

THE PROBLEM WITH INSECTS IS PEOPLE¹

by John A. Weidhaas, Jr.

Abstract. In recent years the general public, public attitudes, special interest groups, and a flurry of pesticide legislation have had a major impact on shade tree entomology and arboriculture. People outside of those professions are increasingly involved in more rapid spread of insects, the decision-making process in insect control programs and regulations of pest control activities. Area-wide insect control programs must be thoroughly planned and adequately publicized to be successful. Arborists have the opportunity to develop improved tree protection services, rather than spraying services, and develop Integrated Pest Management techniques toward an overall shade tree management system. Now and in the future arborists need to be concerned and involved with "people" problems as well as insect problems.

For 55 years, the educational sessions of our annual shade tree conferences have provided considerable emphasis on entomology. It is a major component of arboriculture as a science, a profession, and an art. Over the years we have learned about the recognition, classification, life histories, biologies, host plants, habits, diagnosis of damage, economic impact, and controls for most of the important shade tree insect pests. Through research and experience, we have acquired a broad base of technology and skills that enable us to protect our valuable shade tree resources effectively. In our war against the insects, we have gained the upper hand. But are we going to be able to maintain our advantage?

Not too many years ago, arborists rather freely and independently carried on with the work of shade tree insect and disease control. Today they are hindered by an array of external influences that complicate and restrict those activities. Now, pest control in the landscape is not only becoming more complex, it is practiced in full view of a more concerned, fearful and distrusting public; under expanding regulation by government; and subject to controversy and even harrassment from special interest groups. It is quite evident that one of our major problems with insects is people.

Departing from the usual approach of learning more about how insects affect trees, I believe we need to step back and take an objective look at how people affect insect pests and insect control

programs. The purpose of this presentation is to discuss some of the more common people problems in shade tree entomology and, where possible, suggest ways to overcome or work with them. In addition, some approaches to improve plant protection programs for the future will be considered. I make no claim to any expertise in sociology or psychology, but have been exposed to many situations involving the people aspects of shade tree entomology, as have all of you, I am sure.

It is difficult and perhaps dangerous, but sometimes helpful, to generalize and try to characterize people or stereotype their reactions. Such references are used to help describe general situations and are not intended to disparage any individual, group, or organization.

The focus here will be people not involved directly with shade tree insects or arboriculture. They include: the general public; individuals or groups with interests in or responsibilities for activities related to trees, pests, and pesticides (or the lack thereof!); people who represent, govern, lead, or otherwise might influence people's activities and attitudes; individuals as customers or who directly benefit from tree programs; and to some extent those in professions that may relate to the subject at hand.

Introduction of New Insect Pests

Many of the most destructive insect pests throughout the world were introduced by people transporting themselves, plant materials, various products, and other articles in interstate and international travel and commerce. This is by no means a new problem, but it is a constant threat. The development of more and more rapid methods of transportation and rapidly growing populations over the past century have contributed to the increasing seriousness of the problem. Although most introductions are unintentional and inadvertent, some people will contrive to avoid importation and inspection regulations established initially

¹ Presented at the annual conference of the International Society of Arboriculture in Hartford, Connecticut in August 1980.

by the Insect Pest Act of 1905, The Plant Quarantine Act of 1912, and legislation in various states and other countries.

Table I lists some examples of insects introduced into the United States over the past 150 years. While some pests have been introduced in more recent years, the number is relatively low in relation to the potential threat. The spread of those insects that have become established has been slowed drastically by the efforts of relatively few inspectors. Continual improvements in survey and detection methods coupled with advances in insect control technology have minimized the potential destruction of many introduced insects.

One serious problem with insect survey and detection, however, must be noted here. Acknowledging limitations in manpower and funding, much more emphasis is placed on surveys and detection on agricultural and forest crops and products than on trees, shrubs, and other ornamental plants. The number of potential pest species on ornamentals is astronomical by contrast to major crops, but the economic impact is far less by current methods of determining priorities. Nevertheless, the problem exists and must be acknowledged. Somehow, more effort is needed on ornamental plants.

Arborists can minimize problems involving introduced pests in several ways:

- 1) give strong support to sound inspection, survey, and detection programs by federal and state governments;
- 2) encourage increased efforts on and support for ornamental-environmental plants in these programs;
- 3) be more alert to detect and report potential introduced pests in your normal activities and operations; contact your Department of Agriculture, Extension Service, or State Entomologist to report suspects; and
- 4) help make people aware of the potential hazard of introducing or spreading insect pests, which includes critical local problems of spread such as gypsy moth, Japanese beetle, and the old "chestnut" — storing elm wood that harbors elm bark beetles.

Introduction of New Plant Materials

The quest for new introductions of plant

Table I. Examples of important pests introduced into the United States and Canada.

<i>Insect</i>	<i>First Found</i>	<i>Location</i>
Elm leaf beetle	1834	Md.
purple scale	1857	Fla.
cottony cushion scale	1868	Cal.
gypsy moth	1869	Mass.
shothole borer	1878	—
San Jose scale	1881	Cal.
azalea bark scale	1881	D.C.
poplar and willow borer	1882	—
European elm scale	1884	N.Y.
larch case bearer	1886	Mass.
smaller European elm bark beetle	1904	Mass.
birch leafmining sawfly	1905	Nova Scotia
juniper webworm	1910	—
boxwood leafminer	1910	—
European pine shoot moth	1914	N.Y.
introduced pine sawfly	1914	Conn.
Japanese weevil	1914	—
imported willow leaf beetle	1915	—
Japanese beetle	1916	N.J.
Comstock mealybug	1918	N.Y., Cal.
satin moth	1920	Mass., Br. Col.
Asiatic garden beetle	1922	N.J.
European pine sawfly	1922	Ottawa
birch leafminer	1923	Conn.
beech scale	1929	Mass.
white fringed beetle	1936	Fla.
European chafer	1940	N.Y.
andromeda lacebug	1946	Conn.

materials in the horticultural trade is a thriving enterprise, with new varieties, new cultivars, and the promotion of unusual or sparsely used plant materials. That, in itself is not a problem, much less a people problem. Often touted as "relatively pest free," the extensive planting out of "new" trees and shrubs is invariably followed by a more or less gradual influx of "new" pests. A great many insect species exist endemically in the environment and are seldom conspicuous or seen. With adequate numbers of host plants, they become abundant and serious. My classic example is the thornless honeylocust in its many varieties and colors. At first promoted as a relatively pest-free tree some 30 or more years ago, we now have to contend with mimosa webworm, bagworm, honeylocust spider mite, rust mites, honeylocust pod gall, several honey locust plant bugs and leafhoppers, honeylocust borer, lecanium scale, cottony maple scale, and a few other as yet minor species. Although there are many, let only one more example suffice. In California the Indian laurel fig was introduced as a desirable tree for municipalities. A rather exten-

sive planting was discovered to be infested with Cuban laurel thrips, and it was three years before entomologists were able to provide control measures.

Certainly the breeding, selection, and introduction of new plant materials for the landscape is not to be discouraged. However, it is imperative that:

- 1) plant breeding research and provenance tests include research into potential insect pest problems — and insect resistance!
- 2) arborists should be alert to detect potential insect problems early; and
- 3) the development of insect pests should be anticipated and protection provided when and as needed.

Be mindful of the fact that 3-5 or more years may be required to investigate the biology and habits of the insect, conduct control tests, obtain EPA label approval for the new insecticide use, and apply timely control measures, finally, on the infested plants.

Cooperative Federal-State Control Program

The gypsy moth will serve to illustrate some typical people problems associated with large area control programs that are conducted under existing plant pest laws and carried out by state and federal agencies. Prior to the past couple of decades, these problems were minimal because: 1) people more readily accepted programs conducted by governmental agencies; 2) the gypsy moth had been confined to a relatively limited region for many years where it was familiar to many people; 3) it occurred in more rural than urban-metropolitan areas; and 4) it was not a strong "rallying flag" for special interest groups.

The general public now has the overall attitude that the use of any insecticide is a dangerous threat to human health, animals, the environment, food, and the future. When confronted with problems such as gypsy moth, the average citizen, as well as many community leaders and decision-makers react emotionally: to knowing little about the problem; to being fearful of poisons; to uncertainty over their safety and health; to distrust of science and technology due to widely publicized controversies over pest control practices; and to apprehension over their responsibility in the decision making process.

The August 11, 1980 issue of U.S. News and World Report reported the views of Dr. Jerome Wiesner, retired president of Massachusetts Institute of Technology, as to the effects of technology on our "open and democratic" society: "Our problem at the present time is not that the world has become much more complex but that we have become a society in which we have let a lot more people have a voice without at the same time figuring out a way to keep the system operating. A multitude of people are now able to participate in the decision-making process — without adequate knowledge — and all have either something to gain or something to lose. This leads to a paralysis of decision making."

In a recent newsletter of the American Registry of Professional Entomologists, Dr. B.C. Pass, President, commented: "Today, as perhaps at no other time in history, we live in a society which has become skeptical of scientists and scientific pronouncements. Our credibility is being challenged as never before in this, 'the age of accountability'. Proof of product is demanded and it matters little whether that product is a new energy saving device or professional competency. The days of the ivory tower scientist and the less than professional practitioner are gone. We are challenged and questioned daily by our administrators, by government, by consumers, by scientific colleagues, by the courts, and by the general public. We find that we must function in many new roles if we are to be successful." I might add one comment to Dr. Pass' remarks. Even when proof of product is provided, it is often met with doubt and disbelief.

It is, then, in the arena of public involvement that we try to do the job of protecting our tree resources. Much more effort is required to work with people than to actually carry out the control program. The first sign that a gypsy moth control program is needed is the detection of numerous moths in traps in an otherwise uninfested area. Often such reports are noted in the local or nearby major newspaper. Particularly in rural areas, the fact that a control effort is imminent spreads faster by word of mouth than by any news medium. Just as rapidly, a large stock of misinformation and misunderstanding already begins to accumulate. By the time preliminary planning begins with local

officials, usually 6 to 8 months prior to control operations, a vast array of people are watching, waiting, and anxious to get involved: residents in the area to be treated; agricultural and forest enterprises in the area; community leaders; people outside of the control area; the press; fish and game organizations; special interest groups such as Sierra Club, Nature Conservancy, and others; other agencies such as health departments, water control boards, and the like; to name a few. Usually at least one organic gardener lives in the target area. In a short time activists of various types, far-removed from the area involved, but self-appointed watchdogs, become involved. Attempts to inform people of the situation, what will be done as well as where, when, and how, the nature of the problem, reasons for carrying out the program, and the anticipated outcome are accompanied by much controversy and confrontation. Facts and reason take a back seat to strong emotions and personal convictions.

Even in the final stages, after a decision has been reached, an environmental impact statement has been approved, contracts have been signed, and work forces are ready to go, it is not a sure thing. On numerous occasions opposition groups or individuals have waited until the very last moment to file injunctions that utilize court procedures to delay the program until too late to be effective. In the case of a recent Pennsylvania program, prior EPA approval to apply dimilin was withdrawn approximately 10 days before the control operation was to begin because a determination could not be made by the EPA as to how many residences per unit area constituted a forest situation.

There are seemingly endless other examples of misunderstanding, misinformation, concerns, and controversies that arise. They are interesting enough, but much too lengthy to describe here.

Those who are involved in implementing or cooperating on control programs can minimize many of the people problems by the following general guidelines (individual steps are too extensive to list here):

- 1) When the decision is made (as early as possible) to conduct a control program, work through the local Cooperative Extension Service personnel to arrange an ex-

ploratory meeting with local government officials, and be prepared to set forth specific objectives as to (1) the area involved, (2) what the problem is and the nature of the insect, (3) what is planned for treatment, when, and how, and (4) request that an open meeting be arranged to inform all those interested in what is planned, the nature of the situation, and the opportunity to ask questions.

- 2) Do a thorough job of planning for all legal and operational aspects of the control program, including: approval for the control method employed and the environmental impact statement; proper notification of all residents and others directly involved in the area to be treated; and proper contracts for needed control work.
- 3) Prepare or utilize existing informational brochures that explain the problem and any anticipated questions well in advance of treatment.
- 4) Hold an open meeting at least 3 months prior to control operations for any interested people. Do your homework thoroughly and be prepared for all anticipated questions.
- 5) Inform and seek the cooperation of other agencies that may have an interest or may be able to assist in monitoring the operations; such as the health department, local and state water resource officials, fish and wildlife specialists, etc.

Commercial Arborists Services

Commercial arborists provide services to a rather select group of property owners that is characterized by a higher than average interest in trees and a willingness to expend substantial funds for their protection. Such clients do share current concerns over the possible hazardous effects of pesticides, but more, they are interested in better ways to protect trees whenever possible and better results from arborists' services.

The major impact on pest control practices for commercial arborists has resulted from extensive legislation in recent years: the banning of DDT in 1969; establishment of the EPA and enactment of OSHA in 1970; amendments to the Federal In-

secticide, Fungicide, and Rodenticide Act by FEPCA in 1972 and 1977; establishment of the Toxic Substances Control Act of 1976, and numerous other regulations and restrictions. Putting the responsibility on the general public may be missing the target, since public attitudes are molded by a great extent (1) by those elements in the world of journalism and the media that profit from exploiting controversial and emotional issues; (2) the strong tendency in government to develop bigger and stronger government; and (3) activist groups that oppose the use of pesticides. The responsibility that does lie with the public is its willingness to look to government to solve all its problems rather than merely to govern.

The above comments should not be construed to imply that the legislation is undesirable. It is basically sound and should provide more benefits than hardships in the long run (hopefully). However, there is little question that the laws were passed before they could be implemented adequately. When FEPCA became law, over 1800 uses of pesticides on ornamental plants automatically became unregistered by virtue of the clause that prohibited uses not in accordance with label directions. Millions of dollars and man-hours have been required in preparation for and litigation related to hearings and court proceedings. Also mountains of paperwork have resulted. Drastic changes have occurred in the short span of a decade. Furthermore, as yet, it is impossible to obtain an accurate complete listing of the insecticide uses for ornamental plants that are legal and registered from the Environmental Protection Agency.

One "people problem" for commercial arborists that lies on the borderline of the profession is the so-called arborist who really is not. As Bob Felix noted in the June issue of NAA Arbor Action, certification of commercial applicators is not in itself assurance of high standards of performance and practice. This is by no means a new problem, and considerable progress has been made to improve the situation largely through the efforts of the National Arborists Association in establishing and encouraging standards of practice.

Another problem is the public's unfamiliarity with insects coupled with their inability to recognize many pests until too late to prevent damage or to

apply preventive and corrective measures. People need a professional's expertise to take better care of their trees and avoid losses. This problem then becomes an opportunity for arborists to provide service.

There are many ways in which commercial arborists can minimize certain unique people problems and improve protection of trees:

- 1) strongly support the NAA, which as an industry organization can exert responsible and solid assistance on governmental legislation and regulations pertaining to pest control;
- 2) continue to add to standards of practice, self-study programs, and public relations efforts;
- 3) develop a tree protection approach to replace spraying services by selling tree inspection, pest detection, diagnostic expertise, and essential insecticide treatments.
- 4) explore the feasibility of providing a diagnostic laboratory service for local property owners, including do-it-yourself home landscapers — it might even provide a needed service for professionals in related services;
- 5) take an active role in public awareness by being available to civic groups, local clubs, youth organizations, the news media and feature writers, television news and feature programs interested in current items of interest.

Some Benefits of People Problems

With so much emphasis on problems, some recognition must be given to benefits that are derived. The rapid changes in the past 10 to 20 years have brought about much remarkable progress.

- 1) People are more aware than ever before of the economic and environmental values of trees and other landscape plants.
- 2) More people than ever are aware of and appreciate the need to protect trees from insects and other landscape pests.
- 3) The general public has achieved the highest level of education and affluence in history permitting time and resources to enjoy expanded knowledge and interests.

- 4) We have over 150 years of cumulative technology with which to solve our problems; it is more than doubling every 10 years and improving in quality and sophistication.
- 5) Manpower and other resources have expanded markedly in the last 10 years for research, education, and improved community shade tree programs.
- 6) The magnitude of the pesticide controversy has resulted in millions of dollars of appropriations that would have been unavailable otherwise, and a vast awareness of the importance and need for pest control.
- 7) We now have the capabilities to interrelate and integrate heretofore separate disciplines, technologies, and business practices in a comprehensive management system.

Some New Approaches for the Future

People should be made aware or reminded that much progress has been made in regard to safe, sound, and effective use of pesticides as a result of the many changes in the past decade. Little is to be gained by rehashing issues that have already been resolved. Pesticide uses have been regulated. Pesticides have been cancelled, restricted, and otherwise regulated. Applicators are certified and held responsible for their practices. Safeguards have been built into pesticide development. We should look ahead and go on from here.

Integrated pest management can be developed to provide better methods of tree protection. This is our greatest challenge for the immediate future. It is complex and will require considerable research and effort, which is already underway. As it becomes more widely accepted, the next logical step would be to incorporate it into an overall tree management system, which is what arboriculture really is in the first place.

Arborists should be aware of and look for new

ways to use IPM trained people who will be the product of new IPM curricula being established now in the Universities. Initially most will find positions in crop IPM programs, but efforts should be made to utilize them in arboriculture and ornamental horticulture. With training including horticulture, agronomy, entomology, plant pathology, and weed science, they can do much to upgrade tree protection services.

Arborists, whether commercial or municipal, need to promote tree protection rather than spraying services. Oddly enough, while arboriculture is the culture, care, protection, and maintenance of trees contributing to a better environment, arborists are labeled as pesticide applicators who are "poisoning" the environment.

In promoting tree protection, arborists need to "sell" and provide detection, monitoring, and inspection services as a part of landscape plant management, with control operations on an "as essential" basis. Well documented records of pest conditions, tree service, and tree condition coupled with shade tree evaluation services can do much to promote the economic status of property values.

Since timely and accurate diagnosis of tree troubles is so critical to the tree business, and more broadly trained people are on the horizon, arborists might consider establishing their own diagnostic laboratories, properly equipped and staffed. The Davey and Bartlett companies have been doing this for years. Perhaps making diagnostic services available to those who need it would be a way to expand and diversify business.

There is a great promise for the future of arboriculture as a science, a profession, an art, and a business. Strong leadership, hard work, increased research and development, and quality service are essential to continued progress and growth.

*Department of Entomology,
VPI & SU
Blacksburg, Virginia*