

Use of Scouting as a Pest Management Practice by California Nurseries

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Introduction

Scouting is a fundamental practice in the management of pests and disease in California nurseries. Practically all nursery owners and managers claim they practice scouting. Although scouting may be universal, the objective of a scouting program, the scouting tasks performed, and the level of resources a nursery invests in scouting are unique decisions largely dictated by economics. For a nursery owner to consider their scouting program to be cost effective one of two beneficial outcomes or a combination of the two outcomes should occur. First, scouting efforts should sufficiently reduce the risk of lost revenue caused by pest-related scrap or quarantine. Second, scouting efforts should help minimize chemical treatment costs such that total pest management costs are lower. The purpose of this project is to use data and testimony, collected from the owners and managers of a set of California nurseries, to understand how scouting is practiced in the industry and what influences decisions about scouting. This report will identify the economic risks associated with pest and disease infestation and how scouting is used to mitigate these risks. This report will include discussions of how scouting is practiced by each nursery and the opinion of owners and managers on scouting as a pest management practice.

Case Study Participants

The evidence presented in this report was collected via survey (Appendix A) and in depth interviews with owners and managers from four independent nurseries around Northern California. The selection of participating nurseries was done so as to include operations of different production size and product diversity

that reflex the diversity of the California horticultural industry. The main selection criteria was the size of the nursery as determined by the number of acres of production (Table #1).

Each of the nurseries provided information about their production and sales volume for 2012. In addition information was provided on the nursery’s scouting program including the objective of scouting, the labor and non-labor resources dedicated to scouting, the level of training scouts receive and specific tasks associated with scouting. Case participants also shared information about how scouting fits into their overall pest management strategy.

Table 1: Production and Sales in 2012

| | Nursery #1 | Nursery #2 | Nursery #3 | Nursery #4 |
|---|------------|------------|------------|------------|
| Acres of Production | 230 | 12 | 9 | 50 |
| Cultivars Produced | 1,277 | 700 | 720 | 2,500 |
| Total Gross Revenue (In \$1,000) | 9,750 | 750 | 951 | 6,100 |
| Number Units Sold (In 1,000) | 1,422 | 109 | 74 | 1,195 |

Economic Risks of Pest and Disease

Damage or unsold product, or scrap, is a fact of life for California nurseries and in some years can be quite high. For example, Nursery #1 and Nursery #2 had production scrap that equaled over 50 percent of the number of units sold in 2012 (Table #2). Scrapped product, both production scrap and market scrap occurs for various reasons one of which is pest and disease damage.

In economic terms scrap is equal to lost revenue. Therefore, the objective of any nursery’s pest and disease management strategy is to reduce scrap, or lost revenue, caused by pest and disease damage. Given this, it was interesting that only two of the four case nurseries, Nursery #1 and Nursery #3, kept records of the amount of scrap linked to pests and disease infestations. For the other two nurseries, Nursery #4 reported pest and disease related production scrap at 5 percent of total scrap in 2012 on their survey response. When asked to verify this number during the interview the head grower for Nursery #4 stated this was a rough estimate and that they did not keep track of scrap caused by pest and disease and added “this would be good to know”. Nursery #2 could provide no data as they don’t keep track of the quantity or share of pest related scrap.

Table #2 Volume of Production Scrap and Production Scrap due to Pest and Disease in 2012

| | Nursery #1 | Nursery #2 | Nursery #3 | Nursery #4 |
|--|---------------------|---------------------|------------|---------------|
| Number units scrapped (In 1,000) | 761 | 56.6 | 10.3 | 55.2 |
| Share of scrap to units sold | 53% | 52% | 14% | 5% |
| Share scrap from pest and disease | 18% | ? | 40% | 5% |
| 2012 quarantine | Yes (P. Ramorum) | Yes (P. Ramorum) | No | Yes (LBAM) |

Testimony from each nursery highlight the multiple ways, including different forms of scrap, in which pest and disease infestation can cause economic loss. The first source of loss is through production scrap or the death of plants before they

reach the market. Second, damage that slows plant growth and causes a crop to miss the primary market window when customer demand is highest. This results in larger volumes of unsold product or market scrap. Third the loss of future sales that comes from a nursery establishing a reputation of having pest and disease issues. This form of loss can be significant for nurseries that supply customers in other states. Pests and disease issues can act as interstate trade barriers as destination states refuse to allow product to cross state lines. Finally, a quarantine or complete shutdown of the entire nursery where no product can be sold or shipped due to infestation by one of several regulated pests.

Production Scrap

All nurseries expect a certain portion of production scrap when growing a crop. For example, Nursery #1, prior to the economic downturn of 2009, was starting 1,000 plants in order to have 850 plants sellable at the time of delivery. When sales were strong they would target production scrap at 15 percent. Since 2009 they have shifted their strategy to attempt to decrease production scrap. Nursery #1 monitors production scrap caused by pest and disease infestation. They expect damage from mollusks, insects, weeds, and diseases to account for 18 to 20 percent of production scrap annually. Of the four nurseries observed Nursery #1 kept the most detailed and accurate records of production scrap due to pest and disease.

Market scrap

In 2012 Nursery #3 had an incident that involved a rust infestation on a plot of 1,000 *Agapanthus africanus* 'Peter Pan' in one of their greenhouses. It was scouted one week and found to be healthy and progressing well. The following week it was re-scouted and they discovered that the whole crop was infested with a species of rust. Once discovered, the plants were pruned and a chemical fungicide was applied. The crop was saved but was a month late relative to the prime market window when demand is highest. In the end, the percentage of market scrap, or unsold product, for the crop was higher than expected. The owner estimates that pests and diseases are responsible for about 40 percent of his annual production scrap and accounted for \$40,000 in lost production in 2012 but he estimates that losses in gross revenue due to market scrap was between \$60,000 to \$65,000 in 2012, or about 7 percent of total revenue.

Future sales

The owner of Nursery #3 emphasized the risk of lost future sales due to pest and disease problems. Using weeds as an example, it has been his experience that once a nursery establishes a reputation of weed issues onsite or spreading weeds through their product the nursery will have a tough time competing. Garden center customers and landscape professionals will not risk bringing weeds to their retail location or passing them along to their clients.

Quarantine

Two of the nurseries in the study, Nursery #1 and Nursery #2, have recently experienced quarantine due to an infestation of *Phytophthora Ramorum* (*P. Ramorum*).

Nursery #1 experienced a crisis in 2011 with an infestation of their camellia crop. The positive test for *P. Ramorum* led to four months of quarantine for a large portion of the nursery's inventory and was very costly. In addition to lost sales the nursery was required to trace where the propagative material for their camellia crop came from and where camellias they sold went. Ultimately the nursery owners decided, due the susceptibility of camellias to *P. Ramorum*, to dump their entire remaining production and not produce camellias in the future. This decision was made, in large part, due to the risk of losing future out-of-state sales due to the potential for *P. Ramorum* to return.

Nursery #4 has had quarantine issues related to the Light Brown Apple Moth (*Epiphyas postvittana*) (LBAM) since it was first detected on the nursery in 2010. When LBAM first arrived the nursery had no specific management program to control it. The owner stated they were forced to "get their act together" when inspectors from CDFA started finding LBAM on the product they shipped to customers. Regulations require that once LBAM is found in an area of the nursery the owners must treat a fixed area surrounding the point of detection. If LBAM is found in more than one location they are required to treat the entire nursery simultaneously. They must spray, get re-inspected and continue this process until they are declared LBAM clean by the state inspectors. This process can take up to a

week, in which time no shipments of product are allowed. Since 2010 the nursery has experienced a few instances of being shut down by CDFA inspectors due to LBAM. Management for LBAM has become a year-long effort for Nursery #3 that includes daily targeted scouting and bi-weekly chemical spraying of the entire production area. In the words of the production manager “we spray so heavy because we can’t afford to be shut down for a week due to LBAM.”

Scouting Objectives and Tasks

Each of the four nurseries were asked what the specific objective was with regards to their scouting program. The response was similar across all four cases; early detection of pest and disease issues leading to isolation and eradication to minimize damage. Nursery owners and managers also viewed their scouting program as a means of reducing overall pest management costs by reducing chemical treatment costs (Table #3). Chemical Treatment costs in 2012 ranged from \$535 per acre for Nursery #1 to as much as \$3,178 per acre for Nursery #4. The high cost per acre for chemical treatments in Nursery #4 can be related directly their problems with LBAM.

Table #3 Costs per Acre of Chemical Treatments and Scouting Across Five Cases for 2012

| | Nursery #1 | Nursery #2 | Nursery #3 | Nursery #4 |
|----------------------------|---------------------------------|------------|------------|------------|
| | <i>In actual dollar amounts</i> | | | |
| Chemical | 318 | 667 | 722 | 1,905 |
| Labor | 217 | 625 | 1,778 | 1,273 |
| Total chemical cost | 535 | 1,292 | 2,500 | 3,178 |

Although each nursery observed had similar objectives for their scouting program the content of each scouting program was unique. For the purpose of this study we distinguish between targeted scouting, defined as specific tasks related to pest and disease detection and general or passive scouting, which consists of looking for pest and disease issues while performing other production activities.

Scouting in Nursery #1:

Nursery #1, with the largest production area of the four, divides its space into six individual divisions of around 40 acres each. Each division will be target scouted by the plant health manager, the division manager and assistant division manager. The plant health manager will scout each of the six divisions separately and rotate around the nursery. It takes him two weeks to scout the entire nursery. The division managers and assistant managers will each target scout their separate divisions independently in addition to conducting other production tasks.

None of the target scouting is conducted in a fixed pattern, rather, the nursery scouts and monitors varieties within each block based on time of year and their susceptibility to pests and disease. The plant health manager and each of the division managers document their scouting efforts using a pest disease survey (Appendix B). Each scouting survey will list the incident of pest and disease by zone, the plant variety infested, the size of the plant, the percentage of the zone infested, the type of pest and the level of infestation. The level of infestation is determined by the person doing the scouting and is reported as either trace, light, medium or heavy infestation. The plant health manager will log data from each survey into a daily pest and disease report and determine treatment schedule based

off of the report. For heavy infestation chemical treatments will be applied the same day as the pest is detected, or as soon as possible. For light or medium infestation the zone will be scheduled for chemical spray treatment within a week after detection.

To compliment this “targeted” scouting method the nursery has a production calendar that is a body of knowledge developed over the past 40 years. The production calendar will inform the plant health manager and division managers at what time and under what conditions they need to scout for specific pests and disease. For example, in mid March they know to start looking for signs of aphids in the nursery. Reading the signs and understanding the production calendar determines what issues they target when scouting.

Scouting in Nursery #2

Nursery #2 has one employee that conducts target scouting every Monday specifically for pest and disease. Another employee will perform scouting tasks twice a week while also checking for irrigation problems. Other employees are trained by the owner to passively look for pest and disease problems but do not conduct targeted scouting tasks. No records or log are kept of scouting results.

Scouting in Nursery #3

The owner of Nursery #3 and his production manager each spend about two hours total per week target scouting the 10-acre nursery. They will scout from a quarter to a half-acre block at a time, looking carefully at four different points on the plants inspected. Scouting is not done in a set or mapped pattern. The decision of

which block to scout is determined by what plants are within each block. The owner will first scout blocks that contain “indicator” varieties, or those varieties that are early attractors of pests and disease. For example, Star Jasmine is an early attractor of mites and aphids. The owner uses this method for early detection of both insect pests and fungal disease.

The owner also utilizes yellow sticky traps that are provided by the county agricultural commissioner for the purpose of monitoring Glassy Winged Sharp Shooter (GWSS). A county employee will come to the nursery and place the sticky traps around the nursery at one trap per acre intervals. Although the traps are placed specifically to monitor GWSS, the owner will use the traps as an early detection tool to scout total pest activity in the nursery.

Scouting in Nursery #4

Nursery #4’s current scouting program is dominated by their need to prevent and eradicate the existence of the LBAM. The nursery has one employee whose job includes targeted scouting solely for LBAM. This employee spends 50 percent of her workday scouting for LBAM. For other pests and disease such as white flies, mites and aphids, one of the two owners or one of the two employees who specialize in chemical treatment applications will target scout the nursery. The owner confessed that in some ways LBAM has “been a blessing” as it has forced them to increase overall target scouting efforts. For example, since 2010 they have had earlier detection of white flies and aphids, which the owner attributes to the added scouting from LBAM. Walking past plants, brushing plants and handling plants to look for LBAM caused white flies and aphids to become apparent. They

scout the greenhouses once every two weeks for mites, aphids and whiteflies.

Scouting of outside production for other pest issues occurs according to the time of year, weather and varieties.

Although each of the four nurseries scouting programs was unique some similarities are apparent. None of the four nurseries had an employee who only performed scouting tasks. Each of the four did have at least one employee whose job included some targeted scouting in addition to other duties. Each of the four nurseries also expected all other production employees to passively scout for pests and disease while performing other production tasks. Nursery #1, Nursery #2 and Nursery #3 each based their scouting strategy around a production calendar, which informed them of which pests and disease to look for at specific times during the growing season. In addition, the production calendar also informed as to which plant varieties were most susceptible to infestation and, therefore could act as an indicator plant for targeted scouting. The scouting strategy for Nursery #4 is dominated by the need to control LBAM.

Resources Dedicated to Scouting

The only cost reported by the four nurseries for scouting was labor. Each of the four nurseries provided data on the number of people and hours per week dedicated to scouting (Table #3). Nursery #2 and Nursery #4, both of which have experienced a shutdown due to quarantine, reported the most intensive scouting effort per acre. Nursery #1 and Nursery #3 reported the same scouting intensity per acre.

Table #4 Targeted Scouting Effort per Area of Production

| | Nursery #1 | Nursery #2 | Nursery #3 | Nursery #4 |
|---|-------------------|-------------------|-------------------|-------------------|
| Production acres | 230 | 12 | 9 | 50 |
| Number of employees who scout | 15 | 2 | 2 | 4 |
| Acres per scout | 15.3 | 6 | 4.5 | 12.5 |
| Total hours scouting (Per week) | 50 | 8 | 2 | 32 |
| Weekly time spent scouting per acre (In minutes) | 13 | 40 | 13 | 38 |

The difference in scouting effort by Nursery #1 and Nursery #2 is interesting given their equal experience with a quarantine event due to *P. Ramorum* infestation. The goal of both nurseries would be to decrease the risk of a similar quarantine reoccurring. Nursery #1, possibly due to their large size, made the decision to reduce future infestation risk by eliminating the production of camellias, a plant variety that is popular but highly susceptible to *P. Ramorum*. In contrast, Nursery #2, which is relatively small in comparison, may not have the option to discontinue the production of a popular plant variety. As one owner explained some varieties, such as camellia, fall under the category of “must have” or products that a nursery must grow to satisfy their customers. Many customers will base entire orders around these popular “must have” varieties. Therefore the owner of Nursery #2 must rely on more intense scouting efforts as a means of reducing the risk of another quarantine.

A scouting program that achieves the objective of early pest detection and

isolation can reduce overall pest management costs. Successful scouting can help target smaller chemical application areas, limiting the need for nursery-wide applications and reducing chemical application costs. In each of the four cases chemical treatment costs, which include the cost of chemicals and the labor required for application, were substantially higher than the costs of scouting (Table 5).

Table #5 Costs per Acre of Chemical Treatments and Scouting Across Four Cases for 2012

| | Nursery #1 | Nursery #2 | Nursery #3 | Nursery #4 |
|---------------------------------------|---------------------------------|------------|------------|------------|
| | <i>In actual dollar amounts</i> | | | |
| Chemicals | 318 | 667 | 722 | 1,905 |
| Chemical treatment labor | 217 | 625 | 1,778 | 1,273 |
| Total chemical treatment costs | 535 | 1,292 | 2,500 | 3,178 |
| Scouting cost (all labor) | 157 | 468 | 347 | 333 |

When comparing just labor costs, each of the nurseries spent significantly more on labor per acre for chemical treatment of pest and disease than on scouting. In the case of Nursery #4 and Nursery #3 chemical application labor costs were approximately three to four times the magnitude of costs for scouting labor.

Although there are many factors that might influence this difference one plausible reason is due to the necessity of chemical treatment applicators to be licensed and, therefore, considered skilled labor that demand a higher wage rate. Scouting, although considered an important part of pest and disease management by each case participant, is not a licensed skill that demands a higher wage.

Investment in Scouting Labor

Each of the nursery owners and managers interviewed felt that increases in scouting would be beneficial to their operations as long as the scouting was

effective. For Nursery #1 the owner stated “improved efforts in scouting would help to reduce our reliance on chemical treatments for managing pest and disease. The decision to increase scouting comes down to costs. Labor is very expensive and the accuracy of our scouting is hit and miss. A worker may scout a 5,000 plant block and miss the two plants that actually have aphids on them.”

The owner of Nursery #3 would also like to increase their scouting efforts but believes that investing time and effort into training his employees to do more targeted scouting would not be cost effective. Most of the people he employees have little to no formal education and few stay with the nursery for very long. According to the owner it’s difficult to find employees who are motivated to be good nursery growers and, therefore, effective scouts. He would like to hire additional trained growers who better understand the nursery business and could assist in targeted scouting efforts. He is willing to pay more for trained growers but they are hard to find and equally hard to retain.

The grower manager for Nursery #4 believes that some people are naturally gifted at spotting pest and disease issues on plants. He believes that having more people who were trained to scout for pests and disease would be a benefit to the nursery but only if the individuals have the talent and desire to do the job. The owner states that even if they train someone to scout, unless the individual has an eye for spotting pest and disease issues it will be a waste of time. The owner of Nursery #4 shares his manager’s belief that if they had additional people who are capable of being good pest and disease scouts they could scout the nursery faster and keep ahead of pest related issues better.

This reluctance to invest in training is reflected by the actions of each nursery (Table 6). Although each of the nurseries claimed they provide some form of training for scouting purposes through the year, the amount of training is minimal. Nursery #1 had the highest investment in training in 2012, providing eight hours for each employee that conducts targeted scouting at a total cost of just under \$3,000. The remaining nurseries had practically no training costs in 2012 and minimal time dedicated to training. With regards to the minimal time spent training, one owner stated he would definitely like more training but time is a factor and taking time out of other production activities to train is difficult.

Table #6 Investment in Training for Scouting

| | Nursery #1 | Nursery #2 | Nursery #3 | Nursery #4 |
|--|--------------------------------------|--------------------------------------|-------------------|-------------------|
| Do employees receive training? | Yes | Yes | Yes | Yes |
| How many hours of training annually ? | 8 | 6 | 4 | 2 |
| Who does training? | Nursery personnel and outside source | Nursery personnel and outside source | Outside source | Nursery personnel |
| Training costs for 2012 | 2,930 | 0 | 100 | 200 |

Conclusions

The information shared by the case study nurseries in this report demonstrates that the risks of economic loss from pests and disease are high for California nurseries. Nurseries can suffer lost revenue through production and/or market scrap caused by pest damage. In some years this loss can be as high as 40

percent of annual sales volume. Nurseries that establish a reputation of pests and disease infestation risk the loss of future sales and nurseries that ship product out-of-state face the risk of trade barriers due to the presence of pests and disease. Finally, the risk of quarantine and the shut down of a nursery's entire production from infestation of regulated pests can cause catastrophic economic loss.

The efficient mitigation of these risks is the primary objective of any pest management strategy. The nursery owners and managers in this study recognize that scouting is a fundamental practice in achieving this objective. As one owner stated "we would never think about not scouting". How a nursery scouts and the level of investment they put into their scouting program can determine its effectiveness to overall pest management. Examining the collective information shared by the four nurseries about their scouting programs reveals some points of interest about scouting in the California nursery industry.

- 1) Not all nurseries keep track of how much of their annual production and/or market scrap is due to pest and disease. Without a measure of the damage and loss that comes from pest and disease it is difficult to assess the effectiveness of scouting or the overall pest management strategy.
- 2) The objective of scouting programs is similar across nurseries. Early detection of pest related issues which leads to isolation and rapid treatment to reduce infestation risk to the rest of the nursery.
- 3) It is uncommon for a nursery to have employees who are full-time scouts. Targeted scouting is conducted as part of the duties of certain employees.
- 4) Nurseries try to include general labor in forms of non-targeted or passive scouting, which is conducted while performing other production tasks.
- 5) Targeted scouting in nurseries is centered on some form of implicit or explicit production calendar.
- 6) Scouting labor costs are far less than chemical treatment labor costs.
- 7) Nursery scouts, unlike chemical applicators, are not seen as skilled

labor that deserves a higher level of compensation.

- 8) Nurseries identify the advantage of increased targeted scouting to reduce pest risk and lower chemical treatment costs. BUT
- 9) There is a lack of talented employees who have the ability and knowledge to be effective scouts. To be an effective scout an employee must have a passion for the nursery profession. AND
- 10) Nurseries invest very little in training their employees to be effective scouts.

Appendix A: Project Description and Survey Sent to Case Participants

Project Title: Measuring the Costs and Benefits of Scouting in California Nurseries

Project Coordinators: The University of California Agricultural Issues Center (AIC) is responsible for the research and analysis of this project. AIC serves the state of California as a forum for the identification and analysis of important issues affecting the agricultural sector. Specifically, UC AIC studies the economic implications for agriculture and agribusiness in California of issues that are or can be state, national or global in nature. A sample of our work can be accessed from our website (www.aic.ucdavis.edu).

Fellow Collaborators: UC AIC is collaborating with the California Center for Urban Horticulture, The California Association of Nurseries and Garden Centers, and The California Department of Food and Agriculture.

Purpose of the Project: This project will provide evidence of the cost and revenue implications of a California nursery including a scouting program as part of their pest management strategy. This project will use a series of case studies to examine how California nurseries practice scouting, the costs associated with these specific scouting programs and the success these scouting programs may have toward increasing revenues through decreased crop loss, improved crop quality and reduced incidence of rejected product and quarantine.

Benefit to Case Study Participants: Participants in the case study will be provided an independent analysis of their current scouting program. This analysis will identify costs associated to the current scouting program and provide recommendations to improve the effectiveness of the current scouting program.

A more effective scouting program may make a nursery more competitive by:

- Reducing pesticide cost
- Reducing labor costs associated with pesticide application;
- Reducing revenue loss from scappage due to pest and diseases.
- Reducing REI's associated with pesticide treatments.
- Increase plant quality.

Indirect benefits can be:

- Improved worker's safety
- Less environmental impact

Information Needed from Nursery Participants: Proper analysis will require collection of information regarding participants scouting program. All information provided for this study will be shared anonymously. Any information identifying participating nurseries name and location will be kept confidential.

The following information is needed for an accurate analysis:

Information about your nursery production and sales:

| | | |
|---|----------------|------------------|
| What was the total gross revenue of nursery sales in the last year? (\$) | | |
| How many units of each product size WERE SOLD in the last year? | | |
| Liners | | |
| 1 gallon | | |
| 2 gallon | | |
| 5 gallon | | |
| 7 gallon | | |
| 15 gallon | | |
| 20 gallon | | |
| 25 gallon | | |
| 24 inch box | | |
| 36 inch box | | |
| 48 inch box | | |
| Other Size (Please Specify): | | |
| How many units of production WERE SCRAPPED in the last year? | | |
| Liners | | |
| 1 gallon | | |
| 2 gallon | | |
| 5 gallon | | |
| 7 gallon | | |
| 15 gallon | | |
| 20 gallon | | |
| 25 gallon | | |
| 24 inch box | | |
| 36 inch box | | |
| 48 inch box | | |
| Other Size (Please Specify): | | |
| What share of scrapped production was due to pest and disease damage? (%) | | |
| Did the nursery have quarantine product in the last year? (Yes/No) | | |
| What were your TOP 5 selling varieties? | | |
| Plant Variety | Container Size | Number unit Sold |
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

General information about your nursery:

| | |
|--|--|
| How many different cultivars did the nursery produce in the past year? | |
| How many acres does the nursery occupy? | |
| How many acres were in production in the past year? | |

Information about your nursery's labor costs:

| | |
|---|--|
| How many full time employees does the nursery have? | |
| How many seasonal employees did the nursery hire in the last year? | |
| What was the total cost for labor (salaries and benefits) in the last year? | |

Information about your nursery's overall pest management strategy:

| | |
|---|----------------------|
| Does your nursery base application of chemicals on a pre-determined schedule or are chemicals applied when pest and disease are detected? | |
| If a pre-determined schedule is used what chemicals are applied? (Please list all chemicals below.) | |
| | |
| If applications are based on detection: | |
| What determines when chemical treatment is needed? | |
| | |
| Is there a threshold for pests that triggers a chemical treatment? (Yes/No) | |
| What is your action plan? | |
| | |
| What were your total costs for chemicals used to treat pests and disease in the past year? (\$) | |
| What were the costs (labor and equipment) to apply these chemicals? | |
| | Labor Costs (\$) |
| | Equipment Costs (\$) |

Information about your nursery's scouting program:

| | | |
|--|--|--|
| What is your nursery's objective relative to its scouting program? | | |
| Please describe the specific tasks associated with scouting in your nursery. | How Often is Task Performed? (Daily, weekly) | Percent of nursery task is performed each time |
| | | |
| | | |
| | | |
| | | |
| What are the nurseries total materials costs for scouting? (\$) (Include costs of sampling and measuring tools and pest identification tools) | | |
| How many people are employed whose primary job is scouting? | | |
| How many hours do they scout per week? | | |
| What is the average hourly wage rate for these employees? | | |
| How many people are employed who's primary job IS NOT scouting but conduct some scouting tasks? | | |
| How many hours do they scout per week? | | |
| What is the average hourly wage rate for these employees? | | |
| Do employees receive specific training with regards to scouting? (Yes/No) | | |
| If Yes , How many hours of training do they receive? | | |
| Is training conducted by nursery personnel or from an outside source? | | |
| How often does re-training occur? (Annually, monthly, etc.) | | |
| How much did the nursery spend on scouting training in the last year? (\$) | | |