CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION

2010 Integrated Pest Management Survey of California School Districts

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Executive Summary

2010 Survey Results

The School Integrated Pest Management (IPM) Program in the Department of Pesticide Regulation (DPR) conducted a pest management survey of all California public school districts in 2010. The purposes of the survey were to: (1) measure compliance with requirements of the Healthy Schools Act (HSA), (2) measure adoption of IPM policies, programs and practices, (3) relate demographic and geographic factors to survey responses, (4) identify barriers to IPM adoption and (5) examine changes over time relative to four previous surveys. Ants and weeds are used to examine IPM practices in this study since those pests were identified as being among the top pests in California schools.

Compliance with the Healthy Schools Act

Compliance with the Healthy Schools Act requirements remains high in California public school districts, ten years after the HSA went into effect. Almost all reporting districts post the required warning signs and notify families and staff annually of expected pesticide use. Over three quarters maintain a list of parents wishing to be notified of individual pesticide applications. About two thirds maintain the required records on pesticide use. Three factors significantly predict better compliance with the HSA by school districts: attending DPR's IPM training, contracting for pest management by licensed professionals, and employing more experienced IPM coordinators.

IPM adoption

Over two thirds of reporting districts have adopted an IPM program. District-reported adoption of an IPM program is the best predictor of district use of better IPM practices, indicating that these districts understand what is involved in an IPM program. Specifically, districts that reported having an IPM program are better at managing ants and weeds in IPM-compatible ways, and do more pest monitoring and recordkeeping than districts without an IPM program. DPR's IPM training is positively correlated with certain district characteristics and actions. Trained districts outperform untrained districts in awareness and use of more IPM resources, and use of ant IPM practices. Training, however, does not affect the reported adoption of an IPM program. Almost all districts used at least one pesticide product during the reporting year that is regulated by the Healthy Schools Act. These pesticide products, such as broadcast pesticide sprays, are referred to as non-exempt products. However, almost all districts also report using physical controls for weed management and sanitation for ant management, which are both IPM-compatible practices. Less than one-half of the districts use non-exempt products for ants, while almost all districts used non-exempt

products for weed control. In other words, districts are using more IPM-compatible ant management practices than weed management practices.

Demographics

Several types of demographic and geographic characteristics were examined but only a few showed significant differences. Differences are mainly seen between urban and rural districts. Urban districts use more ant IPM practices, and more IPM resources, but use more pesticide sprays and perceive more barriers to using IPM practices. Regionally, some differences are noted but only with districts with pest management contracts. Contracting districts have lower average scores on the Weed Management scale in the North Coastal and South Eastern regions, compared to non-contracting districts in those regions.

Barriers to IPM adoption

The survey asked about eight barriers, such as understaffing, to using IPM practices. Districts with an IPM program perceive fewer barriers than those without an IPM program and less experienced IPM coordinators report more barriers to the use of IPM practices in their district. Finally, contracting districts in the Sierra region perceive more barriers than any other region.

Trends

Statewide surveys, using similar questionnaires, were conducted in 2001, 2002, 2004, 2007 and 2010. Each survey year, districts voluntarily adopt more IPM policies and practices, such as inspecting buildings for pests and conditions that allow pests to enter, pest monitoring and keeping records of those activities than in previous years. There is also an increase in awareness and use of IPM resources.

While more districts were trained since 2007, there has been no increase in district adoption of IPM programs. That number remains around 68%. The survey did not specifically ask whether budget constraints have hampered the adoption of an IPM program but it can be inferred from comments. IPM is often perceived to be more costly than conventional pest management.

Maintenance and operations staff rather than administrative staff are filling the surveys out more often than in the past, so compared to earlier years, the 2010 survey may best reflect “on the ground” practices.

The perception of the effectiveness of specific ant or weed management practice has remained the same over the years. Yet, in each survey year districts are doing better ant IPM, indicated by greater use of exempt practices, and a reduction in non-exempt practices. Districts reporting high levels of weed IPM practices peaked in 2007. IPM-compatible weed management practices can be more costly than IPM-compatible ant management practices. It is plausible that a drop in districts using weed IPM

practices in 2010 is related to the state's budget situation impacting district finances.

Each survey year, understaffing has been the number one barrier to adoption of IPM practices, closely followed by budget restrictions in 2004 and 2010. The budget restriction barrier rose from fourth to second highest between 2007 and 2010, another indication that the state's fiscal woes could be impacting adoption of IPM policies and practices.

Recommendations

The results from this survey will help DPR's School IPM program improve outreach and training to better meet the needs of California school districts. DPR may need to do more outreach to districts to remind them that pesticide use recordkeeping is still a requirement. DPR could focus outreach to the pest management professionals in the North Coastal and South Eastern regions to encourage the adoption of IPM-compatible practices. DPR could provide more in-depth training on specific universal pest management challenges, such as turf grass weeds. This would provide better access to and understanding of tools that could easily be implemented at the district level. DPR could also share IPM programs and strategies used at districts that report IPM has decreased costs with other school districts. This may guide districts on adoption of an IPM program that can save money and be more effective at reducing pest problems.

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Chapter One: Introduction

The School Integrated Pest Management (IPM) Program in the California Department of Pesticide Regulation (DPR) conducted a survey of all public school districts in California in October 2010. The purpose of the survey was to: (1) measure compliance with requirements of the Healthy Schools Act (HSA), (2) measure adoption of integrated pest management (IPM) policies, programs, and practices, (3) relate demographic and geographic factors to survey responses, (4) identify barriers to IPM adoption, and (5) examine changes over time relative to prior surveys conducted in 2001, 2002, and 2004.

The HSA, enacted in January of 2001, aims to reduce exposure of children to pesticides in schools through the voluntary adoption of IPM and least-toxic practices of pest control. The law defines IPM as a means of preventing and suppressing pest problems using a combination of monitoring and record keeping, establishing pest thresholds, and non-chemical and least hazardous chemical practices of pest management.

The law requires school districts to:

- Notify parents and school staff of specific pesticides applied in schools annually;
- Keep a registry of parents and guardians interested in notification of individual pesticide applications;
- Post signs on school grounds if pesticides are applied; and
- Keep records of pesticide applications for four years.

DPR is required by the HSA to provide training to school district staff to facilitate the adoption of effective IPM programs and practices at school sites. This training effort began with a pilot workshop in June 2001, and with 34 additional workshops reached 698 school districts through June of 2010.

The 2001[1] survey, which preceded initiation of DPR's training, served as a baseline for all subsequent surveys. Analysis of survey responses aided DPR's IPM training efforts and led to improvements in the 2002[2] and 2004[3] surveys. The 2007[4] survey was modified further for clarity and to collect additional information. This report describes the 2010 survey results and findings of statistical analyses performed by scientists from the Institute for Social Research at California State University, Sacramento.

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[1] Tootelian, D.H. (2001). 2001 Integrated Pest Management Survey of California School Districts. Sacramento, CA, California Department of Pesticide Regulation.
[2] Geiger, C.A. and D.H. Tootelian (2003). 2002 Integrated Pest Management Survey of California School Districts. Sacramento, CA, California Department of Pesticide Regulation.
[3] Barnes, C.W. and S. Sutherland (2005). 2004 Integrated Pest Management Survey of California School Districts. Sacramento, CA, California Department of Pesticide Regulation.
[4] Cowles, E., Barnes, C., Sutherland, S., Livingston, B.H. and M Falsken (2008). 2007 Integrated Pest Management Survey of California School Districts. Sacramento, CA, Department of Pesticide Regulation.

Chapter Two: Methods

Data Collection

Surveys of pest management in California's public elementary, high school, and unified school districts were completed in 2001, 2002, 2004, and 2007. In October 2010, ISR mailed or emailed a total of 962 questionnaires to California's public school districts. Follow-up mailings via regular mail and email occurred in November 2010 and March 2011 to improve the survey's response rate (325 responded, or 35%, Appendix Table 2.1). For this report, the ISR combined survey responses, demographic information from the California Department of Education (CDE), and information from DPR's training database. Survey responses are kept confidential; ISR will not reveal individual district responses to DPR.

Questionnaire

The 2010 survey measured whether California's public school districts were complying with the four HSA requirements and voluntarily adopting IPM-compatible policies and practices. The survey focused on the control of ants and weeds because these were the most widely reported pest problems in the previous surveys. The questionnaire itself is in Appendix 1.

The survey was divided into four sections as shown in Table 1.

Table 2.1 2010 Questionnaire Questions

General Pest Management Practices	Ant Management	Weed Management	Respondent Information
• Overall district use of exempt and non-exempt pesticides and herbicides	• Specific exempt and non-exempt practices	• Specific exempt and non-exempt practices	• Pest management responsibilities
• Pest management contracting	• Effectiveness of ant management practices	• Effectiveness of weed management practices	• IPM coordinator status and length of time in that role
• Adoption of an IPM program	• When practices are used	• When practices are used	• Use and awareness of various pest management resources
• Adoption of four HSA components	• Which practices are used most frequently	• Which practices are used most frequently	
• Adoption of record-keeping and monitoring policies and procedures		• Most common locations for weeds	
• Perception of barriers to using IPM practices			
• New to the 2010 survey, respondents listed their district's top three pests, including weeds			

School District Variables

This study tested the relationship between compliance with the HSA, adoption of IPM practices, and the geographic location, population size, and other characteristics of California school districts. In addition to attendance at a DPR training workshop, six CDE or Census district characteristics were collected:

- A description of the population area where the district is located (Appendix Table 2.3)
- The region (Figure 2.1)
- District type (elementary, high school, or unified)
- Number of schools in the district
- Average daily attendance (ADA, ranging from less than 200 students to 10,000 or more)
- Cost per ADA (ranging from less than $7,000 per student to $10,000 or more).

Using information found in this report, DPR will be able to adjust training workshop topics and locations to better suit district needs.

Response Rates

More than one-third of California's 962 schools districts completed the survey on IPM policies and practices. (Appendix Table 2.1) The following findings are statistically significant:

- Response rates were highest in the Sierra and South Eastern regions (46% and 41% respectively), and in large cities (54%)
- Districts with 10 or more schools had the highest response rate (43%) compared to smaller districts
- Districts with 10,000 or more students had a higher response rate (47%) than those with fewer students
- Districts which spend the most on ADA had the lowest response rate at 30 percent
- As expected, response rates were higher in districts that attended DPR's IPM training (37% of trained districts responded) than untrained districts (24% responded).

Responding districts closely resembled the population of school districts in California. (Appendix Table 2.2)

- Districts with 10 or more schools responded more often than would be expected (37% of those districts compared to 29% of the larger population)
- Districts with an average daily attendance greater than 5,000 students responded more often than would be expected (33% compared to 18% of the larger population)

Figure 2.1 Map of Counties Included in School IPM Survey Regions

Region Code	Region Names
1	North Coastal
2	Sierra
3	North Central Valley
4	Bay Area
5	Central Valley
6	Central Coastal
7	LA/Surrounding Area
8	South Eastern

Survey Sample Description

District Characteristics

By June 2011, two-thirds of all school districts participating in the survey had adopted an IPM program. Almost two-thirds of those districts adopted the program five or more years ago. Fourteen percent adopted their program after the 2007 IPM survey. (Appendix Table 2.4)

Respondent Characteristics

More than three-quarters of the respondents served as the designated IPM coordinator for their district. More than one-half had been the IPM coordinator less than five years. (Appendix Table 2.6; see Appendix Table 2.7 for respondents' job categories) The respondents' most common pest management responsibility was deciding when to use pest management treatments (67%). Their least common responsibility was involvement in setting pest management policies (38%). (Appendix Table 2.8)

Data Analysis and Scale Construction

This report compares responses in 2010 to responses from the previous four survey years. This report also presents trends in responses, although not all surveys asked the same questions. Statistical measures used in this analysis are described in Appendix Table 2.9.

The Institute for Social Research (ISR) created five scales to measure compliance with or adoption of HSA policies and practices, and to summarize districts' IPM knowledge, use and perceptions:

- Compliance with the four HSA requirements,
- How well the districts monitor and track IPM practices, policies, and procedures,
- Knowledge of IPM information resources,
- Use of IPM information resources, and
- Impression of barriers to using IPM policies and practices.

Two more scales measure reported use of pesticides and herbicides in the responding districts. Chapter 3 describes average scores on the seven scales. It also describes relationships between the scales and district characteristics and actions.

Healthy Schools Act Compliance Scale

The HSA Compliance scale measures how many of the four HSA-specific policies and practices the district adopted.[5] Table 2.2 lists the four practices in detail. The HSA requires districts using non-exempt pesticides to include these four practices in their management of pesticide use on school

[5] Questions 3D thru G.

campuses. Districts are assigned 10 points for each HSA requirement they adopted, yielding a range of 0 to 40 points for the scale.

Table 2.2 Healthy Schools Act Compliance Scale Components

Each school site maintains records of all pesticides used for at least four years, and makes these records available to the public	10 points
District or school annually provides staff and parents with written notification of expected pesticide use at their school	10 points
District or school maintains a list of parents wanting to be notified of specific pesticide applications	10 points
Warning signs are posted at least 24 hours before and 72 hours after pesticide treatment	10 points
Total maximum score possible	40 points

IPM Program Scale

ISR created the IPM Program scale by assigning five points to seven questions[6] about the district's pest management policies, monitoring and recordkeeping. (Figure 2.3) This scale ranges from 0 to 35 points.

Table 2.3 IPM Program Scale Components

Policy	
Written policy requiring the use of least-toxic pest management practices	5 points
Written policy requiring the monitoring of pest level practices	5 points
Monitoring	
Buildings and grounds are inspected for potential pest problems	5 points
Pest problems (including weeds) are monitored during the course of a year	5 points
Recordkeeping	
Records are kept of building inspections	5 points
Records are kept of pest (including weeds) monitoring results	5 points
Records are kept of pest sightings	5 points
Total maximum score possible	35 points

IPM Information Resource Awareness and Use Scales

Respondents were asked whether they were aware of or had used each of eight information resources on IPM. (Q24, Appendix Table 1.16) Two scales were constructed: one that counted either awareness or use for each resource (the information resource *awareness* scale) and one that counted resource use only (the information resource *use* scale). For each scale, scores varied from zero to eight.

Barriers Scale

The significance of eight resource-based barriers to using IPM practices constituted the barriers scale. (Q8, Appendix Table 1.4) Responses were assigned a "0" if the barrier was "not at all significant," a "1" if the barrier was "somewhat significant," or a "2" if the barrier was "very significant." The highest score possible is 16 points. A higher score indicates a greater perception of barriers to using IPM practices in that district.

[6] Questions 3A, 3C, 4A, B, D thru F

Ant Management Scale

The Ant Management scale measures the district's use of various practices to manage ant problems. DPR staff developed the scale in cooperation with ISR. Scores on the Ant Management scale range from 0 to 160 points. Districts lost and gained points based on whether their practices are compatible with IPM. High scores indicate use of more IPM-compatible ant management practices. The scale was constructed from responses to 15 items covered in three survey questions including pesticide use for ants, frequency of pesticide use and decision-making. The 15 scale items and their scores can be found in Appendix Table 2.10.

Weed Management Scale

The Weed Management scale, developed cooperatively by DPR and ISR, measures the district's use of various practices to manage weed problems. Scores on the Weed Management scale range from 0 to 150 points out of a possible 150 points. Districts lost or gained points based on their use of IPM-compatible practices. High scores indicate the district uses more weed management practices that are consistent with IPM principles. The scale was constructed from responses to 11 items covered in three survey questions including pesticide use for weeds, decision-making and frequency of pesticide use. The 11 scale items and their scores are in Appendix Table 2.11.

Chapter Three: 2010 School District IPM Survey Findings

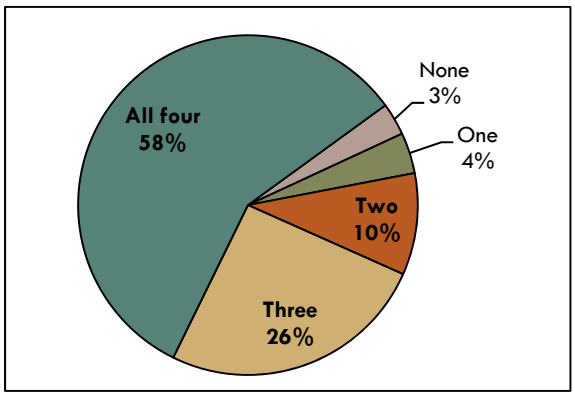
This chapter covers district responses about IPM policies and practices and describes which practices were used to manage ants and weeds during the 12 months prior to survey administration. The chapter also presents districts' perceptions of the effectiveness of various pest management practices, and closes with presenting the top five pests and troublesome weed locations across the state.

Summary of Scales

Compliance with the Four HSA Requirements

IPM-compatible practices include the use of pesticides (including herbicides) least toxic to students, staff, and the environment. HSA regulations apply to districts which use at least one non-exempt pest control practice, such as broadcast herbicide treatment. Some requirements of the Act are followed more closely than others. (Appendix Table 3.1) School districts are much more likely to comply with the requirements of the HSA than they are to voluntarily adopt other IPM-related policies or practices. (Appendix Tables 3.1 and 3.2) Almost all school districts post warning signs before and after pesticide application. Eighty-seven percent annually provide staff and parents with written notification of expected pesticide use at their school. Roughly three-quarters of districts maintain a list of parents who want notification about specific pesticide applications, and two-thirds maintain school site records of all pesticides used for at least four years. (Appendix Table 3.1) A majority of districts using non-exempt practices comply with all four required HSA components. (Figure 3.1 and Appendix Table 3.3)

Figure 3.1 Number of HSA Requirements with which Districts are in Compliance



Not all districts complied with the four requirements of the HSA, despite the law being in place since 2001. (Appendix Table 3.4)

IPM Policies and Practices

Of the three voluntary IPM policies and practices, districts were most apt to have a written list of pesticide products approved for use in district schools. A majority had a written policy requiring use of the least-toxic pest management practices, while roughly one-third required monitoring of pest levels. (Appendix Table 3.1)

Four questions addressed pest monitoring and detection practices: 80 percent of districts monitor pest problems (including weeds), and 71 percent inspect buildings and grounds for potential pest problems. Fifteen percent of responding districts do not keep any pest management records. Very few

districts note that their district performs no pest monitoring or detection activities. (Appendix Table 3.2)

Four questions addressed district recordkeeping activities. Almost one-half of the districts maintain records of building inspections. One-third or fewer of responding districts maintain records of pest sightings, pest management practices used other than pesticides, and results of pest monitoring. (Appendix Table 3.2)

Districts that use non-exempt pest management practices scored an average of 16.94 out of a possible 35 points on the IPM Program scale. (Appendix Table 3.4)

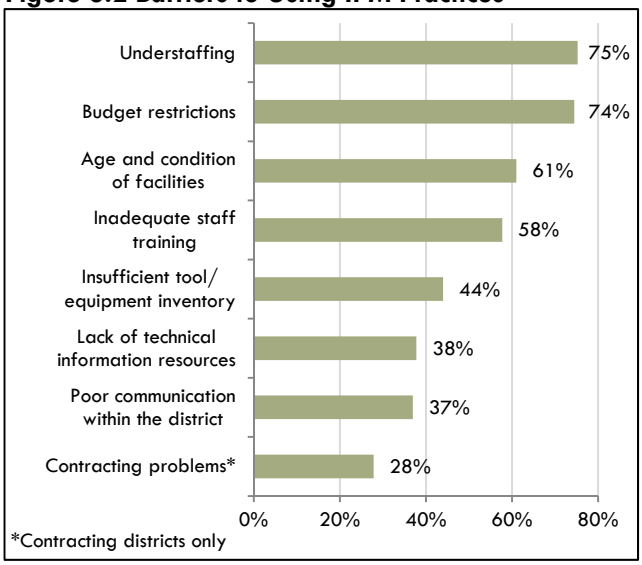
IPM Information Resource Awareness and Resource Use

Respondents were asked whether they were aware of or had used any of the eight listed information resources. The most commonly used resource is DPR training workshops, followed by the DPR school IPM website, and DPR brochures or handouts. (Appendix Table 1.16) Respondents were aware of 5.66 resources, on average, and had used 3.62. (Appendix Table 3.4)

Barriers to Adoption of IPM-Compatible Practices

Respondents were asked to rate the significance of eight specific barriers to using IPM practices. Eight percent of respondents did not believe that any of the practices were significant barriers to using IPM practices. Respondents recognized many resource-based barriers, based on an average scale value of 5.31(out of a possible 16), as shown in Appendix Table 3.4.

Figure 3.2 Barriers to Using IPM Practices

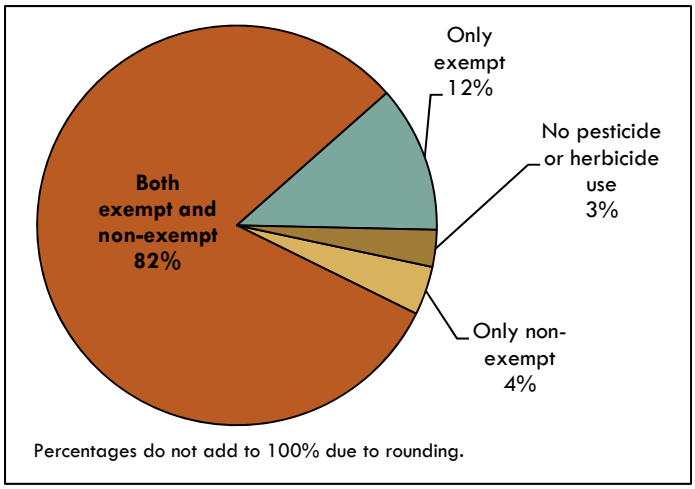


Almost three-quarters of responding districts noted that understaffing and budget restrictions were barriers to adopting IPM-compatible practices. Only one-third perceived a lack of technical information: as noted above, DPR widely distributes information to the districts. Contracting problems were the least mentioned barrier, possibly indicating that pest management companies are already integrating some IPM-compatible practices. (Figure 3.2)

Ant and Weed Management Practices

At the time of the survey, 83 percent of school districts received IPM training and almost all responding districts report using IPM-compatible practices for ant and weed management. Almost all districts also report using at least one non-exempt pesticide practice during the preceding year. Another 15 percent note no pesticide use at all, or the use of exempt practices only. (Figure 3.3 and Appendix Table 3.5) Fully 86 percent of responding districts continue to use one or more pesticides (such as Raid or Roundup) that are not exempt from HSA regulation at least once in the 12 months prior to the survey administration. (Appendix Table 1.3)

Figure 3.3 Percent of Districts Reporting Use of Exempt and Non-Exempt Practices to Manage Ants and Weeds



Three-quarters of districts report managing ants and, of those, only 45 percent use at least one non-exempt practice, such as application of non-exempt insecticides. Almost all districts have to manage weeds and most use at least one non-exempt practice. (Figure 3.4 and Appendix Tables 3.6 and 3.7)

Ant Management Practices

Almost all districts that managed ants noted use of multiple exempt practices in the previous 12 months; improved sanitation and use of ant bait stations were mentioned most often. These are also the two practices reported as used most frequently by a district: ant bait stations are the number one practice for a third of the districts, and one quarter of districts report improved sanitation as their top practice of managing ants. Districts reported using the two non-exempt insecticide practices less frequently than any other practice at least once in the previous year. More than one-quarter of districts use non-exempt insecticides sprayed from a can, and almost one-half apply it using other practices. Very few districts report either as their most frequently used ant management practice. (Figure 3.5, Appendix Table 1.6, and Appendix Table 3.8) The average Ant Management scale score in 2010 was 99.8 points, out of a possible 160 points. (Appendix Table 3.4)

Figure 3.4 Percent of Districts Reporting Use of Non-Exempt Practices

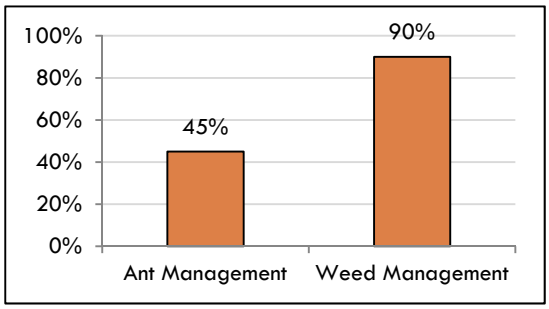
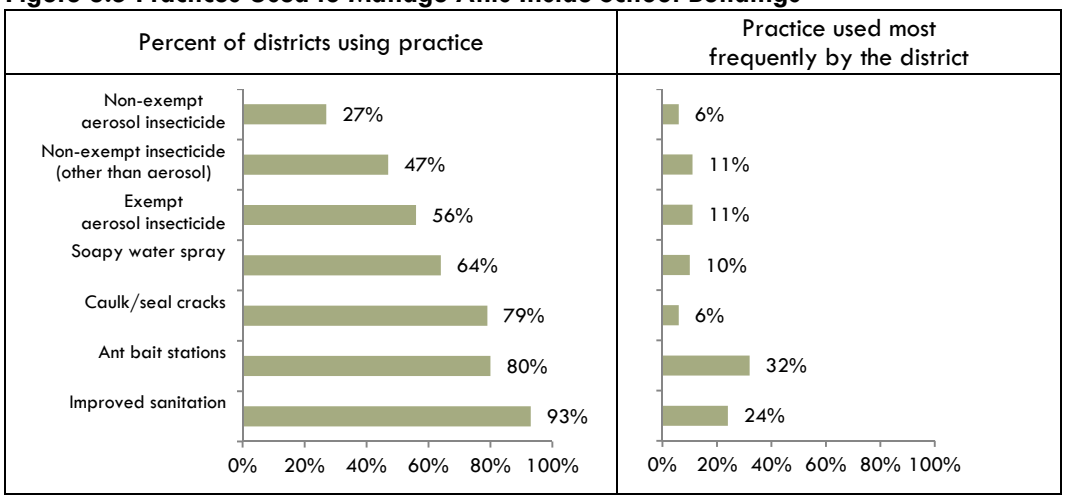


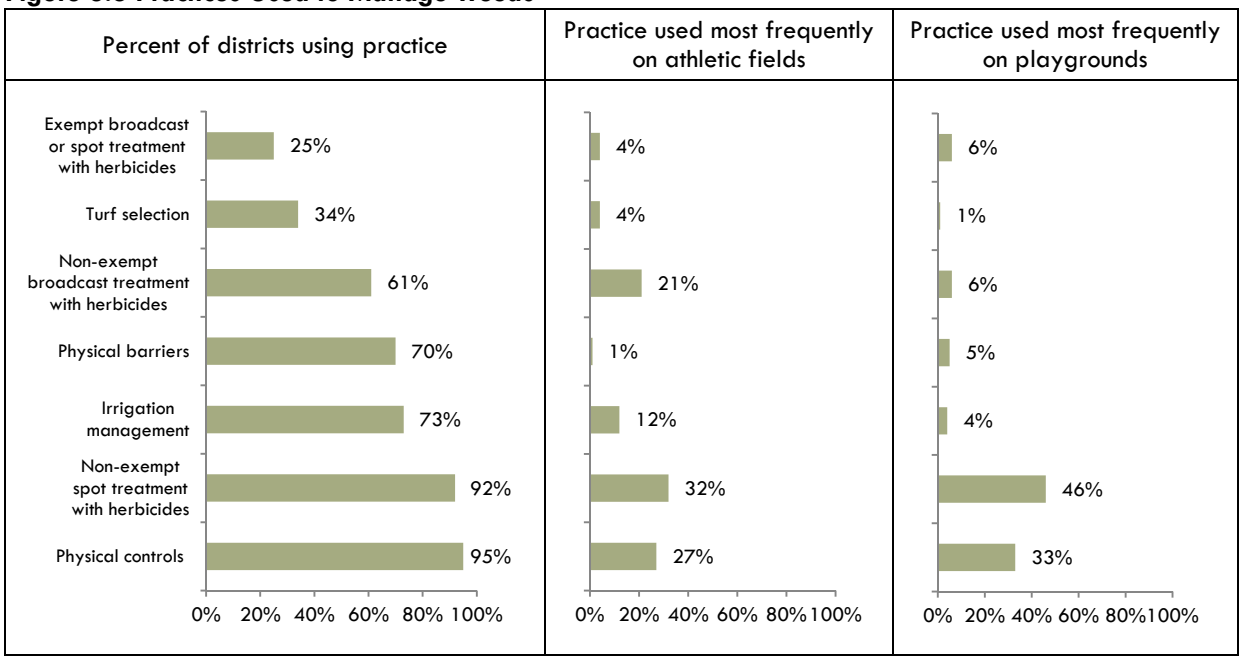
Figure 3.5 Practices Used to Manage Ants Inside School Buildings



Weed Management Practices

The most frequently reported non-exempt weed management practice is spot treatment with an herbicide product such as "Roundup." This is also the most frequently used practice on both athletic fields and playgrounds (one-third and almost one-half of districts use it the most, respectively). Virtually all districts report the use of physical controls, and physical controls are the second most frequently used practice on both athletic fields and playgrounds.

Figure 3.6 Practices Used to Manage Weeds



Almost two-thirds of districts report the use of non-exempt broadcast treatment; one-fifth of districts named it as their most frequently used practice to manage weeds on athletic fields. More than two-thirds of districts report using multiple exempt practices such as irrigation

management and use of mulches or other physical barriers, although few districts named them as their most frequently used practice. (Figure 3.6 and Appendix Tables 1.10 and 3.9) The average Weed Management scale score was 75.4 points on a scale of zero to 160 points. (Appendix Table 3.4)

Relationship between District Characteristics and Pest Management Practices

There is no statistically significant difference in the use of non-exempt practices between districts with an IPM program and those without. In contrast, there are significant differences in the proportion of districts that use one or more non-exempt practice when examining training and contracting status, and between urban and rural districts. While 88 percent of trained[7] districts use non-exempt practices, only 78 percent of untrained districts do. Nine out of ten districts that contract for pest work use at least one non-exempt practice, compared to just two-thirds of non-contracting districts. Almost all districts in urban areas of the state use non-exempt practices, while less than three-quarters of rural districts do the same. (Appendix Table 3.10)

District Characteristics and Perception of Effectiveness of Pest Management Practices

Respondents were asked about their perceived effectiveness of the various ant and weed management practices used in the district. Perception of effectiveness would presumably have a strong impact on the choices a district makes. It would seem reasonable to assume that trained districts and districts with IPM coordinators with more experience on the job might choose IPM-compatible practices more often. Survey results, however, found there is no correlation between training or length of experience on the job and perception of the effectiveness of various ant and weed management practices.

IPM Program Adoption

Districts with an IPM program were significantly more likely to find both exempt and non-exempt weed management practices effective, but there was no difference in perception of exempt and non-exempt ant practice effectiveness. (Table 3.1 and Appendix Table 3.10) There was no significant difference in the perception of effectiveness of only exempt ant or weed practices between the two types of districts. (Table 3.2 and Appendix Table 3.10) Districts without an IPM program were significantly more likely to find non-exempt weed practices effective. (Appendix Table 3.11) Rural districts with an IPM program were more likely than urban districts that also have an IPM program to believe only non-exempt weed practices were effective. Urban districts with an IPM program were more

[7] For the purposes of this chapter, trained districts are those in which a staff member attended a DPR school IPM workshop 12 or more months before ISR received the survey. A trained district is considered untrained if the training occurred too recently (within the prior 12 months) to implement the IPM-compatible practices learned at the training.

likely than rural districts to believe both exempt and non-exempt ant practices were effective. (Appendix Table 3.12)

Table 3.1 Characteristics of Districts Likely to Believe a Combination of Exempt and Non-exempt Practices are Effective

District Characteristic	Ant Management Practices	Weed Management Practices
Has an IPM Program	✗	✓
Is trained	✗	✗
Has contracts	✓	✓
Is an urban district	✗	✓
Respondent has three or more years of experience	✗	✗

✓ = Statistically significant; ✗ = Not statistically significant

Contracting

Districts that contract with pest control businesses were more likely to perceive both exempt and non-exempt practices effective, for both ant and weed management practices. Districts with contracts were less likely to perceive only exempt ant and weed practices as effective, compared to districts without pest management contracts. (Tables 3.1, 3.2, and Appendix Table 3.13)

Location

Urban districts are more likely than rural districts to believe a combination of exempt and non-exempt weed practices are effective. Rural districts consider exempt weed management practices to be more effective when compared to urban districts. (Table 3.1 and Appendix Table 3.14) There is no difference between urban and rural districts in the perception of effectiveness of any ant management practice. (Tables 3.1 and 3.2, and Appendix Table 3.14)

Table 3.2 Characteristics of Districts Likely to Believe Only Exempt Practices are Effective

District Characteristic	Ant Management Practices	Weed Management Practices
Does not have an IPM Program	✗	✗
Not Trained	✗	✗
Does not have contracts	✓	✓
Is a rural district	✗	✓
Respondent has fewer than three years of experience	✗	✗

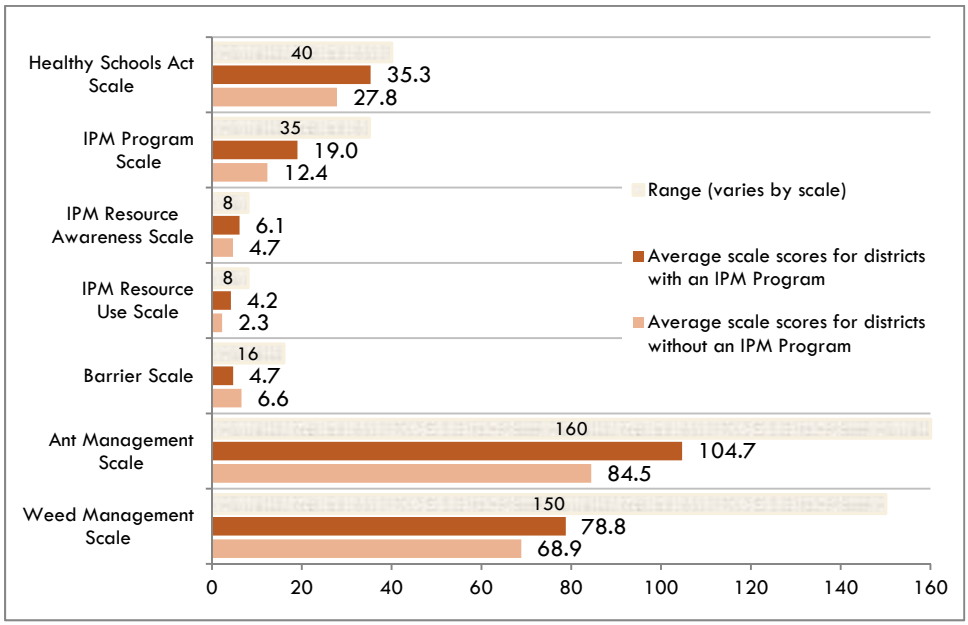
✓ = Statistically significant; ✗ = Not statistically significant

DISTRICT CHARACTERISTICS AND AVERAGE SCALE SCORES

IPM Program Adoption

While districts without an IPM program use at least one non-exempt ant or weed management practice as often as districts which have adopted an IPM program, the latter districts out-perform those without an IPM program on each scale. No other district action or characteristic better predicts a more IPM-compatible district than adoption of an IPM program. Those districts scored seven points higher on the HSA scale and almost seven points higher on the IPM Program scale. Moreover, those districts were aware of and used more IPM resources, perceived fewer barriers, and scored higher on the Ant and Weed Management scales, compared to districts without an IPM program. (Figure 3.6 and Appendix Tables 3.15a and 3.15b)

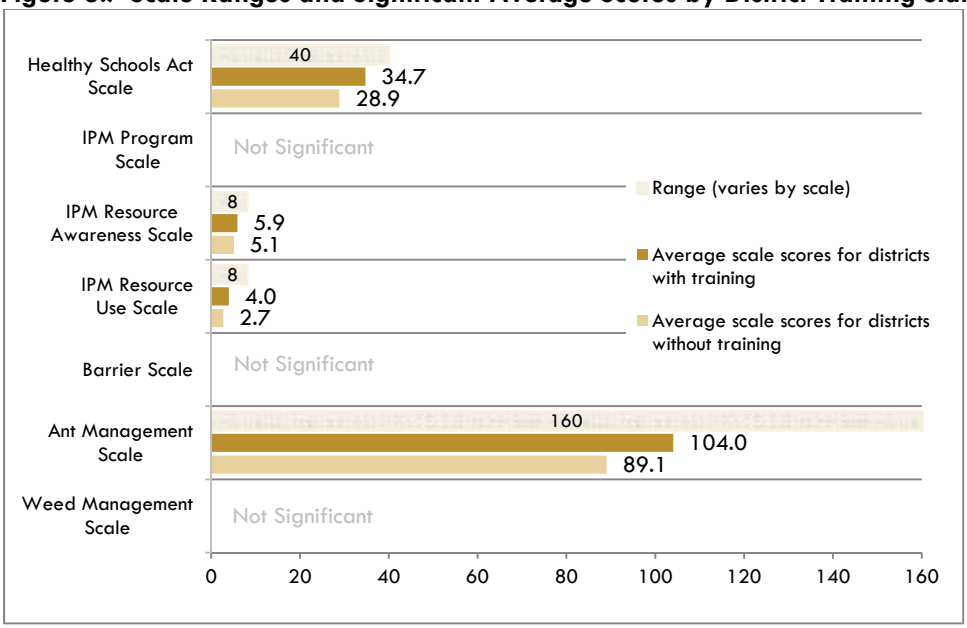
Figure 3.6 Scale Ranges and Significant Average Scores by IPM Program Adoption Status



Training

While there is an association between adoption of an IPM program and use of more IPM-compatible practices, there is no statistical association between training attendance and the use of more IPM-compatible practices and practices on three of the scales measured in this study: the IPM Program scale, the Barrier scale, and the Weed Management scale. The remaining four scales had statistically significant differences between trained and untrained districts: trained districts scored higher on the HSA scale, the IPM Resource Awareness and Use scales, and the Ant Management scale. (Figure 3.7 and Appendix Table 3.16)

Figure 3.7 Scale Ranges and Significant Average Scores by District Training Status



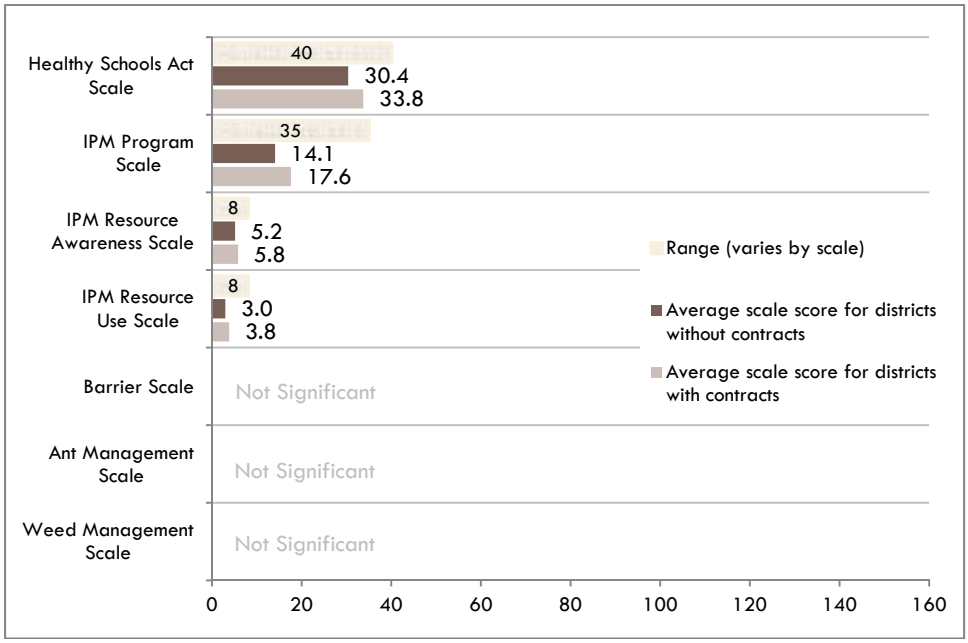
Urban trained districts score higher on the IPM Resource Use scale and the Ant Management scale, compared to rural trained districts. Rural trained districts score higher on the Weed Management scale. Untrained urban districts perceive more barriers to using IPM-compatible practices in their district. (Appendix Table 3.17)

Contract Status

Districts that contract for pest management services had higher scale scores on the HSA scale, the IPM Program scale, and the IPM Resource Awareness and Use scales, compared to non-contracting districts. (Figure 3.8 and Appendix Table 3.18) These scales do not directly measure pesticide use but indicate awareness of the HSA and IPM resources.

While district contract status in general does not correlate with the Barrier scale, there are some regional differences: in the Sierra, districts with pest management contracts perceive more barriers to using IPM practices than non-contracting districts (5.4 barriers versus 2.1). In the North Coastal and the South Eastern regions, districts without contracts have higher average scores on the Weed Management scale: North Coastal districts without contracts average 111.7, compared to contracting districts, which average 86.5. The gap between weed scale scores is even greater in the South Eastern region: non-contracting districts average 120 on the weed scale, while contracting districts average just 61.7. (Appendix Table 3.19)

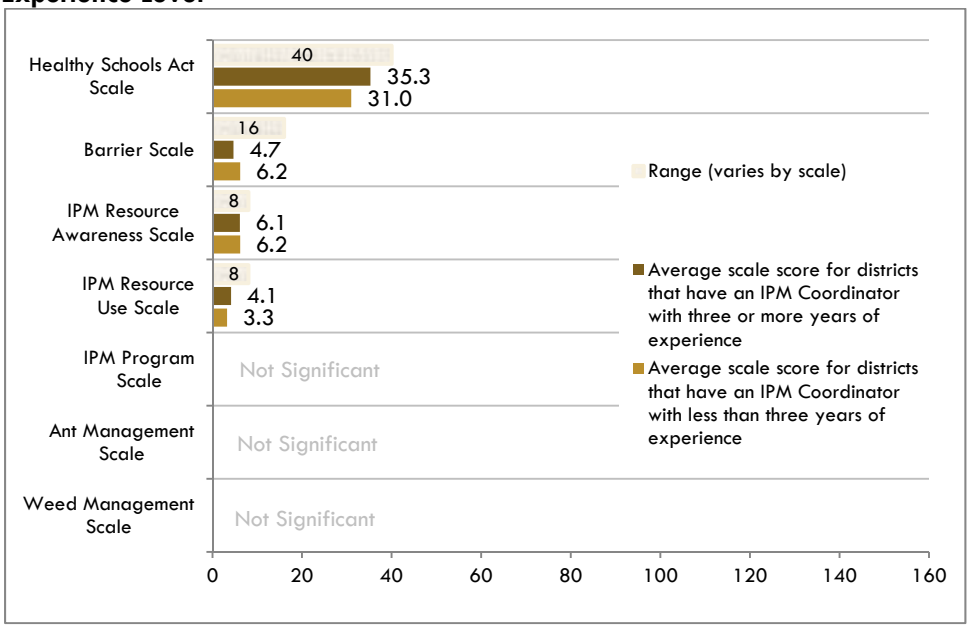
Figure 3.8 Scale Ranges and Significant Average Scores by Pest Management Contract Status



IPM Coordinator Experience

In addition to having higher average scores on the HSA scale and the IPM Resource Awareness and Use scales, coordinators with the longest tenure identified fewer barriers toward putting IPM practices to use. Though districts with more experienced IPM coordinators might be expected to have higher scale scores, there was no difference in the average IPM Program, ant, and weed scale scores in their districts. (Figure 3.9 and Appendix Table 3.20)

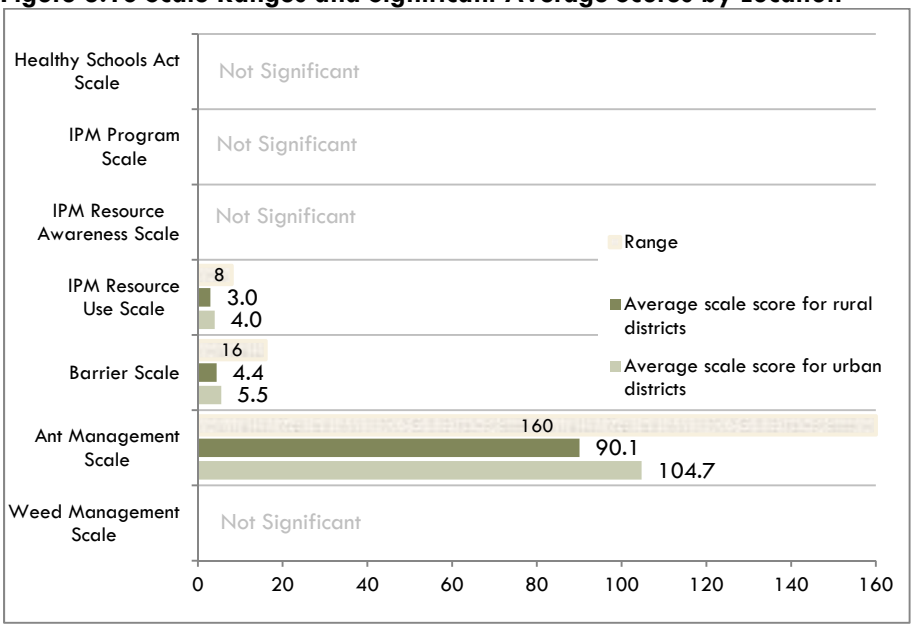
Figure 3.9 Scale Ranges and Significant Average Scores by IPM Coordinator Experience Level



Location and Region

Urban districts used more IPM resources, perceived more barriers, and had higher ant management scale scores than rural districts. (Figure 3.10 and Appendix Table 3.19) With one exception, there was no significant regional difference on any of the scales. The North Coast region averaged the highest score on the Weed Management scale with a 102 point average, 36 points higher than the lowest-scoring region, the South East, which averaged only 66 points. (Appendix Table 3.22)

Figure 3.10 Scale Ranges and Significant Average Scores by Location



Troublesome Pests and Weed Locations

The 2010 survey asked respondents to report the top three most troublesome pests within their district. With the exception of districts in the Central Coast region, ants were the most commonly reported pest statewide. (Table 3.3 and Appendix Table 3.23) As reported previously, ants and weeds remain the top two troublesome pests for California school districts.

Table 3.3 Top Five Pests by Region

Rank	North Coastal	Sierra	North & Central Valleys	Bay Area	Central Coastal	Los Angeles & Surrounding Area	South Eastern
1	Ants	Ants & Bees/Wasps (Tie)	Ants	Ants	Squirrels/gophers	Ants	Ants
2	Bees/wasps		Weeds	Weeds	Weeds	Bees/wasps	Weeds
3	Weeds	Weeds	Squirrels/gophers	Squirrels/gophers	Ants	Weeds	Bees/wasps & Squirrels/gophers (Tie)
4	Squirrels/gophers	Squirrels/gophers	Mice/rats	Mice/rats	Mice/rats	Squirrels/gophers	
5	Mice/rats	Mice/rats & Birds (Tie)	Bees/wasps	Bees/wasps	Bees/wasps	Mice/rats	Spiders

The 2010 survey also asked respondents to report the weed location most troublesome in their district. Statewide, respondents most commonly reported fence lines (38%) as the most troublesome spot for campus weed control. Regionally, the Sierra, Bay Area, Central Coastal, and South Eastern region respondents all noted landscaped areas as their district's primary space for troublesome weed growth. (Table 3.4 and Appendix Table 3.24)

Table 3.4 Top Five Campus Locations for Weed Growth by Region

Rank	North Coastal	Sierra	North & Central Valleys	Bay Area	Central Coastal	Los Angeles & Surrounding Area	South Eastern
1	Paved areas	Landscaping	Fence lines	Landscaping	Fence lines & Landscaping (Tie)	Fence lines	Landscaping
2	Fence lines	Fence lines	Landscaping	Fence lines		Landscaping	Fence lines
3	Landscaping & Non-landscaped ground (Tie)	Non-landscaped ground	Non-landscaped ground	Non-landscaped ground	Non-landscaped ground & School Garden (Tie)	Non-landscaped ground & Athletic fields (Tie)	Paved areas
4		Paved areas	Paved areas & Athletic fields (Tie)	Paved areas			Non-landscaped ground
5	Playgrounds & School Garden (Tie)	Playgrounds		Athletic fields	Paved areas & Athletic fields (Tie)	Paved areas	Athletic fields

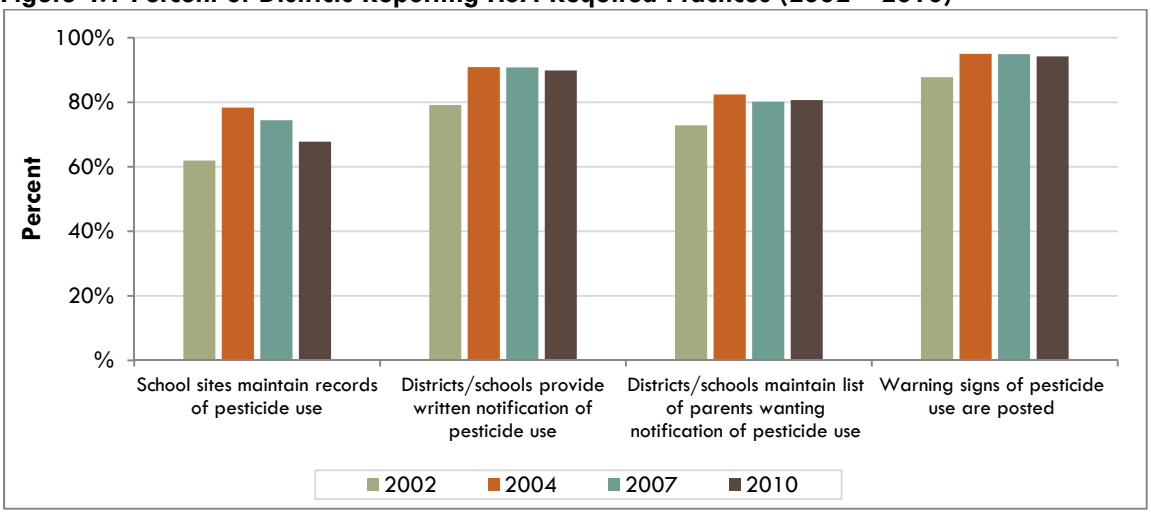
Chapter Four: Trends

Because California school districts have participated in five surveys beginning in 2001, it is possible to identify trends in pest management policies and practices over time. This chapter presents trends in select survey responses. Changes in responding district characteristics and respondent awareness of pest management practices can be found in Appendix Tables 4.1 and 4.2. Note that some findings presented below are based on new survey questions starting in 2004.

Healthy Schools Act Policies and Practices

From 2007 to 2010, school districts continued to comply with the four HSA-required regulations. More districts complied with every practice in 2004 than in 2002. With the exception of school site maintenance of pesticide use records, districts complied with HSA policies at similar rates from 2004 to 2010. (Figure 4.1) Beginning with the 2002 survey, each year HSA scale scores have averaged 30 to 35 points, indicating districts typically adopt at least three of the four HSA components. (Appendix Table 4.3)

Figure 4.1 Percent of Districts Reporting HSA-Required Practices (2002 – 2010)

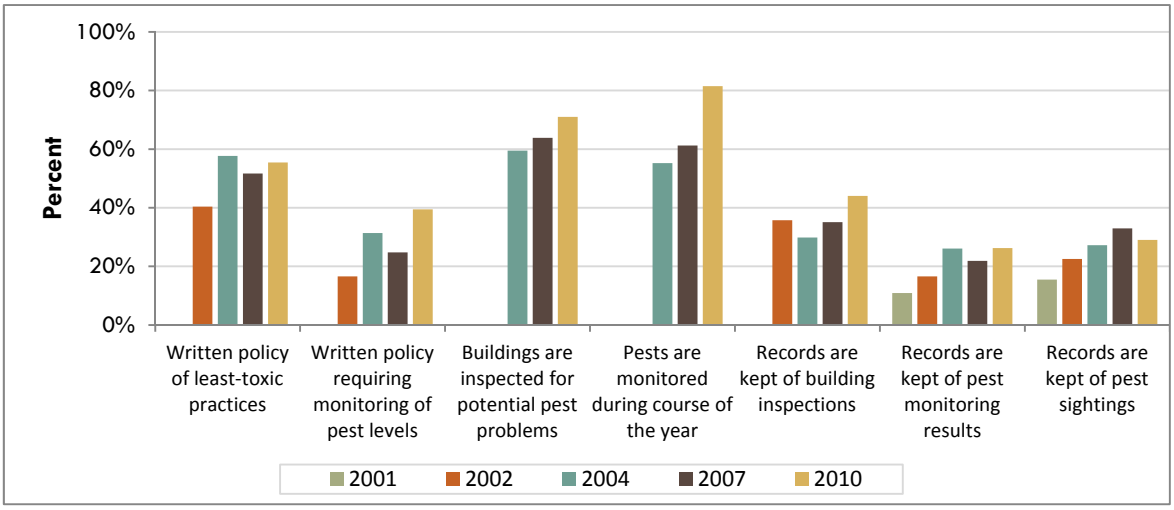


IPM Policies and Practices

There is good news about other IPM activities: 2010 continues the general trend of increased adoption of voluntary IPM policies, practices, and activities. Over two thirds of districts report that they have adopted an IPM program. Monitoring pests, inspecting buildings for pest problems, and maintaining records of building inspections are the most frequently adopted voluntary activities in 2010. Districts were most likely to adopt a written policy of least-toxic practices in 2002, and to inspect buildings for potential pest problems in 2004 and 2007. Adoption of a pest sighting recordkeeping policy (this is distinct from the HSA required pesticide

application recordkeeping) appears to drop from 2007 to 2010, but that change is not statistically significant. (Figure 4.2 and Appendix Table 4.4)

Figure 4.2 Percent of Districts Adopting Voluntary IPM Policies, Practices and Activities (2001 – 2010)



District Characteristics and Assessments

Despite the fact that more districts have attended training than ever before, there is no comparable increase in the number of districts adopting an IPM program. DPR has trained 83 percent of districts as of June 2011, a significant increase from 70 percent in 2007, while there is no similar increase in the percent adopting a program. Each year of the survey, a very consistent 70 percent of districts reported their district had an IPM program. (Appendix Table 4.5)

Two-thirds of districts in 2010 report that their IPM program has increased the effectiveness of their pest management activities, up from 41 percent in 2002. Each year, more than one-half of the districts have reported their IPM program cost has decreased or had no impact on long-term costs. Each year, roughly 25 percent report their IPM program has increased their long-term costs. (Appendix Table 4.5)

A respondent's job category may affect his/her knowledge of district practices. In 2010, more than three-quarters of respondents state that they are their district's IPM coordinator, a percentage that has not changed over the years. (Appendix Table 4.6) As administrative or front office staff filled out surveys less often over the years, maintenance and operations (M & O) staff filled out the survey more often. Because M & O staff is filling out the surveys more frequently, survey results may better reflect actual practices. (Appendix Table 4.6)

Perception of Barriers to Using IPM Practices and Practices

The average 2010 Barrier scale score is higher, compared to both 2004 and 2007. A higher score on the Barrier scale indicates that districts perceive more barriers discouraging the use of IPM-compatible practices. In 2010, districts scored 5.31 on average, compared to 4.67 in 2004 and 4.63 in 2007. Since districts are increasingly suffering from California state budget problems, it seems likely that increased costs drive the sense that understaffing and budgetary restrictions are increasingly problematic. Understaffing continues to be the barrier cited most frequently (75% in 2010, Table 4.1 and Appendix Table 4.7). In 2004 and 2007, roughly one-half of the districts reported budget restrictions as a barrier. This percent jumped to 74 percent in 2010.

Table 4.1 Ranked Barriers to Using IPM Practices & Average Barrier Scale Scores (2004, 2007, and 2010)

	2004	2007	2010
Understaffing	66%	70%	75%
Budget restrictions	63%	52%	74%
Age and condition of school facilities	55%	58%	61%
Inadequate staff training	50%	58%	58%
Insufficient tool/equipment inventory	40%	40%	44%
Lack of technical information resources	35%	33%	38%
Poor communication within district	29%	33%	37%
Contracting problems*	22%	24%	28%
Average Barrier Scale Score	4.67	4.63	5.31

* Contracting districts only

District Use of Non-Exempt Pesticides since 2002

Despite DPR's efforts to decrease the use of non-exempt pesticides in California school districts, surveys since 2004 indicate no change in the proportion of districts that use those less desirable pesticide practices. Districts were not asked about quantities of pesticides used, so there is no way of knowing if there was a change in the amount of pesticides used. Eighty two to 85 percent of districts report using at least one non-exempt practice. (Table 4.2) Additionally, each year 84 to 87 percent of districts with an IPM program used non-exempt practices, while 77 to 83 percent of districts without an IPM program used non-exempt practices. The difference in use of non-exempt practices between districts with or without IPM programs is only significant in 2007. (Appendix Table 4.8)

Table 4.2 Use of Exempt and Non-Exempt Practices (2004, 2007, and 2010)

	2004	2007	2010
District uses at least one non-exempt practice	85%	82%	85%
District does not use non-exempt practices	15%	18%	15%
Total %	100%	100%	100%
Number of cases	508	462	335

In the latter three survey years, districts that attended training use non-exempt practices *more often* than untrained districts. (Appendix Table 4.9) It is important not to assume that DPR training caused the more frequent use of non-exempt

practices; this survey did not examine any relationship between DPR training content and non-exempt pesticide use.

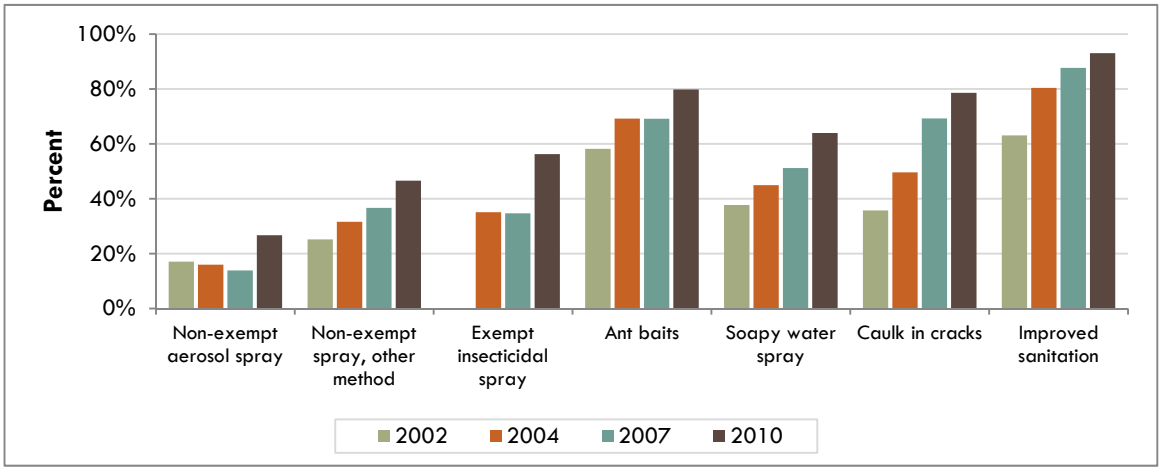
In general, districts that contract out for pest management use non-exempt practices *more often* than districts that do not have any contracts. Ninety-one percent or more of contracting districts report using at least one non-exempt practice every year, compared to 50 to 67 percent of non-contracting districts during the same time period. This is not surprising since, in general, pest management contracts involved pesticide application. (Appendix Table 4.10)

ANT MANAGEMENT PRACTICES

Over the years, the proportion of all districts which manage ants held steady at 77 to 83 percent. Compared to 2007, districts in 2010 increased use of non-exempt aerosol spray, exempt insecticidal spray, ant baits, and soapy water spray. Use of non-exempt spray by other practices, caulk in cracks, and improved sanitation did not significantly increase between 2007 and 2010. (Figure 4.3 and Appendix Table 4.11)

Despite the increase in use of non-exempt aerosol spray, in 2010 districts scored higher on the ant management scale. This is due to the overall increase in the use of other IPM-compatible ant management practices. Districts received 99.8 on the Ant Management scale in 2010, 93.68 in 2007, and 88.97 in 2004. (Appendix Table 4.11)

Figure 4.3 Ant Management Practices (2002 - 2010)



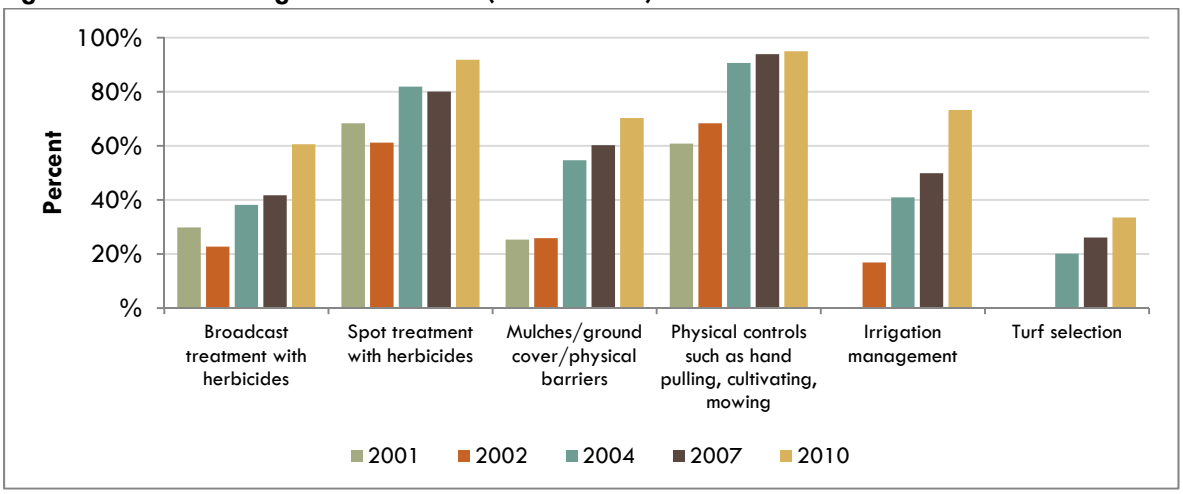
Perceived effectiveness of ant management practices

With the exception of soapy water spray, which is used to clean trails, an average of 80 percent or more of districts considered each ant management practice effective. The perceptions of effectiveness have not changed since 2002. On average, 71 percent rated soapy water spray as effective during the study period. Districts considered the use of non-exempt pesticides (not aerosol can) to be the most effective (95 percent of districts). (Appendix Table 4.12)

WEED MANAGEMENT PRACTICES

There was no change in the proportion of districts that manage weeds—91 to 94 percent of districts have done so since the 2001 survey administration. Compared to 2007, 2010 saw a large increase in the use of one exempt and two non-exempt practices: broadcast treatment with non-exempt herbicides, spot treatment with non-exempt herbicides, and irrigation management. Except in 2002, districts have increased use of both exempt and non-exempt practices. In 2002, there was a dip in the use of broadcast treatment and spot treatment with herbicides; however, subsequent use of those practices increased every survey year. (Figure 4.4 and Appendix Table 4.13)

Figure 4.4 Weed Management Practices (2002 - 2010)



There has been no difference in the most frequent weed management practice used on athletic fields and playgrounds, as well as the location with the most weed trouble during the last seven years (2004, 2007 and 2010). Districts continue to use non-exempt spot treatment as their most frequent practice, and continue to state that landscaping and fence rows are their most problematic weed location. (Appendix Table 4.13)

The average Weed Management scale score decreased from 80.8 in 2007 to 75.4 in 2010. The score in 2010 was higher than in 2004 (69.5). (Appendix Table 4.12)

Perceived effectiveness of weed management practices

From 2004 to 2010, no weed management practices have had any significant change in perceived effectiveness. During the study period, 90 to 99 percent of districts noted the following management practices effective: non-exempt broadcast treatment, non-exempt spot treatment, and the use of mulches and other physical controls (94%, 99%, 92% and 90%, respectively). The two remaining exempt practices were noted as effective by fewer than 90 percent of districts: irrigation management (83% average) and turf selection (84% average). (Appendix Table 4.14)

Conclusions

School districts have been required to meet all four requirements of the Healthy Schools Act since 2001. Despite this, at least one third of school districts are not keeping records of pesticide applications. The number of districts reporting that they are recordkeeping has significantly decreased from a high of 78% in the 2004 survey. Districts receiving IPM training from DPR tend to comply with more of the HSA requirements. DPR may need to do more outreach to districts to remind them that recordkeeping of pesticide use is still a requirement.

The adoption of a school IPM program is voluntary under the HSA. No other district characteristic better predicts a more IPM-compatible district than the adoption of an IPM program. Over two thirds of school districts report adopting an IPM program. DPR trained 83% of all districts in school IPM practices as of June 2011, a significant increase since the 2007 survey (70% in 2007), but there was no similar increase in the number of districts adopting an IPM program.

Demographic and geographic differences were examined. The most differences in pest management policies, programs, and practices were seen between urban and rural districts. Almost all urban districts use non-exempt practices, such as aerosol insecticides or broadcast herbicide treatments at least once during the year while less than three-quarters of rural districts do the same. DPR's efforts to educate urban districts could focus on the reduction of non-exempt practices. Another significant difference is in North Coast and South Eastern region districts that have pest management contracts. Those districts score lower on the weed scale, meaning that they are using fewer IPM-compatible practices for weed management. DPR could focus outreach to the pest management professionals in those regions to encourage the adoption of IPM-compatible practices.

More districts in the 2010 survey are reporting that there are significant barriers to using IPM practices. Since districts are increasingly suffering from budget cutbacks, it seems likely that understaffing and budget restrictions are problematic. Districts that have adopted an IPM program frequently report that this has decreased the cost of pest management. They also report that IPM is more effective than conventional pest management. DPR could share IPM programs and strategies from districts that report IPM has decreased costs with other school districts. This may convince districts that adoption of an IPM program can save money and be more effective at reducing pest problems.

Survey Instrument

Making the grade on pest management

CALIFORNIA SCHOOL IPM

CALIFORNIA SCHOOL INTEGRATED PEST MANAGEMENT (IPM) PROGRAM

2010 SURVEY OF SCHOOL DISTRICTS

GENERAL PEST MANAGEMENT PRACTICES

1 During the last twelve months, what type of pesticides (including herbicides) were used in your school district?
*Please check only **one** answer.*

- ◯ Only pesticides exempt* from the Healthy Schools Act (HSA) (for example, ant bait stations)
- ◯ Only pesticides that are not exempt from the HSA (for example, Roundup®)
- ◯ Both exempt* and non-exempt pesticides (including herbicides)
- ◯ No pesticides (including herbicides) were used at all
- ◯ Not sure

2 For what type(s) of pest control does your district contract with pest control businesses?
*Please check **all** appropriate boxes.*

- ☐ Termite control
- ☐ Food service area pest control
- ☐ Perimeter pest control
- ☐ Grounds pest control (for example, landscape, paved areas)
- ☐ Have contracts for pest control, but uncertain about type
- ☐ Don't know whether the district has contracts for pest control
- ☐ District does not contract with pest control businesses

3 Has your district officially adopted (through a school board action or administrator's directive) the following policies or practices?

	Yes	No	Not sure
a. Written policy requiring the use of least-toxic pest management practices	◯	◯	◯
b. Written list of pesticide products approved for use in school districts	◯	◯	◯
c. Written policy requiring the monitoring of pest level practices	◯	◯	◯
d. Each school site maintains records of all pesticides used for at least four years, and makes these records available to the public	◯	◯	◯
e. District or school annually provides staff and parents with written notification of expected pesticide use at their school	◯	◯	◯
f. District or school maintains a list parents wanting to be notified of specific pesticide applications	◯	◯	◯
g. Warning signs are posted at least 24 hours before and 72 hours after pesticide treatment	◯	◯	◯

4 Which of the following describes your district's recordkeeping and pest monitoring/detection activities?
*Please check **all** that apply.*

- ☐ Buildings and grounds are inspected for potential pest problems
- ☐ Pest problems (including weeds) are monitored during the course of a year
- ☐ No pest monitoring/detection activities
- ☐ Records are kept of building inspections
- ☐ Records are kept of pest (including weeds) monitoring results
- ☐ Records are kept of pest sightings (for example, by teachers)
- ☐ Records are kept of pest management practices used other than pesticides
- ☐ No records are kept on pest management

5 Has your school district adopted an IPM program?

- ◯ Yes → How many years ago? [ ] → ***Go to Question 6***
- ◯ No → ***Go to Question 8***
- ◯ Not sure → ***Go to Question 8***

6 Do you think your district's IPM program has:
*Please check only **one** answer.*

- ◯ Resulted in more effective pest management
- ◯ Made no difference in pest management effectiveness
- ◯ Resulted in less effective pest management
- ◯ Uncertain/no opinion

7 Has your district's IPM program affected the long-term cost of pest management?
*Please check only **one** answer.*

- ◯ Reduced the cost
- ◯ Increased the cost
- ◯ Had no impact on the cost
- ◯ Uncertain/no opinion

8 What are the barriers to using IPM practices in your district? Please rate the significance of each of the following:

	Not at all significant	Somewhat significant	Very significant
a. Age and condition of school facilities	◯	◯	◯
b. Poor communication within the district	◯	◯	◯
c. Budget restrictions	◯	◯	◯
d. Inadequate staff training	◯	◯	◯
e. Understaffing	◯	◯	◯
f. Insufficient tool/equipment inventory	◯	◯	◯
g. Lack of technical information resources	◯	◯	◯
h. Contracting problems	◯	◯	◯

* Pesticides (including herbicides) exempt from the Healthy Schools Act: self-contained bait stations, gel/paste in cracks and crevices, disinfectants, ingredients exempt from registration

ANT MANAGEMENT INSIDE SCHOOL BUILDINGS

We would like to find out about all practices your school district used during the **12 months** to manage ant problems **inside** district buildings. This includes practices used by both district personnel and contractors.

9 Did your district do anything to manage ants **inside** school buildings within the last 12 months?

◯ Yes → ***Go to Question 10*** ◯ No → ***Go to Question 14*** ◯ Not sure → ***Go to Question 14***

10 Did your district use the following practices to manage ants **inside** buildings?

11 If **yes**, please rate the effectiveness of each practice used:

		No	Yes	Very effective	Somewhat effective	Uncertain	Somewhat ineffective	Very ineffective
Non-Exempt Methods	a. Non-exempt insecticidal spray from an aerosol can (for example, Raid®)	◯	◯ →	◯	◯	◯	◯	◯
	b. Non-exempt insecticides applied using other application method	◯	◯ →	◯	◯	◯	◯	◯
Exempt Methods	c. Exempt insecticidal spray from an aerosol can (for example, mint, citrus, or other plant based oils)	◯	◯ →	◯	◯	◯	◯	◯
	d. Ant bait stations	◯	◯ →	◯	◯	◯	◯	◯
	e. Soapy water spray	◯	◯ →	◯	◯	◯	◯	◯
	f. Caulk/seal cracks to prevent entry of ants	◯	◯ →	◯	◯	◯	◯	◯
	g. Improved sanitation	◯	◯ →	◯	◯	◯	◯	◯
	h. Other (please describe below)	◯	◯ →	◯	◯	◯	◯	◯

12 For each practice used, which best describes how your district decided **when** this treatment for ants was necessary? *Please select only **one** option per treatment.*

		Not applicable, did not use	Regular time intervals	When ants are first noticed	When number of ants exceeds a pre-established threshold	After a certain number of complaints	Other (please describe below)
Non-Exempt Methods	a. Non-exempt insecticidal spray from an aerosol can (for example, Raid®)	◯	◯	◯	◯	◯	◯
	b. Non-exempt insecticides applied using other application method	◯	◯	◯	◯	◯	◯
Exempt Methods	c. Exempt insecticidal spray from an aerosol can (for example, mint, citrus, or other plant based oils)	◯	◯	◯	◯	◯	◯
	d. Ant bait stations	◯	◯	◯	◯	◯	◯
	e. Soapy water spray	◯	◯	◯	◯	◯	◯
	f. Caulk/seal cracks to prevent entry of ants	◯	◯	◯	◯	◯	◯
	g. Improved sanitation	◯	◯	◯	◯	◯	◯
	h. Other	◯	◯	◯	◯	◯	◯

Description of other ways your district decided when to use treatment (please indicate which type of treatment you are describing):

13 Which **one** practice did your district use **most frequently** to manage ants **inside** school buildings? *Please check only **one** answer.*

Non-Exempt Methods
- ◯ Non-exempt insecticidal spray from an aerosol can (for example, Raid®)
- ◯ Non-exempt insecticides applied using other application method

Exempt Methods
- ◯ Exempt insecticidal spray from an aerosol can (for example, mint, citrus, or other plant based oils)
- ◯ Ant bait stations
- ◯ Soapy water spray
- ◯ Caulk/seal cracks to prevent entry of ants
- ◯ Improved sanitation
- ◯ Other (please specify):

WEED MANAGEMENT

We would like to find out about all practices your school district used during the **12 months** to manage weed problems. This includes practices used by both district personnel and contractors.

14 Did your district do anything to manage weeds within the last 12 months?

◯ Yes → ***Go to Question 15*** ◯ No → ***Go to Question 20*** ◯ Not sure → ***Go to Question 20***

15 Did your district use the following practices to manage weeds? **16** If **yes**, please rate the effectiveness of each practice used:

		No	Yes	Very effective	Somewhat effective	Uncertain	Somewhat ineffective	Very ineffective
Non-Exempt Methods	a. Broadcast treatment with herbicides (for example, weed and feed products)	◯	◯	◯	◯	◯	◯	◯
	b. Spot treatment with herbicides (for example, Roundup®)	◯	◯	◯	◯	◯	◯	◯
Exempt Methods	c. Broadcast or spot treatment with herbicides exempt from registration (for example, clove oil)	◯	◯	◯	◯	◯	◯	◯
	d. Use of mulches, ground covers, barrier cloth or plastic	◯	◯	◯	◯	◯	◯	◯
	e. Physical controls such as hand pulling, cultivating, mowing	◯	◯	◯	◯	◯	◯	◯
	f. Irrigation management	◯	◯	◯	◯	◯	◯	◯
	g. Turf selection	◯	◯	◯	◯	◯	◯	◯
	h. Other (please describe below)	◯	◯	◯	◯	◯	◯	◯

17 Which best describes how your district decided **when** herbicide treatment for weeds was necessary? *Please select only **one** option per treatment.*

	Not applicable, did not use	Regular time intervals (annually, seasonally, monthly, etc.)	When weeds are first noticed	When weed abundance exceeds a pre-established threshold	After a certain number of complaints	Other (please describe below)
a. Broadcast treatment with herbicides (for example, weed and feed products)	◯	◯	◯	◯	◯	◯
b. Spot treatment with herbicides (for example, Roundup®)	◯	◯	◯	◯	◯	◯
c. Broadcast or spot treatment with herbicides exempt from registration (for example, clove oil)	◯	◯	◯	◯	◯	◯

Description of other ways your district decided when to use herbicides (please indicate which type of treatment you are describing):

18 Which **one** practice did your district use **most frequently** to manage weeds in the following locations? *Please select only **one** option per location.*

	Broadcast treatment with herbicides	Spot treatment with herbicides	Broadcast or spot treatment with herbicides exempt from registration	Use of mulches, ground covers, barrier cloth, or plastic	Physical controls such as hand pulling, cultivating, mowing	Irrigation management	Turf selection	Other (please describe below)
a. Athletic fields	◯	◯	◯	◯	◯	◯	◯	◯
b. Playgrounds	◯	◯	◯	◯	◯	◯	◯	◯

Description of other practices used to manage weeds (please indicate which location you are describing):

19 At which **one** of the following locations does your district typically have the most trouble with weeds? *Please check only **one** answer.*

◯ Athletic fields
◯ Playgrounds
◯ Landscaping
◯ Rights of way
◯ Fence lines
◯ Paved areas/cracks in asphalt
◯ Non-landscaped ground
◯ School garden
◯ Other (please specify):

20 In the last year, did you have problems with any of the pests listed below? *Please check your **top three** pests only.*

- ☐ Ants
- ☐ Bears
- ☐ Bees/wasps
- ☐ Birds
- ☐ Cockroaches
- ☐ Deer
- ☐ Fleas
- ☐ Flies
- ☐ Mice/rats
- ☐ Opossums
- ☐ Raccoons
- ☐ Snails/slugs
- ☐ Snakes
- ☐ Spiders
- ☐ Squirrels/gophers
- ☐ Termites
- ☐ Weeds
- ☐ Other (please specify): _____

RESPONDENT INFORMATION

21 Which of the following are you responsible for in your district? *Please check **all** that apply.*

- ☐ Pest management and pesticide safety training
- ☐ Setting pest management policies
- ☐ Deciding when to use pest management practices
- ☐ Deciding which pest management practices to use
- ☐ Using pest management practices
- ☐ Directing others to use pest management practices
- ☐ Keeping records of all pest management practices used
- ☐ Other (please specify): _____

22 Are you the designated IPM coordinator for your school district?

- ◯ Yes ⟶ ***Go to Question 23***
- ◯ No ⟶ ***Go to Question 24***

23 How long have you been the IPM coordinator for your school district?

- ◯ Less than 1 year
- ◯ 1-2 years
- ◯ 3-4 years
- ◯ 5-10 years
- ◯ More than 10 years

24 Please indicate whether you have accessed or are aware of **each** of the following information resources on pest management in schools. *Please check only **one** box for each information resource.*

	Have accessed	Aware of but have not accessed	Not aware of
a. DPR School IPM web site	◯	◯	◯
b. Brochures/handouts from DPR	◯	◯	◯
c. Presentations on school IPM by DPR Staff	◯	◯	◯
d. Training workshops on school IPM	◯	◯	◯
e. Information provided by licensed pest control business	◯	◯	◯
f. University of California resources	◯	◯	◯
g. Information from other web site sources	◯	◯	◯
h. California Department of Education, School Facilities Planning Division	◯	◯	◯

Your job title:

_____

School district name:

_____

Your name (optional):

_____

Any comments or suggestions? (300 characters maximum)

_____

Thank you for taking the time to complete our survey.
If you have any questions about the survey itself, please contact Dr. Belinda Messenger at (916) 324-4077.

Would you like to host a DPR-sponsored IPM workshop? If so, please send an e-mail message to school-ipm@cdpr.ca.gov.

Print Form

Please submit the survey by November 15th, 2010
by clicking "Submit by Email"
OR
print the survey and fax it to (916) 278-5150.

Submit by Email

Technical difficulties? Please contact Jeanine Cunningham at (916) 278-4522.

Appendix Tables

Appendix Table 1.1 Responses to Questions 1 and 2

			Percent	*Number of cases*
1.	During the last twelve months, what types of pesticides (including herbicides) were used in your school district? Please check only one answer.	Only pesticides exempt from the Healthy Schools Act (HSA)	12%	*40*
		Only pesticides that are not exempt from the HSA	4	*13*
		Both exempt and non-exempt pesticides (including herbicides)	80	*273*
		No pesticides (including herbicides) were used at all	3	*9*
		Not sure	1	*5*
		Total	100%	*340*
2.	For what type(s) of pest control does your district contract with pest control businesses? Please check all appropriate boxes.	Termite control	36%	*123*
		Food service area pest control	48	*164*
		Perimeter pest control	50	*169*
		Grounds pest control (for example, landscape, paved areas)	32	*109*
		Have contracts for pest control, but uncertain about type	5	*16*
		Don't know whether the district has contracts for pest control	<1	*1*
		District does not contract with pest control businesses	22	*74*

Appendix Table 1.2 Responses to Question 3

3.	Has your district officially adopted (through a school board action or administrator's directive) the following policies or practices?	Percent				
		Yes	No	Not Sure	Total	*Number of cases*
a.	Written policy requiring the use of least-toxic pest management practices	54%	19%	265	100%	*314*
b.	Written list of pesticide products approved for use in school districts	62	22	16	100	*317*
c.	Written policy requiring the monitoring of pest level practices	39	35	26	100	*303*
d.	Each school site maintains records of all pesticides used for at least four years, and makes these records available to the public	66	18	16	100	*316*
e.	District or school annually provides staff and parents with written notification of expected pesticide use at their school	87	7	6	100	*325*
f.	District or school maintains a list of parents wanting to be notified of specific pesticide applications	78	9	13	100	*325*
g.	Warning signs are posted at least 24 hours before and 72 hours after pesticide treatment	92	5	3	100	*328*

Appendix Table 1.3 Responses to Questions 4 through 7

			Percent	*Number of cases*
4.	Which of the following describes your district's recordkeeping and pest monitoring/detection activities? Please check all that apply.	Buildings and grounds are inspected for potential pest problems	71%	*241*
		Pest problems (including weeds) are monitored during the course of a year	80	*272*
		No pest monitoring/detection activities	4	*12*
		Records are kept of building inspections	46	*156*
		Records are kept of pest (including weeds) monitoring results	26	*87*
		Records are kept of pest sightings (for example, by teachers)	29	*97*
		Records are kept of pest management practices used other than pesticides	27	*93*
		No records are kept on pest management	15	*52*
5.	Has your school district adopted an IPM program?	Yes	68%	*228*
		No	15	*51*
		Not sure	16	*55*
		Total	100%	*334*
	If yes, how many years ago?	Less than one year ago	1%	*2*
		One year ago	1	*2*
		Two years ago	5	*9*
		Three years ago	7	*13*
		Four years ago	9	*16*
		Five years ago	14	*27*
		More than 5 years ago	64	*120*
		Total	100%	*189*[a]
6.	Do you think your district's IPM program has: Please check only one answer.	Resulted in more effective pest management	67%	*150*
		Made no difference in pest management effectiveness	16	*35*
		Resulted in less effective pest management	2	*5*
		Uncertain/no opinion	15	*33*
		Total	100%	*223*
7.	Has your district's IPM program affected the long-term cost of pest management? Please check only one answer.	Reduced the cost	38%	*84*
		Increased the cost	18	*39*
		Had no impact on the cost	24	*53*
		Uncertain/no opinion	21	*46*
		Total	100%	*222*

[a] Of 228 districts reporting IPM program adoption, 39 districts did not specify how long ago the program was adopted.

Appendix Table 1.4 Responses to Question 8

8.	What are the barriers to using IPM practices in your district? Please rate the significance of each of the following:	Percent				
		Not at all significant	Somewhat significant	Very significant	Total	*Number of cases*
a.	Age and condition of school facilities	39%	42%	18%	100%	*316*
b.	Poor communication within the district	63	30	7	100	*314*
c.	Budget restrictions	26	48	27	100	*321*
d.	Inadequate staff training	42	41	17	100	*319*
e.	Understaffing	25	38	37	100	*323*
f.	Insufficient tool/equipment inventory	56	33	11	100	*316*
g.	Lack of technical information resources	62	30	8	100	*315*
h.	Contracting problems	71	25	4	100	*315*

Appendix Table 1.5 Responses to Question 9

			Percent	*Number of cases*
9.	Did your district do anything to manage ants inside school buildings within the last 12 months?	Yes	77%	*258*
		No	19	*63*
		Not Sure	*5*	*16*
		Total	100%	*337*

Appendix Table 1.6 Responses to Questions 10 and 11

				11. If yes, please rate the effectiveness of each practice used:						
				Percent						
10.	Did your district use the following practices to manage ants inside buildings?	Percent Yes	*Total number of cases*	Very effective	Somewhat effective	Uncertain	Somewhat ineffective	Very in-effective	Total	*Number of cases*
a.	Non-exempt insecticidal spray from an aerosol can (for example, Raid®)	27%	*202*	27%	*55%*	14%	2%	2%	100%	*51*
b.	Non-exempt insecticides applied using other application method	*47*	*204*	*59*	*37*	1	1	1	100	*79*
c.	Exempt insecticidal spray from an aerosol can (for example, mint, citrus, or other plant based oils)	*56*	*213*	19	*67*	6	*7*	1	100	*109*
d.	Ant bait stations	80	*233*	40	*47*	*7*	4	2	100	*173*
e.	Soapy water spray	64	*211*	12	*56*	17	8	*7*	100	*118*
f.	Caulk/seal cracks to prevent entry of ants	*79*	*215*	28	*54*	10	*5*	2	100	*151*
g.	Improved sanitation	93	*233*	46	44	6	1	3	100	*196*
h.	Other	39	*87*	63	21	13	--	4	100	*24*

Appendix Table 1.7 Responses to Question 12

12.	For each practice used, which best describes how your district decided when this treatment for ants was necessary? Please select only one option per treatment.	Percent						
		Regular time intervals	When ants are first noticed	When exceeds pre-established threshold	After a certain number of complaints	Other	Total	*Number of cases*
a.	Non-exempt insecticidal spray from an aerosol can (for example, Raid®)	*5%*	41%	15%	34%	*5%*	100%	*41*
b.	Non-exempt insecticides applied using other application method	23	30	22	18	6	100	*77*
c.	Exempt insecticidal spray from an aerosol can (for example, mint, citrus, or other plant based oils)	*7*	*76*	*7*	*7*	2	100	*110*
d.	Ant bait stations	13	69	10	6	2	100	*175*
e.	Soapy water spray	*5*	83	3	6	2	100	*126*
f.	Caulk/seal cracks to prevent entry of ants	20	*52*	11	15	3	100	*153*
g.	Improved sanitation	46	46	1	6	2	100	*196*
h.	Other	17	34	3	14	31	100	*29*

Appendix Table 1.8 Responses to Question 13

			Percent	*Number of cases*
13.	Which one practice did your district use most frequently to manage ants inside school buildings? Please check only one answer.	Non-exempt insecticidal spray from an aerosol can (for example, Raid®)	5%	*13*
		Non-exempt insecticides applied using other application method	6	*16*
		Exempt insecticidal spray from an aerosol can (for example, mint, citrus, or other plant based oils)	8	*20*
		Ant bait stations	28	*70*
		Soapy water spray	8	*20*
		Caulk/seal cracks to prevent entry of ants	1	*2*
		Improved sanitation	18	*46*
		Other	1	*2*
		Multiple answers given	24	*60*
		Total	100%	*249*

Appendix Table 1.9 Responses to Question 14

			Percent	*Number of cases*
14.	Did your district do anything to manage weeds within the last 12 months?	Yes	93%	*312*
		No	*7*	*22*
		Not Sure	1	*3*
		Total	100%	*337*

Appendix Table 1.10 Responses to Questions 15 and 16

				16. If yes, please rate the effectiveness of each practice used:						
				Percent						
15.	Did your district use the following practices to manage weeds?	Percent Yes	*Total number of cases*	Very effective	Somewhat effective	Uncertain	Somewhat ineffective	Very in-effective	Total	*Number of cases*
a.	Broadcast treatment with herbicides (for example, weed and feed products)	61%	*254*	46%	48%	4%	2%	--%	100%	*125*
b.	Spot treatment with herbicides (for example, Roundup®)	92	*294*	78	21	--	1	--	100	*256*
c.	Broadcast or spot treatment with herbicides exempt from registration (for example, clove oil)	25	*228*	17	47	10	17	10	100	*30*
d.	Use of mulches, ground covers, barrier cloth or plastic	70	*246*	20	69	4	5	2	100	*170*
e.	Physical controls such as hand pulling, cultivating, mowing	95	*281*	29	62	4	5	1	100	*255*
f.	Irrigation management	73	*247*	20	62	9	8	1	100	*173*
g.	Turf selection	33	*233*	20	59	15	3	3	100	*74*
h.	Other	16	*230*	43	43	--	14	--	100	*7*

Appendix Table 1.11 Responses to Question 17

17. Which best describes how your district decided when herbicide treatment for weeds was necessary? Please select only one option per treatment.	a. Broadcast treatment with herbicides (for example, weed and feed products)		b. Spot treatment with herbicides (for example, Roundup®)		c. Broadcast or spot treatment with herbicides exempt from registration (for example, clove oil)	
	Percent	*Number of cases*	Percent	*Number of cases*	Percent	*Number of cases*
Regular time intervals (annually, seasonally, monthly, etc.)	53%	*73*	38%	*99*	39%	*14*
When weeds are first noticed	18	*24*	31	*81*	44	*16*
When weed abundance exceeds a pre-established threshold	22	*30*	25	*66*	8	*3*
After a certain number of complaints	4	*6*	2	*5*	6	*2*
Other	2	*3*	2	*6*	3	*1*
Multiple responses given	1	*1*	1	*3*	--	--
Total	100%	*137*	100%	*260*	100%	*36*

Appendix Table 1.12 Responses to Question 18

18. Which one practice did your district use most frequently to manage weeds in the following locations? Please select only one option per location.	a. Athletic fields		b. Playgrounds	
	Percent	*Number of cases*	Percent	Number of cases
Broadcast treatment with herbicides	21%	*60*	4%	*11*
Spot treatment with herbicides	31	*90*	46	*130*
Broadcast or spot treatment with herbicides exempt from registration	4	*11*	5	*13*
Use of mulches, ground covers, barrier cloth, or plastic	1	*2*	4	*12*
Physical controls such as hand pulling, cultivating, mowing	25	*72*	30	*84*
Irrigation management	8	*22*	1	*4*
Turf selection	3	*10*	1	*3*
Other	<1	*1*	1	*4*
Multiple responses given	8	*22*	7	*19*
Total	100%	*290*	100%	*280*

Appendix Table 1.13 Responses to Question 19

		Percent	*Number of cases*
19. At which one of the following locations does your district typically have the most trouble with weeds? Please check only one answer.	Athletic fields	7%	*21*
	Playgrounds	5	*14*
	Landscaping	23	*72*
	Rights of way	1	*3*
	Fence lines	23	*70*
	Paved areas/cracks in asphalt	7	*23*
	Non-landscaped ground	14	*42*
	School garden	2	*5*
	Other	1	*4*
	Multiple answers given	18	*57*
	Total	100%	*311*

Appendix Table 1.14 Responses to Question 20

			Percent	*Number of cases*
20.	In the last year, did you have problems with any of the pests listed below? Please check your top three pests only.	Ants	69%	*234*
		Weeds	*55*	*188*
		Bees/wasps	49	*168*
		Squirrels/gophers	*47*	*159*
		Mice/rats	35	*118*
		Cockroaches	20	*69*
		Spiders	20	*67*
		Birds	13	*45*
		Termites	10	*34*
		Flies	6	*19*
		Raccoons	3	*11*
		Opossums	3	*10*
		Fleas	3	*9*
		Deer	2	*8*
		Snakes	2	*8*
		Snails/slugs	2	*7*
		Bears	1	*3*
	Other: (Written responses)		(9)	*(29)*
		Skunks	4	*14*
		Gophers	2	*6*
		Cats	1	*2*
		Moles	1	*2*
		Bats	<1	*1*
		Bird bugs	<1	*1*
		Grey fox	<1	*1*
		Mountain lions	<1	*1*
		Voles	<1	*1*

Appendix Table 1.15 Responses to Questions 21 through 23

			Percent	*Number of cases*
21.	Which of the following are you responsible for in your district? Please check all that apply.	Pest management and pesticide safety training	58%	*196*
		Setting pest management policies	38	*130*
		Deciding when to use pest management practices	67	*227*
		Deciding which pest management practices to use	66	*226*
		Using pest management practices	61	*207*
		Directing others to use pest management practices	66	*224*
		Keeping records of all pest management practices used	59	*201*
		Other	4	*13*
22.	Are you the designated IPM coordinator for your school district?	Yes	78%	*249*
		No	22	*70*
		Total	100%	*319*
23.	How long have you been the IPM coordinator for your school district?	Less than 1 year	11%	*27*
		1-2 years	14	*35*
		3-4 years	28	*68*
		5-10 years	37	*92*
		More than 10 years	10	*25*
		Total	100%	*247*

Appendix Table 1.16 Responses to Question 24

24.	Please indicate whether you have accessed or are aware of each of the following information resources on pest management in schools.	Percent				
		Have accessed	Aware of but have not accessed	Not aware of	Total	*Number of cases*
a.	DPR School IPM web site	64%	22%	14%	100%	*305*
b.	Brochures/handouts from DPR	63	20	17	100	*296*
c.	Presentations on school IPM by DPR Staff	44	33	23	100	*285*
d.	Training workshops on school IPM	67	24	8	100	*308*
e.	Information provided by licensed pest control business	52	31	17	100	*286*
f.	University of California resources	35	31	34	100	*282*
g.	Information from other web site sources	46	28	27	100	*283*
h.	California Department of Education, School Facilities Planning Division	24	36	39	100	*277*

Appendix Table 2.1 Response Rates by Seven District Characteristics

		Number of districts that were mailed the survey	Number of completed surveys	Response rate
Overall		962	340	35%
Population area	Large city	37	20	54%
	Midsize city	125	48	38
	Urban fringes of large city	252	92	37
	Urban fringes of midsize city	185	55	30
	Large town or small town	46	18	39
	Rural, outside MSA	122	43	35
	Rural, inside MSA	195	49	25
	Total	962	325[a]	
Region	North Coastal	62	20	32%
	Sierra	124	57	46
	North Central Valley	79	19	24
	Bay Area	161	57	35
	Central Valley	209	57	27
	Central Coastal	56	18	32
	LA/Surrounding area	191	64	34
	South Eastern	80	33	41
	Total	962	325	
District type	Elementary	545	179	33%
	High	82	26	32
	Unified	335	120	36
	Total	962	325	
Number of schools in district	Fewer than 5	453	138	30%
	5 to 9	228	67	29
	10 or more	281	120	43
	Total	962	325	
Number of students (ADA)[b]	Less than 200	189	51	27%
	200-499	122	44	36
	500-999	96	24	25
	1,000-1,999	110	31	28
	2,000-2,999	79	36	46
	3,000-4,999	89	29	33
	5,000-9,999	120	40	33
	10,000 or more	144	68	47
	Total	949	323[c]	
Cost per student (cost per ADA)[b]	Less than $7,000	81	31	38%
	$7,000-$9,999	652	227	35
	$10,000 or more	216	65	30
	Total	949	323[c]	
District attended DPR IPM training	Yes	733	271[d]	37%
	No	229	54	24
	Total	962	325	

[a] Though N is shown as 340 above, 15 districts chose to complete the survey anonymously; therefore, district characteristic data is only available for the known 325 districts.
[b] ADA is Average Daily Attendance. ADA figures are not reported for both the 12 state-wide common districts and for one recently merged district; they were dropped from these two analysis categories leaving an N of 949 for all districts that were mailed the survey.
[c] ADA data for the 2009-2010 fiscal year was not available for two responding districts.
[d] The number of trained, responding districts represents those trained through June 2011.

Appendix Table 2.2 District Characteristics for All Districts and for Responding Districts

		All districts that were sent the survey		Districts that completed the survey		
		Percent	*Number*	Percent	*Number*	*p**
Population area	Large city	4%	*37*	6%	*20*	.073
	Midsize city	13	*125*	15	*48*	
	Urban fringes of large city	26	*252*	28	*92*	
	Urban fringes of midsize city	19	*185*	17	*55*	
	Large town or small town	5	*46*	6	*18*	
	Rural, outside MSA	13	*122*	13	*43*	
	Rural, inside MSA	20	*195*	15	*49*	
	Total	100%	*962*	100%	*325*	
Region	North Coastal	6%	*62*	6%	*20*	.107
	Sierra	13	*124*	18	*57*	
	North Central	8	*79*	6	*19*	
	Bay Area	17	*161*	18	*57*	
	Central Valley	22	*209*	18	*57*	
	Central Coastal	6	*56*	6	*18*	
	LA/Surrounding area	20	*191*	20	*64*	
	South Eastern	8	*80*	10	*33*	
	Total	100%	*962*	100%	*325*	
District type	Elementary	57%	*545*	55%	*179*	.719
	High	9	*82*	8	*26*	
	Unified	35	*335*	37	*120*	
	Total	100%	*962*	100%	*325*	
Number of schools in district	Fewer than 5	47%	*453*	42%	*138*	**.009**
	5 to 9	24	*228*	21	*67*	
	10 or more	29	*281*	37	*120*	
	Total	100%	*962*	100%	*325*	
Number of students (ADA)	Under 200	20%	*189*	16%	*51*	**.018**
	200-499	13	*122*	14	*44*	
	500-999	10	*96*	7	*24*	
	1,000-1,999	12	*110*	10	*31*	
	2,000-2,999	8	*79*	11	*36*	
	3,000-4,999	9	*89*	9	*29*	
	5,000-9,999	13	*120*	12	*40*	
	10,000 or more	15	*144*	21	*68*	
	Total	100%	*949*	100%	*323*	.465
Cost per student (cost per ADA)	Less than $7,000	9%	*81*	10%	*31*	
	$7,000-$9,999	69	*652*	70	*227*	
	$10,000 or more	23	*216*	20	*65*	
	Total	100%	*949*	100%	*323*	
District attended DPR IPM training	Yes	73%	*733*	83%	*271*	**.002**
	No	27	*229*	17	*54*	
	Total	100%	*962*	100%	*325*	

* Significance of ANOVA F-test. Probabilities $\leq$ .05 are bolded for easy identification.

Appendix Table 2.3 U.S Census Bureau Population Area Categories

Category		Description
Urban	Large city	an incorporated city with a population greater than or equal to 250,000
	Urban fringes of a large city	urban areas within a Consolidated Metropolitan Statistical Area (CMSA) or Metropolitan Statistical Area (MSA)
	Mid-sized city	the central city of a CMSA or MSA with a population less than 250,000, but greater than 25,000
	Urban fringes of a mid-sized city	urban areas within a CMSA or MSA
	Small or large towns	incorporated places with a population greater than 2,500 (small towns) or 25,000 (large towns) located outside a CMSA or MSA
Rural	Rural, inside MSA	any area within the CMSA or MSA of a large or mid-sized city and defined as rural by the Census Bureau; this includes farmland and towns of less than 2,500
	Rural, outside MSA	any area outside a CMSA or MSA and defined as rural by the Census Bureau

Appendix Table 2.4 IPM Program Adoption and Program Duration

		Percent [a]
Has your school district adopted an IPM program?	Yes	68%
	No	15
	Not sure	16
	Total	100%
	Number of cases	*334*
If yes, how many years ago?	Less than one year ago	1%
	One year ago	1
	Two years ago	5
	Three years ago	7
	Four years ago	9
	Five years ago	14
	More than 5 years ago	64
	Total	100%
	Number of cases	*189*

[a] Figures do not add to 100% due to rounding.

Appendix Table 2.5 IPM Coordinator Status by IPM Program Adoption

	Respondent is IPM Coordinator	
	Percent	
District has adopted IPM program	Yes	No
Yes	76%	47%
No	12	23
Not Sure	12	30
Total	100%	100%
	Number of cases	*314*

Appendix Table 2.6 IPM Coordinator Status

		Percent
Designated IPM coordinator for district	Yes	78%
	No	22
	Total	100%
	Number of cases	*319*
For designated IPM coordinators, length of time with this responsibility	Less than 1 year	11%
	1-2 years	14
	3-4 years	28
	5-10 years	37
	More than 10 years	10
	Total	100%
	Number of cases	*247*

Appendix Table 2.7 Respondent Job Category

	Percent
Maintenance & Operations Manager/Supervisor	35%
Maintenance & Operations Director/Coordinator	32
Maintenance & Operations Worker	17
Administration	8
Front office/business office	6
Safety/Risk Management	2
Total	100%
Number of cases	*323*

Appendix Table 2.8 Respondent Responsibilities

		Percent	*Number of cases*
Pest management responsibilities	Deciding when to use pest management practices	67%	227
	Deciding which pest management practices to use	66	226
	Directing others to use pest management practices	66	224
	Using pest management practices	61	207
	Keeping records of all pest management practices used	59	201
	Pest management and pesticide safety training	58	196
	Setting pest management policies	38	130
	Other	4	13

Appendix Table 2.9 Statistical Measures Used in Analysis

In addition to descriptive statistics (percentages, means, standard deviations), the analysis employs two measures of association (chi square and test of column proportions) and a measure of difference between the means on a dependent variable for each category of an independent variable (Analysis of Variance).	**Chi square** measures the association between two categorical variables. In only one instance–the evaluation of the representativeness of the sample–chi square goodness of fit is used to test the difference between the sample and the school district population on district characteristics. However, for all other analyses involving chi square presented in this report, chi square is used to test for independence in the distribution of two variables. When the chi square test indicates a not independent relationship exists between two categorical variables, the **column proportions test** can drill down to find which pairs of variable values contribute to the significant chi-square finding. (This pairwise comparison uses the Bonferroni correction, which adjusts the observed significance level when multiple comparisons occur between the columns.) For example, there is a significant relationship between urban and rural school districts in terms of perceived effectiveness of exempt versus non-exempt weed management practices. The column proportions test reveals that the significance is driven, in part, by the proportion of each type of district which believes both exempt and non-exempt practices are effective: urban 77%, rural 63%. It also reveals that there is no significant difference in the proportion of respondents who believe only non-exempt practices are effective: urban 12%, rural 16%. Please see Appendix Table 3.14 for all column proportions in this example.
	Analysis of Variance (ANOVA) measures whether the means of an interval variable vary significantly between the values of a categorical variable (for example, whether means on the ant management scale vary between districts that have received IPM training and those that have not).

Appendix Table 2.10 Ant Management Scale Construction

	Q 10) Did district use practice? 7 (items)		Q12) For districts that used a practice, how did they decide when treatment was necessary? (7 items)				
	Yes	No	Regular time intervals	When ants are first noticed	When number exceeds pre-established threshold	After a certain number of complaints	Q13) Most frequently used practice
Insecticidal spray from an aerosol can	0	15	-15	-10	-1	-5	-15
Insecticides sprayed using other application method	0	10	-10	-5	0	-3	-10
Exempt insecticidal spray from an aerosol can	0	0	-5	2	3	0	-3
Ant baits	10	0	-5	3	5	0	0
Soapy water spray	5	0	0	5	3	0	5
Caulk in cracks	15	0	15	10	7	5	10
Improved sanitation	15	0	15	10	7	5	15

Appendix Table 2.11 Weed Management Scale Construction

	Q15) Did district use practice? (7 items)		Q17) For districts that used herbicides, how did they decide when treatment was necessary? (2items)				Q18) Most frequently used practice for: (2 items)	
	Yes	No	Regular time intervals	When weeds are first noticed	When number exceeds pre-established threshold	After a certain number of complaints	Athletic fields	Play-grounds
Broadcast treatment with herbicides	0	10	-15	-10	-1	-5	-15	-20
Spot treatment with herbicides	0	5	-10	-5	0	-3	-10	-15
Broadcast or spot treatment with herbicides exempt from registration	5	0	0	5	10	5	5	5
Mulches, ground covers, barrier cloth or plastic	15	0	n/a	n/a	n/a	n/a	15	15
Physical controls such as hand pulling, cultivating, mowing	10	0	n/a	n/a	n/a	n/a	10	10
Irrigation management	15	0	n/a	n/a	n/a	n/a	15	15
Turf selection	15	0	n/a	n/a	n/a	n/a	15	15

Appendix Table 3.1 Official Adoption of Policies and Practices

Has your district officially adopted (through a school board action or administrator's directive) the following policies or practices?		Percent				
		Yes	No	Not Sure	Total	*Number of cases*
Practices officially adopted by district (required for compliance with Healthy Schools Act)	Warning signs are posted at least 24 hours before and 72 hours after pesticide treatment	92%	5%	3%	100%	*328*
	District or school annually provides staff and parents with written notification of expected pesticide use at their school	87	7	6	100	*325*
	District or school maintains a list of parents wanting to be notified of specific pesticide applications	78	9	13	100	*325*
	Each school site maintains records of all pesticides used for at least four years, and makes these records available to the public	66	18	16	100	*316*
Policies officially adopted by district	Written list of pesticide products approved for use in school districts	62%	22%	16%	100%	*317*
	Written policy requiring the use of least-toxic pest management practices	54	19	26	100	*314*
	Written policy requiring the monitoring of pest level practices	39	35	26	100	*303*

Appendix Table 3.2 Recordkeeping and Pest Monitoring/Detection Activities

		Percent	*Number of cases*
Which of the following describes your district's recordkeeping and pest monitoring/ detection activities? Please check all that apply.	Pest problems (including weeds) are monitored during the course of a year	80%	*272*
	Buildings and grounds are inspected for potential pest problems	71	*241*
	Records are kept of building inspections	46	*156*
	Records are kept of pest sightings (for example, by teachers)	29	*97*
	Records are kept of pest management practices used other than pesticides	27	*93*
	Records are kept of pest (including weeds) monitoring results	26	*87*
	No records are kept on pest management	15	*52*
	No pest monitoring/detection activities	4	*12*
	Total	n/a	*330*

Appendix Table 3.3 Number of HSA Requirements with which Districts Comply

Number of HSA Requirements	Percent	Number of Districts*
None	3%	*8*
One	4	*10*
Two	10	*25*
Three	26	*66*
Four	58	*149*
Total	100%	*258*

* Findings include only districts that reported use of non-exempt practices.

Appendix Table 3.4 Scale Descriptives

Scale	*Number of cases*	Mean	Minimum	Maximum
HSA Compliance[a]	*258*	33.10	0	40
IPM Policies and Practices*	*286*	16.94	0	35
IPM Awareness	*320*	5.66	0	8
IPM Use	*320*	3.62	0	8
Barriers	*304*	5.31	0	16
Ant Management	*257*	99.81	0	160
Weed Management	*312*	75.40	0	150

[a] Findings include only districts that reported use of non-exempt practices.

Appendix Table 3.5 District Use of Exempt and Non-Exempt Ant and Weed Management Practices

	District Practices	Percent[a]	*Number of cases*	Percent	*Number of cases*	Statewide Practices
A.	Only non-exempt	4%	*12*	86%	285	Use of at least one non-exempt practice (A plus B)
B.	Both exempt and non-exempt	82	*273*			
C.	Only exempt	12	*40*	97%	313	Use of at least one exempt practice (B plus C plus D)
D.	No pesticide or herbicide use	3	*9*			
	Total	100	*334*			

[a] Percentages do not add to 100% due to rounding.

Appendix Table 3.6 Percent of Districts Using Ant and Weed Management Practices in the Last 12 Months

		Percent	*Number of cases*			Percent	*Number of cases*
Did your district do anything to manage ants inside school buildings within the last 12 months?	Yes	77%	*258*	Did your district do anything to manage weeds within the last 12 months?	Yes	93%	*312*
	No	19	*63*		No	7	*22*
	Not Sure	5	*16*		Not Sure	1	*3*
	Total	100%	*337*		Total	100%	*337*

Appendix Table 3.7 Ant and Weed Management Practice Type

	Overall		Ant Management		Weed Management	
	Percent	*Number of cases*	Percent	*Number of cases*	Percent	*Number of cases*
District uses at least one non-exempt practice	85%	*286*	45%	*116*	90%	*280*
District does not use non-exempt practices	15%	*49*	55%	*142*	10%	*32*
Total	100%	*335*	100%	*258*	100%	*312*

Appendix Table 3.8 Most Frequently Used Ant Management Practices

		Percent	*Number of cases*
Which one practice did your district use most frequently to manage ants inside school buildings? Please check only one answer.	Non-exempt insecticidal spray from an aerosol can (for example, Raid®)	6%	*19*
	Non-exempt insecticides applied using other application method	11	*37*
	Exempt insecticidal spray from an aerosol can (for example, mint, citrus, or other plant based oils)	11	*38*
	Ant bait stations	32	*107*
	Soapy water spray	10	*35*
	Caulk/seal cracks to prevent entry of ants	6	*19*
	Improved sanitation	24	*82*
	Other	1	*2*
	Total	100%	*339*

Appendix Table 3.9 Most Frequently Used Weed Management Practices by Campus Location

Which one practice did your district use most frequently to manage weeds in the following locations? Please select only one option per location.	Athletic fields		Playground	
	Percent	*Number of cases*	Percent	*Number of cases*
Non-exempt broadcast treatment with herbicides	21%	*67*	6%	*17*
Non-exempt spot treatment with herbicides	32	*103*	46	*141*
Exempt broadcast or spot treatment with herbicides exempt from registration	4	*13*	6	*17*
Use of mulches, ground covers, barrier cloth, or plastic	1	*3*	5	*16*
Physical controls such as hand pulling, cultivating, mowing	27	*87*	33	*101*
Irrigation management	12	*39*	4	*11*
Turf selection	4	*14*	1	*4*
Total	100%	*326*	100%	*307*

Appendix Table 3.10 Pest Management Practices by IPM Program Adoption, Training Status, Contract Status, and Location

	IPM Program			Training			Contracting			Location		
	No IPM Program	Adopted IPM Program	*p**	Untrained	Trained	*p**	District does not have contracts	District has contracts	*p**	Urban	Rural	*p**
District uses at least one non-exempt practice	83%	86%	>.05	*78%*	*88%*	**≤.05**	67%	91%	**≤.05**	*91%*	*72%*	**≤.05**
District does not use non-exempt practices	17%	14%		*22%*	*13%*		33%	9%		*9%*	*28%*	
Percent Total	100%	100%		100%	100%		100%	100%		100%	100%	
Total Number	102	227		89	232		81	254		211	110	

Note: Significant changes between district characteristics are italicized. Non-significant changes are grayed out.
* Significance of ANOVA F-test. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 3.11 Adoption of an IPM Program by Perceived Effectiveness of Weed Management Practices

	No IPM Program	Adopted IPM Program	*p**
Only exempt practices effective	13%	12%	**≤.05**
Only non-exempt practices effective	*24%*	*11%*	
Both exempt and non-exempt practices effective	*61%*	*76%*	
Neither exempt nor non-exempt practice effective	2%	1%	
Percent Total	100%	100%	
Total Number	88	212	

Note: Significant changes between district characteristics are italicized. Non-significant changes are grayed out.
* Significance of ANOVA F-test. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 3.12 Perceived Effectiveness of Ant and Weed Management Practices, by Districts that have Adopted an IPM Program, by Location

	Ant Management Practices			Weed Management Practices		
Practices in districts with an IPM program	Urban	Rural	*p**	Urban	Rural	*p**
Only exempt practices effective	53%	65%	**≤.05**	*10%*	*20%*	**≤.05**
Only non-exempt practices effective	5%	11%		10%	10%	
Both exempt and non-exempt practices effective	*38%*	*22%*		80%	69%	
Neither exempt nor non-exempt practice effective	4%	2%		1%	2%	
Percent Total	100%	100%		100%	100%	
Total Number	129	54		145	61	

Note: Significant changes between district characteristics are italicized. Non-significant changes are grayed out.
* Significance of ANOVA F-test. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 3.13 Perceived Effectiveness of Ant and Weed Management Practices, by Contract Status

	Ant Management Practices			Weed Management Practices		
	District does not have contracts	District has contracts	*p**	District does not have contracts	District has contracts	*p**
Only exempt practices effective	*76%*	*53%*	**≤.05**	*30%*	*8%*	**≤.05**
Only non-exempt practices effective	7%	8%		20%	14%	
Both exempt and non-exempt practices effective	*16%*	*36%*		*49%*	*77%*	
Neither exempt nor non-exempt practice effective	2%	3%		2%	1%	
Percent Total	100%	100%		100%	100%	
Total Number	45	201		66	239	

Note: Significant changes between district characteristics are italicized. Non-significant changes are grayed out.
* Significance of ANOVA F-test. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 3.14 Perceived Effectiveness of Weed Management Practices, by Location

	Urban	Rural	p*
Only exempt practices effective	*9%*	*20%*	**≤.05**
Only non-exempt practices effective	12%	16%	
Both exempt and non-exempt practices effective	*77%*	*63%*	
Neither exempt nor non-exempt practice effective	1%	1%	
Percent Total	100%	100%	
Total Number	201	90	

Note: Significant changes between district characteristics are italicized. Non-significant changes are grayed out.
* Significance of ANOVA F-test. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 3.15a Average Scores on All Significant Scales by IPM Program Adoption

	Healthy Schools Act Scale			IPM Program Scale			IPM Resource Awareness Scale			IPM Resource Use Scale		
	Average	*Number of cases*	p*	Average	*Number of cases*	p*	Average	*Number of cases*	p*	Average	*Number of cases*	p*
Adopted IPM Program	35.33	*180*	**.000**	19.03	*196*	**.000**	6.13	*219*	**.000**	4.23	*219*	**.000**
No IPM Program Adoption	27.84	*74*		12.35	*85*		4.67	*96*		2.27	*96*	
All Districts	33.20	*254*		17.01	*281*		5.68	*315*		3.63	*315*	

* Significance of ANOVA F-test. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 3.15b Average Scores on All Significant Scales by IPM Program Adoption

	Barrier Scale			Ant Management Scale			Weed Management Scale		
	Average	*Number of cases*	p*	Average	*Number of cases*	p*	Average	*Number of cases*	p*
Adopted IPM Program	*4.72*	*209*	**.000**	104.68	*192*	**.000**	78.79	*213*	**.015**
No IPM Program Adoption	6.59	*91*		84.45	*60*		68.89	*93*	
All Districts	*5.29*	*300*		99.86	*252*		*75.78*	*306*	

* Significance of ANOVA F-test. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 3.16 Average Scores on All Significant Scales by District Training Status

	Healthy Schools Act Scale			IPM Resource Awareness Scale			IPM Resource Use Scale			Ant Management Scale		
	Average	*Number of cases*	p*	Average	*Number of cases*	p*	Average	*Number of cases*	p*	Average	*Number of cases*	p*
District was trained	34.73	*182*	**.000**	5.92	*220*	**.006**	3.98	*220*	**.000**	104.04	*189*	**.000**
District was not trained	28.87	*62*		5.11	*89*		2.74	*89*		89.07	*61*	
All Districts	33.24	*244*		5.69	*309*		3.62	*309*		100.39	*250*	

* Significance of ANOVA F-test. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 3.17 Average Scores on All Significant Scales for Districts by Training Status and Location

	Trained Districts									Un-Trained Districts		
	IPM Use Scale			Ant Management Scale			Weed Management Scale			Barrier Scale		
	Average	*Number of cases*	*p**	Average	*Number of cases*	*p**	Average	*Number of cases*	*p**	Average	*Number of cases*	*p**
Urban	*4.27*	*157*	**.002**	107.57	*141*	**.010**	74.39	*164*	**.019**	6.17	*42*	**.035**
Rural	3.24	*63*		93.67	*48*		86.04	*56*		4.59	*39*	
All Districts	3.98	*220*		104.04	*189*		*77.35*	*220*		*5.41*	*81*	

* Significance of ANOVA F-test. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 3.18 Average Scores on All Significant Scales by Pest Management Contract Status

	Healthy Schools Act Scale			IPM Program Scale			IPM Resource Awareness Scale			IPM Resource Use Scale		
	Average	*Number of cases*	*p**	Average	*Number of cases*	*p**	Average	*Number of cases*	*p**	Average	*Number of cases*	*p**
District has contracts	33.75	*208*	**.035**	17.61	*232*	**.013**	*5.82*	*244*	**.033**	3.83	*244*	**.003**
District does not have contracts	30.40	*50*		14.07	*54*		*5.16*	*76*		2.96	*76*	
Total	33.10	*258*		16.94	*286*		*5.66*	*320*		3.62	*320*	

* Significance of ANOVA F-test. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 3.19 Average Scores on Barrier and Weed Scales by Contract Status and Region

		Barrier Scale			Weed Management Scale		
Region	Contract Status	Average	*Number of cases*	*p**	Average	*Number of cases*	*p**
North Coastal	No contract	2.09	*11*	**.002**	111.67	*9*	**.044**
	Has contracts	5.40	*5*		86.5	*6*	
	Regional Total/Average	3.13	*16*		101.6	*15*	
Sierra	No contract	5.47	*19*	.575	78.06	*18*	.772
	Has contracts	4.94	*31*		80.88	*32*	
	Regional Total/Average	5.14	*50*		79.86	*50*	
North and Central Valleys	No contract	6.73	*11*	.069	88.50	*10*	.083
	Has contracts	4.62	*60*		69.39	*61*	
	Regional Total/Average	4.94	*71*		72.08	*71*	
Bay Area	No contract	4.15	*13*	.214	85.54	*13*	.157
	Has contracts	5.57	*37*		70.27	*41*	
	Regional Total/Average	5.20	*50*		73.94	*54*	
Central Coastal	No contract	7.80	*5*	.417	71.80	*5*	.149
	Has contracts	5.92	*12*		93.17	*12*	
	Regional Total/Average	6.47	*17*		86.88	*17*	
Los Angeles and Surrounding Area	No contract	4.40	*5*	.430	75.83	*6*	.806
	Has contracts	5.58	*53*		79.27	*55*	
	Regional Total/Average	5.48	*58*		78.93	*61*	
South Eastern	No contract	3.00	*2*	.314	120.00	*2*	**.005**
	Has contracts	5.70	*27*		61.68	*28*	
	Regional Total/Average	5.52	*29*		65.57	*30*	
State	No contract	5.30	*74*	.981	81.89	*71*	.057
	Has contracts	5.31	*230*		73.49	*241*	
	State Total/Average	5.31	*304*		75.40	*312*	

* Significance of ANOVA F-test. Probabilities $\leq$ .05 are bolded for easy identification.

Appendix Table 3.20 Average Scores on All Significant Scales by IPM Coordinator Experience Level

	Healthy Schools Act Scale			IPM Resource Awareness Scale			IPM Resource Use Scale			Barrier Scale		
	Average	*Number of cases*	*p**	Average	*Number of cases*	*p**	Average	*Number of cases*	*p**	Average	*Number of cases*	*p**
Less than three years experience	31.00	*50*	**.005**	4.97	*64*	**.000**	3.25	*64*	.003	6.20	*60*	**.003**
Three or more years experience	35.27	*148*		6.19	*188*		4.14	*188*		4.70	*174*	
All Districts	34.19	*198*		5.88	*252*		3.92	*252*		5.08	*234*	

* Significance of ANOVA F-test. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 3.21 Average Scores on All Significant Scales by Location

	IPM Resource Use Scale			Barrier Scale			Ant Management Scale		
	Average	*Number of cases*	*p**	Average	*Number of cases*	*p**	Average	*Number of cases*	*p**
Urban district	3.97	*202*	**.000**	5.54	*194*	**.010**	104.72	*176*	**.001**
Rural district	2.97	*107*		4.44	*97*		90.08	*74*	
All Districts	3.62	*309*		5.18	*291*		100.39	*251*	

* Significance of ANOVA F-test. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 3.22 Significance of Region on Weed Management Practices

	Average	*Number of cases*	*p**
North Coastal	101.60[a]	*15*	**.009**
Central Coastal	86.88	*17*	
Sierra	79.86	*50*	
Los Angeles and Surrounding area	78.93	*61*	
Bay Area	73.94	*54*	
North and Central Valleys	72.08	*71*	
South Eastern	65.57	*30*	
Total	76.8	*298*	

* Significance of ANOVA F-test. Probabilities ≤ .05 are bolded for easy identification.
[a] The average for the North Coast region is only significantly higher than the North and Central Valleys, the Bay Area, and the South Eastern region.

Appendix Table 3.23 Reported Top Pests by Region

	North Coastal	Sierra	North & Central Valleys	Bay Area	Central Coastal	Los Angeles & Surrounding Area	South Eastern	Total responding
Ants	80%	68%	68%	65%	61%	75%	78%	70%
Weeds	45%	56%	51%	58%	67%	56%	66%	56%
Bees/wasps	55%	68%	34%	39%	33%	59%	53%	49%
Squirrels/gophers[a]	40%	42%	47%	54%	72%	48%	53%	49%
Mice/rats	25%	19%	36%	51%	50%	41%	25%	36%
Cockroaches	-	2%	26%	26%	-	32%	34%	21%
Spiders	10%	18%	24%	12%	17%	16%	44%	20%
Birds	10%	19%	9%	16%	11%	10%	13%	13%
Termites	-	7%	9%	5%	17%	17%	19%	11%
Flies	-	5%	12%	2%	17%	2%	6%	6%
Skunks	5%	12%	1%	2%	-	5%	-	4%
Fleas	-	-	4%	2%	-	5%	6%	3%
Raccoons	-	4%	-	5%	6%	5%	3%	3%
Deer	5%	11%	-	2%	-	-	-	2%
Opossums	-	-	3%	-	-	6%	6%	2%
Snails/slugs	-	-	-	2%	11%	5%	-	2%
Snakes	-	2%	4%	2%	-	3%	3%	2%
Bears	5%	4%	-	-	-	-	-	1%
Total Number	*20*	*57*	*74*	*57*	*18*	*63*	*32*	*321*

[a] A number of respondents who selected the squirrels/gophers category adamantly noted that their selection should include only gophers and not squirrels.
Most common pests per region are boxed in each column, and the region in which a pest was most troublesome is shaded in green in each row.

Appendix Table 3.24 Top Campus Locations for Weed Growth by Region

	North Coastal	Sierra	North & Central Valleys	Bay Area	Central Coastal	Los Angeles & Surrounding Area	South Eastern	Total responding
Fence lines	27%	30%	46%	33%	29%	44%	38%	38%
Landscaping	20%	32%	34%	41%	29%	40%	45%	36%
Non-landscaped ground	20%	28%	25%	22%	18%	21%	17%	23%
Paved areas	40%	22%	13%	20%	12%	16%	21%	18%
Athletic fields	7%	10%	13%	13%	12%	21%	14%	14%
Playgrounds	13%	12%	10%	6%	-	14%	7%	10%
School garden	13%	6%	3%	2%	18%	12%	-	6%
Rights of way	7%	8%	4%	2%	-	11%	3%	5%
Total Number	*15*	*50*	*71*	*54*	*17*	*57*	*29*	*293*

Most common pests per region are boxed in each column, and the region in which a pest was most troublesome is shaded in green in each row.

Appendix Table 4.1 Characteristics of Responding Districts (2004, 2007, and 2010)

		2004	2007	2010	*P**
Population Area	Large city	4%	4%	6%	**.050**
	Mid-size city	10	15	15	
	Urban fringes of large city	*36*	*26*	28	
	Urban fringes of mid-size city	*12*	*20*	17	
	Large town	1	-	-	
	Small town	6	4	5	
	Rural, outside MSA	16	12	13	
	Rural, inside MSA	15	18	15	
	Total	100%	100%	100%	
Region	North Coastal	8%	8%	6%	**.050**
	Sierra	13	*10*	*18*	
	North Central	8	7	6	
	Bay Area	14	15	18	
	Central Valley	19	23	18	
	Central Coastal	5	7	6	
	LA/Surrounding Area	23	22	20	
	South Eastern	10	10	10	
	Total	100%	100%	100%	
District Type	Elementary	53%	54%	55%	.859
	High	9	10	8	
	Unified	38	36	37	
	Total	100%	100%	100%	
Number of schools in district	1-2 schools	*19%*	*31%*	26%	**.050**
	3-4	15	13	17	
	5-9	*29*	*22*	*21*	
	10-19	22	20	20	
	20 or more	15	14	17	
	Total	100%	100%	100%	
Average Daily Attendance	Under 200 students	16%	19%	16%	.357
	200-499	10	9	14	
	500-999	11	10	7	
	1,000-1,999	9	11	10	
	2,000-2,999	8	8	11	
	3,000-4,999	11	9	9	
	5,000-9,999	15	14	12	
	10,000 or more	20	20	21	
	Total	100%	100%	100%	
Cost per Student	Under $6,000	*12%*	*2%*	-%	**.050**
	$6,000-$6,499	*25*	*8*	*2*	
	$6,500-$6,999	*27*	*19*	*7*	
	$7,000-$7,999	*19*	*38*	*32*	
	$8,000-$9,999	*8*	*17*	*38*	
	$10,000 or more	*9*	*15*	*20*	
	Total	100%	100%	100%	
Did the district attend training?	No	*72%*	30%	17%	**.050**
	Yes	28	*70*	83	
	Total	100%	100%	100%	
Total Responding Districts[a]		*527*	*505*	325	

Note: Significant changes between years are italicized. Non-significant changes are grayed out.

[a] Six respondents in 2004 and 15 respondents in 2010 did not provide district identification. Those districts have been dropped from all trend analyses of district characteristics.

* Significance of chi square. Probabilities < .05 are bolded for easy identification.

Appendix Table 4.2 Respondent Awareness and Use of Pest Management Information Resources (2002, 2004, 2007, and 2010)

		2002	2004	2007	2010	*P**
DPR School IPM Website	Have accessed	57%	58%	64%	64%	**.050**
	Aware of but have not accessed	20	21	19	22	
	Not aware of	*23*	*21*	17	*14*	
	Total %	100%	100%	100%	100%	
	Number of cases	383	503	474	305	
Brochures/handouts from DPR	Have accessed	61%	59%	63%	63%	.087
	Aware of but have not accessed	16	18	20	20	
	Not aware of	23	22	16	17	
	Total %	100%	100%	100%	100%	
	Number of cases	383	498	473	296	
Presentations on school IPM by DPR staff	Have accessed	*29%*	*29%*	*40%*	*44%*	**.050**
	Aware of but have not accessed	*27*	*36*	30	33	
	Not aware of	*44*	*34*	*30*	*23*	
	Total %	100%	100%	100%	100%	
	Number of cases	374	483	458	285	
Training workshops on school IPM	Have accessed	*51%*	*51%*	*60%*	*67%*	**.050**
	Aware of but have not accessed	*23*	*30*	*25*	*24*	
	Not aware of	*26*	*19*	*15*	*8*	
	Total %	100%	100%	100%	100%	
	Number of cases	390	501	478	308	
Info provided by licensed pest control businesses	Have accessed	*67%*	*56%*	*52%*	*52%*	**.050**
	Aware of but have not accessed	*14*	*23*	*24*	*31*	
	Not aware of	19	20	24	17	
	Total %	100%	100%	100%	100%	
	Number of cases	388	494	472	286	
University of California resources	Have accessed	27%	27%	33%	35%	.096
	Aware of but have not accessed	30	33	31	31	
	Not aware of	43	40	37	34	
	Total %	100%	100%	100%	100%	
	Number of cases	366	483	456	282	
Info from other web site sources	Have accessed	39%	*35%*	40%	*46%*	**.050**
	Aware of but have not accessed	23	27	28	28	
	Not aware of	*39*	*37*	31	*27*	
	Total %	100%	100%	100%	100%	
	Number of cases	362	484	457	283	
CA Dept of Education, School Facilities Planning Division	Have accessed	25%	21%	20%	24%	.131
	Aware of but have not accessed	29	36	37	37	
	Not aware of	47	42	43	39	
	Total %	100%	100%	100%	100%	
	Number of cases	369	481	448		
Resource Awareness Scale	Mean	4.92	5.33	5.53	5.66	**.000**
	Standard Deviation	2.42	2.51	2.33	2.35	
	Number of cases	413	520	494	320	
Resource Use Scale	Mean	3.28	3.2	3.52	3.62	**.000**
	Standard Deviation	2.11	2.24	2.21	2.23	
	Number of cases	413	520	494	320	

Note: Significant changes between years are italicized. Non-significant changes are grayed out.

* Significance of chi square for individual practices and policies. Significance of ANOVA F-test for the Resource Awareness and Resource Use Scales. Probabilities $\leq$ .05 are bolded for easy identification.

Appendix Table 4.3 Healthy Schools Act Scale: Policies and Practices Officially Adopted by Districts (2002, 2004, 2007, and 2010)

		2002	2004	2007	2010	*P**
Practices officially adopted by district (required for compliance with Healthy Schools Act)	Each school site maintains records of all pesticides used for at least four years, and makes these records available to the public	*62%*	*78%*	*74%*	*68%*	**.050**
	District or school annually provides staff and parents with written notification of expected pesticide use at their school	*79*	*91*	*91*	*90*	
	District or school maintains a list of parents to be notified of specific pesticide applications	*73*	*82*	80	81	
	Warning signs are posted at least 24 hours before and 72 hours after pesticide treatment	*88*	*95*	*95*	*94*	
Healthy Schools Act Scale	Mean	30.17	34.58	33.9	33.1	**.000**
	Standard deviation	12.85	9.73	9.94	10.08	
	Number of cases	*302*	*397*	*359*	*258*	

Note: Significant changes between years are italicized. Non-significant changes are grayed out.
* Significance of chi square for individual practices and policies. Significance of ANOVA F-test for the Healthy Schools Act Scale. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 4.4 IPM Program Scale: Recordkeeping and Pest Monitoring Activities (2001, 2002, 2004, 2007, and 2010)

IPM Scale Components	2001	2002	2004	2007	2010	*P**
Written policy of least-toxic practices	n/a	*40%*	*58%*	*52%*	*55%*	**.050**
Written policy requiring monitoring of pest levels	n/a	*17*	*31*	*25*	*40*	
Buildings are inspected for potential pest problems	n/a	n/a	*60*	64	*71*	
Pests are monitored during course of the year	n/a	n/a	*55*	*61*	*82*	
Records are kept of building inspections	n/a	39	*30*	35	*44*	
Records are kept of pest monitoring results	*11*	*17*	*26*	*22*	*26*	
Records are kept of pest sightings	*16*	*23*	*27*	*33*	*29*	
IPM Program Scale						
Mean			14.72	14.26	16.94	**.003**
Standard Deviation			10.44	9.24	9.49	
Number of cases			*466*	*458*	*286*	
Question 3B						
Written list of pesticide products approved for use in district schools[a]	n/a	50%	67%	61%	64%	

Note: Significant changes between years are italicized. Non-significant changes are grayed out.
* Significance of chi square for individual practices and policies. Significance of ANOVA F-test for the Healthy Schools Act Scale. Probabilities ≤ .05 are bolded for easy identification.
[a] This question (Q3B), as in 2002, 2004, and 2007, was not included in either the HSA or IPM scales. It is listed here for informational purposes.

Appendix Table 4.5 Adoption of IPM Program and Impact of IPM Program on Effectiveness and Long-Term Cost of Pest Management (2002, 2004, 2007, and 2010)

		2002	2004	2007	2010	P*
Has district adopted an IPM program?	Yes	70%	69%	70%	68%	.959
	No or Not Sure	30	31	30	32	
	Total	100%	100%	100%	100%	
	Number of cases	413	515	499	334	
Impact of IPM program on effectiveness of pest management[1]	More effective	*41%*	*49%*	*62%*	*67%*	**.050**
	Made no difference	20	23	16	16	
	Resulted in less effective pest management	*20*	*15*	*9*	*2*	
	Uncertain/no opinion	19	13	13	15	
	Total	100%	100%	100%	100%	
	Number of cases	285	349	347	223	
Impact of IPM program on long-term cost of pest management[1]	Reduced the long term cost	28%	32%	29%	38%	**.050**
	Had no impact on long term cost	25	25	*28*	*18*	
	Increased the long term cost	28	21	25	24	
	Uncertain/no opinion	19	22	18	21	
	Total	100%	100%	100%	100%	
	Number of cases	286	348	343	222	

Note: Significant changes between years are italicized. Non-significant changes are grayed out.
* Significance of chi square. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 4.6 IPM Coordinator Status and Respondent Job Category (2004, 2007, and 2010)

		2004	2007	2010	P*
IPM Coordinator	Yes	84%	83%	78%	.108
	No	16	17	22	
	Total	100%	100%	100%	
	Number of cases	518	494	319	
Job Category	Administration	*14%*	10%	*8%*	**.050**
	Front office/business	8	6	6	
	Safety/risk management	5	4	2	
	MO Director/coordinator	34	38	32	
	MO Manager/supervisor	*27*	33	*35*	
	MO Worker	12	*10*	*17*	
	Total	100%	100%	100%	
	Number of cases	485	489	323	

Note: Significant changes between years are italicized. Non-significant changes are grayed out.
* Significance of chi square. Probabilities ≤ .05 are bolded for easy identification.

Appendix Table 4.7 Barriers to Use of IPM Practices (2004, 2007, and 2010)

	What are the barriers to using IPM practices in your district? Please rate the significance of each of the following:		Number of cases			P*
			2004	2007	2010	
a.	Age and condition of school facilities	Somewhat or very significant	*249*	*268*	*192*	
		Total number of cases	*453*	*465*	*316*	
b.	Poor communication within the district	Somewhat or very significant	*131*	*153*	*116*	
		Total number of cases	*448*	*457*	*314*	
c.	Budget restrictions	Somewhat or very significant	*290*	*242*	*239*	
		Total number of cases	*457*	*466*	*321*	
d.	Inadequate staff training	Somewhat or very significant	*225*	*265*	*183*	
		Total number of cases	*446*	*460*	*317*	
e.	Understaffing	Somewhat or very significant	*302*	*329*	*243*	
		Total number of cases	*456*	*470*	*323*	
f.	Insufficient tool/equipment inventory	Somewhat or very significant	*178*	*184*	*139*	
		Total number of cases	*441*	*460*	*316*	
g.	Lack of technical information resources	Somewhat or very significant	*154*	*152*	*119*	
		Total number of cases	*446*	*463*	*315*	
h.	Contracting problems	Somewhat or very significant	*79*	*86*	*66*	
		Total number of cases	*352*	*360*	*237*	
	Barrier Scale	Mean	4.67	4.63	5.31	**.017**
		Standard Deviation	3.56	3.33	3.50	
		Number of cases	*427*	*443*	*304*	

* Significance of ANOVA F-test for the Barrier Scale. Probabilities ≤.05 are bolded for easy identification.

Appendix Table 4.8 IPM Program Adoption by Pest Management Practice (2004, 2007, and 2010)

	2004		2007		2010	
	Adopted IPM Program	No IPM Program	Adopted IPM Program	No IPM Program	Adopted IPM Program	No IPM Program
District uses at least one non-exempt practice	87%	81%	*84%*	*77%*	86%	83%
District does not use non-exempt practices	13	19	*16*	*24*	14	17
Total %	100%	100%	100%	100%	100%	100%
Number of cases	340	152	320	136	227	102

Note: Significant differences between districts with or without an IPM program are italicized. Non-significant changes are grayed out.

Appendix Table 4.9 Training Status by Pest Management Practice (2004, 2007, and 2010)

	2004		2007		2010	
	Untrained	Trained	Untrained	Trained	Untrained	Trained
District uses at least one non-exempt practice	*81%*	*95%*	*70%*	*87%*	*72%*	*87%*
District does not use non-exempt practices	*19*	*5*	*30*	*13*	*28*	*13*
Total %	100%	100%	100%	100%	100%	100%
Number of cases	361	147	135	327	53	268

Note: Significant differences between trained and untrained districts are italicized. Non-significant changes are grayed out.

Appendix Table 4.10 Contract Status by Pest Management Practice (2004, 2007, and 2010)

	2004		2007		2010	
	District does not have contracts	District has contracts	District does not have contracts	District has contracts	District does not have contracts	District has contracts
District uses at least one non-exempt practice	*62%*	*92%*	*50%*	*91%*	*67%*	*91%*
District does not use non-exempt practices	*38*	*8*	*51*	*9*	*33*	*9*
Total %	100%	100%	100%	100%	100%	100%
Number of cases	113	395	103	359	81	254

Note: Significant differences between contracting and non-contracting districts are italicized. Non-significant changes are grayed out.

Appendix Table 4.11 Ant Management Practices (2002, 2004, 2007, and 2010)

		2002	2004	2007	2010	*P**
Did the district do anything to manage ants?	Yes	83%	81%	77%	77%	.076
	No	17	20	23	23	
	Total	100%	100%	100%	100%	
	Number of cases	418	533	500	337	
Practices used to manage ants[a]	Non-exempt aerosol spray	*17%*	*16%*	*14%*	*27%*	**.050**
	Non-exempt spray, other method	*25*	*32*	*37*	*47*	
	Exempt insecticidal spray	n/a	*35*	*35*	*56*	
	Ant baits	*58*	*69*	*69*	*80*	
	Soapy water spray	*38*	*45*	*51*	*64*	
	Caulk in cracks	*36*	*50*	*69*	*79*	
	Improved sanitation	*63*	*80*	*88*	*93*	
One practice used most frequently to manage ants inside school buildings[a]	Non-exempt aerosol spray	10%	7%	5%	7%	>.050
	Non-exempt spray, other method	13	13	17	9	
	Exempt insecticidal spray	n/a	9	8	11	
	Ant baits	35	37	33	37	
	Soapy water spray	13	10	12	10	
	Caulk in cracks	4	2	1	1	
	Improved sanitation	24	22	25	25	
	Total	100%	100%	100%	100%	
	Number of cases	321	388	332	187	
Ant Management Scale	Mean		88.97	93.68	99.8	**.000**
	Standard Deviation		30.88	29.27	33.88	
	Number of cases		*424*	*377*	*257*	

Note: Significant changes between years are italicized. Non-significant changes are grayed out.
[a] Some 2002 and 2004 responses to the ant practices questions (Q10 and Q13) are inconsistent with the 2004 report, due to collapsing of two (2002) or three (2004) spray pesticide categories for that report. Categories of spray pesticides for 2002 and 2004 have been restored in order to compare all three spray categories with 2007 and 2010 for this trend analysis.
* Significance of chi square for individual ant management practices. Significance of ANOVA F-test for the Ant Management Scale. Probabilities $\leq$.05 are bolded for easy identification.

Appendix Table 4.12 Perceived Effectiveness of Ant Management Practices (2004, 2007, and 2010)

Practice		2004	2007	2010	Average
Non-exempt aerosol spray	Very or somewhat effective	86%	92%	82%	87%
	Uncertain, somewhat or very ineffective	14	8	18	13
	Total %	100%	100%	100%	100%
	Number of cases	59	49	51	
Non-exempt spray, other method	Very or somewhat effective	93%	96%	96%	95%
	Uncertain, somewhat or very ineffective	7	4	4	5
	Total %	100%	100%	100%	100%
	Number of cases	106	123	79	
Exempt insecticidal spray	Very or somewhat effective	78%	79%	86%	81%
	Uncertain, somewhat or very ineffective	22	21	14	19
	Total %	100%	100%	100%	100%
	Number of cases	125	116	109	
Ant baits	Very or somewhat effective	85%	92%	87%	88%
	Uncertain, somewhat or very ineffective	15	8	13	12
	Total %	100%	100%	100%	100%
	Number of cases	255	231	173	
Soapy water spray	Very or somewhat effective	71%	74%	68%	71%
	Uncertain, somewhat or very ineffective	29	26	32	29
	Total %	100%	100%	100%	100%
	Number of cases	170	170	118	
Caulk in cracks	Very or somewhat effective	87%	88%	83%	86%
	Uncertain, somewhat or very ineffective	13	12	17	14
	Total %	100%	100%	100%	100%
	Number of cases	186	226	151	
Improved sanitation	Very or somewhat effective	90%	92%	91%	91%
	Uncertain, somewhat or very ineffective	10	8	9	9
	Total %	100%	100%	100%	100%
	Number of cases	297	299	196	

Note: Significant changes between years are italicized. Non-significant changes are grayed out.

Appendix Table 4.13 Weed Management Practices (2001, 2002, 2004, 2007, and 2010)

		2001	2002	2004	2007	2010	P*
Did district do anything to manage weeds?	Yes	91%	91%	94%	93%	93%	.165
	No	9	9	6	7	7	
	Total %	100%	100%	100%	100%	100%	
	Number of cases	394	418	533	504	337	
Practices used to manage weeds	Broadcast treatment with herbicides	*30%*	*23%*	*38%*	*42%*	*61%*	**.050**
	Spot treatment with herbicides	*68*	*61*	*82*	*80*	*92*	
	Mulches/ground cover/physical barriers	*25*	*26*	*55*	*60*	*70*	
	Physical controls such as hand pulling, cultivating, mowing	*61*	*68*	*91*	*94*	*95*	
	Irrigation management	n/a	*17*	*41*	*50*	*73*	
	Turf selection	n/a	n/a	*20*	26	*34*	
Most frequent practice used on athletic fields	Broadcast treatment with herbicides			*15%*	18%	*23%*	**.050**
	Spot treatment with herbicides			43	40	35	
	Physical controls only			*37*	35	*28*	
	Irrigation management			*2*	5	*9*	
	Turf selection			2	2	4	
	Mulches/ground cover/physical barriers			1	1	1	
	Total %			100%	100%	100%	
	Number of cases			469	431	257	
Most frequent practice used on playgrounds	Broadcast treatment with herbicides			6%	6%	5%	>.050
	Spot treatment with herbicides			52	50	53	
	Physical controls only			37	35	34	
	Irrigation management			2	2	2	
	Turf selection			1	1	1	
	Mulches/ground cover/physical barriers			4	6	5	
	Total %			100%	100%	100%	
	Number of cases			460	434	244	
Location which has the most trouble with weeds[a]	Athletic fields/playgrounds	*34%*	*25%*	*18%*	*22%*	*19%*	**.050**
	Landscaping	*24*	*34*	*37*	*39*	*40*	
	Rights of way	*7*	4	*3*	3	2	
	Fence rows	35	37	43	36	39	
	Total %	100%	100%	100%	100%	100%	
	Number of cases	357	298	374	348	180	
Weed Management Scale	Mean			69.5	80.8	*75.4*	**.000**
	Standard Deviation			32.2	33.2	32.7	
	Number of cases			*497*	*471*	*312*	

Note: Significant changes between years are italicized. Non-significant changes are grayed out.
* Significance of chi square for individual weed management practices. Significance of ANOVA F-test for the Weed Management Scale. Probabilities $\leq$ .05 are bolded for easy identification.
[a] About 25% of responding districts in 2004 and 2007 noted multiple locations which have trouble with weeds. The percentages noted for this question do not include those districts in the chi square analysis. We are unable to compute rates of multiple responses given by districts in the 2001 and 2002 surveys.

Appendix Table 4.14 Perceived Effectiveness of Weed Management Practices (2004, 2007, and 2010)

Practice		2004	2007	2010	Average
Broadcast treatment with non-exempt herbicides	Very or somewhat effective	94%	94%	94%	94%
	Uncertain, somewhat or very ineffective	6	6	6	6
	Total %	100%	100%	100%	100%
	Number of Cases	*175*	*172*	*125*	
Spot treatment with non-exempt herbicides	Very or somewhat effective	99%	99%	99%	99%
	Uncertain, somewhat or very ineffective	1	1	1	1
	Total %	100%	100%	100%	100%
	Number of Cases	*384*	*359*	*256*	
Mulches/ground cover/physical barriers	Very or somewhat effective	93%	93%	90%	92%
	Uncertain, somewhat or very ineffective	7	7	10	8
	Total %	100%	100%	100%	100%
	Number of Cases	*260*	*258*	*255*	
Physical controls such as hand pulling, cultivating, mowing	Very or somewhat effective	89%	91%	90%	90%
	Uncertain, somewhat or very ineffective	11	9	10	10
	Total %	100%	100%	100%	100%
	Number of Cases	*426*	*406*	*255*	
Irrigation management	Very or somewhat effective	81%	85%	82%	83%
	Uncertain, somewhat or very ineffective	19	15	18	17
	Total %	100%	100%	100%	100%
	Number of Cases	*255*	*231*	*173*	
Turf selection	Very or somewhat effective	85%	88%	80%	84%
	Uncertain, somewhat or very ineffective	15	12	20	16
	Total %	100%	100%	100%	100%
	Number of Cases	*93*	*105*	*74*	

Note: Significant changes between years are italicized. Non-significant changes are grayed out.