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THE PERCEPTION AND MANAGEMENT OF PESTS AND PESTICIDES
A Collaborative International Research Program

RESEARCH PLAN*

In 1979, under the initiative of the International Geographical Union and with the support of the UNESCO-coordinated Man and the Biosphere Program and the United Nations Environment Program, an interdisciplinary group of biological, social and behavioral scientists met at Clare College in Cambridge, England to develop a joint program of research into the perception of pests, pesticides and pest management alternatives. The group, made up primarily of entomologists interested in farmer behavior and hazard management, developed a common research program relating to the perceptions and behavior of pest managers and the international flow of pesticides. Supporting these major components would be national profiles of pest problems and management, case studies of lessons drawn from the experience of integrated pest management, and the organization of a collaborative network for sharing information and research.

The primary aim of the program of studies adopted was to gain better knowledge of the ways in which pests were being managed and the reasons for the use of these techniques. This was seen as a step towards the improvement of pest management and was motivated in part by a concern about the possible adverse or counter-productive effects of the misapplication of pesticides.

Among other motivations for the collaborative effort was the perceived opportunity to strengthen the role of social research in pest management. The pest problem had been largely the concern of agronomists, entomologists and other biological and biochemical specialists. Recently, however, there has been a growing recognition among pest experts of the need to view the pest problem in a somewhat wider context. Indeed, the term "pest management" is itself an expression of this wider perspective as compared with the more restricted view implied in the phrase "pest control." We now understand the problem not so much in terms of controlling pests but of managing the pest-crop-farmer-market system in an effective manner. This clearly involves the use of economic criteria (e.g., in determining a cost-effective level of pest management) and also social and behavioral considerations (determining how farmers perceive the pest problem and possible responses).

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* Formally adopted, 8 October 1980, at the Second Meeting of the Network for the Study of the Perception and Management of Pests and Pesticides, held at Clark University, Worcester, Massachusetts, 01610, USA.

The organizers of the October workshop wish to express appreciation to Man and the Biosphere, The United Nations Environment Program, The United States Agency for International Development, and the Open University (U.K.) for their support of this meeting.

The introduction of social and economic criteria does not itself provide an exhaustive treatment of the pest management problem. A holistic view also involves considerations of health, environmental protection, international trade and aid, and scientific cooperation and information exchange. The aims of the program of research are therefore to gain better knowledge of the pest problem in the context of integrated pest management, using an interdisciplinary, international collaborative approach and seeking as a long term goal the achievement of ecologically sound, economically gainful and socially acceptable strategies for pest management.

The selection of themes was implemented by preparatory work in research design, culminating in a second workshop held at Clark University in Worcester, Ma. (USA) in October, 1980. The workshop, attended by 26 participants from thirteen countries and evenly distributed among the biological and social sciences, adopted this research plan to govern its collaborative activities for the next two years.

Guidelines for research were prepared in each of the four substantive areas and will be issued in January, 1981 by the Institute for Environmental Studies, University of Toronto, Toronto, Canada, M5S 1A4. In brief, over the next two years, individual scientists and research institutions in the collaborative network have resolved to undertake: (1) a comparative series of national profiles of pesticide and pest management practices; (2) site-specific studies of the perceptions and actions of pest managers and pesticide users; (3) a series of histories of alternative pest management systems; and (4) a set of papers concerning problems relating to the international flow of pesticide technology and associated hazards.

An initial report on these activities is tentatively planned for a scientific seminar to be held in June, 1982 in Nairobi.

National Profiles of Pesticide and Pest Management Practices

In many industrialized countries, there is a large literature related to pest problems, the use of pesticides, and their regulation. For much of the developing world such rudimentary data have never been assembled and for the purpose of international comparison, there are few available studies. Thus as a beginning effort in this research plan, national profiles of pest management problems will be prepared.

Essential elements to be included in the national profile are:

1. General geographical description of the country;
2. Major crops, pests and control measures;
3. Pesticide laws and regulation and government involvement;
4. Pest management research and application institutions and programs in both agriculture and public health;

5. Hazards associated with pest management, both environmental and human health;

6. Other pesticide uses and management problems.

This component of the program will provide a basis of systematic comparison of national differences in profile and an indication of problems requiring policy consideration at the national and international levels. Over the period of the program, the preparation of at least two national profiles for each of the major world regions is envisaged. Commitments to provide national profiles have been received from: Brazil, Burma, Kenya, Lesotho, Nigeria, Sierre Leone, Thailand, Uganda, United Kingdom, Zambia, Zimbabwe.

Pest Managers and Pesticide Users

Farmers, farm managers, and workers make most of the specific decisions about pesticide use and pest control practices, and occupy an important position in the network of pesticide flow and pest control information dissemination. Knowledge of their perceptions of pests and pesticides and the associated hazards is essential if national pest control is to be promoted effectively and over-reaction to pest and pesticide hazards is to be avoided.

The study of managers and users will include surveys from many countries in the major regions of the world dealing with agriculture and public health. Interviews will provide data on perceptions of pests, perceived risks and benefits associated with different methods of control (traditional and contemporary, including cultural, biological and chemical methods) details of actual control methods used and sources of information and materials related to pest control. Questionnaires will be designed to allow comparative analyses of data on salient issues among countries and geographical regions.

Over the next two years, at least one site-specific study of managers and users will be carried out in each nation where a national profile will be prepared and the research guidelines will also be circulated widely to interested collaborators in other countries. Commitments to provide site-specific managers and users studies have been received from: Brazil (Northeast), Germany, Kenya, Malaysia, Nigeria, Sierra Leone, Sri Lanka, Uganda, United Kingdom, United States, Zambia, Zimbabwe.

Case Histories of Alternative Pest Management Systems

Detailed case histories of attempts to develop alternative pest management systems will be useful in making plans for similar systems in other regions and for other crops. In addition, these studies will be useful in assisting a variety of policy decision-makers in appreciating the importance of this ecological approach to pest control.

A detailed outline has been developed to assist in displaying the specific elements of these pest management strategies together with the secondary effects on health, economy and environment.

As a first effort, comparative analysis will be made of selected examples for cotton insect control in several contrasting production regions. The areas to be compared are: South Texas (USA), Matamoros (Mexico), Tapachula, Chiapas (Mexico), Gezira Scheme, (The Sudan), Faiyum, (Egypt), and possibly also Multan, (Pakistan) and Ord River, (Australia). For the future case studies of pest management strategies for: oil palm, (Malaysia); cabbage, (Malaysia, Philippines, and U.S.A.); apple (Peru and Chile and the U.S.A.); and soybeans (Latin America, U.S.A.) may be considered.

International Flows of Pesticides

The export of pesticide products and pesticide manufacturing processes to developing countries is now a commonplace practice and some of its side-effects are becoming a source for concern. Reasons for the anxiety include: the fear of adverse effects on local ecosystems, a concern for the disruption of local agricultural methods, and various hazards to users, populations in the vicinity of production and use, and consumers of the residues on various products.

In order to assess the risks involved in pesticide export and reformulation, it is necessary to study the flow of processes, products, information, risk control measures and hazardous residues between industrialized and developing countries.

These flows can be most usefully examined by focusing on four broad interrelated areas of research:

1) trends in international transfer of pesticide;

2) the role of pesticides in technology transfer;

3) the regulatory processes affecting international flows;

4) the control of pesticide residues.

These four research areas provide an overall framework to explore the international questions of pesticide flow and integrate and compare findings from the site-specific studies and national profiles. Over the next two years, the dimensions of the international problems will be identified in a series of basic papers; a comparative international analysis will be carried out based on the national profiles, and empirical studies will be designed for international pesticide flows. Initial papers will cover each of the above listed four topics.

Supporting Activities

Currently the collaborative network maintains communication with 80 researchers and international agencies in 24 countries, provides a computer-assisted bibliography on perception-related studies at the Open University (U.K.), and publishes a series of working papers at the Institute for Environmental Studies, University of Toronto (Canada). These activities will continue over the two year period along with the activities of the project coordinators: for national profiles (B. Napompeth, National Biological Control Research Center, Thailand) for pest manager and pesticide user studies (E.M. Tukahirwa, Makerere University, Uganda), for case histories of alternative pest management systems (R.F. Smith, University of California, USA) and for international flow studies (K. Johnson, Clark University, USA). I. Burton (Univeristy of Toronto, Canada) will continue as chairman of the coordinating committee, J. Tait (Open University, U.K.) will maintain the secretariat, and W. Upholt (MAB, US) will serve as treasurer. These seven people will serve as the coordinating committee for the network and will organize research activities and help identify needed resources. The network will continue as an activity of the Man and the Biosphere Program, under the joint sponsorship of the International Geographical Union and the International Organization for Biological Control with the continued interest of the United Nations Environment Program.