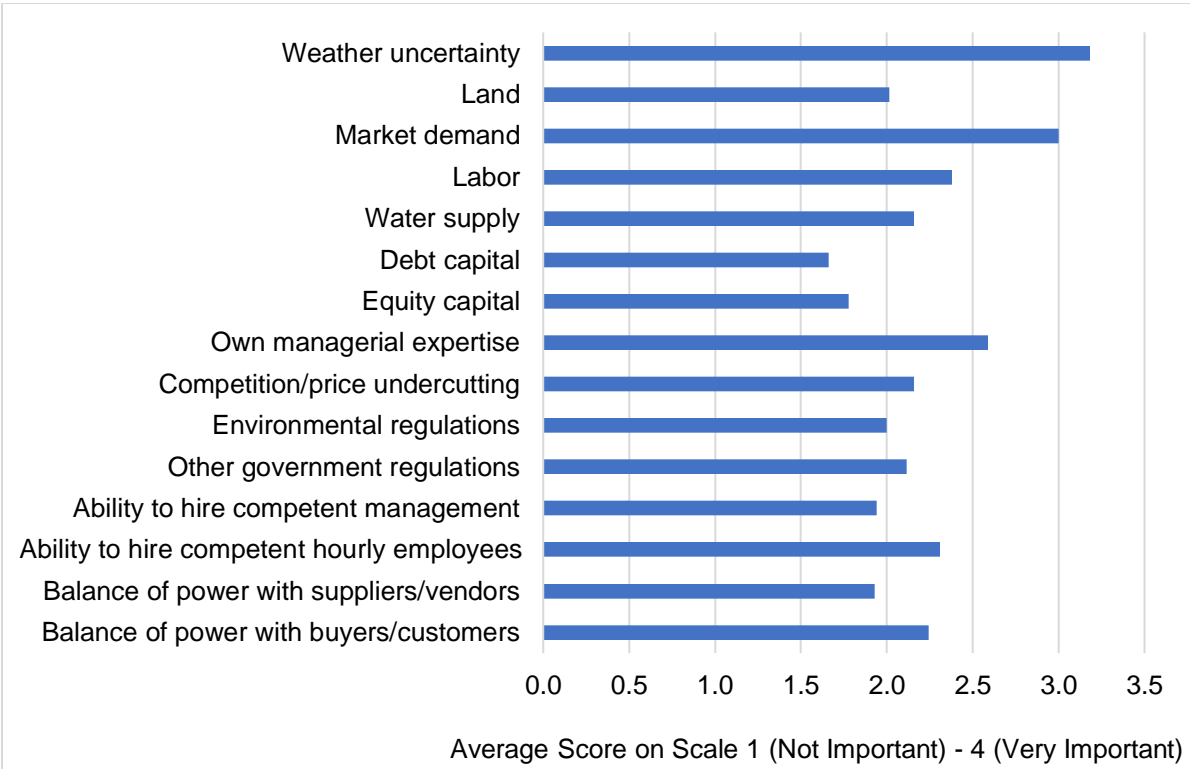
The potential factors affecting product prices last year's prices, inventory levels, product uniqueness, market demand, grade of plants, other grower's prices, inflation, cost of production, and other factors (Figure 23). The highest-rank factor that affects price is product uniqueness (average score of 2.6 out of 4.0) followed by cost of production (2.5), market demand (2.5), grade of plants (2.4), other growers' prices (2.3), inflation (2.2), inventory levels (2.1), last year's prices (2.0), and other factors (1.8).

Figure 23. Factors Determining Product Pricing in 2018



The potential factors that can impact the overall business environment include balance of power with buyers/customers, balance of power with suppliers/vendors, ability to hire competent hourly employees, ability to hire competent management, other government regulations, environmental regulations, competition/price undercutting, own managerial expertise, equity capital, debt capital, water supply, labor, market demand, land, and weather uncertainty. As shown in Figure 24, the top factors affecting business include weather uncertainty (3.2 out of 4.0) and market demand (3.0). Other factors impacting business include, in decreasing order, own managerial expertise (2.6), labor (2.4), ability to hire competent hourly employees (2.3), water supply (2.2), competition/price undercutting (2.2), balance of power with buyers/customers (2.2), other governmental regulations (2.1), land (2.0), environmental regulations (2.0), ability to hire competent management (1.9), balance of power with suppliers/vendors (1.9), equity capital (1.8), and debt capital (1.7).

Figure 24. Factors Impacting the General Business Environment in 2018



Summary and Implications

The horticulture industry is vital for Texas' agriculture economy. Industry leaders and stakeholders can use the information presented in this report to advocate and communicate the importance of the Green industry with other agriculture leaders and state government. Not only can the information in the report serve as a comparative benchmark for individual firms to use to compare their business activities to, but also presents the value of the overall horticulture industry at a larger scope. A call to action is required for issues including encouragement to use marketing practices and management, reducing time- and resource-intensive watering methods, and investigation into research and education programs related to understanding the change in consumer demand related to plant types and improvement of IPM strategies.

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