

IDENTIFYING THE SOPHISTICATION LEVELS IN AN IPM PHILOSOPHY¹

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IPM was the buzz phrase of the eighties for tree care companies over North America. Companies began conversions to treatment tactics that were more in line with the concepts of an IPM philosophy. Today the trend continues as consumer education creates more impetus to swing conventional spray programs over to more environmentally sound treatment tactics. As companies make this transition, questions arise as how to best utilize existing technology with available equipment and personnel to provide a competitive, effective and profitable service.

In order to implement a successful IPM program certain fundamental requirements need to be addressed. First, an adequate clientel base needs to be established. An assessment of your prospective clientel is needed in order to design a program that will attract a large enough customer base to support your program. Environmental concerns and issues, ornamental landscape plant populations, potential disease and pest problems and disposable income are examples of characteristics that need to be assessed.

Second, your program must be horticulturally sound as to provide quality services and protect your reputation.

Third, your program must be profitable. Decisions concerning program economics inputs and pricing strategies must be compatible so as to insure an adequate profit margin. Long term success depends on the ability of the program to financially sustain itself without becoming a financial drain on the other components of your business.

Obviously, we have all determined that your IPM program must make a profit and it must be economically feasible for your clients. Wow, what a contradiction in terms. Profitable but affordable. Today I wish to discuss how we can have both, with compromise.

Nielson (1) defines IPM as "a common sense

approach, using environmentally conservative methods to maintain pests below defined economic or aesthetically damaging levels. Targeted intervention tactics are used based on monitoring plant vitality and abundance of pests and their natural enemies." As companies make the transition to an IPM philosophy three different types or levels of IPM seem to be evolving.

I believe that there are different types or levels of IPM. As I attempt to identify the different levels of IPM, I hope I can help you decide where you are and where you would like to go with your program. Incidentally, all programs have one very important element in common. All drastically reduce the amount of pesticide use, often exceeding an 80% reduction.

1st Level. See and Spray or See and Treat.

The characteristics of such a program are:

- 1) Decision making is straight forward. If a pest is detected, a pesticide application is provided.
- 2) This program is typically very pest oriented. Consideration is not given to the plants growing environment or vitality on the application date. Consideration may not be given to the pest population level on the application date.
- 3) No/poor follow up after a treatment is made, within a reasonable time period, to determine efficacy of the treatment. This program may have yearly treatments scheduled regardless of pest population. An example may be an yearly scheduled treatment to manage gypsy moth even though the population had crashed the previous year.
- 4) No/poor record keeping regarding the plant and pest conditions. Although the applicator may remember from year to year, the previous year's treatment characteristics are not recorded. Should a new applicator take over that route, all previous information is lost. No recorded information is kept on plant health and growing environment.
- 5) Usually there are no regularly scheduled plant

1. Presented at the annual conference of the International Society of Arboriculture in Toronto in August 1990.

inspections during the growing season. An inspection means more than a visit to the client's front door to solicit more work or a glance at 30 mph in a passing automobile.

In summary, the first type/level of IPM is a refinement of a cover spray system. Often in such a system the salesperson provides the scouting, selling prescribed treatments long before the application date is near.

2nd Level. Integrated Pest Management.

In a typical Integrated Pest Management service the following characteristics are usually found:

- 1) There is a decision making process. These decisions are usually based on pest population and aesthetic injury levels. If the pest population jeopardizes the health or aesthetics of the plant, a treatment is provided.
- 2) Cultural tactics are employed such as pruning and fertilization. However, fertilization may be recommended to improve plant vitality without first knowing the actual cause of plant decline. For example, I was recently called by a condominium manager and asked to fertilize a large declining planting at a 2 year old condominium complex. Rather than automatically route a fertilization crew to provide the service, I suggested that an examination of the site was appropriate. He agreed. I found that the topsoil had been removed during construction down to a clay layer. Only a few inches of loam was replaced causing excess water from their irrigation system to collect in the planting pits causing plant decline.
- 3) Emphasis is placed on using a pesticide with reduced toxicity and other pest management tactics that include other than petrochemical controls. Insecticidal soaps and horticultural oils used alone and in combination with other petrochemical products are key identifiable items to IPM programs.
- 4) A monitor or scout is now used to inspect plant materials on some prescribed cycles during the growing season. That person may or may not be the pesticide applicator but certainly is the person responsible for the decision making process.
- 5) Degree days and/or phenological relationships are used to better time trapping actions.
- 6) Pheromone traps may be used to better time borer treatments. Pit fall or sticky traps may be used to monitor population levels or emergence

dates.

7) Threshold levels are used to determine if actions are necessary based on sampling of best populations.

8) Accurate record keeping has been instituted to maintain pest population records. Also plant susceptibility and current condition may be recorded.

9) Because a routine monitoring and action cycle has been established, additional emphasis can be placed on using the least toxic material available to manage the pest problem.

This program is typically reactive.

3rd Level. Plant Health Care.

This program combines the principles and practices of IPM with a more comprehensive management program. In PHC the emphasis is on the plant and on those factors that affect its health and vitality. PHC is more problem solving than system solving. For example, we know that many insects and diseases that kill plants are opportunistic. When a plant's vitality level drops below a certain point it becomes unable to protect itself by natural means and is an attractive host. Through monitoring and management of plant health and vitality, a PHC program becomes a proactive rather than a reactive approach.

In addition to the components of an IPM program, plant health care incorporates the following:

- 1) An initial plant inventory is conducted. Through the determination of plant species under your care a more accurate prediction of the problems that may be encountered can be obtained.
- 2) A basic plant analysis is conducted concurrently with the initial inventory. A visual vitality rating is assigned to each plant. This rating is based on characteristics such as leaf color and size, incremental growth and presence of plant parasites. This information provides an important baseline for later trend analysis. It also serves to prepare the client if the plant's long term prognosis is poor.
- 3) Plant growing environment is evaluated. This information allows the technical specialist to better determine site problems that may influence plant health and vitality. Items such as soil compaction, excessive moisture, incorrect soil pH, insufficient light and poor soil fertility are assessed. The creation of more optimum growing conditions through

growing environment manipulation can often circumvent future plant problems.

4) Trend analysis of key plant vitality through the use of methodology such as shigometers, root starch analysis and incremental growth. The health and vitality of key landscape plants can be monitored over time. Efficacy of treatment practices can be analyzed.

5) The use of suitable plant species for specific sites is emphasized. The matching of a plant's native habitat to growing conditions to be encountered in the landscape is a tactic emphasized to reduce plant stress and future plant problems. Through relocation and involvement in the landscape design process, a healthier and more problem free landscape can be obtained.

A sound plant management program depends on accurate monitoring of pest population levels, diseases and other growing environment conditions. Routine inspections are the cornerstone of success. Cultural practices such as pruning, aerification, fertilization, lime or sulfur application and irrigation may all be administered with accuracy and a high degree of confidence. Of course, use of petrochemical, biological soaps,

oils, synthetics and organics are all part of the arsenal used in plant health care. However, their judicious use is paramount. The bottom line is, if a plant is managed properly there will be fewer fatal or debilitating parasitic organisms to control.

Recognizing the different programs is the first step to a better understanding of the strengths and weaknesses of each program. Depending on equipment and personnel available, companies can provide several programs and increase marketing flexibility. Through recognition of the fundamental requirements for implementation of IPM philosophy, tree care companies can design programs that are environmentally sound and provide the quality of tree and shrubs care desired by the client.

Literature Cited

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ABSTRACT

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Wood borers are a major pest problem in nurseries. They destroy vascular tissues, thus cutting off sap flow, and weaken a tree's structural integrity. Consequently nursery stock infested with insect borers tops the list of restricted stock. However, controlling wood borers with chemicals is difficult. First, wood borers are only vulnerable to insecticides during a small portion of their life cycle. Second, because long-residual insecticides are not available to control wood borers, short-residual insecticides must be applied. Wood boring insects may also be categorized as primary or secondary invaders. Primary invaders attack healthy trees; secondary invaders attack weakened trees. Ash-llac borer, peach tree borer and round-headed apple tree borer are three primary invaders. Two examples of secondary invaders are flatheaded apple tree borer and bronze birch borer.