

**A HISTORY
OF THE
UNIVERSITY OF CALIFORNIA
STATEWIDE IPM PROGRAM**

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PROLOGUE

The University of California (UC) Statewide Integrated Pest Management (IPM) Program, established by legislative action in 1979, did not just happen because a few scientists thought it would be a good thing to do. Rather, it evolved out of a series of scientific advances, a receptive political climate, and changes at UC that coalesced at a particular time.

The Science

Shortly after World War II, the spectacularly successful application of the pesticide DDT to agricultural pest problems stimulated development in the field of chlorinated hydrocarbon chemistry and hence many other organic pesticides. However, it wasn't very long before a number of scientists working in pest management began to recognize these new pesticides were not to be the panacea first envisioned. For example, Michelbacher and Middlekauff, in their 1950 studies on the control of melon aphids, were among the first to describe increased pest population densities flaring up when heavy dosages of the new pesticides destroyed natural enemies. Additionally, they were able to show that if low-dosage pesticide treatments were carefully chosen, timed, and "integrated" with wind conditions and certain agronomic practices, increased populations of natural enemies resulted and good control could be achieved without seriously disrupting the environmental balance.

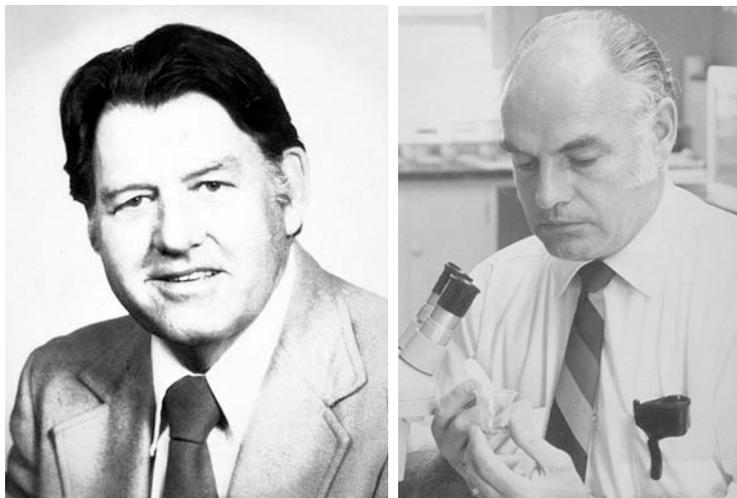


Vedalia beetle attacks cottony cushion scale.

Early successes with the use of biological control, starting with the introduction of the vedalia beetle into southern California citrus orchards in the 1880s to control the cottony cushion scale, led to establishment of insectaries and biological control facilities on the UC Berkeley and UC Riverside campuses. In the 1950s and 1960s, researchers began to develop the ecological foundations for the effective use of introduced biological control agents (as well as natural agents) in ecosystems with reduced use of broad-spectrum pesticides. At the same time, agronomists, horticulturalists, plant breeders, plant pathologists, nematologists, and weed scientists were also involved in the development of tactics and management

practices for crop pests including plant diseases, nematodes, and weeds.

Out of these efforts, it soon became clear that there were a number of pest control "tactics," e.g., chemical, biological, cultural, physical, genetic, and even regulatory procedures, that could be employed to manage pests, but increased research was needed to focus on how these could be "integrated" into an effective, ecologically based program. In 1959, Vernon Stern, Ray Smith, Robert van den Bosch, and Kenneth Hagen published their seminal article in *Hilgardia*, "The Integrated Control Concept." This publication not only presented the definitions and explanation of terms useful in discussing IPM, but also developed the conceptual framework for successful IPM programs. They clearly pointed out that biological control and chemical control were not necessarily alternative methods, but rather "they may be complementary, and, with adequate understanding, can be made to augment one another. One reason for the apparent incompatibility of



Kenneth Hagen (left) and Robert van den Bosch, early leaders of the UC Berkeley Division of Biological Control.

biological control and chemical control is our failure to recognize that the control of arthropod populations is a complex ecological problem. This leads to the error of imposing insecticides *on* the ecosystem, rather than *fitting them into it*."

During the 1960s an increasing number of researchers were exploring integrated pest management in various cropping systems, and by the early 1970s many articles had been written and several definitions appeared in the literature. In 1972, the Council on Environmental Quality provided the following definition:

Integrated pest management is an approach that employs a combination of techniques to control the wide variety of potential pests that may threaten crops. It involves maximum reliance on natural pest population controls, along with a combination of techniques that may contribute to suppression cultural methods, pest-specific diseases, resistant crop varieties, sterile insects, attractants, augmentation of parasites or predators, or chemical pesticides as needed. A pest management system is not simply biological control or the use of any single technique. Rather, it is an integrated and comprehensive approach to the use of various control methods that takes into account the role of all kinds of pests in their environment, possible interrelationships among the pests, and other factors.

They further added that an integrated pest management program should contain at least the following three elements:

- Diagnosis of the pest problem by scouting, also referred to as "field checking," pest trapping, and/or other methods;
- Determination if and when intervention, i.e., pest suppression, is required, mostly based on damage thresholds; and
- Suppression of the pests(s) by the most appropriate tools(s) available.

The National Science Foundation (NSF) recognized the potential significance of integrated control programs and established a national prototype research program in 1972 under NSF grant GB-34718, funded by NSF, the U.S. Environmental Protection Agency (EPA), and the U.S. Department of Agriculture (USDA). This program was administered through the UC International Center for Biological Control on the Berkeley campus and became known as the "Huffaker Project." Grants funded under this program made significant



Carl Huffaker, a leader of the Division of Biological Control, UC Berkeley.

advancements in establishing the systems analysis approach to understanding and solving agricultural pest problems. Research results from this effort were utilized in the USDA extension IPM pilot projects for cotton, apple, citrus, alfalfa, and soybean. In California, pilot projects for cotton and later for pears demonstrated to growers the value of monitoring by crop consultants in reducing pesticide use and production costs, while maintaining quality and yields. The pear pilot



Cover page of the Pear Pest Management manual, 1978.

project resulted in the UC manual for pear pest management that was well received in the agricultural community. This manual, prepared by Dick Bethell, CE horticultural advisor in El Dorado County, and many cooperating UC authors, became a prototype for other such books to follow. Pat Weddle, one of those who worked on these IPM pilot projects, went on to found a private consulting business that continues to serve growers.

The Consortium for Integrated Pest Management (CIPM), a 17-university, interdisciplinary research project on four major crops (alfalfa, apple, cotton, and soybean) was initiated in 1979. CIPM was a new way for organizing and managing agricultural research. It provided a mechanism for overcoming political, disciplinary, and administrative barriers for scientists of 17 state agricultural experiment stations, land-grant universities, and USDA Agricultural Research Service (ARS) and Economic Research

Service (ERS) to work collectively on a very large problem of national concern. CIPM brought together the talents of a large group of the nation's best agricultural scientists in a centrally managed and directed effort that underwent an annual peer review.

Simultaneous with these advances by pest management researchers in examining problems on an ecosystem basis, rapid advances were being made in the computer sciences. To implement an effective integrated pest management program on an ecosystem basis requires analysis of large quantities of detailed and accurate data from repeated field monitoring. Computerized data management had the ability to reduce, store, retrieve, and perform the necessary calculations to make relationships among biological and abiotic factors useful to those who have to predict the need for and supervise the treatment strategies. These advances, in terms of computer capabilities and availability to individual researchers, allowed the application of systems analysis science to complex pest management problems.

The Political Landscape

Responsiveness of faculty to the California Legislature has been an expectation since early days of UC's history. It was no accident that men like Eugene Hilgard, one of the nation's great geologists and soil scientists, and John LeConte, a world-renowned physicist, were among the first faculty hired in the 1870s. These scientists were expected to discover new things of value for the state, and they were required to appear before the legislature and give reports each year to justify the state's investment. That university-legislature relationship has continued through the years and was no different in the 1960s and 1970s as the debate over pest management strategies and the use of pesticides was developing. As the scientific community learned more and more about the environmental and human health problems associated with heavy use of DDT and other pesticides,

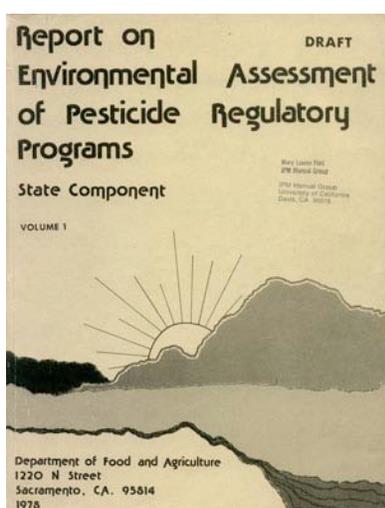
they lobbied state agencies and legislative staff to fund research on an integrated approach to pest management. However, the general public was not particularly provoked by the topic, and hence there was little incentive to place a priority on funding a new program. The faculty was lobbying on "new things of value for the state" but their voices were falling on deaf ears. Even after Rachel Carson published *Silent Spring* in 1962, the public thought of the problem more in terms of fringe issues such as eggshell thickness of peregrine falcons and western grebes. It wasn't until it was shown that workers in plants manufacturing DBCP had been made infertile that many began to pay serious attention. Finding DBCP in groundwater and drinking wells in 1978 finally captured the public's attention, and they demanded action.

In 1972, the California Department of Food and Agriculture (CDFA) began to license pest control advisers (PCAs) to advise growers on pest control methods. To use a commercial pesticide applicator to apply a pesticide or to use a restricted pesticide in California, growers were required to obtain a written recommendation from a state-licensed PCA. A copy of that recommendation had to be submitted to the county agricultural commissioner who provided a certain amount of oversight of their activities. At that time the vast majority of those who became licensed PCAs were also sales representatives associated with pesticide supply companies. This created the challenge of not only providing these individuals with suitable tools for monitoring pest populations and with reliable, science-based information on IPM, but also having to convince them to shift their traditional mode of operation. In many cases the use of a pesticide had become a form of insurance. The cost of material and application was relatively inexpensive and guaranteed a marketable crop. An additional impediment to the integrated approach was that in some cases the banking industry was reluctant to provide operating loans to growers without an assurance that they would use the tried-and-true pesticide program. Relative to the cost of labor for scouting fields or analyzing samples, pesticides were cheap. To really practice an IPM approach, the PCA could no longer simply write a prescription for some chemical based on a general calendar of possible pest problems, but would have to go into the field to actually identify the pest and the problem correctly, and spend time in monitoring and evaluating various approaches. Use of the wrong pesticide at the wrong time would jeopardize reliance on the biological control component of IPM and perhaps cause additional pest problems. It is not easy to change habits, particularly when you are paid by the amount of pesticides you sell. The licensing program contributed to more professional use of pesticides, but made only minimal inroads in the adoption of IPM.

In 1976, California Attorney General Evelle Younger issued a formal opinion that a strict interpretation of the California Environmental Quality Act (CEQA) required that an environmental impact report be prepared before any application of an environmentally hazardous pesticide. Strict adherence to that position would require the preparation of an estimated 100,000 environmental impact reports annually. With pressure from the agricultural lobby, the State Legislature rushed to exempt pesticide regulation from the impact report requirement, but only for a period. In the interim, the CDFA, the pesticide regulatory agency at the time, was required to develop both a comprehensive assessment of pesticide use in California and a plan for reducing whatever serious problems the department might find associated with that use. This plan was to be completed by 1978.

The State Agriculture Code placed a burden upon the CDFA to explore, develop, and foster alternatives to environmentally harmful chemical pest control strategies, and IPM was the common

term given to alternative strategies developed explicitly to reduce the use of harmful chemicals. By this time, IPM was a well-known concept to California's agriculture community, which, together with the University of California, had done more to advance IPM technology than any other community in the world. Unfortunately, the concept of IPM was not well known to government officials, state legislators, educators, and the general public. In December 1977, the conference "New Frontiers in Pest Management: A Comprehensive Evaluation of Integrated Pest Management," was held in Sacramento for the express purpose of expanding public awareness of the value of integrated pest management. To demonstrate how the political field was shifting by this time, it is noteworthy to list the educational institutions and agencies that sponsored this event. They included: University of California, California Department of Education, California State Legislature, U.S. Office of Education, California Resources Agency, California Community Colleges, State Water Resources Control Board, California Engineering Foundation, and California Department of Food and Agriculture. This conference had a robust agenda, including discussion of many aspects of integrated pest management as a concept and outlining how to proceed in implementation. Dr. Mary Louise Flint, Assistant Director, Pesticide Impact Report, CDFA (later to be hired by the UC IPM Project as director of the IPM manuals group) gave a presentation, "Educational Needs for Integrated Pest Management." In this presentation she effectively outlined the educational and publication needs for an effective IPM program, which served as a roadmap for subsequent proposals.



CDFA released the Environmental Assessment of Pesticide Regulatory Programs report in 1978.

In October 1978, in response to the Attorney General's 1976 opinion, CDFA issued a draft "Report on Environmental Assessment of Pesticide Regulatory Programs." This four-volume report was highly critical of pesticide use and regulation in California and suggested that pesticides were overused in the state because alternatives and integrated pest management were not being considered in pest control decisions. The release of the report generated front page headlines in newspapers across the state, and the California Legislature jumped into action to see what could be done to address the problem and calm both environmentalists, concerned with potential hazards, and growers, who feared loss of potential chemical tools.

The report included 68 recommendations to overcome the many problems identified in the report as associated with pesticide use in California. Most of the recommendations related to state regulatory programs to bring them into compliance with the CEQA. However, a few recommendations suggested ways that UC could assist in reducing the problems through development and promotion of IPM programs. Specifically,

19. The CDFA (including agricultural commissioners' staff) and University of California, should cooperate in preparing pest management information sheets for crop-specific pest management reevaluations which cover the following subjects: a) identification of the crop, pests, and pesticides which it covers; b) description of the pest management system, including pest monitoring techniques, economic thresholds, application rates and methods, and any other necessary information; c) description of

the relative advantages and disadvantages of the pesticides included in the system; d) description of all regulations and special restrictions on the use of pesticides.

59. The University of California should be encouraged to expand its research into alternative pest control strategies, specifically integrated pest management and mitigation measures. Research and funding agencies should be encouraged to use the PUR (Pesticide Use Reporting) system in establishing pest management research priorities.

The dialog and hoopla generated by the report lingered well into 1979, with legislators holding hearings and considering the report's recommendations and various legislative approaches to the problem. This set the stage well for the introduction of the University's proposal for a special IPM program in spring 1979. As stated in an April 9, 1979, Sacramento Bee editorial,

The University of California is proposing to establish a five-year, \$9.4 million program to reduce pesticide use in California and to increase use of integrated pest management (IPM). ... If ever a budget request is welcome, this is it....

...Late last year, an Environmental Assessment Team in the Department of Food and Agriculture concluded, as have other study groups in the past, that what has stood in the way of broader use of IPM techniques has often been nothing more than inertia or ignorance about the method and its possibilities. ...The UC effort is therefore welcome not only because it will almost surely develop more sophisticated means of IPM, but because it will give new visibility and legitimacy to an underused technique that may well make things easier not only for the environment and public health, but for the grower who uses it.

The University of California

The historical practice in university funding and governance make it difficult for research and extension outreach activities to adjust to rapidly changing times. Early in the history of the Agricultural Experiment Station and Cooperative Extension Service in California, essentially all of the support came from two sources: formula funding from the federal government, and a block grant for research from the California Legislature. State funding for agricultural research became constrained in the early 1960s as many demands of an increasing population with a variety of special needs were placed in competition for tax revenue. Up until about 1961, the state block grant had been increasing annually, allowing new resources to be used to employ researchers and provide technical support as new problems arose in agriculture.

In 1966, partly because of increasing demands on state tax dollars, but also because many in the public and legislature were unhappy with the UC administration for its handling of the "free-speech" movement on the Berkeley campus, an 8% cut in the block grant for research occurred, and another 8% was cut in 1970. As a result of these reductions, UC departments and county Cooperative Extension offices were stretched to carry out their research and extension programs with less money, and there was little interest in redirecting existing funds that would cut across disciplinary and county boundaries to address new problems.

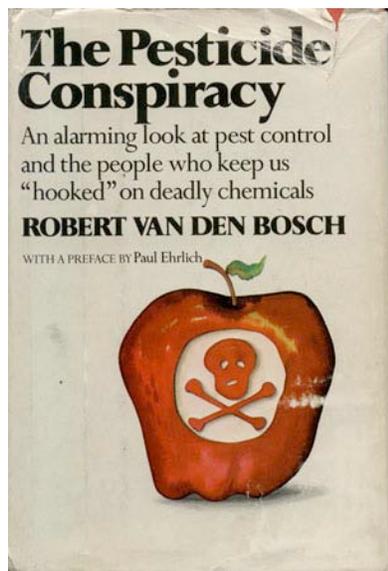
As growers perceived new threats and problems, the University convinced them that they would, by some mechanism, have to obtain new funds for research, as it was virtually impossible to redirect existing resources away from the long-established priorities. And the growers heeded this call. First, they began proposing a series of budget initiatives directed at meeting high priority problems, and these resulted in the establishment of statewide special programs and projects such as Mosquito Research, Pear Decline Funds, Mechanization Research, Control of Starlings, each reporting to the UC Vice President—Agriculture. Secondly, they began to establish industry-based research programs under provisions of the Marketing Act authority of CDFA. Under this act, commodity groups could tax themselves for a variety of activities, including funding research. As a result, a number of commodities established advisory boards that raised funds from their industry to support research. However, neither of these mechanisms for raising new funds identified research on an integrated approach to pest management as a high priority. The bulk of these monies were directed either towards solving a particular pest problem for a given commodity or for genetic modification and plant breeding.

Another force in play during these years was the federal government's large investments in strengthening the country's science structure following the end of World War II. NSF, National Institutes of Health (NIH), and USDA were offering grant programs that attracted scientists from agriculture, particularly the younger appointees, as well as the rest of the scientific community. Ability to obtain grants from such sources had a large impact on an individual's merit-and-promotion progress. A self-sustaining, circular process evolved whereby the route for peer acceptance as a scientist was through peer-reviewed journal publications, particularly as a senior or sole author; the route to those publications was to seek funds to purchase instruments and supplies and to hire graduate students, postdoctoral scholars, and technical support; and the route to those funds was to become successful in obtaining extramural grants from NSF, NIH, USDA, grower organizations, and yes, from the pesticide industry. Since university departmental budgets could provide only the infrastructure: laboratories, greenhouses, field operations, and some secretarial and technical support, the focus of the research became that of the particular funding agency involved. As this process evolved during the 1960s and 1970s, administrators in the UC Division of Agricultural Sciences ("the Division," later Division of Agriculture and Natural Resources), colleges and departments, and Cooperative Extension had less and less impact on the direction of the research. And these grant sources were not sympathetic toward long-term, interdisciplinary, team projects focused on specific crops.

In 1974, Ivan Thomason and Jim Lyons were asked to present a white paper on research funding at the Division's annual statewide conference at Asilomar. In this white paper, the team proposed that the Vice President—Agriculture set aside some funds, on the order of \$500,000, to be used to fund targeted research addressing priority problems in the Division. This proposal was met with complete disdain by all in attendance.

During the 1960s and 1970s, grower organizations, commodity groups, Farm Bureau, and others, had close alliances with the agrichemical industry and were susceptible to the lobbying efforts of that industry to counter any discussion about the possibility of alternatives to pesticides. Besides the fact that a number of pest management researchers were being heavily funded by pesticide companies, UC's administration was also caught up in the agrichemical lobby. As articulated in

Robert van den Bosch's 1978 book *The Pesticide Conspiracy*, an organization, the California Education Foundation on Agriculture and Food Production (CEFAFP), was formed in 1970, "to begin, and continue, a vigorous educational program on the role of chemicals in modern agriculture and on their relationship to the environment and the demands of the public for attractive, safe, and wholesome food." The primary mover of CEFAFP was Allen Grant, Ronald Reagan's appointee as president of the California Board of Agriculture (and hence an *ex officio* member of UC's Board of Regents), and a staunch proponent of the agrichemical business. The general tone of CEFAFP philosophy was to imply that those environmentalists who suggested there might be some alternative to unrestricted use of pesticides were "largely a cover for leftist and radical groups to further their objective of destroying the country's political and economic system." To gain respectability for this organization, CEFAFP appointed UC Vice President Kendrick and Emil Mrak, ex-chancellor at UC Davis, to its board of directors.



During this same period, Dr. Guy McCloud was a special assistant to Vice President Kendrick. Dr. McCloud was a retired executive of an agricultural chemical company and had strong connections to the pesticide industry. About this same time, the U.S. Congress established a pesticide coordinator position at each land-grant institution to respond to criticisms that the government was not doing enough to protect public health from the overuse of pesticides. Dr. Ed Swift, an extension entomologist and strong supporter of pesticide use, became the statewide pesticide coordinator for the Division. Ed Swift and Guy McCloud had offices adjacent to Vice President Kendrick's and they had great influence in the direction of the Division's research and extension programs in pest management. When Ivan Thomason, Professor of Nematology, UC Riverside, was appointed as Assistant Director of Cooperative Extension for Pest Management Programs by Kendrick, he suggested that these two individuals with strong ties to the pesticide industry sitting in the Vice President's office posed a serious problem—both in perception and in fact. Shortly after McCloud retired, Ed Swift was relocated to an office at the USDA ARS Western Regional Laboratory in Albany, and he too, soon retired. Dr. Mike Stimmann, employed as the pesticide training coordinator at the time, was recruited and hired as the statewide pesticide coordinator to replace Ed Swift. Mike focused his efforts on making sure that Division personnel working with pesticides followed state and federal pesticide rules and regulations. He also continued to provide pesticide safety training.

While CEFAFP never accomplished much, its activities were taken over in 1974 by the Council of California Growers, an agribusiness lobbying and public relations organization whose very existence reflected the pervasive desire to hold on to the notion that any pest problem could be controlled by spraying the appropriate chemical.

However, also during the mid-1970s, the USDA–UC CE pilot projects on integrated approaches to pest management began to demonstrate clearly the value of such a program in reducing pesticide use, while at the same time lowering production costs. As a result, growers' interest in supporting these alternatives to heavy pesticide use began to increase. The growers also recognized that they would likely face increased regulatory constraints on the use of pesticides if they didn't change their

practices, so they began to express some interest in a larger research project to support development of IPM. At the same time, pressure from the UC scientists leading the IPM crusade within the pest management departments began to have an impact on administrators in the Division of Agricultural Sciences. In February 1975, Robert van den Bosch and Carl Huffaker, Division of Biological Control, UC Berkeley, forwarded a draft, "A Research Proposal: An Integrated Control Program at Kearney Field Station" (appendix I), to P. S. Messenger, chair of Entomology, UC Berkeley. This document stated in part:

University of California researchers have made striking advances in integrated control. For example, in the San Joaquin Valley important headway has already been made under the NSF-EPA project (above), and in various other Experiment Station efforts in cotton, grape, alfalfa, walnut, citrus, olive, and stone fruits.

It is proposed, therefore, that an Integrated Pest Management effort to exploit these advances be centered on research conducted by University personnel at, or associated with, the Kearney Field Station operation.

The crux of the proposed Kearney Field Station program would be to develop around a central modeling and systems analysis specialist, a team of scientists and technologists to pool their efforts in problem solving research to expand upon the existing integrated control base. In this connection, the proposed program would involve as main principals the disciplines of entomology, plant pathology and weed science.

Optimal pest control requires, among other things, a thorough understanding of the biology and ecology of each pest, of weather, soil, and cultural conditions, and the consequences of each contemplated action on other parts of the system. Thus, the work of scientists in different disciplines must be closely integrated; the modern use of modeling and systems analysis has afforded the most effective tool we know for doing this. It has served to crystallize and effectively bring together the expertise and data from various disciplines. From this base, analytical pest management decision making can be developed to help the California farmer make his major pest control decisions with minimum guesswork, thereby limiting his use of chemicals to times of essential need. This in turn will minimize the very expensive and often self-defeating prophylactic use of pesticides.

This document articulated the integrative philosophy, concept, and structure of such a program, and was the first step towards UC organizing a formal IPM program.

The next activity to surface was in April 1977 when chairmen of four UC Berkeley departments (E. Schlinger, Department of Entomological Sciences, E. Sylvester, Division of Entomology and Parasitology, R. van den Bosch, Division of Biological Control, and A. Weinhold, Department of Plant Pathology) sent the following proposal to establish a university-wide IPM program to Vice President Kendrick.

Proposal to Develop a University-wide
Program in Integrated Pest Management

WHEREAS pests (e.g., pathogens, insects, mites, nematodes, weeds, vertebrates) deprive us of nearly one-half of our crops in cultivation and storage, attack or compete with desired resources in our forests, pasturelands, parklands and urban areas, attack our structures and other possessions, transmit some of our most serious diseases, and bite, sting, harass and revolt us, and

WHEREAS crop and livestock pests alone cost the California agro-economy at least one billion dollars a year, and

WHEREAS the prevailing pest management strategy, strongly oriented to chemical control, has not only failed to bring satisfactory relief from many major pest problems but has in fact aggravated certain old problems and engendered new ones with the extensively used chemical pesticides frequently causing serious ecological, economic and sociological harm, resulting in increasing societal concern over these impacts and a rising demand for their reduction through the alternative strategy of integrated pest management (IPM), and

WHEREAS the major agency to undertake the IPM responsibility in the state is the University of California, but recognizing that despite the existence of considerable relevant intellectual, logistical, and physical resources, no clearly established philosophical and operational framework now exists within the University to address and undertake the holistic, truly interdisciplinary thrust required by a meaningful integrated pest management program, and further recognizing that a funding base must be developed to support a meaningful University IPM program, we respectfully recommend that the committee cited below, composed of knowledgeable IPM specialists, be formed at the earliest possible date to be charged with the development of a prototype University of California master plan for IPM research and implementation. Specific aspects of the committee's charge are herewith outlined.

We request this ad hoc committee to respond to the following charges for development and for implementing this Integrated Pest Management program:

Define the role of integrated pest management in the University of California in relation to the agricultural resources of the State;

Define the existing state of the art of Integrated Pest Management in California, the nation and the world;

Present a model research program for one of the major crops in California, e.g., cotton;

Develop programmatic schemes for multidisciplinary, multi-crop research, using crop combinations such as alfalfa, cotton and tomatoes, or grapes, citrus, and stone-pome fruits;

Identify the available University of California resources, itemize new resources needed, and develop the estimated budget needs for this program on a yearly basis for the first five years;

Develop an organizational structure for the program including administrative, research and extension functions; and

Develop a program plan for implementing the proposal for Integrated Pest Management—Statewide.

To implement this charge, we recommend that the ad hoc planning committee be composed of the following University of California faculty members with field experience in systems-oriented pest management:

Ferris, Howard, Asst. Nematologist (UC Riverside)

Gilchrist, David, G., Asst. Plant Pathologist (UC Davis)

Gutierrez, Andrew, Assoc. Entomologist (UC Berkeley), Chairman

Luck, Robert L., Entomologist (UC Riverside)

Shoemaker, Christine, Visiting Asst. Res. Systems Ecologist (UC Berkeley)

Thomason, Ivan J., Asst. Director, Coop. Ext. (UC Riverside)

Thomson, Sherman, Asst. Plant Pathologist (UC Berkeley)

In addition, we recommend that this committee consult with other University of California faculty and staff members, as well as outside consultants involved with integrated pest management as the need arises.

The resulting program, subject to such review and modification deemed necessary to improve its feasibility and viability, shall be presented by the statewide administration of the Division of Agricultural Sciences to those administrative, legislative, and public bodies for their consideration, review, and support.

On May 31, 1977, Vice President Kendrick issued a memo charging the above committee with the responsibilities outlined and stated he was "not giving the committee a deadline for completing the proposal, but an early report would be appreciated for planning purposes." In July of 1977, Andrew Gutierrez, chair of the advisory committee, forwarded a draft document from the committee to the vice president. During the remainder of 1977 and early 1978, the draft document was circulated widely to deans and appropriate department chairs for review and comment. The advisory committee produced a report on the "development and implementation of a statewide integrated pest management program in California" (appendix II), and in response, Vice President Kendrick wrote the following to the committee:

I am pleased with the report and am impressed with the amount of work you have put into it. I have perused it and I can state that I am in general agreement with your recommendations, but I expect there will be need for modification of some of the details of the administration of the project. However, I firmly support the principles from which you have drawn up the recommendations.

I want to have my Council of Directors review and fully understand the program before I initiate its implementation. I hope we will be under way by summer.

By this letter I want each of you to know of my sincere gratitude for your good contributions to this endeavor. I want to especially thank Andy Gutierrez for chairing this project.

With this letter I am discharging the Committee. I know each of you will be expecting something to happen, and I can assure you that it will. I ask for patience, however, because my past experience reminds me that very few things of this nature progress as rapidly as we all would like.

The "Gutierrez Committee" report was widely circulated to deans, department chairs, and Cooperative Extension personnel for their review, comments, and suggestions. Following this review, Vice President Kendrick appointed a small committee (Ivan Thomason, Assistant Director Coop Ext. for Pest Management, UC Riverside; Charles Hess, Dean, College of Agricultural and Environmental Sciences, UC Davis; James Lyons, Associate Dean for Plant Sciences and Pest and Disease Management, UC Davis; and Roy Rauschkalb, Regional Director, Cooperative Extension, UC Davis) asking for a document to be presented to the Legislature to seek funding for the project.

This document was circulated within the vice president's Council of Directors and they all agreed that the time had arrived. With CDFAs' draft "Report on Environmental Assessment of Pesticide Regulatory Programs" in hand, and its strong recommendation that "the University of California should be encouraged to expand its research into alternative pest control strategies, specifically integrated pest management," it was clear that the science and the public policy had merged into uniform support for IPM and that the time was ripe to put forward the University's plan. However, much to everyone's dismay, Vice President Kendrick did not believe this was the right time. He said that the UC president's office was already negotiating the University's budget and he did not believe the president would be willing to forward any new initiative for the current year's budget.

Those involved in developing the initiative did not agree with this assessment and took the proposal "to the street." Dean Hess discussed the proposal with the Farm Bureau, several other grower's organizations, and with Richard Rominger, Director of CDFAs, and Dan Dooley the Deputy Director. Jim Lyons and Ivan Thomason discussed the document with various commodity groups. There was strong support for the proposal, even from the Environmental Defense Fund, the Sierra Club, and the United Farm Workers, although these latter groups were still not sure they could trust the University to follow through on the project and worked to add a public policy committee into the proposal to provide some oversight. The most significant part of this process was that Rominger and Dooley had the ear of Governor Jerry Brown, who also became enthusiastic about the proposal. When word got back to the UC president that the governor would like to see this proposal included in the University's budget request, he agreed that indeed it was the right time, and hence, as if by magic, Jim Kendrick decided it was the right time, too. The proposal was formally placed in the legislative process on April 9, 1979 (appendix III).

The project was approved by the Legislature with a July 1, 1979 budget allocation of \$1.125 million. The "Integrated Pest Management" language as finally approved by the Legislature and the Governor (appendix IV) states in the last paragraph, "it is legislative intent that UC attempt to reallocate internal resources in order to increase support for integrated Pest Management in 1980-81 to a total of \$2 million."