Cornell University
Cooperative Extension

2008 Needs Assessment Survey of the New York State Greenhouse Industry

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INTRODUCTION AND SUMMARY

According to the USDA Floriculture Crops 2006 Summary, New York State had 721 greenhouse floriculture production operations, with over 26,000,000 square feet of greenhouse space and with an estimated wholesale value of $207 million. The objective of the survey was to determine production practices, sources of educational information, and barriers to success and profitability faced by commercial greenhouse producers. The survey was distributed at grower training workshops, during on-site visits, and as an on-line survey advertised in newsletters. Because it was intended that the survey could be completed during educational sessions, an effort was made to keep the survey brief enough to be answered in 10-15 minutes. A total of 132 survey responses were received between January 1 and June 30, 2008.

In terms of business operations, the majority of respondents identified energy, labor, and hard good costs as challenges. The ability to attract and retain competent employees and weather uncertainty were also commonly cited difficulties. Primary challenges for growing high quality crops included insect and disease control, management of the greenhouse growing environment, crop irrigation, and fertilizer use. Overall, the most pressing challenges appear to be related to energy costs and business operation rather than crop culture. Few respondents currently market their products as sustainable/organic, though nearly 40 percent expect to do so in the future. The survey results are being used to focus applied research and outreach efforts to areas where both the need and potential for impact exist. Below are the detailed survey results and summary information for each section.

SECTION 1. ABOUT YOUR BUSINESS

Based on the demographic information, a "typical survey respondent": had a 23,000 square foot greenhouse operation; produced hanging baskets, bedding plants, potted plants, and herbaceous perennials; made the majority of their income from retail sales; and was dependent on the operation to provide most of their own income. When examined in more detail it is apparent that NYS has a diverse greenhouse industry. While, the median greenhouse production area was about half an acre (23,000 square feet), sizes ranged from less than 1,000 to more than 200,000 square feet. Responses from a few very large size operations skewed size results so that mean greenhouse area was 14,000 square feet larger than the median production area. The majority of respondents produced traditional crops (bedding plants, potted plants etc.), but a significant number also produced more diverse crops (propagative material, vegetables, and cut flowers).

Table 1. Crops that are produced by survey respondents (n=132*).

Type of greenhouse crop	Respondents growing the crop (%)
Hanging baskets	86
Bedding plants	82
Potted plants (flowers)	70
Herbaceous perennials	64
Potted plants (foliage)	41
Propagative material (liners, plugs)	30
Greenhouse vegetables	28
Nursery material (in containers)	23
Field-grown cut flowers	17
Greenhouse cut flowers	10
Nursery material (in ground)	2

*n is the number of respondents that answered this question

Table 2. Percentage of income that comes from retail versus wholesale sales (n=126)

Type of sales	Percent of operation income	
	Median	Average
Retail	75	58
Wholesale	25	42

The greenhouse production area of the respondents averaged 37,000 square feet per producer; and the median was 23,000 square feet (n=117).

The greenhouse (nursery) operation was the primary source of income for 61% of respondents (n=127).

SECTION 2. PRODUCTION PRACTICES

The "typical respondent" does not rely heavily on technology (such as supplemental lighting, computer control of the greenhouse environment) to produce their crops. Hand watering and drip irrigation of crops are the most common watering methods (Figure 1). The majority of respondents are concerned about water use restrictions and regulations (Table 3). However very few capture and reuse water; the majority of respondents are concerned about disease issues in these systems. While the majority of respondents use a fertilizer injector, few use acid injection to neutralize the alkalinity of their irrigation water (Figure 1). Roughly one-third of respondents check their water/media to ensure they are managing fertilizers appropriately. Most operations purchase plugs/liners from outside operations; over half also produce some of their own plugs/liners. Not surprisingly based on the value of retail sales, many respondents also purchase pre-finished plants to sell retail (Figure 2); and nearly thirty percent sell pre-finished plants on the wholesale market Fifteen percent of respondents currently market their products as organic/sustainable; and of those not marketing this way, nearly 40 percent believe they may do so in the future. Most growers carry out some sustainable growing practices such as reusing pots/flats and practicing integrated pest management.

Figure 1. Irrigation and fertilization practices/products that are used by respondents (n=131).

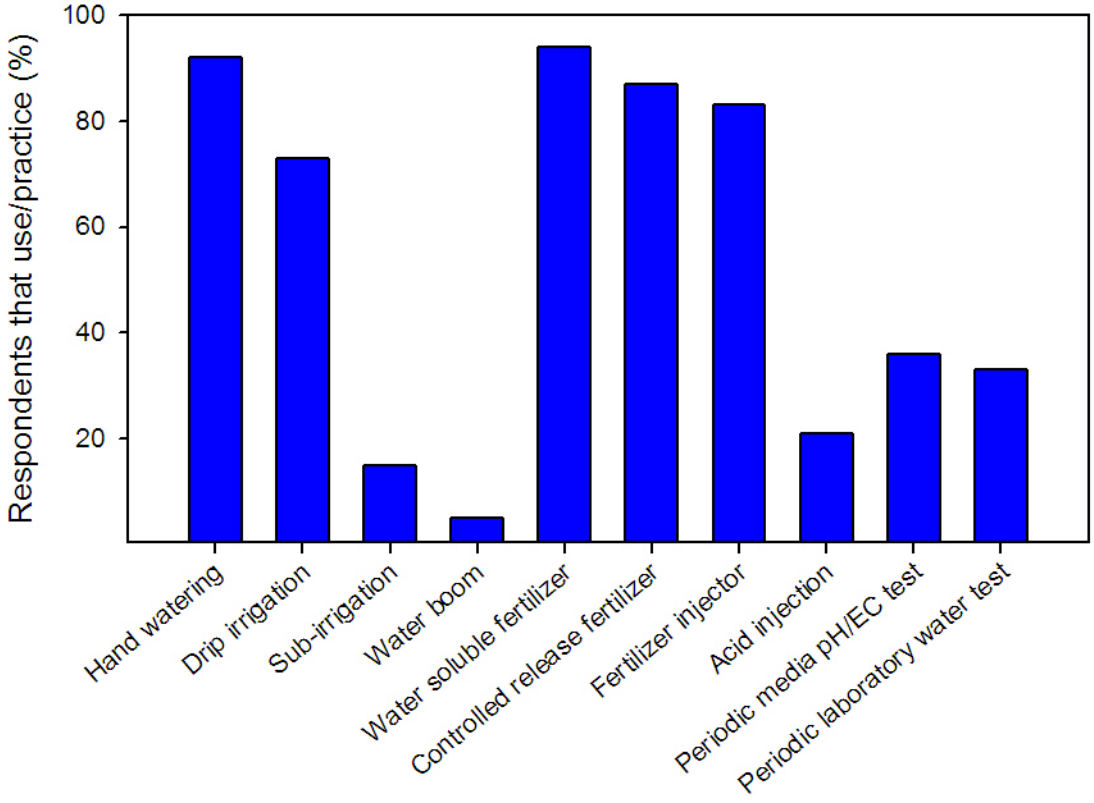


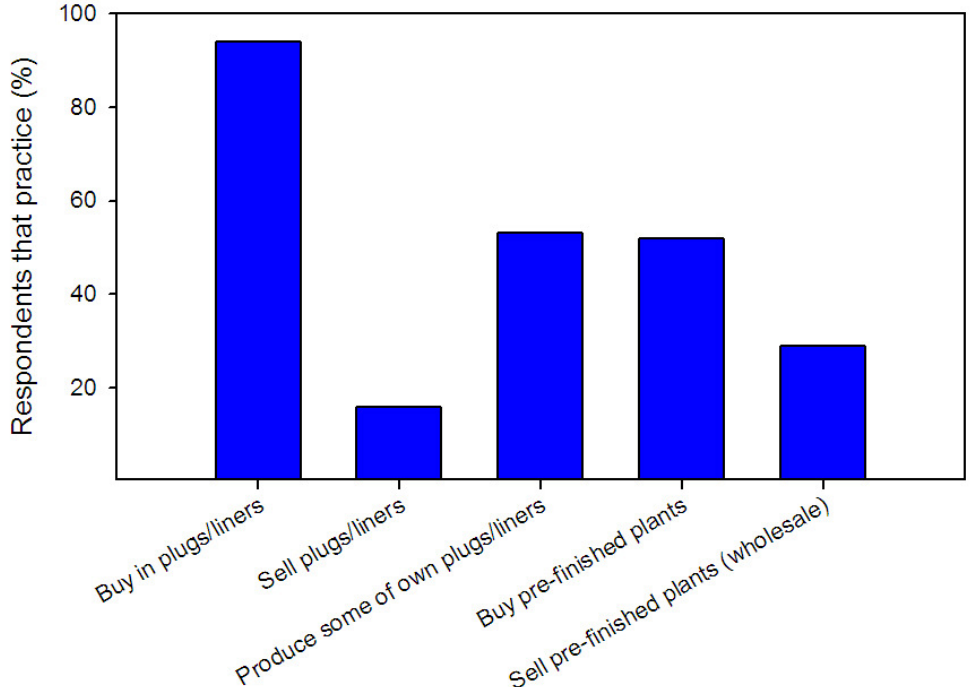
Table 3. Practices and beliefs regarding water use among respondents (n=129).

Practice/belief	Respondents that agree/use (%)
Concerned about water use restrictions/regulations	52
Use a water recirculation system currently	6
Plan to use water recirculation in future	6
Concerned about disease issues in water recirculation	58

Table 4. Technology use by respondents (n=130).

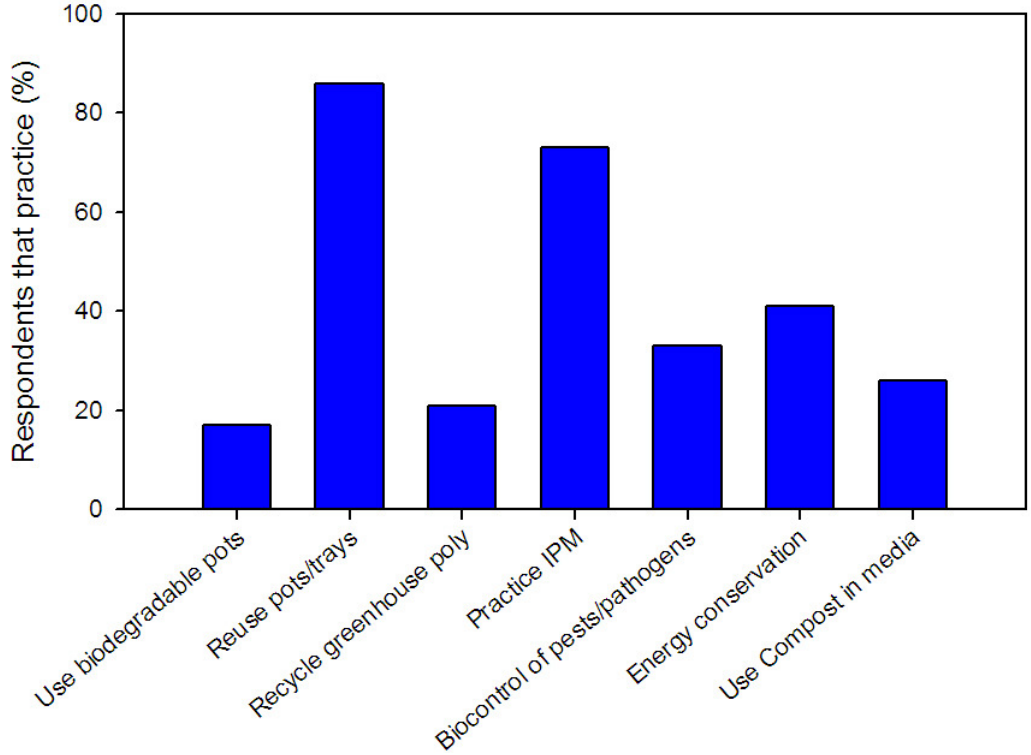
Practice	Respondents that use (%)
Use supplemental lights	20
Use computer-operated environmental control	18
Use automated equipment for labor savings (ex: flat filler)	48

Figure 2. Plant material sourcing by respondents (n=126).



15% of respondents currently market some of their products as organic or sustainable. Among those respondents that do not currently market their products as organic/sustainable, 39% believe they may do so in the future (n=127).

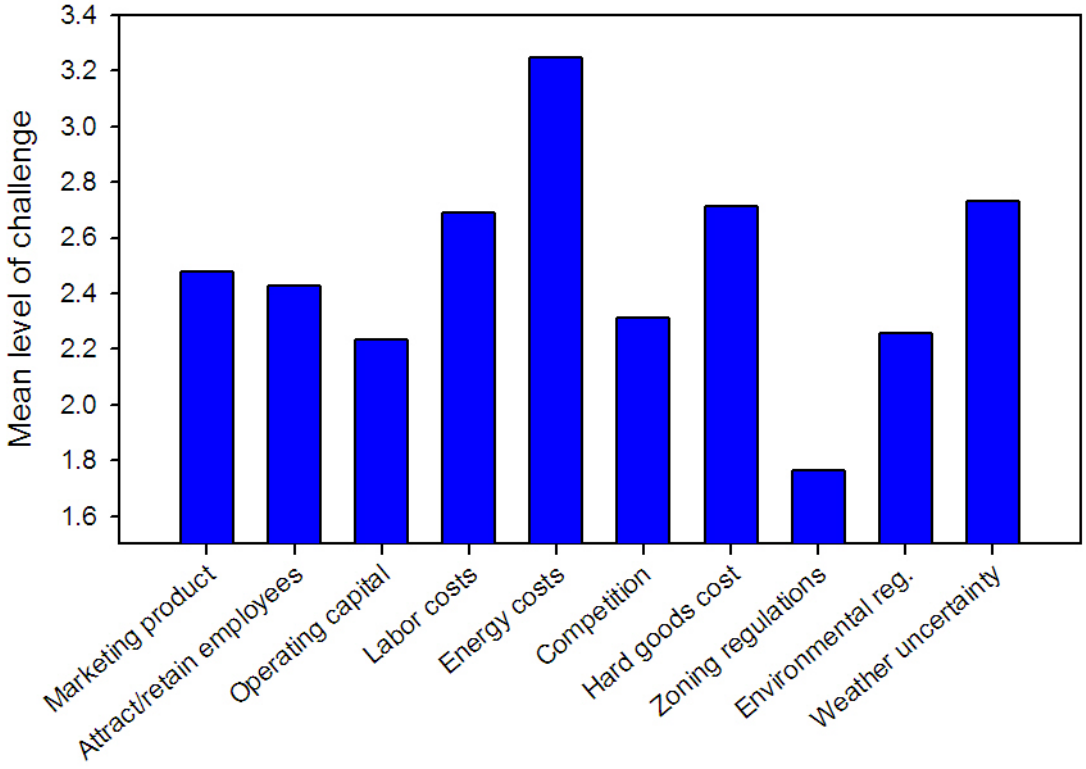
Figure 3. Sustainable practices followed by respondents (n=126).



SECTION 3. BARRIERS TO SUCCESS AND PROFITABILITY

Survey respondents were asked to rank several items on the degree of challenge they pose for successful business operation and production of high quality crops. Energy costs were ranked as by the far the greatest business challenge; labor costs, hard good costs, and weather uncertainty were also ranked highly as challenges (Figure 4). In terms of growing high quality crops, insects, diseases, environmental control, and weather uncertainty were the greatest challenges (Figure 5). When asked to write-in the one greatest challenge to profitability, energy costs followed by labor issues (costs/attracting/retaining), and marketing were ranked as the greatest challenges (Figure 6). It appears that rising costs and managing business operations are the greatest challenges to success rather than issues related to crop production. Despite the challenging business climate, one-half of respondents stated they were considering expanding their business in the future.

Figure 4. Challenges to successful business operation (average n=119). Degree of challenge scale: 0 = no effect to 4 = very major.



50% of respondents indicated they were considering expanding their greenhouse business (n=120).

Figure 5. Challenges for growing high quality plants (average n=123). Degree of challenge scale: 0 = no effect to 4 = very major.

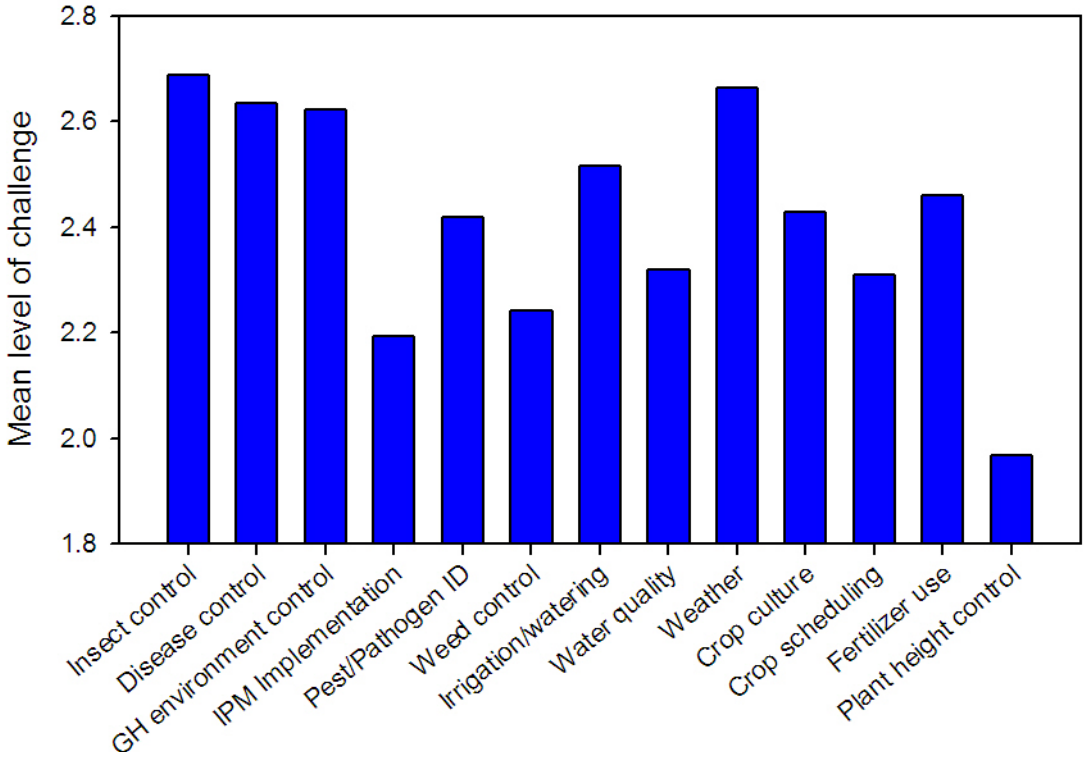
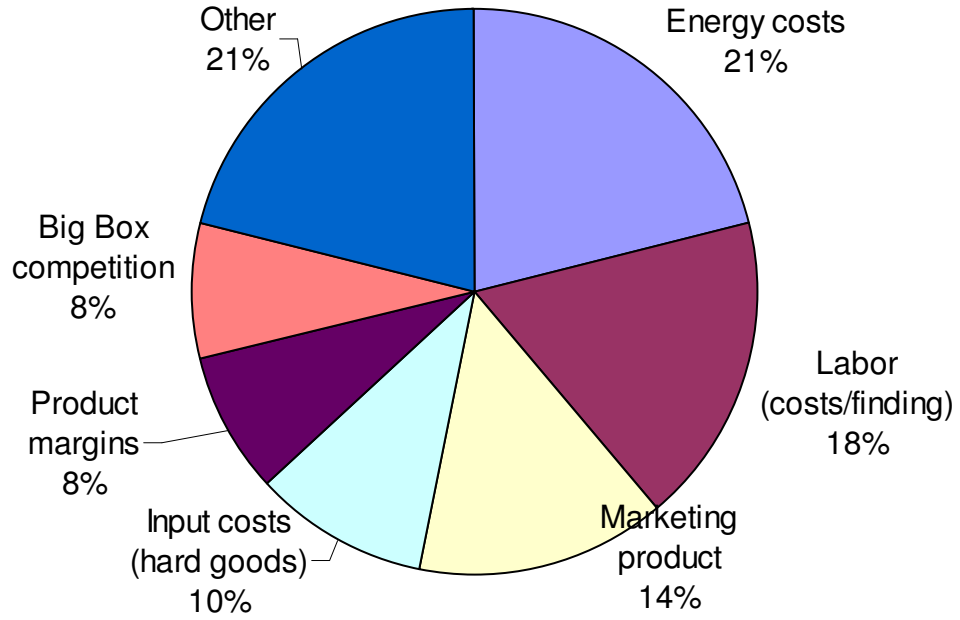


Figure 6. The one greatest challenge to profitability as indicated by respondents as a write-in question (n=107). Write-in responses were then grouped into major categories.



SECTION 4. INFORMATION SOURCES

When presented with a list of various information sources, respondents ranked several as being quite useful including: internet, extension, industry sales person, other growers, printed materials, and local workshops (Figure 7). The information source that received the highest average ranking was printed references; while conferences outside the respondent's locale received consistently low rankings. State and local extension received the most responses as being the one most valuable information source in a write-in question; however, this was followed closely by industry sales person (Figure 8). January was selected as being the most useful month to hold an educational program; while few respondents indicated a willingness to attend programs in the spring and summer months (Figure 9).

Figure 7. Usefulness of various information sources as ranked by respondents (average n=120). Scale: 0 = don't use to 3 = very useful.

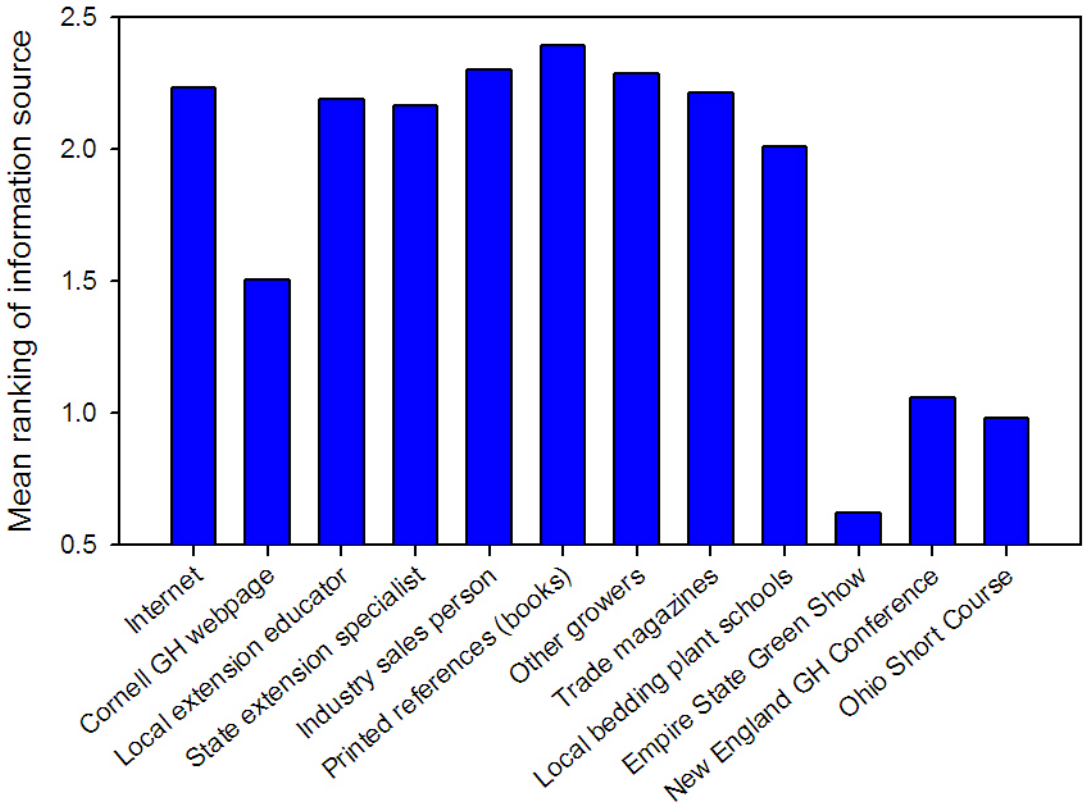


Figure 8. The one most valuable information source as indicated by respondents as a write-in question (n=111).

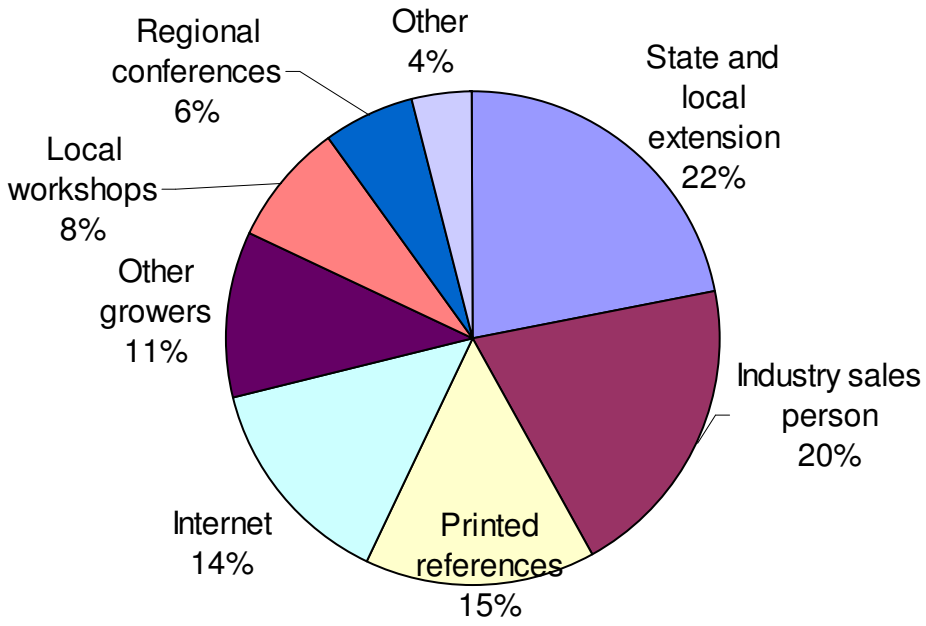
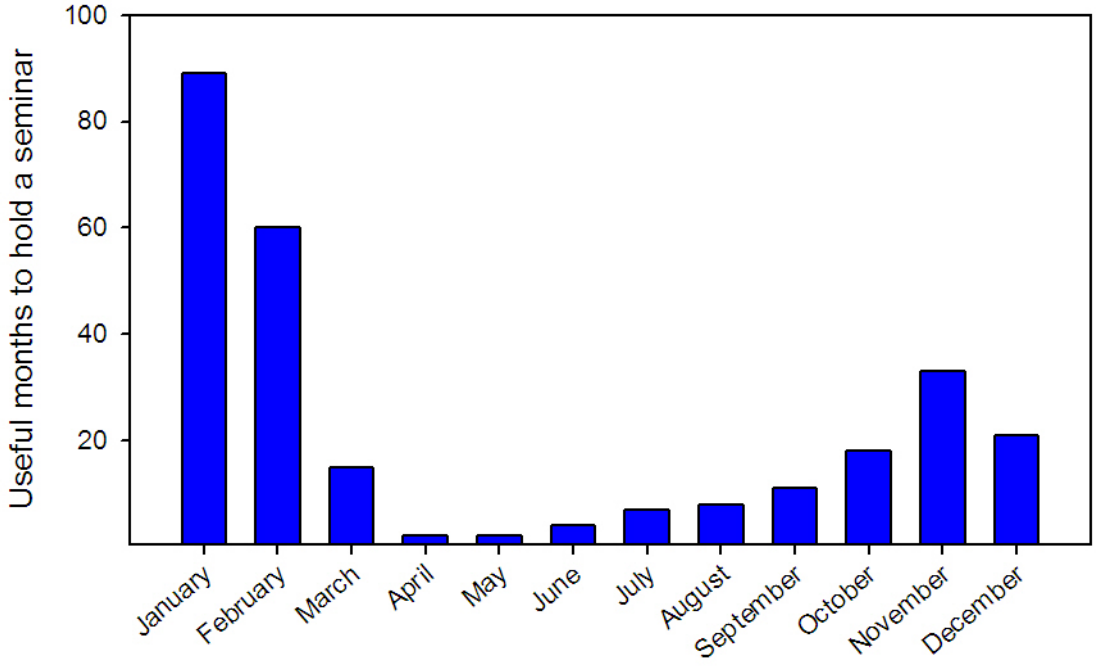


Figure 9. The best months to hold seminars/workshops; percent of respondents willing to attend an education program offered in a given month (n=126).



RESPONSE TO THE SURVEY

Following the survey tabulation, a discussion was held with a focus group comprising wholesale/retail greenhouses operators (7), greenhouse supply representatives (2), and extension personnel (7). Industry members were first asked is the survey results matched the reality that they were experiencing. A summary of comments is presented below:

- there was a general consensus that the results "made sense" and seemed to accurately depict what was occurring in the greenhouse industry
- in terms of rising energy/input costs, producers made several comments:
    - while energy costs have increased significantly, energy represents a much smaller percentage of the budget (ex: 10%) than does labor (ex: 40%)
    - one grower noted that poinsettias consumed half their energy budget yet brought in only 15% of their revenue, therefore careful consideration is needed for each decision as to which crops to produce
    - one grower noted that they consistently raise their prices every year to match costs, so their customers get in the habit of expecting it
    - because input costs have increased tremendously lately, not just heat/fuel; but plastic pots up 40% from last year, fertilizer prices skyrocketing, that many growers do not know their true input costs for a crop and are consequently selling below their production cost
    - several growers commented on the need to add freight costs onto their shipments and are trying to get this up to a level to recoup fuel costs
- one grower commented that weed control was a larger issue for them than is reflected in the survey results
- weather uncertainty is always an issue in an industry where 40% of sales can come from the month of May

Industry members were then asked to make recommendations to the extension personnel as to ways they might address the needs and challenges highlighted by the survey. Comments included:

- The fact that 20% of respondents listed industry sales people as their number one information source is significant; reaching out to industry sales reps could have a multiplier effect – they are the "eyes in the field" that can keep us apprised of current problems; and extension personnel can keep them informed of the most current research
- There was some consensus that extension personnel should "keep doing what they're doing" (i.e research and education related to cultural practices, disease, and insect management) and perhaps because we already have this expertise, these areas are not cited as top challenges
- However, besides maintaining current programs, it make sense to collaborate with others at Cornell and other institutions that already have expertise in specific challenge areas but are not applying it to a greenhouse setting; examples included marketing, sustainable energy, recycling agricultural plastic
- Extension personnel should collaborate with others to work on marketing topics such as:
    - buy local efforts
    - demonstrating to the public what quality is, and what to look for (ex: a quality poinsettia versus a mass-market plant)
- Extension personnel should make growers aware of grant programs that are available such as USDA energy grants and provide assistance with the application process

APPENDIX: Copy of the Greenhouse Needs Assessment Survey

2008 New York State Greenhouse Industry Survey

Cornell Cooperative Extension is conducting a NYS greenhouse industry survey to learn about your business and the most pressing industry challenges. Your answers will help us to determine priorities for future research and outreach activities. All responses will be kept confidential and will be reported as group data only. Thank you for participating and adding your voice to the survey.

ABOUT YOUR BUSINESS

1. Which of the following crops do you produce (select all that apply)

- □ Bedding plants
- □ Field-grown cut flowers
- □ Greenhouse cut flowers
- □ Greenhouse vegetables
- □ Hanging baskets
- □ Herbaceous perennials
- □ Potted plants (flowers)
- □ Potted plants (foliage)
- □ Propagative material (liners, plugs)
- □ Nursery material (in ground)
- □ Nursery material (in containers)
- □ Other (please specify) _____ _____

2. Sales from your operation consist of _____ % retail and/or _____ % wholesale.

3. The approximate total size of your production greenhouse(s) is _____ square feet.

4. Is your greenhouse/nursery operation your primary source of income? □ Yes □ No

5. In what county is your business located? _____

PRODUCTION PRACTICES

6. Irrigation/fertilization practices – select all the following that you use (please check all that apply)

- □ Controlled release fertilizer
- □ Water soluble fertilizer
- □ Fertilizer injector
- □ Acid injection
- □ Hand watering
- □ Drip irrigation
- □ Sub-irrigation (ebb and flow etc.)
- □ Water boom
- □ Periodic water sampling for laboratory analysis
- □ Periodic media pH/EC testing

7. Are you concerned about water use restrictions and regulations? □ Yes □ No

8. Do you currently use a water recirculation system? □ Yes □ No
   8a. If no, do you plan to use water recirculation system in the future? □ Yes □ No
   8b. If yes, are you concerned about disease issues in these systems? □ Yes □ No

9. Do you use supplemental lights? □ Yes □ No

10. Plugs/Liners - Do you (please check all that apply):

- □ Produce your own plugs/liners
- □ Buy in plugs/liners
- □ Sell plugs/liners
- □ Buy pre-finished plants
- □ Sell pre-finished plants

11. Do you market any of your products as organic or sustainable? □ Yes □ No

11a. If no, do you plan on marketing any of your products as organic/sustainable in the future? □ Yes □ No

12. Do you use any of the following sustainable practices? (please check all that apply):

- □ Biodegradable pots
- □ Reuse pots/trays
- □ Recycle greenhouse poly
- □ IPM
- □ Biological control of pests/pathogens
- □ Energy conservation measures (passive cooling, energy curtains, etc.)
- □ Use of compost/natural materials in the potting media
- □ Other (please specify) _____

_____

12a. Are there any other specific sustainable practices you are interested in implementing in the future? _____

13. Do you have a computer-operated environment control system? □ Yes □ No

14. Do you use automated equipment for labor savings? □ Yes □ No

14a. If yes, what type of equipment do you use (for example: flat filler, transplanter)?_____

_____

BARRIERS TO SUCCESS AND PROFITABILITY

15. Please rate each of the factors listed below according to the degree of challenge to the successful operation of your business. Please check the appropriate cell.

Factor	**No Effect**	**Very Minor**	**Minor**	**Major**	**Very Major**
Ability to attract and retain competent employees					
Ability to successfully market your product					
Availability of capital (cash and/or loans)					
Labor costs					
Energy costs (heating, transportation, electric, etc.)					
Competition					
Cost of hard goods (pots, fertilizer, etc.)					
Zoning regulations					
Environmental regulations					
Weather uncertainty					
Other (please specify)					

16. Please rate each of the factors listed below according to the degree of challenge for growing high quality plants. Please check the appropriate cell.

Factor	No Effect	Very Minor	Minor	Major	Very Major
Greenhouse environmental control					
Insect control					
Disease control					
Implementation of an IPM program					
Ability to correctly identify an insect pest or disease pathogen					
Weed control					
Crop irrigation/watering					
Water quality					
Weather					
Cultural requirements of new crops					
Scheduling crops in the greenhouse					
Fertilizer use (managing toxicities/deficiencies)					
Managing plant height using PGRs or environment					
Other (please specify)					

17. Are you considering expanding your greenhouse business? □ Yes □ No

18. What is the greatest challenge to profitability for your business? _____
_____

INFORMATION SOURCES

19. Please rate the following information sources by how useful they are to answer questions related to your business. Please check the appropriate cell.

Source	Don't Use	Not Useful	Somewhat Useful	Very Useful
Local extension educator				
State extension specialists based at Cornell				
Industry sales person				
Printed references (books)				
Internet				
Cornell Greenhouse webpage (http://www.greenhouse.cornell.edu)				
Other growers				
Industry trade magazines				
Regional bedding plant schools				
Empire State Green Industry Show				
New England Greenhouse Conference				
Ohio Short Course				
Other (please specify)				

20. Which one of the above information sources do you find the most useful? _____

21. What are the best months of the year to hold training seminars and workshops?_____

22. What topics would you like to see offered at future seminars and workshops?

1._____
2._____
3._____

23. What floriculture research would provide benefit to your operation?

1._____
2._____
3._____

24. Other comments and suggestions: _____

_____

_____

_____

_____

Thank you for your participation! We wish you a profitable 2008.

If more time is required to complete the survey, please mail to:

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Or complete online at: http://www.greeenhouse.cornell.edu/survey/