United States Department of Agriculture
National Institute of Food and Agriculture

Alternative Production Methods for Landscape Trees: Some Preliminary Survey Results from Landscape and Nursery Professionals.[1]

In 2010, researchers at the University of Massachusetts and the University of New Hampshire began a three year project to evaluate the economics of alternative nursery production methods in the New England area. We want to assess whether pot-in-pot (PIP) and in-ground fabric container (IGFC) trees are comparable to and competitive with trees grown using traditional field-grown (balled and burlapped—B&B) methods.

The project's objectives include:

- Evaluating a pot-in-pot system and an in-ground fabric container system as alternatives to the field-grown balled and burlapped production methods traditionally used in the Northeast for growing landscape trees and shrubs;
- Assessing growth rates and final caliper sizes of trees grown in the three systems, and comparing root mass and structure in the harvested products;
- Measuring the amount of field soil harvested with the trees;
- Assessing whether PIP and IGFC methods are economically competitive with the traditional B&B method;
- Assessing current attitudes about and demand for these alternative products.

This document highlights some of the preliminary results from a survey conducted during the spring and early summer of 2011. Our survey was sent by email to 5,596 individuals associated with the green industry throughout New England in April 2011 using Qualtrics Survey Software. 744 individuals or 13.3 % opened the survey; An initial screening question narrowed the pool to 417 respondents who had purchased or planted trees or large shrubs.

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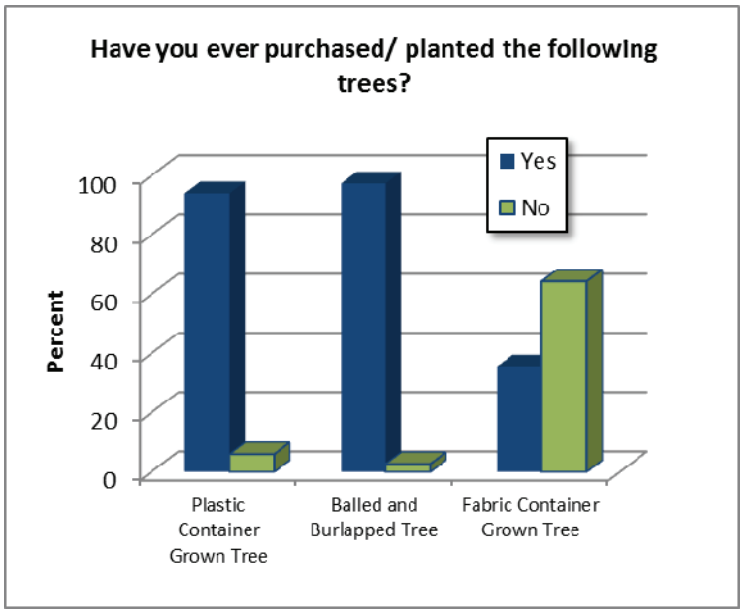
[1] Funding for this project was provided by the USDA National Institute of Food and Agriculture. Additional support provided by the New Hampshire Agricultural Experiment Station.

Respondents' Attitudes about Different Nursery Plants…



⇒ Balled and burlapped (B&B) trees and shrubs are the predominant type purchased and planted. 97% of respondents have purchased B&B trees and shrubs.

⇒ Plastic pots are also popular; 94% have purchased plastic container trees and shrubs.

⇒ Only about 36% of the respondents have purchased trees and shrubs in fabric containers.

⇒ On average, respondents indicated that about 46% of the trees and shrubs they planted were B&B plants and about 43% were in plastic containers. Trees and shrubs in fabric containers made up only about 2% of respondents' purchases.

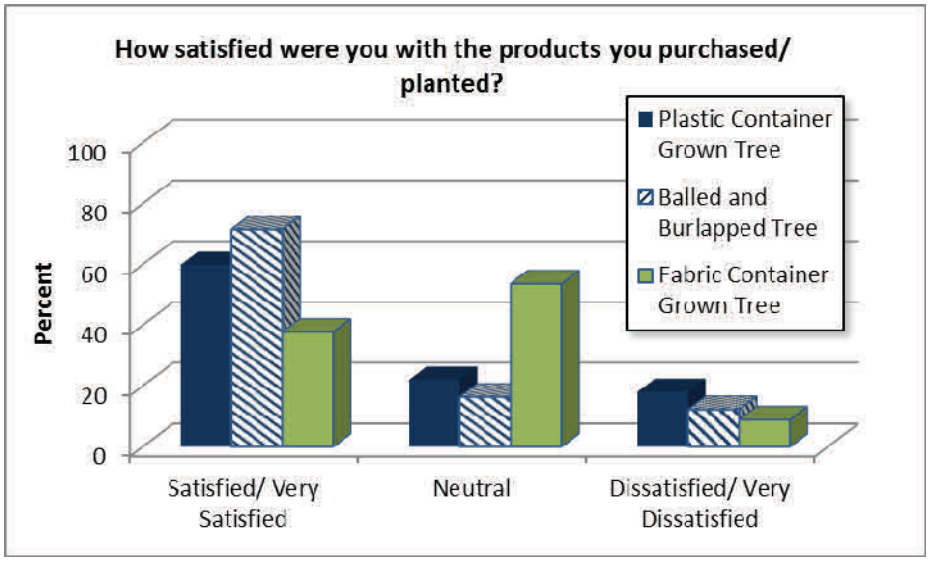
⇒ About 7% purchased balled and potted, bare-root, and other types of plants and about 2% did not answer.

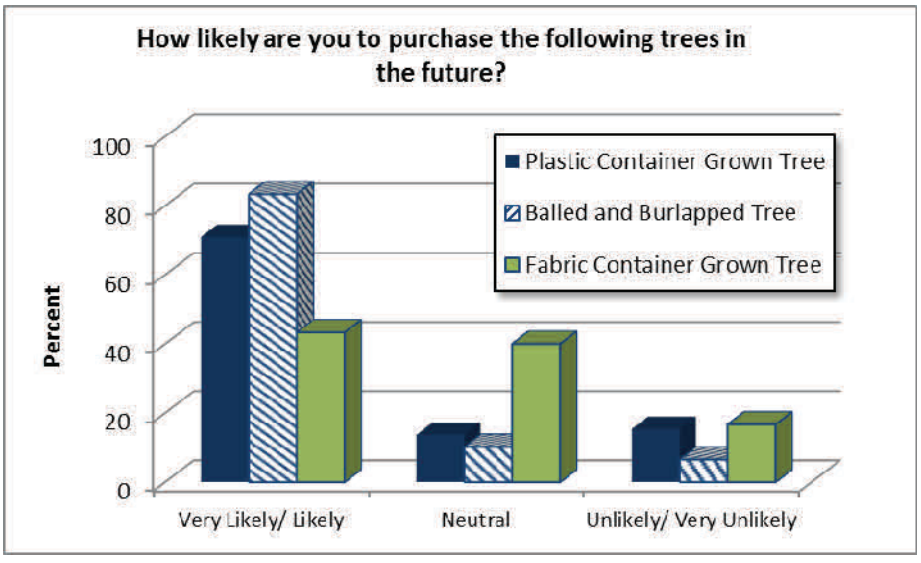
⇒ A majority were either very satisfied or satisfied with both B&B (72%) and plastic container (60%) plants.

⇒ About 38% indicated they were satisfied with fabric container trees.

⇒ However, only 9% were dissatisfied with the fabric container trees, compared to 18% and 12% for plastic pot and B&B trees.

⇒ A number of respondents replied to this question despite not having experience with fabric container trees; Most of these respondents had no opinion about the fabric container trees. We'll look at the differences between those with and without experience on the next page.



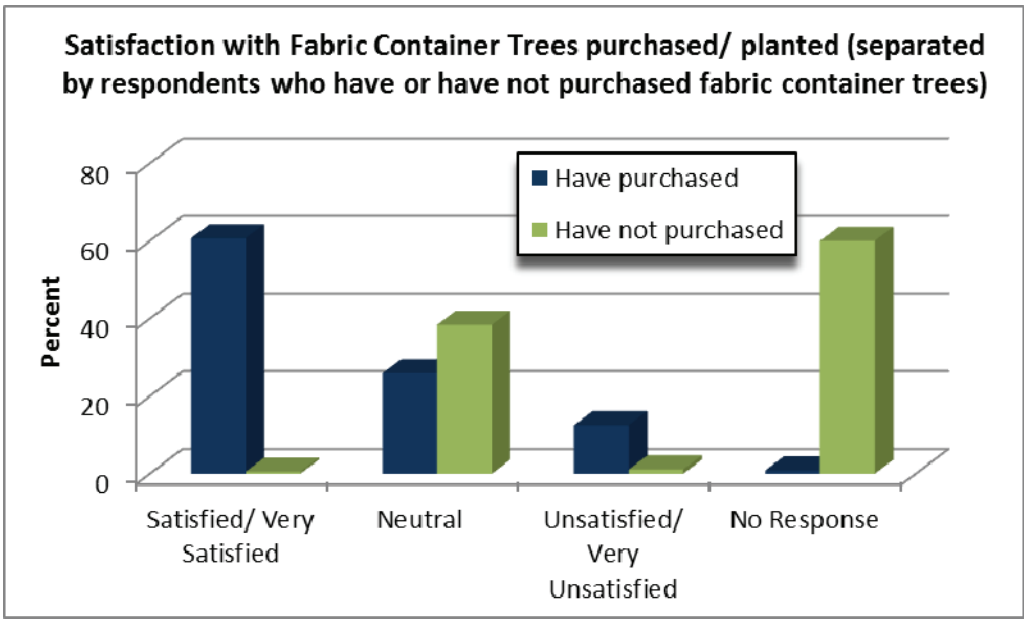


⇒ 83% of respondents indicated they were likely or very likely to purchase a B&B tree in the future, 71% were likely to purchase plastic container trees and 43% likely to purchase fabric container trees.

⇒ As with the satisfaction question, small percentages indicated they were unlikely to purchase that type of tree in the future. Only about 6.5% were unlikely to purchase a B&B tree, while 15 and 17% were unlikely to purchase plastic and fabric container trees, respectively.

Respondents' Attitudes about Different Nursery Plants…

About 36% of our respondents said they had purchased/planted fabric container trees. While most respondents answered the questions about their satisfaction with fabric container tree and whether they were likely to purchase them in the future, we wondered how attitudes differed across the two groups who had and had not tried fabric container trees.



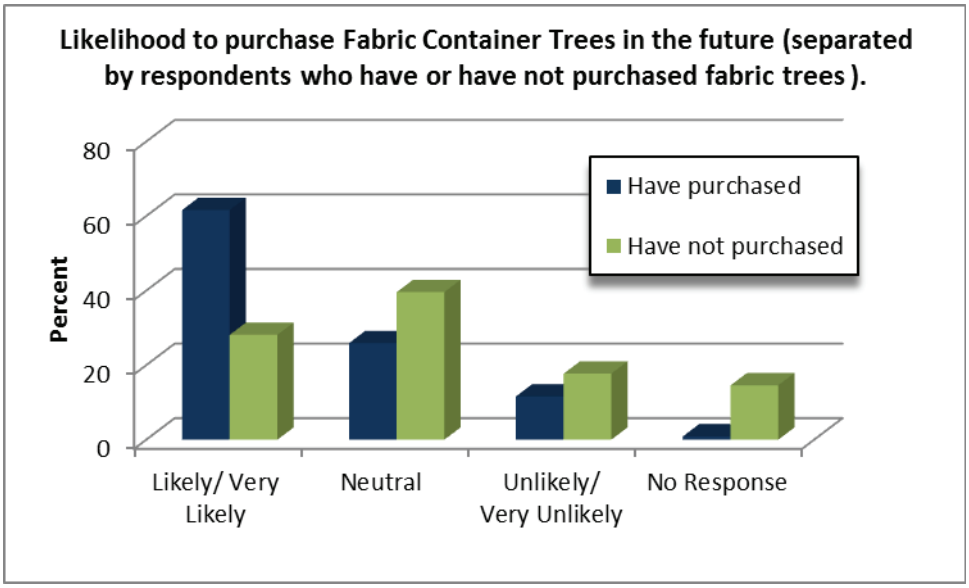
⇒ Of those who had purchased/ planted fabric container trees, 61% were either satisfied or very satisfied with the trees. 26% were "neutral" about the fabric trees and just 12.5% were dissatisfied.

⇒ Virtually all respondents who said they had not purchased/ planted fabric trees selected either "no response" or "neutral" when asked how satisfied they were with fabric container trees.

⇒ A majority of those who purchased/planted fabric trees were likely to purchase them again in the future; 62% were likely or very likely and 25% were neutral. Fewer than 12% said they were unlikely to purchase fabric trees in the future.

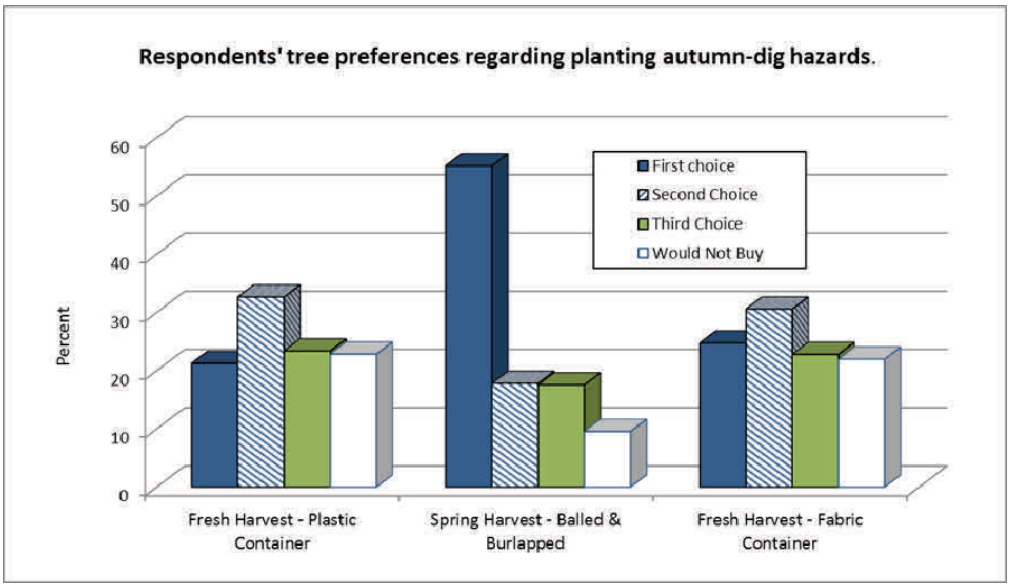
⇒ Those with no experience were less likely to purchase fabric trees in the future. 28% said they were likely or very likely to purchase fabric trees, while the largest percentage was neutral (40%). About 18% said they were unlikely or very unlikely to purchase fabric container trees.

⇒ About 15% of those who had not previously purchased fabric container trees did not respond to this question.



Respondents' Attitudes about Different Nursery Plants…

Some trees, such as birch, are considered autumn dig hazards when harvested as balled and burlapped trees. These trees are dug in the spring and may be held through the summer to be available for summer and fall planting. Plastic container trees eliminate the autumn dig hazard, and fabric container trees can also be harvested in the autumn. We asked how our respondents felt about each of these different trees if they were planting them late in the season (autumn) and asked them to rank their first, second and third choices. We did allow that respondents could choose to not purchase trees.



⇒ Spring harvested balled and burlapped trees were a clear first choice (55%) for the majority of respondents.

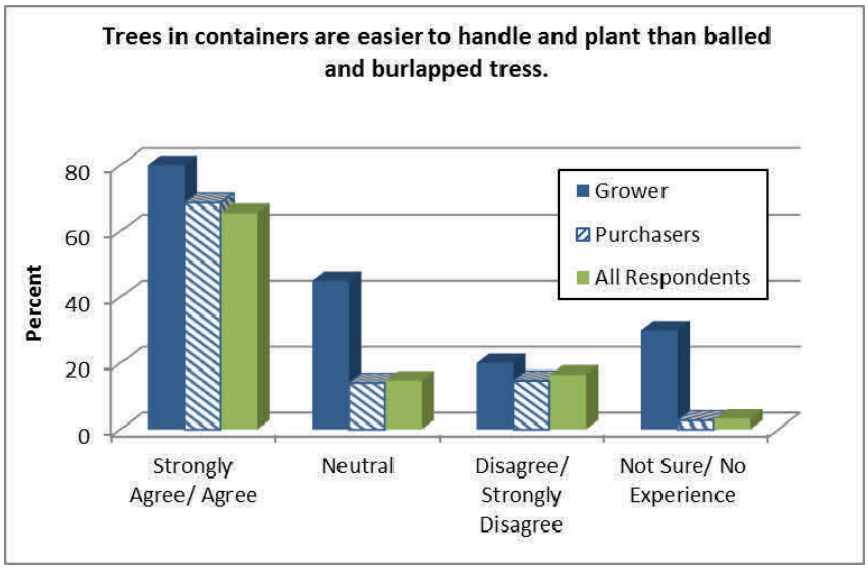
⇒ Preferences for second and third choice trees are more or less evenly split between freshly harvested fabric and plastic container trees.

⇒ About 20% of respondents indicated that they would not buy freshly dug fabric or plastic container trees.

Grower & Purchaser Attitudes Regarding …

To differentiate respondents' interests, responses were separated into the supply and demand sides of the industry by business type: those who grow nursery products (Growers) and those who purchase nursery products (Purchasers). Respondents who identified their business/ profession with the "Nursery/ Grower" category are included as Growers, while other respondents who identified their business with purchasing/ planting (see Table 1) are included as Purchasers. The Nursery/ Growers category comprised 6.4 % of all respondents.

⇒ Not surprisingly, majorities of both *Growers* (80%) and *Purchasers* (69%) agree that "trees grown in containers are easier to handle and plant than balled and burlapped trees."



Grower & Purchaser Attitudes regarding …

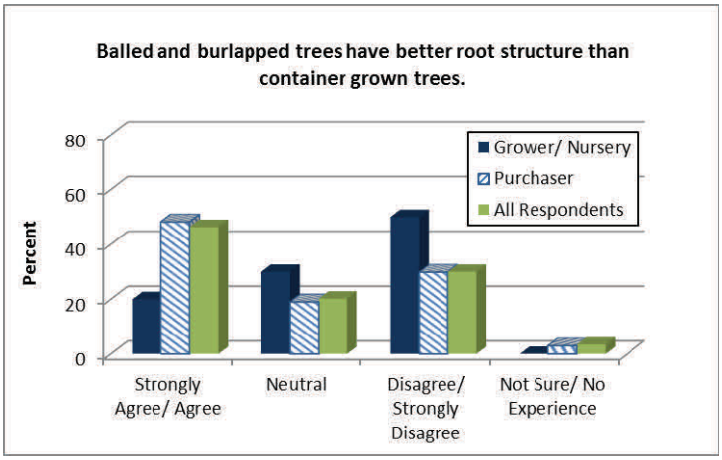
⇒ Nearly half the *Purchasers* agreed that balled and burlapped trees have better root structures than trees grown in containers, and less than 30% disagreed.

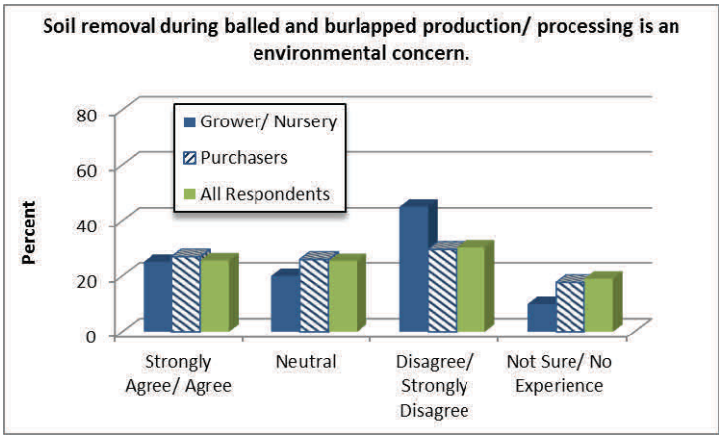
⇒ Attitudes of the *Growers* were quite different - less than 20% agreed balled and burlapped trees have better root structures than trees grown in containers, and nearly 50% disagreed.

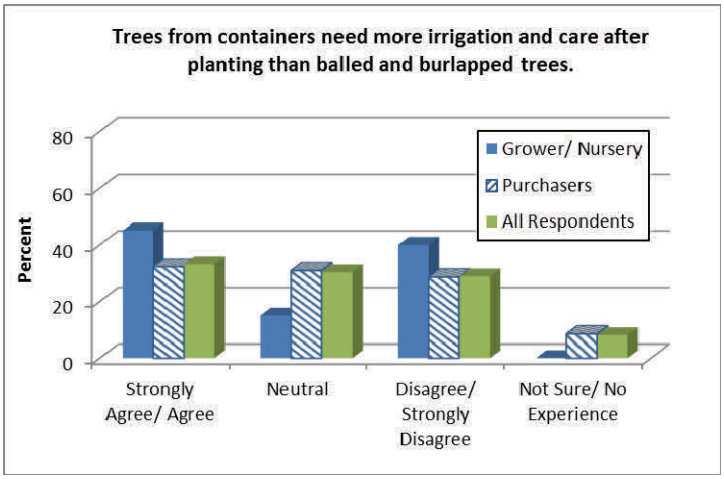
⇒ The two sides of the market seem at odds regarding root structure. Our research evaluates this issue.

⇒ The greatest percent of respondents disagreed with the statement that soil removal during balled and burlapped production/processing was an environmental concern. (30% of *Purchasers* and 45% of *Growers*).

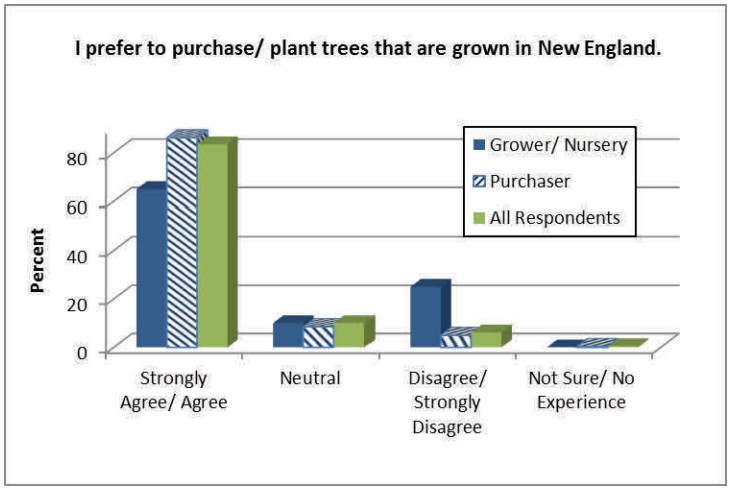
⇒ The proportion of *Growers* that disagreed is significantly higher. About 25% of each category either agreed that soil removal was a concern or were neutral about soil removal. Many *Growers* may have disagreed with this statement due to efforts to follow industry standards for post-harvest soil amendments and composting.







⇒ *Growers* were divided on whether container trees required more care. Just over 40% of the *Growers* agreed that container trees required more care, while nearly 40% disagreed. This question may have been ambiguous; *Growers* may have considered tree care during nursery production in their responses, while *Purchasers* would have considered trees which had been planted in the landscape.



⇒ Finally, respondents were asked to indicate whether they prefer to purchase/ plant trees that are grown in New England. Both *Growers* and *Purchasers* overwhelmingly agreed with this statement (65% and 85%, respectively), though 25% of *Growers* disagreed. Again, there could be ambiguity in these responses; *Growers* could have been considering the purchase of liners for growing on in the nursery, while *Purchasers* would have been considering the purchase of trees fpr landscape planting.

About the Respondents...

⇒ Table 1 shows the distribution of respondents by type of business/profession. 6.4% of the respondents were nursery/growers, the supply side of the green industry, while the remainder of the respondents represented the demand side of the market. (Note that not all survey respondents answered this question.)

⇒ 54% of the respondents were involved in "landscape design, installation and maintenance." This figure is the combined percentages of our second and third categories.

⇒ Nearly 18% of the respondents worked for institutions (municipalities, golf courses, colleges, etc.).

⇒ About 6% characterized themselves as arborists.

Table 1. Respondent's primary type of business.

	Frequency	%
Nursery/Grower	21	6.4
Landscape Contractor	127	39.0
Landscape Architect or Designer	49	15.0
Retail/Garden Center	22	6.7
Wholesaler or Plant Broker	6	1.8
Arborists, Tree Care	20	6.1
Grounds, etc., for Municipal Institution, Golf Courses	58	17.8
Other	23	7.1
	326	100.0

⇒ Table 2 shows the business location of respondents. Most email addresses were obtained from a Massachusetts institution, although the contact list was supplemented by a list from New Hampshire.

Table 2. States represented by the sample.

	Frequency	Percent
Connecticut	27	8.2
Maine	22	6.7
Massachusetts	205	62.5
New Hampshire	54	16.5
Rhode Island	7	2.1
Vermont	4	1.2
New York	9	2.7
	328	100.0

⇒ A majority of the respondents, 62.5%, were from Massachusetts as expected.

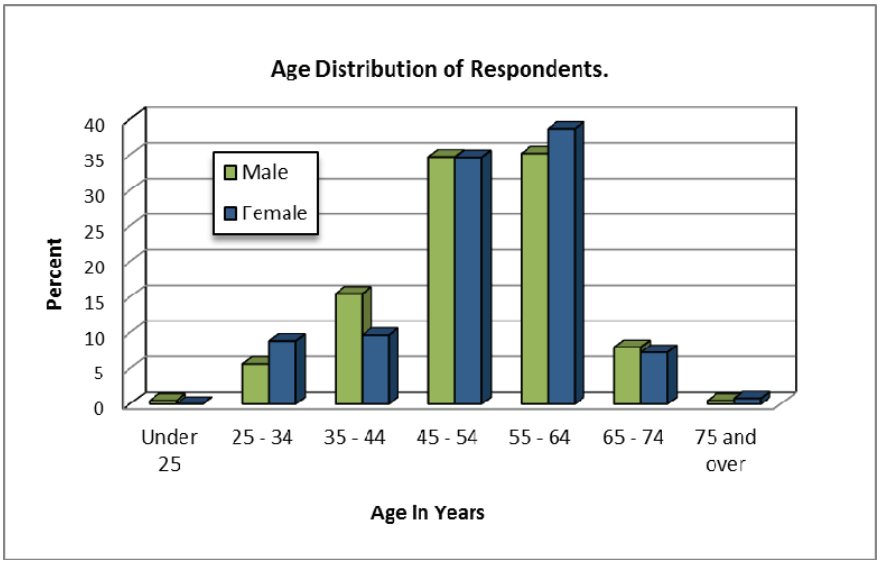
⇒ 16.5% of the respondents reported New Hampshire as their business location.

⇒ Other states are represented in the sample, but our ability to draw reliable inferences from those states is hampered by small sample sizes.

⇒ The age distribution suggests few young entrants.

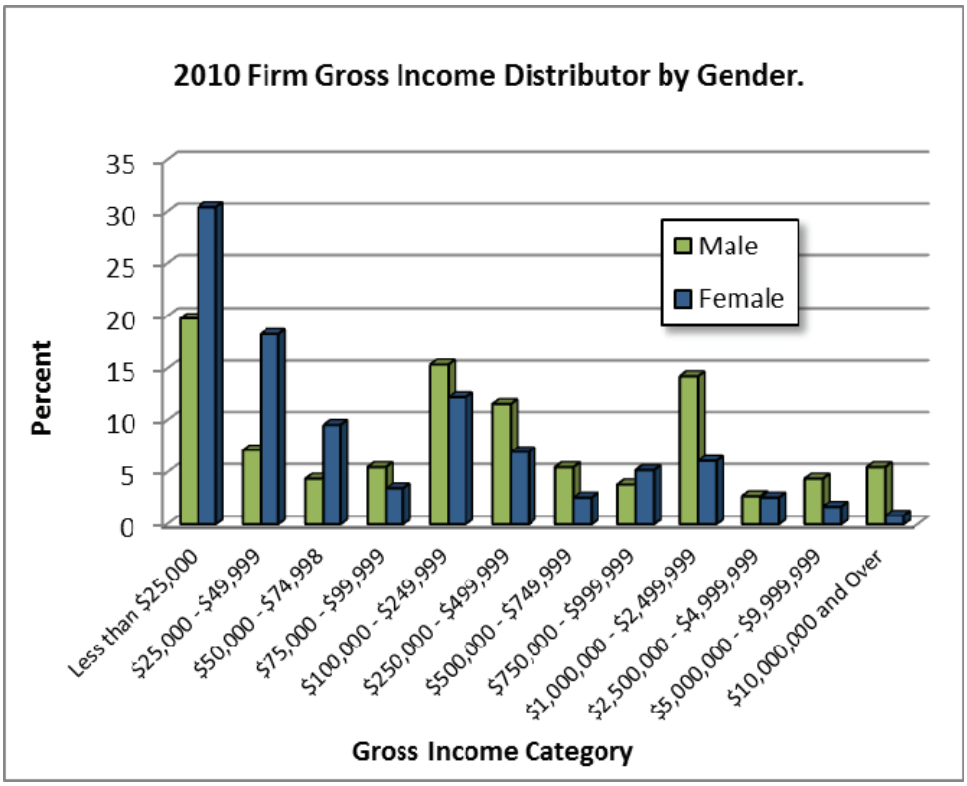
⇒ Age distributions for men and women in the industry are virtually identical.

⇒ Survey respondents were predominantly male, 64.2%, while 35.8 % were female. We do find differences in distributions for several variables for male versus female respondents.



About the Respondents...

⇒ The distribution of firms by gross income illustrates that most respondents worked for small firms. About 24% of all respondents reported gross income less than $25,000 and 46% earned less than $100,000.



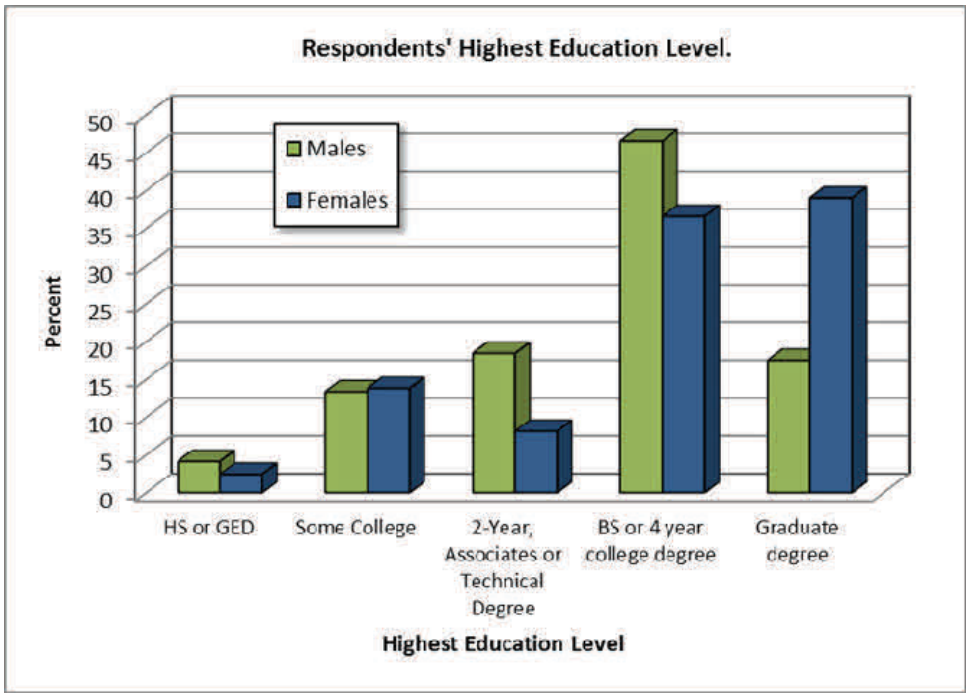
⇒ Fifty-four percent indicated that their firm's gross income was more than $100,000 and about 10 percent indicated their firm had more than 1 million in gross income.

⇒ While 48% of the male respondents reported gross incomes for their firm of $100,000 and over, just 26% of the female respondents reported gross incomes of $100,000 or more.

⇒ Respondents were highly educated with over 82% having Associates, Bachelors, or Graduate degrees, while more than 96% had attended college or additional training beyond high school.

⇒ 54% of male respondents had either a BS or graduate degree, while 75.6% of the female respondents had a BS or graduate degree. The percentages with a high school degree and some college were very similar.

⇒ Over 25% had a graduate degree; Nearly 40% of female respondents had a graduate degree, while 17.5% of the male respondents had a graduate degree.



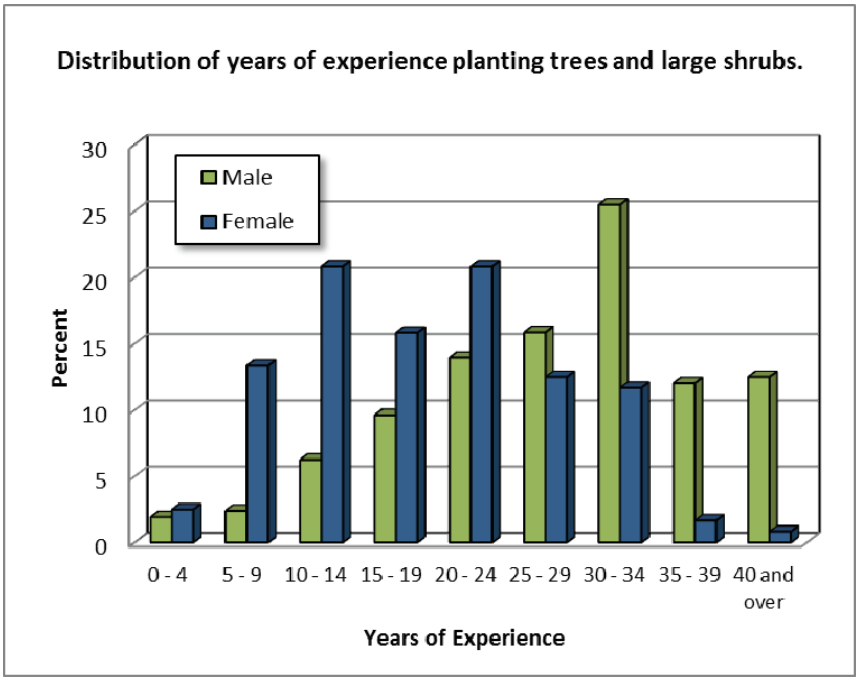
Respondents' Experience...

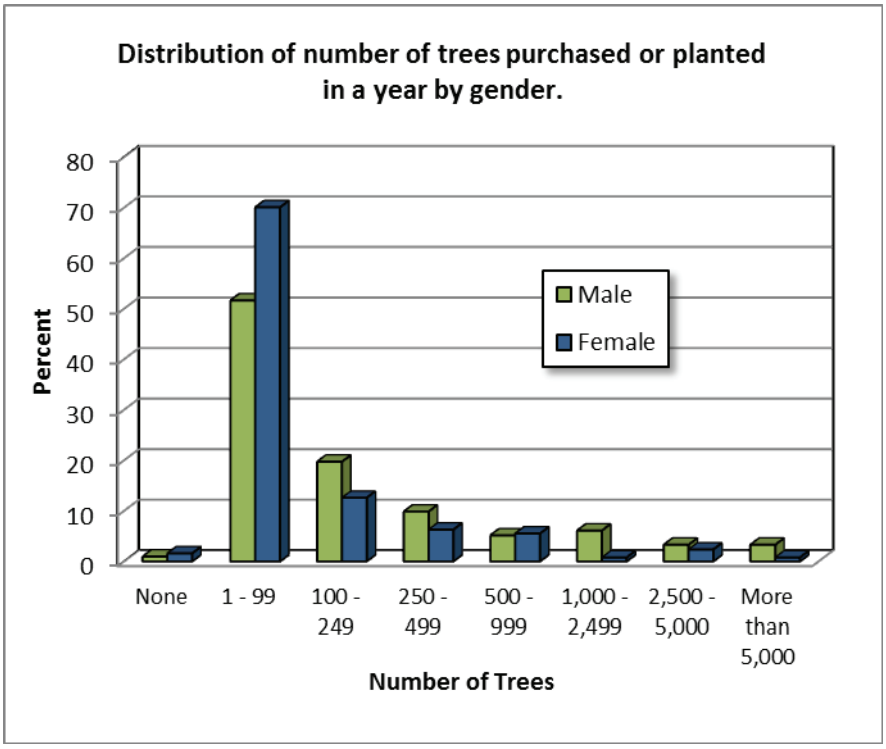
⇒ Respondents averaged just over 23 years of experience planting trees and shrubs; the median was 25 years of experience. Over 16% of the respondents had 35 or more years of experience; nearly 52% of the respondents reported 25 or more years of experience.

⇒ The distribution of experience reflects the age distribution for the survey respondents. Respondents were predominantly between 45 and 64 years old. These two age categories include over 71 % of the respondents. Based on this distribution, the median age would be about 45 to 54 years old.

⇒ Male respondents had more experience planting trees and shrubs. The average male respondent had 26.7 years of experience, while the average female respondent reported 17.8 years of experience.

⇒ 50% of the male respondents reported 30 or more years of experience while only about 14% of the female respondents reported 30 or more years of experience. Most (52.5 %) of the female respondents had fewer than 20 years of experience.





⇒ A majority of the respondents, about 60%, plant fewer than 100 trees and shrubs per year.

⇒ Across the remaining categories, the percentages of male respondents was greater than the percentages of women respondents, with one exception. A greater percentage of women respondents reported planting 500 to 999 trees than men.

Summary and Conclusions:

⇒ Professionals in the nursery and landscape industry have had positive experience with both traditional B&B and plastic pot trees and shrubs. Fewer professionals in the industry have experience with fabric container trees.

⇒ Majorities of those with experience with B&B and plastic container-grown trees are satisfied with those products. We also conclude that a comparable majority of those who have tried fabric container trees are satisfied with fabric container trees.

⇒ For plants that are characterized as autumn dig hazards, most (55%) prefer a spring harvested B&B plant. Fabric container trees were favored by over 20%, and plastic container trees were favored by about 20%.

⇒ The two sides of the market seem to disagree on which type of tree has better root structure. Half the respondents who purchased/planted trees felt that B&B trees have better root structure than container trees, but only 20% of growers agreed.

⇒ One of our research objectives is to evaluate how the different production methods influence root structure, since this may impact the health and longevity of the tree.

⇒ Soil removal does not appear to be a major concern with traditional B&B trees, and purchasers were evenly split on whether container trees required more care after planting than B&B trees.

⇒ One point of agreement was that trees and shrubs grown in New England are preferred, with over 85% of the purchasers agreeing. There appear to be market opportunities for plants grown here in New England.